

MEDIC TRAINING



**CURRICULUM
VOLUME 3**



CONTENTS

UNIVERSAL PRECAUTIONS	1	THE RELATIONSHIP BETWEEN UNIVERSAL HEALTH COVERAGE AND PHC RELATIONSHIP	56
SUMMARY OF MANAGEMENT	1	BASIC EPIDEMIOLOGY.....	57
HAND WASHING	1	PRINCIPLES OF EPIDEMIOLOGY	57
PROTECTIVE CLOTHING	1	MEASUREMENT OF MORBIDITY AND MORTALITY	62
ISOLATION.....	1	HEALTH PROMOTION AND DISEASE PREVENTION	65
SHARPS	2	BACKGROUND HISTORY	65
CLEANING ROUTINE	2	THE OTTAWA CHARTER FOR HEALTH PROMOTION	65
LAB STAFF	2	HEALTH PROMOTION ACTION.....	66
GENERAL APPROACH TO PATIENTS	3	IMPLEMENTATION	69
NUTRITION	4	SUSTAINABLE DEVELOPMENT GOALS (SDGS).....	70
MALNUTRITION	22	HISTORY OF MILLENNIUM DEVELOPMENT GOALS RELATED TO HEALTH	70
GROWTH MONITORING & PROMOTION (GMP).....	35	SUSTAINABLE DEVELOPMENT GOALS RELATED TO HEALTH.....	71
HOW TO MEASURE HEIGHT/LENGTH & WEIGHT	35	MEDICAL ETHICS.....	72
HOW TO PLOT THE GROWTH CHARTS?.....	39	WHAT IS MEDICAL ETHICS, AND WHY IS IT IMPORTANT?.....	72
PLOT WEIGHT-FOR-AGE.....	39	MEDICAL ETHICS AND THE LAW	75
PLOT LENGTH/HEIGHT-FOR-AGE	40	HOW THE 4 PRINCIPLES OF HEALTH CARE ETHICS IMPROVE PATIENT CARE.....	77
INTERPRETING GROWTH CHARTS.....	41	HISTORY OF MEDICAL SCIENCE.....	80
RELATION BETWEEN AGE, WEIGHT AND HEIGHT/LENGTH.....	42	HISTORY OF MEDICINE TIMELINE	81
BENEFIT OF DIFFERENT GROWTH CHARTS.....	43	CONFLICTS.....	84
HOW OFTEN GROWTH CHARTS SHOULD MEASURE AS A ROUTINE?.....	43	CONFLICTS IN MORAL VALUES (ETHICAL DILEMMA)	84
PLOT BMI-FOR-AGE	43	COMMUNICATION	84
MEASUREMENT OF HEAD CIRCUMFERENCE	44	CULTURAL CONCERNS	84
MID UPPER ARM CIRCUMFERENCE (MUAC).....	44	TRADITIONAL BELIEFS.....	84
GROWTH CHARTS AND TABLES (2 DIFFERENT FORMATS).....	45	TRUTH-TELLING	84
PRIMARY HEALTH CARE.....	51	CONFLICTS OF INTEREST	84
ALMA-ATA DECLARATION.....	51	MEDICAL FUTILITY	84
PHC PHILOSOPHY	51	CONTROL AND RESOLUTION.....	85
PHC DEFINITION (“ALMA ATA WHO, 1978”).....	51	ETHIC COMMITTEES	85
DIMENSIONS OF PHC	51	GUIDELINES	85
PRINCIPLES OF PHC.....	52	DECLARATION OF GENEVA (ORIGINAL VERSION).....	85
EIGHT CORE COMPONENTS (ELEMENTS) OF PHC (3+3+2)	52	PHARMACY MANAGEMENT	85
COMMUNITY HEALTH CARE SYSTEM.....	53	INTRODUCTION	85
RIGHTS AND RESPONSIBILITIES IN PHC	53	PURPOSE OF DRUG MANAGEMENT.....	85
THE PRACTICE OF PRIMARY HEALTH CARE (IN GENERAL)	53	PRECAUTIONS IN DRUG USE.....	85
CURATIVE CARE.....	54	ESTIMATING DRUG REQUIREMENTS: ORDERING AND STOCKING DRUGS	85
REHABILITATIVE HEALTH CARE.....	54	ORDERING DRUGS	86
COMMUNITY ORIENTED PRIMARY CARE (COPC).....	54	STOCKING DRUGS	86
REASONS FOR UNSUCCESSFUL IMPLEMENTATION OF PHC (AFTER > 2 DECADES).....	55	ISSUING AND CONTROLLING THE USE OF DRUG	86
		LIFE-SAVING DRUGS.....	86
		PREPARING DRUGS FOR THE OUTPATIENT DEPARTMENT.....	86
		INTEGRATED MANAGEMENT OF CHILDHOOD ILLNESS (IMCI).....	87



IMCI..... 87

IMCI ပေါ်ပေါက်လာပုံ 87

CAUSES OF UNDER 5 MORTALITY IN MYANMAR 87

COMMUNITY – IMCI (လူထုအခြေပြု IMCI)88

ICCM (INTEGRATED COMMUNITY CASE MANAGEMENT) 88

IMMUNIZATION.....89

ကာကွယ်ဆေးထိုးခြင်း) IMMUNIZATION).... 89

ကိုယ်ခံအားစနစ်)THE IMMUNE SYSTEM).. 89

ကာကွယ်ဆေးအမျိုးအစားများ TYPE OF VACCINES 90

ကာကွယ်ဆေးမပေးရသည့်အခြေအနေများ)CONTRAINDICATIONS)..... 91

ကာကွယ်ဆေးများအကြောင်း 93

အအေးလမ်းကြောင်းစနစ်အကြောင်း) COLD CHAIN SYSTEM)..... 94

ကာကွယ်ဆေးထိုးလုပ်ငန်း ဆောင်ရွက်နေစဉ် ဆက်သွယ် အသိပေးခြင်း 95

စောင့်ကြပ်ထောက်လှမ်းကြည့်ရှုခြင်းအတွက် အထောက်အကူစွမ်းများ) TOOLS FOR SURVEILLANCE)..... 99

HEALTH INFORMATION SYSTEM99

INTRODUCTION 99

OBJECTIVES OF THE HIS..... 99

PROCESS OF THE HIS 100

CONTENTS OF THE HIS 100

IPD AND REFERRAL 101

LABORATORY 101

DISEASE CONTROL..... 101

EXPANDED PROGRAMME OF IMMUNIZATION (EPI) 101

SUPPLEMENTARY FEEDING PROGRAM 101

THERAPEUTIC FEEDING PROGRAM 102

ANTENATAL CARE 102

DELIVERY CARE..... 102

POSTNATAL CARE..... 102

FAMILY PLANNING 102

HIV COUNSELING AND TESTING (HCT) 102

PMTCT (ANTENATAL) 102

HEALTH EDUCATION103

WHAT IS HEALTH EDUCATION?103

WHAT IS HEALTH EDUCATION IN YOUR OWN WORDS?103

WHY IS HEALTH EDUCATION IMPORTANT?.....103

WHAT IS CONCEPT OF HEALTH EDUCATION?.....103

WHAT ARE COMPONENTS OF HEALTH EDUCATION?.....103

WHAT IS THE MAIN PURPOSE OF HEALTH EDUCATION?103

WHAT ARE THE PRINCIPLES/DIMENSIONS OF HEALTH EDUCATION?.....103

CALLED THE SIX DIMENSIONS OF HEALTH103

HEALTH EDUCATION STRATEGY.....104

HOW TO TEACH HEALTH EDUCATION AND HEALTH PROMOTION104

HEALTH LEARNING MATERIALS107

FAMILY MEDICINE.....110

1. THE PHILOSOPHY OF FAMILY MEDICINE.....110

2. DOCTOR-PATIENT RELATIONSHIP ...110

3. THE CONSULTATION.....111

THE COMPREHENSIVE THREE-STAGE ASSESSMENT117

COLLABORATION: NEGOTIATING119

SPECIAL SITUATION122

PRINCIPLES OF CHRONIC DISEASES / NCD.....124

FORENSIC MEDICINE.....128

INTRODUCTION128

CHAPTER (1) FORENSIC THANATOLOGY129

CHAPTER (2) PERSONAL IDENTIFICATION134

CHAPTER (3) MEDICO-LEGAL ASPECTS OF WOUNDS135

CHAPTER (4) REGIONAL INJURIES148

CHAPTER (5) ACCIDENT, SUICIDE, HOMICIDE150

CHAPTER (6) SCENE OF CRIME151

CHAPTER (7) FIREARM WOUNDS152

CHAPTER (8) HANGING.....155

CHAPTER (9) DROWNING (SUBMERSION)157

CHAPTER (10) RAPE.....159

CHAPTER (11) LAW AND LAW COURTS165

UNIVERSAL PRECAUTIONS

Universal precautions are simple measures taken to prevent transmission of infection from body fluid and/or blood from:

- Patient to health care worker.
- Patient to patient.
- Health care worker to patient.

All patients' body fluid should be considered infectious, since it is not known who is infected and who is not. The health worker is most at risk of needle prick injuries and splashes of body fluids into the eyes, mouth etc. These areas can be protected to some degree, but awareness and avoidance of the potential risks are the best way of preventing infection.

SUMMARY OF MANAGEMENT

- Wash hands with water and soap before and after patient contact and after removing gloves.
- Wear gloves if there is a risk of contact with blood and body fluids.
- If there is a risk of splashing of blood or body fluids you can protect yourself further by wearing eyeglasses or goggles, mask and/or gown.
- Reduce unnecessary procedures. For example, avoid unnecessary blood transfusions, injections, or suturing.
- Place a patient whose blood or body fluids are likely to contaminate surfaces or other patients in an isolation room or area.

HAND WASHING

Make sure there is running water in your clinic or at least ensure there is access to water.

Wash your hands with plenty of water and (antimicrobial) soap.

Washing hands with soap and water is preferable to alcohol wash.

Alcohol concentration of > 60% needed.

Alcohol should not be used for visible dirt e.g., blood, mucous, saliva: use water and soap.

Hand washing with a good technique covering all surfaces of the hands at the right time is more important than the agent used or the length of time of hand washing (see drawing for technique)

- Wash hands immediately after contact with blood, body fluids, mucous membranes, or broken skin, even if gloves are worn.
- Wash hands before and after eating or preparing food.
- Wash hands after using the toilet.
- Wash hands after blowing your nose, coughing or sneezing into your hands.
- Wash hands before giving injections.
- Wash hands after each patient contact.
- Wash hands after handling dirty items.

PROTECTIVE CLOTHING

Gloves

- Wear clean, ordinary thin gloves anytime there is contact with blood, body fluids, mucous membrane, and broken skin.
- Change gloves between tasks or procedures on the same patient.
- Before going to another patient, remove gloves promptly and wash hands immediately.

Gowns

- Plastic gowns should be worn when there is a risk of splashes of blood or other fluids e.g., vaginal deliveries, opening abscesses. Clean them after use.
- Clean work clothes after use.

Eye-cover and Mask

- Eyeglasses or goggles and a mask should be used when there is a risk of splashes of body fluids, for example, vaginal deliveries, opening abscesses.

ISOLATION

For Airborne Transmission

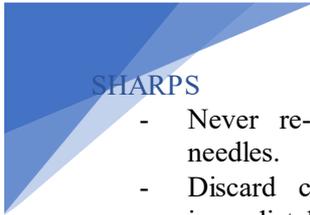
- Place the patient in a separate room away from other patients. The patient's room should be well ventilated. The doors should be closed to the hall and the windows open to the outside. This will reduce the chance of airborne infection. If possible, patients' rooms should have large windows to let in sunlight.
- Wear a mask when working with the patient.
- Limit movement of the patient from the room to other areas.

For Droplet Transmission

- Place the patient in an isolation room.
- Wear a mask when working with the patient.
- Limit movement of the patient from the room to other areas.

For Contact Transmission

- Place the patient in an isolation room and limit access.
- Wear gloves during contact with patient and with infectious body fluids or contaminated items. Wash hands after each patient contact.
- Wear two layers of protective clothing.
- Limit movement of the patient from the isolation room to other areas.
- Avoid sharing equipment between patients. Use separate equipment for each patient if supplies allow. If sharing equipment is unavoidable, clean and disinfect it before using it with the next patient.



SHARPS

- Never re-use needles. Avoid recapping needles.
- Discard contaminated disposable sharps immediately into a sharps container (puncture resistant and liquid proof containers).
- The precise location of sharps containers is important. They should be kept as close as possible to where the sharp item is to be used.
- Make sure contaminated equipment is not reused until it has been cleaned, disinfected, and sterilized properly.
- When washing sharp instruments wear heavy gloves and handle with care.

CLEANING ROUTINE

- Routinely clean and disinfect frequently touched surfaces including beds, bed rails, patient examination tables and bedside tables. Always use gloves when cleaning. Clean the area with disinfectant e.g., bleach, alcohol, or iodine.
- Clean and disinfect soiled linens and launder them safely. Avoid direct contact with items soiled with blood and body fluids.

LAB STAFF

- Assume all specimens are contaminated.
- Wear gloves.
- Wear eye protection if there is a risk of splashes.
- When cleaning lab equipment wear gloves.
- Do not eat in the lab.
- Wear a mask if dealing with airborne pathogens, such as TB.

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. 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 or screening care e.g. for children < 5 years old, check their immunization status and for signs of malnutrition or anaemia.
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. 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.

NUTRITION

အာဟာရသည် လူသားတိုင်း၊ သက်ရှိတိုင်း အသက်ရှင် ကျန်းမာရေးအတွက် အဓိကလိုအပ်ချက်တစ်ရပ်ဖြစ်ပြီး စဉ်ဆက်မပြတ်ဖြစ်ပေါ်နေသော လုပ်ငန်းတစ်ခုဖြစ်သည်။ ၎င်းလုပ်ငန်းထဲတွင် အစားအသောက်ခြင်း၊ ချေဖျက်ခြင်း၊ အစာကိုစုပ်ယူခြင်း၊ ခန္ဓာကိုယ်အတွက် အသုံးပြုခြင်းနှင့် မလိုအပ်သော အညစ်အကြေးများကို စွန့်ပစ်ခြင်းတို့ ပါဝင်သည်။

အာဟာရဓါတ်

သက်ရှိသတ္တဝါတို့ ခန္ဓာကိုယ်အသက်ရှင် ကျန်းမာရေး အတွက် လိုအပ်သော ဇီဝဓာတ်ပစ္စည်းများပင်ဖြစ်သည်။ ယင်းဇီဝ ဓာတ်ပစ္စည်းများကို အစားအစာများ စားသုံးခြင်း ဖြင့် ရယူလေ့ရှိသည်။

အာဟာရပညာဆိုသည်မှာ

- ၁။ လူတို့၏နေ့စဉ်လိုအပ်သည့် အာဟာရများကိုသိရှိစေခြင်း
- ၂။ လူတို့လိုအပ်သော အာဟာရဓါတ်များ ကြွယ်ဝသည့် အစားအစာများကို သိရှိစေခြင်း
- ၃။ အာဟာရဓါတ်ချို့တဲ့သော လက္ခဏာများ သိရှိစေခြင်း စသည်တို့ပါဝင်သော သိပ္ပံပညာရပ်ဖြစ်သည်။

အစာဆိုသည်မှာ

- ၁။ ခန္ဓာကိုယ်အတွက် လိုအပ်သော စွမ်းအင်ကို ထုတ်ပေး နိုင်ရမည်။
 - ၂။ ခန္ဓာကိုယ်ကြီးထွားရေးအတွက် အထောက်အကူ ပြုရ မည်။
 - ၃။ ခန္ဓာကိုယ်တွင်းမှ ပျက်စီးသွားသော ရုပ်ဝတ္ထုများကို အစားထိုးပြင်ဆင်ပေးနိုင်ရမည်။ (သို့မဟုတ်) ခန္ဓာကိုယ်၏ ဖော်ပြပါ ဆောင်ရွက်ချက်များကို အပိုအလိုမရှိအောင် ထိန်းချုပ်ပေးနိုင်ရမည်။ ဤတာဝန်ရပ်များအနက် အနည်း ဆုံးတစ်ခုခုကို ထမ်းဆောင်ပေးနိုင်မှသာ အစာဖြစ်သည်။
- အစာနှင့်အာဟာရဆိုသည့် ဝေါဟာရများကို တခါတရံတွင် တူညီသကဲ့သို့ သုံးနှုန်းကြသည်။ သို့သော် ဤဝေါဟာရ (၂) ခုသည် လုံးဝတူညီသည်ကားမဟုတ်။ စားသောက်ဖွယ်ရာ Food Stuff ဆိုသည်မှာ အစာအဖြစ်စားသုံးနိုင်သော မည်သည့်အရာကိုမဆို စားသောက်ဖွယ်ရာဟုခေါ်သည်။ အစာ food ဆိုသည်မှာ မတူညီသော စားသောက်ဖွယ်ရာ များကို ပေါင်းထားခြင်းဖြစ်ပြီး အရည်အချင်းအားဖြင့်၎င်း၊ အရည်အသွေးအားဖြင့် ပါဝင်မှုအတိုင်းအတာ ကွဲပြား ခြားနား ကြသည်။

အာဟာရမျှတသောအစာ

အသက်အရွယ်၊ ကျား/မ၊ အလုပ်အကိုင်အလိုက် လူ၏ခန္ဓာကိုယ်အတွက် လိုအပ်သော အာဟာရဓါတ်များ အမျိုးအစားစုံလင်စွာ မျှမျှတတပါဝင်သော အစားအစာ ပင်ဖြစ်သည်။ ၎င်းအစားအစာများသည် ပမာဏအားဖြင့် လုံလောက်ရမည့်အပြင် နေ့စဉ်အာဟာရ လိုအပ်ချက်များကို ဖြည့်ဆည်းပေးနိုင်သော အစာများဖြစ်ရမည်။ လူတစ်ဦး ချင်းအတွက် ယဉ်ကျေးမှု၊ လူမှုရေး၊ စီးပွားရေးအားဖြင့် လည်း လိုက်လျောညီထွေရှိပြီး လက်ခံနိုင်သော အစာ ဖြစ်ရပါမည်။

အာဟာရဓါတ် (၆)မျိုး

အာဟာရသည် အသွေး၊ အသား၊ အင်အားတို့ကို ဖြစ်စေ တတ်သော သြဇာဓါတ်ဖြစ်သည်။ အစာထဲတွင်ပါဝင်သော ဓာတ်ပစ္စည်းများလည်းဖြစ်သည်။ ခန္ဓာကိုယ် တည်ဆောက် ခြင်း၊ အသက်ရှင်ခြင်း၊ လှုပ်ရှားသွားလာခြင်း၊ မျိုးပွားခြင်း အတွက် အာဟာရဓါတ်အမျိုးမျိုး လိုအပ်သည်။ ခန္ဓာကိုယ် အတွက်လိုအပ်သော အာဟာရဓါတ် (၆) မျိုးမှာ (က) ကစီဓါတ် (ခ) အဆီဓါတ် (ဂ) အသားဓါတ် (ဃ) သတ္တုဓါတ် (င) ဗီတာမင်ဓါတ်နှင့် (စ) ရေဓါတ်တို့ဖြစ်ကြသည်။ အာဟာရလိုအပ်ချက်များသည် အသက်အရွယ်၊ ကျား/မ၊ လှုပ်ရှားမှု၊ ကျန်းမာရေးအခြေအနေတို့အရ ကွာခြားသည်။ အစားအစာများကို ယင်းတို့တွင် ကြွယ်ဝစွာပါဝင်သည့် အာဟာရဓါတ်များ၏ အဓိကအကျိုးပြုမှုပေါ်မူတည်၍ အစာအုပ်စု (၃) စုခွဲခြားနိုင်သည်။

အစာအုပ်စု	အာဟာရဓါတ်	ကြွယ်ဝသောအစာများ
အင်အား ဖြစ်စေသော အစာ	ကစီဓါတ်	ကောက်နံ့များ၊ သစ်ဥသစ်ဖု၊ အချိုစာများ
	အဆီဓါတ်	တိရစ္ဆာန်အဆီ၊ သီးနှံဆီအမျိုးမျိုး
ခန္ဓာကိုယ် ကြီးထွား စေသော အစာ	အသားဓါတ်	သား၊ ငါး၊ ဥ၊ နို့၊ ပဲအမျိုးမျိုး
ရောဂါ ကာကွယ် စေသောအစာ	သတ္တုဓါတ်	ဟင်းသီးဟင်းရွက်၊ သစ်သီးဝလံ
	ဗီတာမင်ဓါတ်	ဟင်းသီးဟင်းရွက်၊ သစ်သီးဝလံ
	ရေဓါတ်	အရည်အမျိုးမျိုး၊ အရည်ရွှမ်းသည့်အစာများ

အင်အားဓါတ်

ကိုယ်ခန္ဓာအတွင်းအသက်ရှူခြင်း၊ သွေးလည်ပတ်ခြင်း၊ အစာကြေချက်ခြင်းစသည့် ဇီဝကမ္မလှုပ်ရှားမှုများအတွက် လည်းကောင်း၊ နေ့စဉ်လှုပ်ရှားသွားလာရေးအတွက် လည်းကောင်း၊ ခန္ဓာကိုယ်အပူချိန်ကို (၃၇ °C) တွင် ထိန်းသိမ်းထားရေးအတွက်လည်းကောင်း အင်အားလိုသည်။ ထို့အပြင် ကိုယ်ဝန်ဆောင်မိခင်များတွင် သန္ဓေသား ကြီးထွားရန် နို့တိုက်မိခင်များတွင် နို့ရည်ထွက်ရှိစေရန်၊ ကလေးသူငယ်များတွင် အသွေးအသား တည်ဆောက် ကြီးထွားရန် အင်အားလိုသည်။ ယင်းအင်အားဓါတ်ကို အစားအစာများမှ ရရှိသည်။

အင်အားကိုတိုင်းတာသည့် ယူနစ်တစ်ခုမှာ ကယ်လိုရီ (Calorie) ဖြစ်သည်။ တစ်ကီလိုကယ်လိုရီမှာ ရေတစ်ကီလိုဂရမ်ကို အပူချိန်တစ်ဒီဂရီစင်တီဂရိတ် ပိုမိုမြင့်မားလာအောင်ပေးရန် လိုအပ်သည့် အပူပမာဏ (သို့) အင်အားပမာဏပင်ဖြစ်သည်။

အင်အားလိုအပ်ချက်သည် အောက်ပါအချက်များအပေါ် မူတည်သည်။

၁။ **အသက်အရွယ်** - ကလေးသူငယ်များသည် အသွေးအသားတည်ဆောက်ရသည့်အပြင် လှုပ်ရှားမှု များသောကြောင့် အင်အားပိုလိုသည်။

၂။ **ကျားမ** - အမျိုးသားများသည် သာမန်အားဖြင့် ကိုယ်အလေးချိန် ပိုများသောကြောင့် အင်အားပိုလိုသည်။

၃။ **လှုပ်ရှားမှု** - ခွန်အားစိုက်ထုတ်ရသောကြောင့် ကာယလှုပ်သားများသည် အင်အားပိုလိုသည်။

၄။ **ကျန်းမာရေးအခြေ** - Body Temperature များက BMR (Basal Metabolic Rate) များသည် နာလန်ထချိန်တွင် ကုန်ဆုံးသွားသော အင်အားများ ပြန်ဖြည့်ရန် အင်အားပိုလိုသည်။

၅။ **ဇီဝကမ္မအခြေအနေ** - ကိုယ်ဝန်ဆောင်တွင် သန္ဓေသားများ၏ အသွေးအသားများ တည်ဆောက်ရသောကြောင့် အင်အားပိုလိုသည်။ မိခင်နို့ရည်တွင် အဆီ၊ ကစီဓါတ်များ ပါဝင်သောကြောင့် အင်အားပိုလိုသည်။

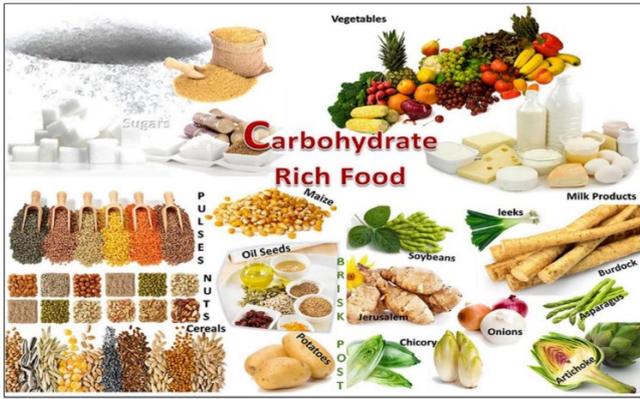
၆။ **ပတ်ဝန်းကျင်အခြေအနေ** - ပတ်ဝန်းကျင်တွင် အပူချိန်နည်းက ခန္ဓာကိုယ်၏အပူချိန်ကို ထိန်းသိမ်းထားနိုင်ရန် အင်အားပိုလိုသည်။

အစာတွင်ပါဝင်သည့် ကစီနှင့်အဆီများကို ချေဖျက်လိုက်သောအခါ အင်အားဓါတ်ရရှိသည်။ အင်အားဓါတ်များ ပိုလုံပါက ခန္ဓာကိုယ်တွင် အဆီအဖြစ် စုဆောင်းထားရှိသည့် အတွက် ကိုယ်အလေးချိန်တိုး၍ ဝမ်းလျှောနိုင်သည်။

၁။ ကစီဓါတ် (CARBOHYDRATE)

လူများအတွက် အစားအစာမှရရှိသော အင်အားဓါတ်တွင် ကစီဓါတ်သည် အဓိကဖြစ်သည်။ ကာဘိုဟိုက်ဒရိတ် 1 g လောင်ကျွမ်းပါက အင်အားဓါတ် (calorie) 4 kcal ရရှိမည်ဖြစ်သည်။ ကစီဓါတ်၏ အခြေခံမှာ Monosaccharide ဖြစ်သည်။ ကစီဓါတ်ကြွယ်ဝသော အစာများကို အစာကြေချက်သောအခါ ဂလူးကို့စ်သကြားအဆင့်အထိ ကြေချက်ပြီးခန္ဓာကိုယ်အတွင်းသို့ စုပ်ယူသွားသည်။ ထိုဂလူးကို့စ် သကြားအား လောင်စာအဖြစ် အသုံးပြုကာ အင်အားဓါတ်ရယူ၍ ဇီဝကမ္မလှုပ်ရှားမှုများ၊ အပူငွေ့များအဖြစ် ထုတ်လုပ်သုံးစွဲသည်။ ဂလူးကို့စ်များလာပါက ဂလိုင်ကိုဂျင်အဖြစ် ကြွက်သား၊ နှလုံးနှင့် အသည်းတို့တွင် သိမ်းဆည်းထားသည်။ ယင်းထက် ပိုလုံပါက အဆီအဖြစ်ပြောင်းလဲပြီး အဆီပြင်အဖြစ် သိမ်းဆည်းထားသည်။

စိတ်ပူပန်နေသူများ၊ လေ့ကျင့်ခန်းပြင်းပြင်းထန်ထန် လုပ်သောသူများ၊ အာဟာရချို့တဲ့သူများ၊ ပေါင်မပြည့် လမစေ့သော ကလေးများနှင့် အင်ဆူလင်အထွက်များသော သူများ၏ သွေးထဲတွင်သကြားဓါတ်လျော့နည်းသည်။



၂။ အဆီဓါတ် (Fat)

အဆီဓါတ်တွင် ကာဘိုဟိုက်ဒရိတ်နှင့်အသားဓါတ်ကဲ့သို့ပင် ကာဗွန်၊ ဟိုက်ဒရိုဂျင်နှင့် အောက်စီဂျင်တို့ ပေါင်းစပ်ပါဝင်သည်။ အဆီသည်ရေတွင် မပျော်ဝင်ပေ။ အဆီဓါတ်သည် ကစီဓါတ်နှင့်အသားဓါတ်တို့ထက် အင်အားနှစ်ဆ ပိုရရှိစေသည်။ အဆီဓါတ် 1g လောင်ကျွမ်းပါက အင်အားဓါတ် (calorie) 9 kcal ရရှိသည်။

အဆီဓါတ်ကို ပြည့်ဝအဆီ (Saturated Fat) နှင့် မပြည့်ဝသောအဆီ (Unsaturated Fat) ဟူ၍ နှစ်မျိုးခွဲခြားထားသည်။ ပြည့်ဝအဆီကို တိရစ္ဆာန်မှရရှိသောအဆီ (ထောပတ်ဆီ၊ ဝက်ဆီ၊ ငါးဗိုက်သား စသည်) နှင့် အုန်းဆီတို့တွင်တွေ့ရသည်။ မပြည့်ဝသောအဆီကို သီးနှံဆီ (နှမ်းဆီ၊ မြေပဲဆီ၊ နေကြာဆီစသည်) များမှရရှိသည်။ တိရစ္ဆာန်မှရသောအဆီကို များများစားပါက သွေးထဲတွင် (Cholesterol) များလာနိုင်သည်။ လူတစ်ဦးသည် တစ်နေ့တာလိုအပ်သော အင်အားဓါတ် (Calorie) ၏ ၁၅ မှ ၃၀% ကို ပေးစွမ်းနိုင်သည့် အဆီပမာဏကိုသာ စားသင့်သည်။ (ကယ်လိုရီ ၂၄၀၀ kcal လိုအပ်သော အမျိုးသမီးတစ်ဦးသည် ကယ်လိုရီ ၃၆၀ မှ ၇၂၀ kcal ပေးစွမ်းနိုင်သည့် အဆီပမာဏ ၄၀ မှ ၈၀ gm; ၂.၅ မှ ၅ ကျပ်သားအတွင်းသာ စားသုံးသင့်သည်။ ဟင်းချက်ဆီ ပမာဏ မဟုတ်ပါ။ အစာတွင်ပါဝင်သည့် မြင်ရ/မမြင်ရ အဆီစုစုပေါင်းကို ဆိုလိုခြင်းဖြစ်သည်။) အဆီများများ စားပါက ကိုယ်အလေးချိန်တိုးလာရုံသာမက နောက်ဆက်တွဲရောဂါများဖြစ်သော နှလုံးသွေးကြောကျဉ်းရောဂါ၊ အသည်းအဆီဖုံးရောဂါ၊ သွေးတိုးရောဂါစသည့် နာတာရှည်ရောဂါများဖြစ်ပွားနိုင်သည်။

အဆီဓါတ်ခြေဖျက်ခြင်းနှင့်သိုမှီးခြင်း

အဆီဓါတ်သည် အစာအိမ်၊ အူသိမ်အတွင်းသို့ ရောက်သော အခါ သည်းခြေရည်နှင့် ပန်ကရိယမှ ထွက်သော အစာချေ အရည်များဖြင့် ချေဖျက်ခံရပြီး ခန္ဓာကိုယ်တွင်းသို့ စိမ့်ဝင်

ရောက်ရှိ သွားသည်။ ခန္ဓာကိုယ် အတွင်းသို့ ရောက်ရှိ သွားသော အဆီအချို့သည် အင်အားအဖြစ်သို့ ပြောင်းလဲ အသုံးချခြင်းခံရသည်။ အချို့ကို ခန္ဓာကိုယ်ဆဲလ်များ တည်ဆောက်ရာ၌လည်းကောင်း၊ အချို့ကို အဆီပြင် စုဆောင်းရာတွင်လည်းကောင်း သိုမှီးထားသည်။ ခန္ဓာကိုယ် အတွက် အင်အားလိုအပ်လျှင် သိုမှီးထားသော အဆီများကို အသုံးပြုနိုင်သည်။

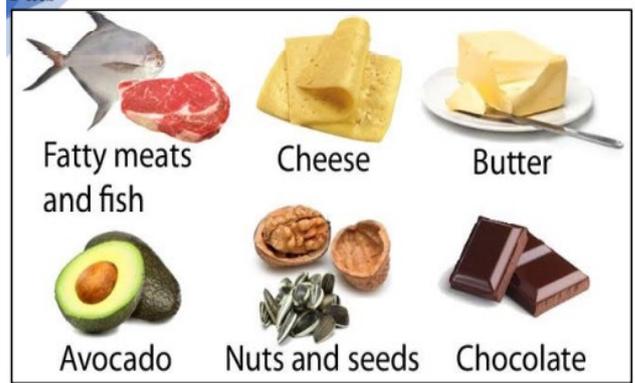


Figure: Fats rich foods

အဆီဓါတ်ဆောင်ရွက်ချက်များ

- (၁) အဆီဓါတ်သည် Essential Fatty Acid ထောက်ပံ့ပေးသည်။
- (၂) အဆီတွင် ပျော်ဝင်သောဗီတာမင် (A, D, E, K) များကို သယ်ဆောင်ပေးသည်။
- (၃) အဆီဓါတ်သည် အအေးဒဏ်နှင့် ထိခိုက်ဒဏ်ရာရရှိမှုမှ ကာကွယ်ပေးသည်။
- (၄) Fatty Acid ပေါင်းစပ်ခြင်းဖြင့် အသားဓာတ်၏ ဇီဝဓာတုလုပ်ငန်းများကို ပြောင်းလဲဆောင်ရွက်နိုင်စေသည်။
- (၅) အဆီဓါတ်သည် အစားအစာအား ပိုမိုနူးညံ့ပျော့ပြောင်းစေပြီး အရသာပိုရှိစေသည်။
- (၆) အရေပြားနှင့် ဆံပင် အမွှေးအမှင်များ ကျန်းမာစေရန် ထောက်ပံ့ပေးသည်။
- (၇) ရောဂါပိုးမွှားများ ဝင်ရောက်နိုင်မှုကို ဟန့်တား၍ ဓာတုအဆိပ်များကို စုပ်ယူ ထိန်းချုပ်ပေးသည်။
- (၈) ခန္ဓာကိုယ်အတွက် အရန်အင်အားဓာတ် သိုလှောင်ရုံ ဖြစ်သည်။

၃။ အသားဓာတ် (PROTEIN)

အသားဓာတ်ကြွယ်ဝသောအစားအစာများကို တိရစ္ဆာန်မှရသော အစားအစာများ - အသားအမျိုးမျိုး၊ ငါး၊ ပုစွန်အမျိုးမျိုး၊ နို့နှင့် ကြက်ဥ

အပင်မှရသောအစားအစာများ - ပဲအမျိုးမျိုး၊ မြေပဲ၊ (ဂျုံ၊ ဆန်၊ ပြောင်း၊ အာလူး) ဟူ၍ (၂)မျိုး ခွဲခြား ထားသည်။ အသားဓာတ်အမျိုးအစား (Amino acid) စုံလင်မှုနှင့် ခန္ဓာကိုယ်မှ ကြေချက်စုပ်ယူနိုင်မှုပေါ်မူတည်၍ တိရစ္ဆာန်မှ ရသော အသားဓာတ်ကို ပထမတန်းစားဟုလည်းကောင်း၊ အပင်မှရသော အသားဓာတ်ကို ဒုတိယတန်းစားဟု လည်းကောင်း သတ်မှတ်သုံးစွဲလေ့ရှိသည်။

တစ်နေ့လျှင် စွမ်းအင် ၃၀၀၀ ကီလိုကယ်လိုရီလိုသော လူတစ်ဦးသည် နေ့စဉ်အသားဓာတ် (၅)ကျပ်သားခန့် (အသား၊ ငါး၊ ပဲ (၅)ကျပ်သားကိုဆိုလိုခြင်းမဟုတ်ပါ) စားသုံးရမည်ဖြစ်သည်။

အကယ်၍နေ့စဉ်စားသုံးနေသောအစားအစာမှ အင်အားဓာတ် လုံလောက်စွာမရရှိလျှင် ခန္ဓာကိုယ်တွင်းရှိ ကစီနှင့် အဆီဓာတ်များကို လောင်စာအဖြစ်သုံးရသည်။ ကစီနှင့် အဆီဓာတ်များ ကုန်ခမ်းသွားလျှင် ခန္ဓာကိုယ်တွင်းရှိ အသားဓာတ်များကို လောင်စာအဖြစ်သုံးရသည်။ ထိုအခါ ခန္ဓာကိုယ်တွင် အသားဓာတ်လျော့နည်းကာ တဖြည်းဖြည်း ပိန်ချိုးချိန် လာသည်။

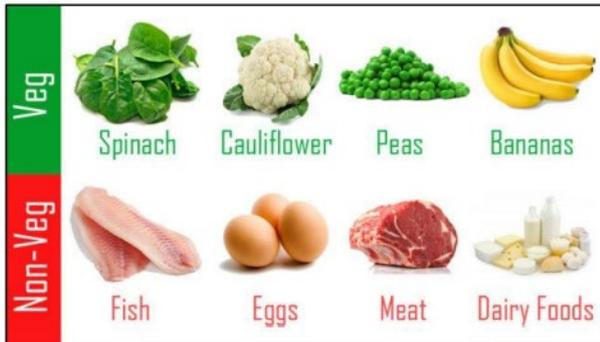


Figure: Protein rich foods

အမိုင်နိုအက်ဆစ်(၂)မျိုး ခွဲခြားနိုင်သည်။

၁။ အဓိကကျသော အမိုင်နိုအက်ဆစ် (Essential Amino Acids)

ခန္ဓာကိုယ်မှ မထုတ်လုပ်နိုင်သော (သို့) ထုတ်လုပ်နိုင် ပါကလည်း လုံလောက်စွာထုတ်လုပ်နိုင်ခြင်း မရှိသော အမိုင်နိုအက်ဆစ်များ ဖြစ်သည်။

- 1. Arginine
- 2. Valine
- 3. Histadine
- 4. Isoleucine
- 5. Alanine
- 6. Methionine
- 7. Phenylalanine
- 8. Leucine
- 9. Threonine
- 10. Tryptophan

၂။ အဓိကမဟုတ်သော အမိုင်နိုအက်ဆစ်

ခန္ဓာကိုယ်မှ လိုသလောက် ထုတ်ပေးနိုင်သော အမိုင်နိုအက်ဆစ်များ ဖြစ်သည်။

- 1. Glycine
- 2. Glutamic acid
- 3. Aspartic acid
- 4. Proline
- 5. Alanine
- 6. Serine
- 7. Tyrosine
- 8. Cysteine
- 9. Asparagine
- 10. Glutamine

အစားအသောက်ပေါ်တွင်မူတည်၍ ပါဝင်သော အမိုင်နို အက်ဆစ်ဓာတ်များမတူညီကြပါ။ ဥပမာအားဖြင့် ဆန်တွင် Methionine ဓာတ်ပါဝင်မှုများပြီး၊ ပဲတွင် Lysine များစွာပါဝင်သည်။ အသားတွင်ပါဝင်သည့် အမိုင်နို အက်ဆစ်နှင့်အသီး တွင်ပါဝင်သည့် အမိုင်နိုအက်ဆစ်တို့မှာ အမျိုးအစားခြင်းမတူညီပါ။ ထို့ကြောင့် ခန္ဓာကိုယ်အတွက် လိုအပ်သော အမိုင်နိုအက်ဆစ် ဓာတ်များရရှိရန် အစားအစာ ကို မျှတစွာစားသုံးသင့်ပါသည်။

အသားဓာတ်၏ အရေးကြီးပုံ

၁။ အသားဓာတ်မှရသော အမိုင်နိုအက်ဆစ်များ (Amino Acid)ကို သွေးတွင်ပါသော ဟေမိုဂလိုဘင် (Haemoglobin) ၊ Plasma Protein ၊ သွေးခဲစေသော ပစ္စည်း (Clotting Factors)၊ ဟိုမုန်း (Hormone) အချို့၊ Cells များကြီးထွားရန်/ပွားများရန် လိုအပ်သော Nucleic Acids များ၊ (Antibody) ခေါ် ကိုယ်ခံစွမ်းအားများ တည်ဆောက်ရာတွင် အသုံးပြုသည်။

၂။ နို့တိုက်မိခင်များ နို့ကောင်းစွာထွက်ရန် အသားဓာတ် လုံလောက်စွာ စားသုံးရမည်။

၃။ ခန္ဓာကိုယ်ကြီးထွားဖွံ့ဖြိုးရန်နှင့် ပျက်စီးမှုများကို ကာကွယ်ရန် အသားဓာတ် ပိုမိုလိုအပ်သည်။

၄။ သွေးတွင် သကြားဓာတ်လိုအပ်ပါက အမိုင်နို အက်ဆစ်များကို အသုံးပြုလျက် အသည်းနှင့် ကျောက်ကပ်မှ ဂလူးကိုစ့် တည်ဆောက်ပေးနိုင်သည်။

၅။ ခွဲစိတ်ပြီးလူနာများ အနာကျက်ရန်နှင့် နုလန်ထစ လူနာများ ရောဂါလျင်မြန်စွာ ပျောက်ကင်းစေရန် အသား ဓာတ်များစားသုံးရမည်။

၆။ အမိုင်နိုအက်ဆစ်မှ တည်ဆောက်ယူရသော ကိုယ်ခံစွမ်းအား (Antibody) သည် ရောဂါများကို တိုက်ဖျက်ရန် အရေးပါသည်။

အသားဓာတ်ချို့တဲ့ပါက- ပရိုတင်းအင်အားချို့တဲ့ရောဂါ ဖြစ်နိုင်သည်။ ခန္ဓာကိုယ်ခုခံစွမ်းအား ကျဆင်းသောကြောင့် ရောဂါ အမျိုးမျိုး ဝင်လွယ်သည်။ တာရှည်ပါက ခန္ဓာကိုယ် နှင့် ဉာဏ်ရည်ဖွံ့ဖြိုးမှု နှေးကွေးခြင်း ဖြစ်နိုင်သည်။

၄။ သတ္တုဓါတ် (Minerals)

ခန္ဓာကိုယ်အတွက်အရေးပါသော သတ္တု ဓါတ်အမျိုးပေါင်း (၂၀)ကျော်ရှိသည်။

- ၁။ ကယ်လစီယမ်
- ၂။ ဖော့စဖရပ်
- ၃။ ပိုတက်စီယမ်
- ၄။ ဆာလဖါ
- ၅။ ဆိုဒီယမ်
- ၆။ ကလိုရင်း
- ၇။ မဂ္ဂနီစီယမ်
- ၈။ သံဓါတ်
- ၉။ ဇင့်
- ၁၀။ စယ်လီနီယမ်
- ၁၁။ မင်းဂွန်စ်
- ၁၂။ ကော့ပါး
- ၁၃။ အိုင်အိုဒင်း
- ၁၄။ မော်လစ်ဘီဒီနမ်
- ၁၅။ ကိုဘော့လ်
- ၁၆။ ခရိုမီယမ်
- ၁၇။ ဖလူအိုရင်း
- ၁၈။ စီလီကွန်
- ၁၉။ ဗီနီယမ်
- ၂၀။ နီကယ်လ်
- ၂၁။ တင်း

ခန္ဓာကိုယ်တွင်ပါဝင်သော သတ္တုဓါတ်များ

သတ္တုဓါတ်	ခန္ဓာကိုယ်ထဲရှိ ပျမ်းမျှပမာဏ (ဂရမ်)	အဓိကရှိသောနေရာ
ကယ်လ်ဆီယမ်	၁၀၀၀၁၅၀၀-	အရိုး
ဖော့စဖိတ်	၆၀၀၉၀၀-	အရိုး
ဆာလဖါ	၁၇၀	အမိုင်နိုအက်ဆစ်
ပိုတက်စီယမ်	၁၃၅	ဆဲလ်တွင်းအရည်
ကလိုရင်း	၁၂၀	ခန္ဓာကိုယ်တွင်းအရည်
ဆိုဒီယမ်	၈၀	ခန္ဓာကိုယ်တွင်းရည်
မဂ္ဂနီစီယမ်	၂၅	အရိုး
သံ	၄	အသွေး

(၄-က) ဆိုဒီယမ် (Sodium)

- ၁။ Osmotic Pressure ကို ပုံမှန်ဖြစ်ရန် ထိန်းသိမ်းထားပေးသည်။
- ၂။ pH (Acid base balance) ကိုပုံမှန်ဖြစ်ရန် ထိန်းထားပေးသည်။
- ၃။ အရည်များစိမ့်ဝင်စွန့်ထုတ်မှု၊ ကြွက်သားများ၏ လုပ်ငန်းများနှင့် အာရုံကြောများ၏ ဆောင်ရွက်မှုတို့ကို ပုံမှန် ဆောင်ရွက်နိုင်ရန်အတွက် အသုံးဝင်သည်။
- ၄။ အစာအာဟာရများကိုစုပ်ယူခြင်း၊ သယ်ယူပို့ဆောင်ခြင်း များ ဆောင်ရွက်ပေးသည်။

(၄-ခ) ပိုတက်စီယမ် (Potassium)

- ၁။ ခန္ဓာကိုယ်အတွင်းရှိ အင်္ဂါအစိတ်အပိုင်းများ၌ အရည်နှင့် Osmotic Pressure ပုံမှန် ညီမျှ နေစေရန်ဆောင်ရွက်သည်။
- ၂။ အာရုံကြောမျှင်များ တစ်ခုနှင့်တစ်ခု ဆက်သွယ် ဆောင်ရွက်နိုင်ရန် ကူညီသည်။
- ၃။ ခန္ဓာကိုယ်၏ Acid base ညီမျှစေရန် ဆောင်ရွက်သည်။
- ၄။ ခန္ဓာကိုယ်တွင် ဓာတ်ပစ္စည်းများ ပြုပြင်ပြောင်းလဲမှု၌ ပါဝင်ဆောင်ရွက်သည်။
- ၅။ ကြွက်သားများပုံမှန် အနေအထားရှိရန်အတွက် အထောက်အကူပြုသည်။
- ၆။ Pancreas မှ အင်ဆူလင်ထွက်ရှိရန်အတွက် အထောက်အကူပြုသည်။

(၄-ဂ) ထုံးဓာတ် (Calcium)

- ၁။ ထုံးဓာတ်သည် ခန္ဓာကိုယ်တွင် အရိုးနှင့်သွားများ တည်ဆောက်ရန်အတွက် လိုအပ်သည်။
- ၂။ ကြွက်သားများ ကျုံ့ခြင်း၊ ဆန့်ခြင်းနှင့် သွေးခဲခြင်း တို့အတွက် အရေးပါသည်။
- ထုံးဓာတ်ကြွယ်ဝစေသော အစားအသောက်များမှာ နွားနို့၊ အရိုးပါ ဝါးစားနိုင်သော ငါးကလေးများ၊ အခွံပါ ဝါးစားနိုင်သော ပုစွန်ကလေးများနှင့် မျှင်ငါးပိတို့ဖြစ်သည်။ ဆန်၊ ဂျုံ စသည်တို့တွင် ထုံးဓာတ်အနည်းငယ်သာပါရှိပြီး ဟင်းသီးဟင်းရွက်တို့တွင် အတန်အသင့်သာပါသည်။ မြန်မာလူမျိုးတို့ နေ့စဉ်စားသုံးသော အစားအစာများတွင် ထုံးဓာတ် ပါဝင်မှု နည်းပါးသည်။

ထုံးဓာတ် ချို့တဲ့သော လက္ခဏာများ

သွေးတွင် ကယ်လစီယမ်များ ရုတ်တရက် လျော့နည်းပါက ကြွက်တက်ခြင်း (tetany)၊ ခြေချောင်းလက်ချောင်း လေးများ ကပ်ခြင်း၊ ခြေလက်များ လေးလံခြင်းတို့ ဖြစ်တတ်သည်။ ငယ်ရွယ်သူများတွင် အရိုးပျော့ရောဂါ ဖြစ်ခြင်း၊ ကိုယ်ကာယ ကြီးထွားမှုနှေးခြင်း၊ သွားများ ကောင်းမွန်စွာ မပေါက်ခြင်းများ ဖြစ်တတ်သည်။ အရွယ် ရောက်သူများတွင် အရိုးများကိုက်ခဲ နာကျင်ခြင်း၊ အရိုးဆတ်၍ ကျိုးခြင်းတို့ ဖြစ်တတ်သည်။

(၄-ဃ) သံဓာတ် (Iron)

သွေးအားနည်းရောဂါတွင် ဖော်ပြထားပါသည်။

(၄-င) အိုင်အိုဒင်း (Iodine)

အိုင်အိုဒင်း ချို့တဲ့ရောဂါများတွင် ဖော်ပြထားပါသည်။

(၄-စ) ဖလိုရင်း (Florine)

၁။ ဖလိုရင်းသည် သွားများခိုင်မာရန်နှင့် သွားပိုးမစားစေရန် ကာကွယ်ပေးသည်။

၂။ ဖလိုရင်း များလွန်းပါကလည်း သွားများတွင် အဖြူရောင် အစက်အပျောက်များ ဖြစ်ပေါ်နိုင်သည်။

(၄-ဆ) သွပ် (Zinc)

သွပ်သည် ကလေးငယ်များ ခန္ဓာကိုယ်ဖွံ့ဖြိုးမှုအတွက် လိုအပ်သည်။

၅။ ဗီတာမင်ဓာတ်များ (Vitamins-သက်စောင့်ဓာတ်များ)

ဗီတာမင်များသည် ကျန်းမာရေး၊ ကြီးထွား ဖွံ့ဖြိုးရေး အတွက် နေ့စဉ်အနည်းငယ်မျှ လိုအပ်သော အာဟာရဓာတ်များ ဖြစ်သည်။ ဗီတာမင်များအားလုံး လုံလောက်မှုတစ်စုံတစ်ရာရှိရန် အစားအစာအမျိုးမျိုး စားသုံးရန် လိုအပ်သည်။ ဗီတာမင်ဓာတ်များကို အဆီတွင် ပျော်ဝင်စေသော ဗီတာမင်အုပ်စုနှင့် ရေတွင် ပျော်ဝင်သော ဗီတာမင်များဟူ၍ အုပ်စု(၂)ခု ခွဲခြားထားသည်။

၁။ အဆီတွင်ပျော်ဝင်သောဗီတာမင်များ - ဗီတာမင် အေ၊ ဒီ၊ အီး၊ ကေ

၂။ ရေတွင်ပျော်ဝင်သော ဗီတာမင်များ - ဗီတာမင် ဘီဝမ်း Vitamin B1, B2, B6, B12, Niacin (နိုင်ယာဆင်), Folic Acid (ဖောလစ် အက်ဆစ်), Pantothenic Acid နှင့် Biotin တို့ ဖြစ်ကြသည်။



(၅-၁) အဆီတွင်ပျော်ဝင်သော ဗီတာမင်များအုပ်စု (Fat Soluble Vitamin)

(၅-၁-က) ဗီတာမင်အေ (Vitamin A)

ဗီတာမင်အေချို့တဲ့ရောဂါများတွင် ဖော်ပြထားပါသည်။

(၅-၁-ခ) ဗီတာမင်ဒီ (Vitamin D)

ဗီတာမင်ဒီကို ငါးကြီးဆီ(ငါးအသည်းမှအဆီ)၊ တိရိစ္ဆာန် အသည်း နှင့် ထောပတ်၊ ကြက်ဥစသည့်အစားအစာတို့မှ ရရှိနိုင်သည်။ နေရောင်ခြည်နှင့်ထိတွေ့ခြင်းဖြင့် ခန္ဓာကိုယ် အရေပြားသည် ဗီတာမင်ဒီကိုထုတ်လုပ်ပေးနိုင်သည်။ ဗီတာမင်ဒီ ချို့တဲ့လျှင် ကလေးများ၌ (Rickets) ခေါ်အရိုးပျော့ရောဂါဖြစ်ပွားတတ်သည်။

(၅-၁-ဂ) ဗီတာမင်အီး (Vitamin E)

ဓာတ်တိုးဆန့်ကျင်စေခြင်းဖြင့် ဆဲလ်များထဲတွင် ဖြစ်ပေါ် နေသော ဓာတ်ပြောင်းလဲမှုများကို ထိန်းသိမ်းနိုင်သည်။ လူများတွင် ချို့တဲ့သည့်လက္ခဏာများမတွေ့ရပါ။ ဗီတာမင်အီး ကြွယ်ဝသောအစားအစာများမှာ ဖွဲနံ့ဆီ၊ ပဲဆီ၊ ပြောင်းဆီ၊ နှင်းဆီ၊ ဝါစေ့ဆီနှင့် ဟင်းရွက်စိမ်းများ ဖြစ်သည်။

(၅-၁-ဃ) ဗီတာမင်ကေ (Vitamin K)

သွေးခဲစေသောဒြပ်ပေါင်းများ အသည်း၌ထုတ်လုပ်ရာတွင် လိုအပ်သည်။ သာမန်ကျန်းမာသူများအဖို့ ဗီတာမင်ကေ ချို့တဲ့မှုများ မဖြစ်တတ်ပေ။ အသည်းရောဂါရှိသူများတွင် ဗီတာမင်ကေချို့တဲ့တတ်ပြီး သွေးခဲမှုနှောင့်နှေးကာ အရေပြားတွင် သွေးခြည်ဥခြင်း၊ ခန္ဓာကိုယ်တွင် သွေးယိုစီးခြင်းများ ဖြစ်တတ်သည်။ အစိမ်းရင့်ရောင် ရှိသောအရွက်များ၊ ဥအနှစ်များ၊ နွားနို့၊ ကလီစာများသည် ဗီတာမင်ကေကြွယ်ဝသောအစားအစာများဖြစ်ပါသည်။

ဗီတာမင်အီးနှင့်ကေသည် အစားအစာများတွင် လုံလောက် စွာ ပါရှိသဖြင့် ၎င်းဗီတာမင်များ ချို့တဲ့မှုကို တွေ့ရခဲသည်။

(၅-၂) ရေတွင်ပျော်ဝင်သော ဗီတာမင်များအုပ်စု (Water Soluble Vitamin)

(၅-၂-က) ဗီတာမင်ဘီ ၁ (Vitamin B1)

ဗီတာမင်ဘီ(၁)ချို့တဲ့ရောဂါများတွင် ဖော်ပြထားပါသည်။

(၅-၂-ခ) ဗီတာမင်ဘီ ၂ (Vitamin B2)

ဗီတာမင်ဘီ ၂ ချို့တဲ့လျှင် ကျီးကန်းပါးစပ်၊ လျှာနှင့် နှုတ်ခမ်းတွင် ကွဲအက်ခြင်းနာခြင်းတို့ ဖြစ်တတ်သည်။ ဗီတာမင်ဘီ ၂ သည် နွားနို့၊ ကြက်ဥ၊ အသည်းတို့တွင် ကြွယ်ဝပါသည်။ ဟင်းသီးဟင်းရွက်၊ ပဲနှင့် ဆန်လုံးညို တို့တွင် အသင့်အတင့်ပါရှိသည်။

(၅-၂-ဂ) နိုင်ယာစင် (Niacin)

နိုင်ယာစင်ဓာတ်ချို့တဲ့မှုကို ပြောင်းဖူးအား အဓိကအစာ အဖြစ်စားသုံးသည့်နိုင်ငံများတွင်တွေ့ရှိရသည်။ နိုင်ယာစင် ချို့တဲ့ပါက အရေပြားရောင်ရမ်းခြင်း၊ ဝမ်းလျှောခြင်းနှင့် အပြင်းအထန်ချို့တဲ့လျှင် ရူးသွပ်ခြင်း၊ သေဆုံးခြင်း တို့ဖြစ်စေနိုင်သည်။ နိုင်ယာစင်ဓာတ် ကြွယ်ဝသော အစားအစာများမှာ နို့၊ အသားနှင့် ပဲတို့ ဖြစ်သည်။

(၅-၂-ဃ) ဖောလစ်အက်ဆစ် (Folic Acid)

ဖောလစ်အက်ဆစ်ဓာတ်သည် အစိမ်းရင့်ရောင်ရှိသော ဟင်းသီးဟင်းရွက်များ၌ ပါဝင်သည်။ ယင်းဓာတ်ချို့တဲ့လျှင် သွေးအားနည်းရောဂါဖြစ်စေတတ်ပြီး ကိုယ်ဝန်ဆောင် မိခင်များတွင် အဖြစ်များတတ်သည်။ အာရုံကြောနှင့် ဆိုင်သော မွေးရာပါ ချို့ယွင်းမှုများလည်း ဖြစ်စေနိုင်သည်။

(၅-၂-င) ဗီတာမင်ဘီ ၁၂ (Vitamin B12)

ဗီတာမင်ဘီ ၁၂ ကို တိရိစ္ဆာန်များ၏ အသည်းကလီစာ နှင့်အသားများ၊ ကြက်ဥ၊ နွားနို့တို့တွင် တွေ့ရှိရပါသည်။ ဟင်းသီးဟင်းရွက် ချဉ်ဖတ်များတွင်လည်း ယင်းဓာတ် ပါရှိသည်။ သွေးနီဥထုတ်လုပ်မှုအတွက် အရေးကြီးပြီး ချို့တဲ့ပါက သွေးအားနည်းရောဂါ ဖြစ်ပွားတတ်သည်။ သို့သော် အဖြစ်နည်းသည်။

(၅-၂-စ) ဗီတာမင်စီ (Vitamin C)

ဗီတာမင်စီသည် ရေတွင်ပျော်ဝင်နိုင်သော ဓာတ်တစ်မျိုး ဖြစ်သည်။ ယင်းဓာတ်ကြွယ်ဝသော အစားအစာများမှာ ဟင်းရွက် များ (ကန်စွန်း၊ ချဉ်ပေါင်၊ အနံ့သလွန်၊ ဂေါ်ဖီပွင့်၊ ဂေါ်ဖီထုပ်)၊ အရည်စိုရွှမ်းသောသစ်သီးများ (ရှောက်သီး၊ သံပရာ၊ လိမ္မော်၊ ကျွဲကော) စသည်တို့ဖြစ်သည်။ ဇီးဖြူသီး၊ မာလကာသီးတို့သည် ဗီတာမင်စီအများဆုံးပါဝင်သော အသီးများဖြစ်သည်။ လတ်ဆတ်သော ဟင်းသီးဟင်းရွက် နှင့် သစ်သီးအားလုံးတွင် ယင်းဓာတ်ပါရှိသည်။ ဗီတာမင်စီ သည် အပူကြောင့်အလွယ်တကူ ပျက်စီးနိုင်သည်။ အစား အသောက်များ ချက်ပြုတ်ရာတွင် ၅၀% မှ ၇၅% ထိပျက်စီးနိုင်သည်။ ထို့ကြောင့် သစ်သီးများကို အစိမ်းစားသုံးပါက ဗီတာမင်စီကို အလွယ်တကူ ရရှိ နိုင်သည်။ ဗီတာမင်စီချို့တဲ့လျှင် (Scurvy) ခေါ် သွားဖုံးသွေးယိုရောဂါ ဖြစ်တတ်သည်။ သွားဖုံးများပွလာပြီး မကြာခဏသွေးထွက်ခြင်း၊ အရေပြားပေါ်တွင် သွေးခြည် ဥခြင်း၊ အားနည်းခြင်း၊ မောပမ်းခြင်းဖြစ်ပြီး နောက်ဆုံးတွင် သေဆုံးသည်အထိ ဖြစ်နိုင်သည်။ ဗီတာမင်စီသည် အနာကျက်ရန် လိုအပ်သဖြင့် ခွဲစိတ်ထားသောလူနာများ ဗီတာမင်စီ လုံလောက်စွာ စားသုံးရပါမည်။

၆။ ရေဓာတ် (Water)

သက်ရှိမှန်သမျှအဖို့ ရေသည်မရှိမဖြစ် အာဟာရဖြစ်သည်။ သက်ရှိတို့၌ အလေးချိန် ၆၀မှ ၉၀% အထိ အံ့ဩလောက် ဖွယ်ပါဝင်နေ၏။ လူခန္ဓာကိုယ်တွင် သုံးပုံနှစ်ပုံသည် ရေဖြစ်၏။ ကိုယ်တွင်းအစိတ်အပိုင်းများ၊ တစ်သျှူးများ (Tissue) နှင့် ကိုယ်တွင်းမှ အရည်များတွင် ရေများစွာ ပါဝင်နေ၏။ ရေအနည်းငယ်သာပါသော အစိတ်အပိုင်း များမှာ အရိုး၊ သွားနှင့် ဆံပင်တို့ဖြစ်ကြသည်။ ဆီးနှင့်ချွေးတို့အဖြစ်လည်းကောင်း၊ အသက်ရှူထုတ်ရာတွင် ရေငွေ့အဖြစ်သို့ပါသွားသဖြင့် ခန္ဓာကိုယ်၌ရေဆုံးရှုံးမှု အမြဲ ရှိနေသည်။ ထို့ကြောင့် ရေကို အမြဲဖြည့်တင်းပေးရန် လိုအပ်သည်။ ရေသည်အာဟာရဓာတ်ကို ပျော်ဝင်စေပြီး ၎င်းတို့ကို တစ်နေရာမှ တစ်နေရာသို့ သယ်ပို့ပေးသည်။ ခန္ဓာကိုယ်၏အပူချိန်ကိုလည်း ထိန်းပေးသည်။ အာဟာရ ဓာတ်များကို အင်ဇိုင်းများက ချေဖျက်သောအခါ ရေသွင်း ဖြိုခွဲရသဖြင့် ရေလိုသည်။ ရေကိုနည်းအမျိုးမျိုးဖြင့်ရနိုင်သည်။ ရေအနည်းနှင့်အများပါဝင်သဖြင့် အစာစားလျှင် ရေ ကိုလည်း ခန္ဓာကိုယ်က ရရှိသည်။ လိုအပ်သောရေကို အစားအသောက်များမှလည်း ရယူကြရသည်။ အာဟာရ ဓာတ်များဓာတ်တိုးလောင်ကျွမ်းသည့် အခါတွင်လည်း ရေထွက်သည်။ ထို့ပြင် ရေသည် ဓာတ်ပြောင်းလဲမှု အားလုံးအတွက် အကောင်းဆုံးဌာနကြီးလည်း ဖြစ်သည်။ အလုပ်ကြမ်းမလုပ်သူတစ်ယောက်အတွက် တစ်နေ့လျှင် ရေတစ်လီတာမှနှစ်လီတာအထိ လိုအပ်သည်။ အလုပ်ကြမ်း လုပ်သူ၊ အားကစားလေ့ကျင့်သူများသည် ချွေးထွက်များ သဖြင့် ရေလိုအပ်ချက် ပိုမိုများသည်။ ခန္ဓာကိုယ်တွင်း ရေဓာတ်၏ ၁၀% လျော့နည်းပါက ကိုယ်တွင်း ဇီဝကမ္မဖြစ်စဉ်တွင် ထိပါးမှုဖြစ်လာသည်။ ၂၀% လျော့နည်းပါကသေနိုင်သည်။

ရေ၏ဆောင်ရွက်ချက်များ

၁။ Solvent - ပျော်ဝင်ရည်အဖြစ် ဆောင်ရွက်သည်။ ရေသည် အစားအစာများကို ကြော်ချက်ရာတွင် ပျော့ပြောင်းစေခြင်း၊ အရည်ပျော်ဝင်စေခြင်းဖြင့် ကူညီဆောင်ရွက်ပေးသည်။

၂။ Regulator of Body Temperature - ခန္ဓာကိုယ်၏ အပူချိန်ကို ညီမျှနေစေရန် ဆောင်ရွက်သည်။ ကလာပ်စည်းများ၏ အတွင်းနှင့်အပြင်တွင် ရေရှိနေခြင်းအားဖြင့် ကိုယ်ကိုအေးစေသည်။ ထို့ပြင် ရေဓာတ်ကိုခန္ဓာကိုယ်မှ ချွေးအဖြစ်လည်းကောင်း၊ ဆီးအဖြစ်လည်းကောင်း စွန့်ထုတ်ခြင်းအားဖြင့် ခန္ဓာကိုယ်ကို အေးစေသည်။

၃။ Transportation - သယ်ယူပို့ဆောင်ရာတွင် ပါသည်။ ရေသည် ကလာပ်စည်းများ အတွင်းသို့ ဝင်/ထွက် ခြင်းဖြင့် ခန္ဓာကိုယ်အတွက် လိုအပ်သော အာဟာရဓာတ်များကို ပို့ဆောင်ပြီး မလိုအပ်သော အရာများကို စွန့်ထုတ်ရာ၌ ပါဝင်ကူညီသည်။

၄။ Excretory agent - မလိုအပ်သော အညစ်အကြေးများကို စွန့်လွှတ်သည်။ ရေဓာတ်သည် ခန္ဓာကိုယ်အတွက် မလိုအပ်သော အညစ်အကြေးများကို ချွေးအဖြစ်လည်းကောင်း၊ ဆီးအဖြစ် လည်းကောင်း၊ ဝမ်းအဖြစ်လည်းကောင်း စွန့်ထုတ်သည်။

၅။ Lubricant - ခန္ဓာကိုယ်တွင် နေရာအနှံ့အပြား၌ ရေရှိနေခြင်းအားဖြင့် လှုပ်ရှားဆောင်ရွက်မှု မှန်သမျှတွင် ပွန်းပဲ့ထိခိုက်ခြင်း၊ စုတ်ပြတ်ခြင်းများ မဖြစ်စေရန် ချောဆီအဖြစ် ဆောင်ရွက်သည်။

အာဟာရလိုအပ်ချက်များ

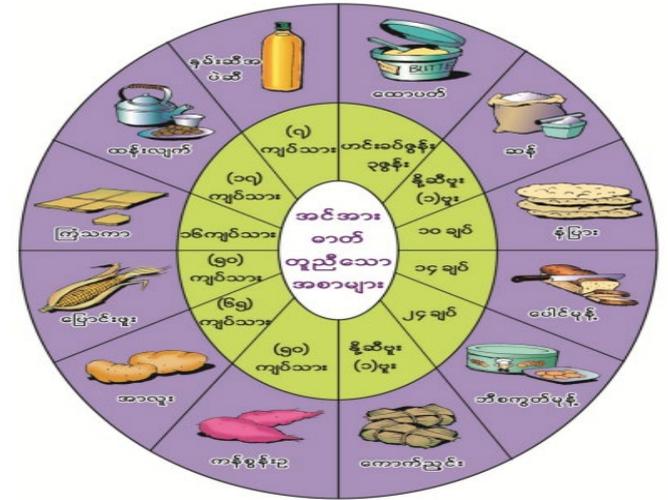
အမြဲတမ်း ကျန်းမာသန်စွမ်းနေစေရန် နေ့စဉ်စားသုံးနေသည့် အစားအစာနှင့်အာဟာရကို သင့်တင့်မျှတစွာ စားသုံးတတ်ဖို့ လွန်စွာလိုအပ်သည်။ နေ့စဉ်စားသုံးနေသော အစားအစာများသည် လူတစ်ဦးတစ်နေ့တာ လိုအပ်ချက်ထက် အရေအတွက်အားဖြင့်သော်လည်းကောင်း၊ အရည်အသွေးအားဖြင့်သော်လည်းကောင်း၊ လျော့နည်းပါက အာဟာရချို့တဲ့ရောဂါများ ဖြစ်ပေါ်လာမည် ဖြစ်သည်။ အကယ်၍တစ်နေ့တာ လိုအပ်ချက်ထက် ပိုမိုလွန်ကဲစွာ စားသုံးပါကလည်း အာဟာရလွန်ကဲသဖြင့် ဖြစ်ပေါ်တတ်သော နာတာရှည်ရောဂါများ ဖြစ်ပေါ်လာမည် ဖြစ်သည်။

အာဟာရလိုအပ်ချက်ပန်းတိုင်

သို့ဖြင့်ရာ အာဟာရလိုအပ်ချက်ပန်းတိုင်ဟူသည် လူတိုင်း ပုံမှန် ကျန်းမာစေရန် နေ့စဉ် အစားအစာနှင့် အာဟာရဓာတ်များကို အချိုးအစားပမာဏနှင့် အမျိုးအစား သင့်တင့်မျှတစွာ စားသုံးနိုင်ခြင်းဟု အဓိပ္ပါယ် ဖွင့်ဆိုနိုင်သည်။

အာဟာရ တန်ဖိုးတူညီ ဇယား

(က) အင်အားဖြစ်ထွန်းစေသောအစာအုပ်စု-



အင်အားဓာတ်တူညီသောအစာများ

ဤကားချပ်ကို ကြည့်ခြင်းအားဖြင့် ပမာဏနည်းနည်း နှင့် အင်အားဓာတ်များသော အစာများရှိသလို၊ ပမာဏ များပြီး၊ အင်အားဓာတ်နည်းသော အစာများလည်း ရှိကြောင်း သိနိုင်သည်။ နည်းနည်းစား၍ အင်အားဓာတ် များများ လိုလျှင် ဤကားချပ်ကို ကြည့်၍ ရွေးနိုင်ပါသည်။ (ဥပမာ- ကလေးငယ်များ၊ ပိန်သောသူများ၊ နေမကောင်း၍ အစာနည်းနည်း စားနိုင်သူများအတွက်) ရွေးချယ်ကျွေးမွေး ပြုစုနိုင်သည်။ များများစား၍ အင်အားဓာတ် နည်းနည်းသာ ရလိုလျှင်လည်း အထက်ပါ နည်းအတိုင်း ရွေးချယ်နိုင်သည်။ (ဥပမာ- ဝသောသူများအတွက် အလေးချိန်လျှော့ရန်) ။ ဒေသအလိုက် ရာသီအလိုက် ပေါများသောအစာများ၊ စားနေကျအစာများကို တန်ဖိုးပေါ်မူတည်၍ ရွေးချယ် စားသောက်နိုင်သည်။ ဖော်ပြပါကားချပ်ရှိ အစားအစာ များသည် ယှဉ်တွဲပါပမာဏအတွက် အင်အားဓာတ် (၁၀၀၀ ကီလိုကယ်လိုရီ) ခန့် အကြမ်းဖျင်းအားဖြင့် ရရှိစေနိုင်သည်။

အင်အားစာတံနှင့် အာဟာရဓာတ်များ လိုအပ်ချက် အချိုးအစား

စဉ်	အစားအစာနှင့်အာဟာရဓာတ်	အာဟာရလိုအပ်ချက်	
		အနိမ့်ဆုံး လိုအပ်ချက်	အမြင့်ဆုံး လိုအပ်ချက်
၁	အဆီဓာတ်စုစုပေါင်း (% အင်အားစာတံ စုစုပေါင်း၏) အင်အားစာတံစုစုပေါင်း၏ပြည့်ဝအဆီအက်စစ်ဓာတ်(က) % (% အင်အားစာတံ စုစုပေါင်း၏) မပြည့်ဝအဆီအက်စစ်ဓာတ် (ခ) (ရက်/မီလီဂရမ်) အစာတွင်ပါဝင်သော ကိုလက်စထရောဓာတ် (ဂ)	၁၅ ၀ ၃ ၀	၃၀ ၁၀ ၇ ၃၀၀
၂	ကစီဓာတ်စုစုပေါင်း (% အင်အားစာတံ စုစုပေါင်း၏) (% အင်အားစာတံစုစုပေါင်း၏) ကစီဓာတ်ပေါင်းစုများ(က) (% အင်အားစာတံစုစုပေါင်း၏) သကြားဓာတ်များ (ခ) (ရက်/ဂရမ်) ပျော်လွယ် အမျှင်ဓာတ် (ဂ) (ဃ(ရက်/ဂရမ်) အမျှင်ဓာတ်များ (၅၅ ၅၀ ၀ ၁၆ ၁၇	၇၅ ၇၀ ၁၀ ၂၄ ၄၀
၃	အသားဓာတ် (အင်အားစာတံ စုစုပေါင်း၏(%	၁၀	၁၅
၄	ဆားဓာတ် (ရက်/ဂရမ်)	*	၆

* တိတိကျကျသတ်မှတ်ခြင်း မရှိသေးပေ။

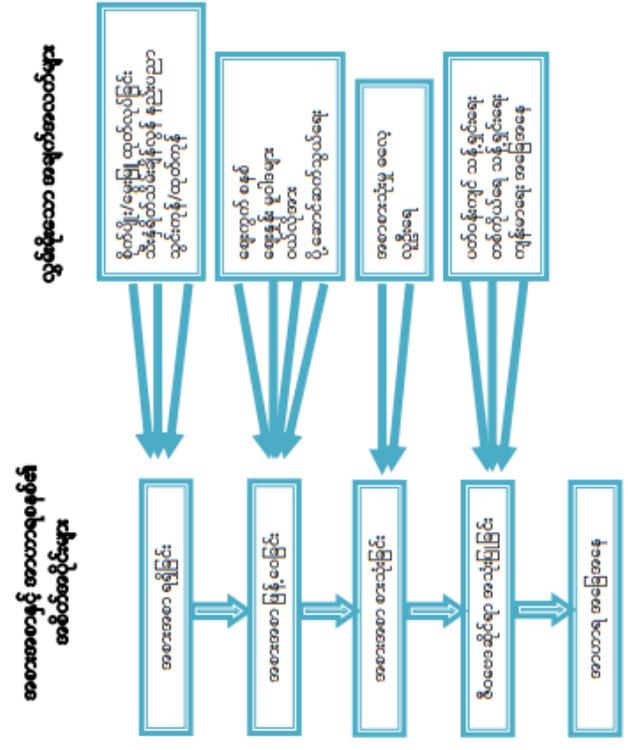
အသက်အုပ်စုအလိုက် တစ်နေ့တာအတွက် အနည်းဆုံး လိုအပ်သော အစာပမာဏ

အသက်အုပ်စု	ဆန်	ဆီ	အသား (သို့)	ငါး (သို့)	ပဲ (သို့)	ဩတ်/ထဲဥ	ဟင်းရွက်စိမ်း	အမြီး ဟင်းသီး	သစ်သီး	ငါးပိ	သကြား/ ထန်လျက်	နို့
	နို့ဆီဗူး	ကျပ်သား	ကျပ်သား	ကျပ်သား	ကျပ်သား	အလုံးရေ	ကျပ်သား	ကျပ်သား	အလုံးရေ	ကျပ်သား	ကျပ်သား	ကျပ်သား
၁-၃ နှစ်	၁/၂	၁/၄	၂/၂	၄	၃	၁	၃	၂	၁	-	၂	၁၂ ၁/၂
၄-၆ နှစ်	၁/၄	၁/၂	၂/၂	၄	၃	၁	၃	၂	၁	-	၂	၁၂ ၁/၂
၇-၉ နှစ်	၁/၄	၂	၂/၂	၄	၃	၁	၅	၃	၁	-	၂ ၁/၂	၁၂ ၁/၂
၁၀-၁၂ နှစ်	၁/၂	၂	၅	၇ ၁/၂	၆	၂	၅	၃	၁	-	၂ ၁/၂	၁၂ ၁/၂
၁၃-၁၉ နှစ်	၂	၃ ၁/၂	၅	၇ ၁/၂	၆	၂	၅	၃	၁	၁	၁	၁၀
*အမျိုးသား(လူကြီး)	၂	၂	၅	၇ ၁/၂	၆	၂	၆ ၁/၄	၅	၁	၁	၁	၁၀
*အမျိုးသမီး(လူကြီး)	၁ ၁/၂	၁ ၁/၂	၅	၇ ၁/၂	၆	၂	၆ ၁/၄	၅	၁	၁	၁	၁၀
ကိုယ်ဝန်ဆောင်	၁ ၁/၂	၂	၅	၇ ၁/၂	၆	၂	၆ ၁/၄	၆ ၁/၄	၁	၁	၂	၂၅
နို့တိုက်မိခင်	၂	၂	၅	၇ ၁/၂	၆	၂	၆ ၁/၄	၆ ၁/၄	၁	၁	၂	၂၅

*အသင့်အတင့်လှုပ်ရှားမှုရှိသူ ဥပမာ-ကျောင်းသား/သူ၊ အိမ်ရှင်မ၊

(၄) ယဉ်ကျေးမှုစလေ့ထုံးစံ၊ အစွဲအလမ်းနှင့်အစားအစာ စားသုံးမှု အလေ့အထ

အရပ်ဒေသတစ်ခုနှင့်တစ်ခုတို့သည် ယဉ်ကျေးမှုစလေ့ထုံးစံနှင့် အစားအစားစားသုံးမှု အလေ့အထတို့သည် ဒေသ၏ တောတောင်ရေမြေ သဘာဝ၊ လူမျိုးဘာသာ ယဉ်ကျေးမှု၊ အယူဝါဒစလေ့၊ ထွက်ကုန်သီးနှံအမျိုးအစား စသည်တို့အပေါ်မူတည်၍ ကွဲပြားခြားနားလျက်ရှိသည်။ လူမျိုးတိုင်းလိုလိုပင် အစားအသောက်နှင့် ပတ်သက်၍ အစွဲအလမ်းများ ရှိတတ်သည်။ အထူးသဖြင့် ကလေးငယ်များ၊ ကိုယ်ဝန်ဆောင်များ၊ မီးတွင်းမိခင်များ၊ နို့တိုက်မိခင်များအတွက် စားသင့်သောအစာ၊ ရှောင်သင့်သောအစာ စသည်ဖြင့် ခွဲခြား ထားတတ်သည်။ နို့တိုက်ကလေးငယ်များအား ကြက်ဥ၊ ဘဲဥကျွေးလျှင် စကားဆိုသည်။ စကားပြော နှေးသည်။ အသားငါးကျွေးလျှင် သန်ထသည်။ ပဲကျွေးလျှင်လေပွသည်ဟူသော လွဲမှားသည့်အယူများ ရှိနေဆဲဖြစ်သည်။



သက်တမ်းတစ်လျှောက် အာဟာရချို့တဲ့မှုများ ဆက်နွယ် ဖြစ်ပွားခြင်း

ဖွံ့ဖြိုးဆဲနိုင်ငံအများစုတွင် ကလေးသေဆုံးမှု စုစုပေါင်း၏ ထက်ဝက်ခန့်မှာ အာဟာရ ချို့တဲ့မှုနှင့် ဆက်နွယ်လျက် ရှိပါသည်။ အာဟာရအခြေအနေတိုးတက်လာခြင်းဖြင့် အာဟာရချို့တဲ့မှုကြောင့် သေဆုံးမှုကို ပပျောက်စေရုံ သာမက ဝမ်းပျက် ဝမ်းလျော့၊ ဝက်သက်၊ အဆုတ်ရောင် ရောဂါနှင့် ကလေးများတွင် အခြားအဖြစ်များသော

ရောဂါများကြောင့် သေဆုံးရခြင်း တို့ကိုလည်း သိသိသာသာ လျော့နည်းစေပါသည်။

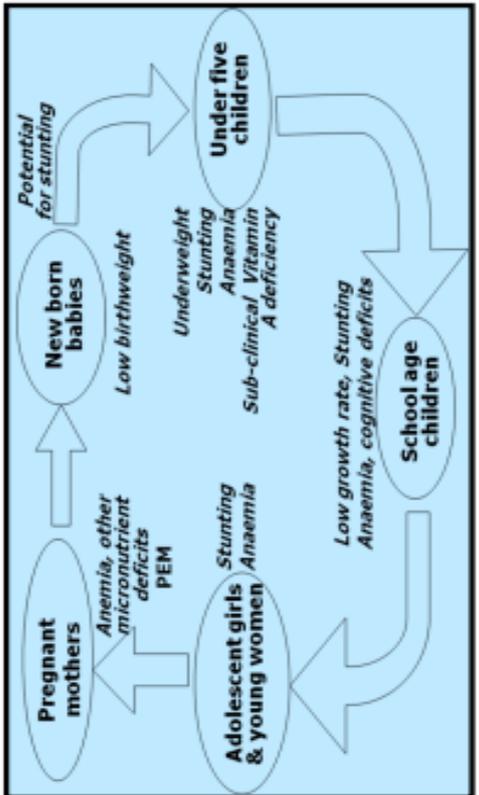


Fig. Nutrition problems throughout the life-cycle Source: Atmarita (2010)

အထက်တွင် ဖော်ပြထားသောပုံမှာ လူတို့၏သက်တမ်း တလျှောက်၌ အာဟာရချို့တဲ့မှုကြောင့် ဖြစ်ပွားတတ်သော ရောဂါများကို ဖော်ပြထားပါသည်။

- (၁) ကိုယ်ဝန်ဆောင်မိခင်
 - သွေးအားနည်းခြင်း (anemia)၊ အဏုအာဟာရ ဓာတ်ချို့တဲ့ရောဂါ (micronutrient deficiency)၊ ပရိုတင်းအင်အား ချို့တဲ့ရောဂါ
- (၂) မွေးကင်းစ
 - ပေါင်မပြည့်မွေးဖွားခြင်း၊ အရပ်ပုရန်အလားအလာရှိခြင်း
- (၃) ငါးနှစ်အောက်ကလေး
 - ကိုယ်အလေးချိန်လျော့နည်းခြင်း (underweight)၊ အရပ်ပုခြင်း (stunting)၊ သွေးအားနည်းခြင်း (anemia)၊ ဗီတာမင်အေ ချို့တဲ့ခြင်း (sub-clinical vitamin A deficiency)
- (၄) ကျောင်းနေအရွယ်ကလေး
 - ကြီးထွားမှုနှုန်းနှေးကွေးခြင်း၊ အရပ်ပုခြင်း၊ သွေး အားနည်းခြင်း၊ ဉာဏ်ရည်ဖွံ့ဖြိုးမှုနှေးကွေးခြင်း
- (၅) အပျိုဖော်ဝင်စအရွယ်နှင့် အမျိုးသမီးငယ်များ- အရပ်ပုခြင်း၊ သွေးအားနည်းခြင်း

ထို့ကြောင့်လူတစ်ဦးစီ၏ အာဟာရအခြေအနေမှာ မွေးဖွားပြီးချိန်မှ စတင်သည်မဟုတ်ဘဲ မိခင်ဝမ်းတွင်း သန္ဓေသား ၁၀၀၀တည်းက စတင်ပေသည်။ အစားအစာ စားသောက်မှုပုံစံနှင့် ပတ်သက်၍ ပညာပေး (သို့မဟုတ်) စီမံချက်များဆောင်ရွက် လိုပါက ကိုယ်ဝန်ဆောင်ချိန်မှ စတင်ရန်လိုအပ်ပေသည်။ အောက်ဖော်ပြပါပုံကို လေ့လာ မည်ဆိုပါက မမွေးမီကိုယ်ဝန်ဆောင် စဉ်ကာလသည် သန္ဓေသား၏ ဦးနှောက်ဖွံ့ဖြိုးမှုအတွက် အလွန်ပင် အရေးပါလှပေသည်။ မွေးဖွားပြီးချိန်မှ အသက်ငါးနှစ်အထိ ကာလသည် ကလေး၏ငယ်ရွယ်စဉ် ကြီးထွားဖွံ့ဖြိုးမှု အတွက် မိခင်နို့ တစ်မျိုးတည်းကို အသက် ၆လ မတိုင်မီတိုက်ကျွေးခြင်း၊ ၆ လမှ ၂ နှစ်အထိ မိခင်နို့ ဆက်လက်တိုက်ကျွေးခြင်းနှင့် သင့်တော်ကောင်းမွန်သော ဖြည့်စွက်စာများ ကျွေးခြင်းတို့သည် အလွန်ပင် အရေးပါလှပေသည်။ အကယ်၍ အာဟာရဆိုင်ရာ ပညာပေးခြင်း (သို့မဟုတ်) စီမံချက်များကို ကလေးအသက် ၅ နှစ် နောက်ပိုင်းမှစ၍ ဆောင်ရွက်မည် ဆိုပါက အချိန်နှောင်းပြီး အကျိုးဖြစ်ထွန်းနိုင်မည် မဟုတ်ပေ။

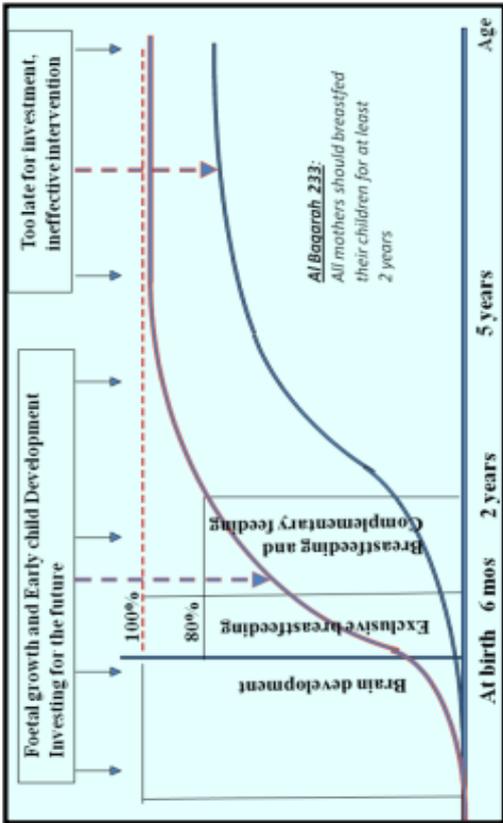


Fig. Nutrition intervention at critical and golden periods of lifes Source: Atmarita (2010)

ကိုယ်ဝန်ဆောင်မိခင်နှင့် အာဟာရ

ကိုယ်ဝန်ဆောင်စဉ်အာဟာရချို့တဲ့မှုအန္တရာယ်

ဖွံ့ဖြိုးဆဲနိုင်ငံများတွင် မီးတွင်းမိခင်များ သေဆုံးမှုနှုန်း များပြားလျက်ရှိရာ ကိုယ်ဝန်ဆောင်စဉ်ကာလတွင် လိုအပ်သော အာဟာရဓာတ်များ ပြည့်ဝစွာ

မစားသုံးခြင်းသည် အကြောင်ရင်းတစ်ခု ဖြစ်သည်။ မြန်မာနိုင်ငံတွင် လေ့လာမှုများအရ ကိုယ်ဝန်ဆောင် မိခင်များ၏ နေ့စဉ်အစာစားသုံးမှုတွင် အင်အားဖြစ်စေသော အစာများ စားသုံးမှုနည်းပြီး သံဓာတ်၊ ထုံးဓာတ်၊ ဘီတာမင်ဘီ-၁၊ ဘီ-၂နှင့် နိုင်ယာစင်ဓာတ်များလည်း စားသုံးမှုနည်းကြောင်း တွေ့ရှိရသည်။

အာဟာရချို့တဲ့သော ကိုယ်ဝန်ဆောင်များသည် ကိုယ်ဝန်ရှိစဉ် ကျန်းမာရွှင်လန်းမှုမရှိခြင်း၊ ကိုယ်ဝန်ပျက်လွယ်ခြင်း၊ ကိုယ်ဝန် လမစေမီ မွေးဖွားခြင်း၊ မွေးဖွားရာတွင် အခက်အခဲရှိခြင်း၊ မွေးဖွားစဉ်မိခင်အသက်ဆုံးရှုံးတတ်ခြင်း စသော အန္တရာယ်များရှိသည်။

အာဟာရချို့တဲ့သော မိခင်များမှမွေးဖွားလာသော ကလေးငယ်များသည် မွေးဖွားမှုဒဏ်ကို မခံနိုင်၍ အသေ မွေးခြင်း၊ မွေးစတွင် ကိုယ်အလေးချိန်မပြည့်ခြင်း၊ နို့စို့ကလေးအရွယ်တွင် ကျန်းမာရေးနှင့် မပြည့်စုံသည့်အပြင် ကျောင်းသားအရွယ် တွင်လည်း ကာယ၊ ဉာဏ်ဖွံ့ဖြိုးမှု လျော့နည်းခြင်းများလည်း ဖြစ်စေနိုင်သည်။ အထက်ပါ အန္တရာယ်များ ကင်းဝေးစေရေးအတွက် ကိုယ်ဝန်ဆောင် မိခင်များ၏ အာဟာရအခြေအနေကို မြှင့်တင်ရန် လိုအပ်ပါသည်။

ကိုယ်ဝန်ဆောင်စဉ် သန္ဓေသားကြီးထွားပုံ

ကိုယ်ဝန်ဆောင်မိခင်များ၏ သားအိမ်တွင် သန္ဓေသားငယ် သည် မုန်ညင်းစေ့ပမာဏမှ အနည်းဆုံး ငါးပေါင်ခွဲခန့် ရှိသော သန္ဓေသားအဖြစ်သို့ ကြီးထွားဖွံ့ဖြိုးလာသည်။ သန္ဓေသားငယ်၏ အရိုး၊ အသား၊ အသွေးများ တည်ဆောက် ရေးအတွက် လိုအပ်သောအာဟာရကို မိခင်၏နေ့စဉ် စားသုံးသော အစာများမှလည်းကောင်း၊ မိခင်ကိုယ်တွင်းမှ လည်းကောင်း ဝေမျှယူ ရသည်။ သန္ဓေသားငယ်သည် ထိုအချိန်တွင် မိမိ၏ခန္ဓာကိုယ် တည်ဆောက်မှုအတွက်သာမက မွေးပြီးခြောက်လ အရွယ်အထိ လိုအပ်သော သံဓာတ်၊ ဗီတာမင်အေ စသည်တို့ကိုလည်း သိုမှီးစုဆောင်း တတ်လေသည်။ မိခင်သည် အဆိုပါ အာဟာရ ဓာတ်များ ချို့တဲ့နေပါက ကလေးငယ်၏ သိုမှီးမှုမှာလည်း လျော့နည်းနေတတ်သည်။ ပဋိသန္ဓေတည်ပြီး ပထမ ရက်သတ္တပတ် (၁၂)ပတ်အတွင်း၌ သန္ဓေသားငယ်သည် အောင်စဝက် (၁ ကျပ်သား ခန့်) နှင့် အရွယ် ၂ လက်မခန့်သာ ရှိသည်။ ကျန် (၂၈)ပတ်အတွင်း၌ ကလေးငယ်၏ ကြီးထွားဖွံ့ဖြိုးမှု နှုန်းမှာ အလွန်မြန်သည်။ သို့ဖြစ်၍ မိခင်အာဟာရ လိုအပ်ချက်မှာ ကိုယ်ဝန်ဒုတိယနှင့် တတိယသုံးလပတ်တွင် ပိုမိုများပြား ပါသည်။

ကိုယ်ဝန်ဆောင်မိခင်၏ ပြောင်းလဲမှု

ကိုယ်ဝန်ရှိစဉ်ကာလတွင် မိခင်၏သားအိမ်သည် ဖွံ့ဖြိုးနေသော သန္ဓေသားအတွက် ကြီးမားကျယ်ပြန့် လာသည်။ သန္ဓေသားအတွက် အချင်းကိုလည်း မိခင် အသွေးအသားမှ တည်ဆောက်ယူသည်။ နို့ချို တိုက်ကျွေးရန်အတွက် မိခင်၏ သားမြတ်သည် ကြီးထွားလာသည်။ မွေးပြီးကာလတွင် နို့ချိုတိုက်ကျွေးရန် အာဟာရများ ရရှိရေးအတွက် ကိုယ်ဝန်ဆောင်စဉ် ကာလတွင် အဆီပြင်စုဆောင်းမှု ရှိလာသည်။ မိခင်၏ သွေးထုထည်သည် ကိုယ်ဝန်ဆောင်စဉ်ကာလတွင် ပိုမိုများလာသဖြင့် သွေးသစ် ဖြစ်ထွန်းမှုအတွက် အာဟာရ လိုအပ်ချက် များလာသည်။

ကိုယ်ဝန်ဆောင်စဉ် ကိုယ်အလေးချိန်တိုးမှု

ဖွံ့ဖြိုးပြီးနိုင်ငံများတွင် ကျန်းမာသောမိခင်တို့သည် ကိုယ်ဝန် ဆောင်စဉ်ကာလတွင် ကိုယ်အလေးချိန်တိုးတက်မှု (၁၀) ကီလိုဂရမ်မှ (၁၂)ကီလိုဂရမ် (၂၂ ပေါင်မှ ၂၆.၄ ပေါင်)အထိ ရှိသည်။ မွေးစကလေး၏ ကိုယ်အလေးချိန်သည် ပျမ်းမျှအားဖြင့် (၃) ကီလိုဂရမ် (၆.၆)ပေါင်ရှိပြီး အဆီပြင် စုဆောင်းမှုမှာ (၅) ကီလိုဂရမ် (၁၁)ပေါင် ရှိသည်။ ဖွံ့ဖြိုးဆဲနိုင်ငံများတွင် ကိုယ်ဝန်ဆောင် ကိုယ်အလေးချိန် တိုးနှုန်းမှာ (၆.၄) ကီလိုဂရမ် (၁၄.၀၈) ပေါင်သာ ရှိတတ်သည်။ သို့ဖြစ်၍ အချို့နိုင်ငံများတွင် ကိုယ်ဝန်ဆောင် မိခင်များအား နေ့စဉ် ဖြည့်စွက်အစာ (ကယ်လိုရီ ၃၅၀ ခန့်) ပိုမိုကျွေးပေးပါက မွေးစကလေးများ ကိုယ်အလေးချိန် များလာပြီး ကျန်းမာသန်စွမ်းကြောင်း တွေ့ရလေသည်။

ကိုယ်ဝန်ဆောင်အတွက် လိုအပ်သော အာဏာရ

ကိုယ်ဝန်ဆောင်စဉ် ပထမ ရက်သတ္တပတ် (၁၂)ပတ်အတွင်း သန္ဓေသား၏ အာဟာရ လိုအပ်ချက်မှာ မများပေ။ ထိုအချိန်တွင် ဖြစ်တတ်သော မူးဝေခြင်း၊ အော့အန်ခြင်း၊ အစားအသောက် ပျက်ခြင်းများကြောင့် နေ့စဉ်စားသုံးမှုကို ဂရုပြုရန် လိုအပ်သည်။

(က) အင်အားဓာတ်(တယ်လိုရီ)

ကိုယ်ဝန်ဆောင်စဉ်အတွင်း အသွေး၊ အသားသစ်များ တည်ဆောက်ရခြင်း၊ ကိုယ်အလေးချိန် ပိုမိုများပြား လာခြင်း၊ အဆီပြင်စုဆောင်းခြင်းတို့ကြောင့် နေ့စဉ် ကယ်လိုရီ(၃၀၀)ခန့် ပိုမိုလိုအပ်သည်။ ဆန်နို့ဆီဘူး တစ်ဝက်ခန့် ပိုမို စားသုံးခြင်းဖြင့် ဖြည့်ဆည်းနိုင်သည်။ သို့မဟုတ်ပါက ထန်းလျက်နှင့် မြေပဲကို (၃)ကျပ်သားခန့်စီ ပိုမိုစားသုံးခြင်းဖြင့် ဖြည့်တင်းနိုင်သည်။

(ခ) ပရိုတင်း

ကိုယ်ဝန်ဆောင်စဉ် ဒုတိယနှင့် တတိယ ကိုယ်ဝန်သုံးလပတ် များတွင် ပရိုတင်းလိုအပ်ချက်သည် နေ့စဉ်စားသုံး သင့်သည် ထက် (၁၀) ဂရမ် ပိုမိုသည်။ သာမန်အမျိုးသမီးများ၏ ပရိုတင်း လိုအပ်ချက်သည် (၄၀) ဂရမ် ဖြစ်သည်။ အဆိုပါ ပရိုတင်း လိုအပ်ချက်ကို အသား၊ ငါး၊ ကြက်ဥ၊ ဘဲဥ၊ နို့များဖြင့် ဖြည့်စွမ်းနိုင်ပါသည်။

(ဂ) သတ္တုဓာတ်များ

ကိုယ်ဝန်ဆောင်စဉ် အဓိက ပိုမိုလိုအပ်သော သတ္တုဓာတ် များမှာ သံဓာတ်နှင့် ထုံးဓာတ်တို့ဖြစ်သည်။ သံဓာတ် လိုအပ် ချက်ကို အသား၊ အသွေး၊ အသည်းများမှရသော သံဓာတ်ဖြင့် ဖြည့်ပေးနိုင်လျှင် အကောင်းဆုံး ဖြစ်သည်။ အစိမ်းရောင် | ဟင်းရွက်နှင့် ပဲမျိုးစုံတို့မှလည်း သံဓာတ်ကို ရရှိနိုင်ပါသည်။

ကျန်းမာရေးဝန်ထမ်းများက ကိုယ်ဝန်ဆောင်များကို ဝေငှသော "ဓာတ်ဆေးပြားများသည် ဖိုးလစ်အက်စစ်ပါ ထည့်သွင်းထားသဖြင့် ကိုယ်ဝန်ရှိမှန်းသိသည်နှင့် တစ်နေ့ တစ်ပြား စားသုံးရမည် ဖြစ်သည်။ ကိုယ်ဝန်(၇)လပြည့်လျှင် နံနက်တစ်ပြား၊ ညတစ်ပြား တစ်နေ့နှစ်ပြား တိုးမြှင့်သောက်သုံးရမည် ဖြစ်သည်။

သာမန်အမျိုးသမီးများ နေ့စဉ် ထုံးဓာတ်လိုအပ်ချက်မှာ (၄၀၀-၅၀၀) မီလီဂရမ် ဖြစ်ပါသည်။ သာမန် အမျိုးသမီး | တစ်ဦး စားသုံးသော အစာများ၌ပင် ထုံးဓာတ် လိုအပ်ချက်သည် ပြည့်ဝခြင်းမရှိပေ။ ကိုယ်ဝန်ဆောင်စဉ် ထုံးဓာတ် လိုအပ်ချက်မှာ (၁၀၀၀) မီလီဂရမ် ဖြစ်ပါသည်။ ထုံးဓာတ်ကြွယ်ဝသော အစာများမှာ နို့၊ ငါးကလေး အစို့/အခြောက်၊ ပုဇွန်ဆိတ်၊ နှမ်း၊ ဒန့်သလွန်ရွက်၊ ဟင်းနုနယ် ရွက်၊ ပေါက်ပန်းဖြူရွက်တို့ ဖြစ်ပါသည်။

(ဃ) ဗီတာမင်များ

ကိုယ်ဝန်ဆောင်စဉ် အထူး ပိုမိုလိုအပ်သော ဗီတာမင်မှာ ဖိုးလစ်အက်စစ်ဖြစ်သည်။ အသည်း၊ ပဲမျိုးစုံနှင့် အစိမ်းရောင် | ဟင်းရွက်များသည် ဖိုးလစ်အက်စစ် ကြွယ်ဝ၍ ဂရုစိုက်စားသုံးသင့်သည်။ အခြားပိုမိုလိုအပ် သော ဗီတာမင်များကို ဖေါ် ပြပါအစာများ ပိုမိုစားသုံးခြင်း ဖြင့် တပါတည်း ပိုမိုရရှိနိုင်သည်။

နို့တိုက်မိခင်နှင့် အာဟာရ

မိခင်ဝမ်းမှ ကျွတ်လာသောကလေးငယ်သည် မိမိတို့ လိုအပ်သောအာဟာရများကို မိခင်နို့ရည်မှသာ တဆင့် | ရနိုင်သည်။ အမိဝမ်းတွင်း၌ ရှိစဉ်ကကဲ့သို့ စိတ်တိုင်းကျ လိုအပ်သောအာဟာရများကို မျှတရယူနိုင်စွမ်း မရှိတော့ချေ။ သို့ဖြစ်၍ မိခင်နို့သည် လိုအပ်သော အာဟာရများ ပြည့်စုံကာ ပမာဏအားဖြင့် လုံလောက်စေရန် နို့တိုက်မိခင်ဘဝတွင် ကိုယ်ဝန်ဆောင် ဘဝထက် ပိုစား ရပါမည်။ စိတ်ဓာတ်အားဖြင့်လည်း ရင်သွေးကို ကောင်းမွန်စွာ နို့တိုက်နိုင်မည်ဟု မိမိကိုယ်ကို ယုံကြည်မှု အပြည့်အဝ ရှိနေရမည် ဖြစ်သည်။

နို့ရည်ထွက်မှုအတွက် အာဟာရ

နို့တိုက်မိခင်တစ်ဦးသည် ကိုယ်ဝန်ဆောင်မိခင်တစ်ဦးထက် အာဟာရပိုလိုသည်။ သာမန်အားဖြင့် နို့တိုက် မိခင်၏ နေ့စဉ်အစားအစာတွင် အာဟာရ အနည်းအကျဉ်းချို့တဲ့ပါက မိခင်၏ နို့ရည်တွင် ဗီတာမင်များ လျော့နည်း နိုင်သည်။ သို့ရာတွင် မိခင်၏ နေ့စဉ်အစာတွင် အာဟာရ အလွန်အမင်း ချို့တဲ့ပါက နို့ရည်ထွက်နှုန်း ပမာဏ အထူးလျော့နည်း နိုင်သည်။

မိခင်နို့ရည်တွင် အောက်ပါဓာတ်များ နေ့စဉ်ပါဝင်ဆုံး ရှုံးလျက် ရှိပါသည်။

(က) အင်အားဓာတ်(ကယ်လိုရီ)။ ။ ကျန်းမာသောမိခင် တစ်ဦးသည် တစ်နေ့လျှင် နို့(၃၅)ကျပ်သားမှ (၅၀)ကျပ်သား ခန့် အထိ၊ စီစီ(၆၀၀ မှ ၈၀၀)၊ အကြမ်းပန်းကန် (၆)လုံးမှ(၈)လုံးထွက်သည်။ နို့စီစီ(၁၀၀)တွင် ကယ်လိုရီ (၇၀)ခန့် ရှိသည်။ ယင်းကဲ့သို့ နို့ထွက်စေရန် အင်အားဓာတ် ကယ်လိုရီ (၆၀၀)မှ (၈၀၀)လိုသည်။ နို့တွင် အင်အားဓာတ် သည် သကြားဓာတ်နှင့် အဆီဓာတ်အသွင်ဖြင့် အဓိက ပါဝင်သည်။ အဆိုပါအင်အားဓာတ်ကို ဆန်ဖြင့်သာ ဖြည့်ရမည်ဆိုပါက သာမန် အမျိုးသမီးတစ်ဦး စားသုံးခြင်း ထက် ဆန်နို့ဆီဘူးတစ်ဘူးခန့် ပိုမိုစားသုံးရမည် ဖြစ်သည်။ သို့ရာတွင်ထမင်းများများ မစားလိုသူများအတွက် အင်အား ဖြစ်စေတတ်သော အခြားသရေစာများ၊ ပုံစံ-ထန်းလျက်၊ မြေပဲဖြင့်ပြုလုပ်သောအစာများ၊ ဆီဖြင့်ကြော်ထားသော အစာများကို ပိုမိုစားသုံးနိုင်သည်။

(ခ) ပရိုတင်းဓာတ်။ ။ နို့တွင်ဒုတိယအရေးကြီးဆုံး ပါဝင်သောဓာတ်မှာ ပရိုတင်းပင်ဖြစ်သည်။ နို့စီစီ (၁၀၀)တွင် ပထမ တန်းစား ပရိုတင်း (၁.၂)ဂရမ်ပါ၍ နို့စီစီ(၈၀၀)တွင် ပရိုတင်း(၁၀)ဂရမ်ခန့် ပါဝင်သည်။ နေ့စဉ် စားသုံးနေသော မြန်မာ့အစားအစာများတွင် ပါဝင်သောပရိုတင်းဖြင့်

ချိန်ဆလျှင် (၁၅)ဂရမ် ပိုမိုလိုအပ်မည် ဖြစ်သည်။ တစ်နေ့လျှင် နွားနို့ (၂၅) ကျပ်သားခန့် (သို့မဟုတ်) ပဲ(၃)ကျပ်သားခန့်ကို ပိုမိုစားသုံးပါက ယင်းဓာတ်ကို ဖြည့်တင်းနိုင်သည်။

(ဂ) သတ္တုဓာတ်များ။ ။ နို့တွင်ပါဝင်သော အရေးကြီး သည့် သတ္တုဓာတ်မှာ ထုံးဓာတ်ဖြစ်သည်။ ယင်းကို မိမိ၏ နေ့စဉ် အစာတွင် လုံလောက်စွာမရရှိပါက မိခင်ကိုယ်တွင်းမှ ထုံးဓာတ်များဆုံးရှုံးပြီး မိခင်သည် ထုံးဓာတ်ချို့တဲ့သော ရောဂါများ ရနိုင်သည်။

ထုံးဓာတ်သည် ကလေးငယ်၏ အရိုးနှင့်သွားများကို တည်ဆောက်ရေးအတွက်လည်း အရေးကြီးသည်။ မိခင်နို့ စီစီ (၁၀၀)တွင် ယင်းသည် မီလီဂရမ်(၃၀ မှ ၄၀) အထိ ပါတတ်သည်။ တစ်နေ့လျှင် မီလီဂရမ် (၂၀၀ မှ ၃၀၀)အထိ လိုအပ်သည်။ သို့ရာတွင် ထုံးဓာတ် စိမ့်စုပ်မှုသည် မသေချာ သောကြောင့် တစ်နေ့တာအစာ၌ မီလီဂရမ် (၁၀၀၀) အထိ ပါသင့်သည်။ နွားနို့ (၂၅)ကျပ်သားမှ ထုံးဓာတ် မီလီဂရမ် (၅၀၀)အထိ ရနိုင်သည်။ နှမ်း ၂ကျပ်ခွဲသာ၊ ငါးကလေးခြောက် ၂ ကျပ်သားမှလည်း အလားတူ ထုံးဓာတ် ရနိုင်သည်။

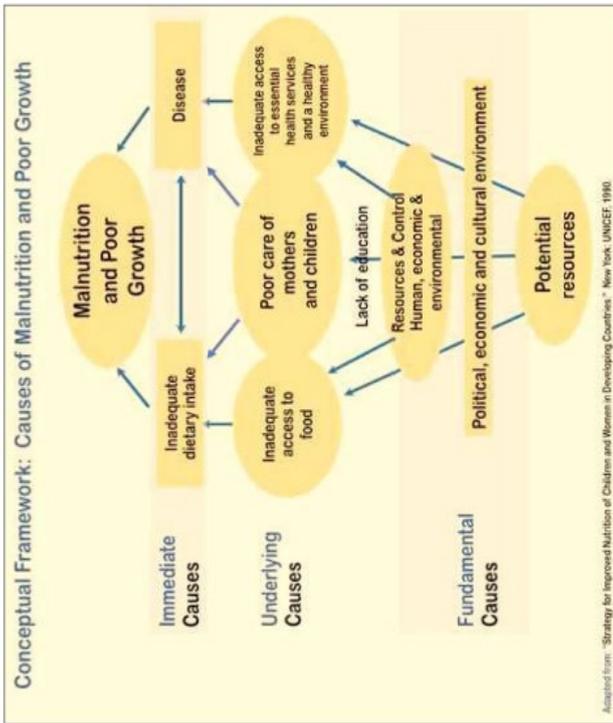
နို့တွင် သံဓာတ်ပါဝင်နှုန်းမှာ အလွန်နည်းပါသည်။ တစ်နေ့တာအတွက် သံဓာတ်လိုအပ်ချက်မှာ (၁)မီလီဂရမ် ခန့် ဖြစ်သည်။ နို့တိုက်မိခင်များအဖို့ ဓမ္မတာလာလေ့ မရှိသဖြင့် နို့တွင်ဆုံးရှုံးသွားသည့် သံဓာတ်ကို ဓမ္မတာ မလာသဖြင့် စုဆောင်းမိသောသံဓာတ်ဖြင့် ဖြည့်တင်း နိုင်သည်။ နို့တွင်ပါဝင်သောသံဓာတ်မှာ ကလေးငယ်အတွက် လုံလောက်မှုမရှိ သဖြင့် နို့တိုက်ကလေးများအား ဖြည့်စွက် အစာကို အချိန်မီ (ကလေး ၆လပြည့်သည်နှင့်) ကျွေးသင့် သည်။

(ဃ) ဗီတာမင်များ။ ။ မိခင်၏အစာတွင် အာဟာရ ပြည့်ဝသည့်နှင့်အမျှ မိခင်နို့တွင်ဗီတာမင်ဒီမှအပ အခြား ဗီတာမင်များ လုံလောက်စွာ ပါမည်ဖြစ်သည်။ ဗီတာမင်ဒီ ရရှိရေးအတွက် ကလေးငယ်အား နေရောင်ခြည်များနှင့် တွေ့ထိစေရမည်။ ဗီတာမင်များတွင် ဗီတာမင်ဘီ-၁ နှင့် ဗီတာမင်အေများ နို့တိုက်မိခင်၏အစာတွင် ပြည့်ဝစွာ ပါဝင်နိုင်ရန် အရေးကြီးသည်။ ဗီတာမင်ဘီ-၁ ချို့တဲ့မှုသည် မိခင်အား ချည့်နဲ့စေနိုင်ပြီး ကလေးငယ်အား သူငယ်နာ ဘယ်ရီဘယ်ရီ ဖြစ်စေနိုင်သည်။ ဗီတာမင်အချို့တို့မှသည် ကလေးငယ်၏ မျက်စိနှင့်ကျန်းမာရေး အကြာအနက်ကို ထိခိုက်စေ နိုင်သည်။

(c) နို့တိုက်မိခင်အတွက်တစ်နေ့တာ။ ။ နို့တိုက်မိခင်များသည် နို့ရည်အတွက် ကုန်ဆုံးသွားသော အင်အား၊ ပရိုတင်း၊ သတ္တု ဓာတ်များကို ပြန်လည်ဖြည့်တင်းရန်လိုသည်။ သို့ဖြစ်၍ အင်အားကိုဖြစ်စေသောအစာများ၊ ပရိုတင်းကြွယ်ဝသော အစာများ၊ သတ္တုဓာတ်နှင့်ဗီတာမင်ကြွယ်ဝသော အစာများကို အလေးထား စားသုံးရမည်။ တစ်နေ့တာ စားသုံးသင့်သော အစာကို "အသက်အုပ်စုအလိုက် တစ်နေ့တာအတွက် အနည်းဆုံး လိုအပ်သော အစာပမာဏ" တွင် ကြည့်ရှု ကိုးကားနိုင်သည်။ နို့တိုက်မိခင်အတွက် နို့ထွက်သန်စေရန် ဟင်းချိုရည်၊ နွားနို့ စသည်တို့ကို ပိုမိုသောက်သုံး ပေးရမည်။

အာဟာရမျှတမှု အာဟာရမမျှတခြင်း

- ၁။ အာဟာရချို့တဲ့မှု
- ၂။ အာဟာရလွန်တဲ့မှု (၂) မျိုးစလုံး ပါဝင်သည်။



အာဟာရချို့တဲ့ရသောအကြောင်းများ
 အာဟာရချို့တဲ့ရောဂါ ဖြစ်ပွားခြင်း၏ လတ်တလော အကြောင်းရင်း (၂) ခုမှာ- အစာအာဟာရ လုံလောက်စွာ မစားသုံးခြင်းနှင့် ကူးစက်ရောဂါထူပြောခြင်းတို့ ဖြစ်သည်။ နောက်ခံအကြောင်းရင်းများမှာ အိမ်ထောင်စုအဆင့် အစားအစာ မဖူလုံခြင်း၊ မိခင်နှင့်ကလေးအား ပြုစုစောင့်ရှောက်မှု အားနည်းခြင်း နှင့် ကျန်းမာရေးစောင့်ရှောက်မှုရရှိရန် လက်လှမ်းမမီခြင်း တို့ကြောင့် ဖြစ်သည်။ အခြေခံ အကြောင်းရင်းများအဖြစ် လူမှုစီးပွားရေးအခြေအနေသည် အရေးပါသည်။

အစာအာဟာရ လုံလောက်စွာ မစားသုံးခြင်း

- ရိက္ခာထုတ်လုပ်မှု မလုံလောက်ခြင်း၊ ရာသီဥတုအခြေအနေ၊ မြေဆီလွှာအခြေအနေ၊ စိုက်ပျိုးရေးနည်းပညာများ)
- ရိက္ခာဖြန့်ဖြူးမှုအခြေအနေ မညီမျှခြင်း (ဆင်းရဲချမ်းသာ မညီမျှခြင်း၊ ကူးသန်းသွားလာမှု ခက်ခဲခြင်း)
- အစားအစာစားသုံးမှု မလုံလောက်ခြင်း (ဘာသာရေးအယူအဆနှင့် ဓလေ့ထုံးစံများ)
- အာဟာရပညာနည်းပါးခြင်း၊ အားလပ်ချိန်နည်းပါးခြင်း

ရောဂါဘယထူပြောခြင်း ကူးစက်ရောဂါများဖြစ်ပွားခြင်း

အာဟာရချို့တဲ့သောကလေးငယ်များသည် ဝမ်းလျှောရောဂါ၊ တီဘီရောဂါ အူနေကပ်ပါးရောဂါများ (သန်ကောင်ရောဂါ ဖြစ်ပွားတတ်ကြောင်း တွေ့ရပါသည်။ ပတ်ဝန်းကျင်သန့်ရှင်းရေးနှင့် တကိုယ်ရည်သန့်ရှင်းရေး နိမ့်ကျခြင်းကြောင့်လည်း ရောဂါဘယများ အကြိမ်ကြိမ်ဖြစ်ကာ အာဟာရချို့တဲ့မှုကို ပိုမိုပြင်းထန်စေပါသည်။

အိမ်ထောင်စုအဆင့် အစားအစာ မဖူလုံခြင်း

မိသားစုဝင်အားလုံး တစ်နှစ်ပတ်လုံး သန့်ရှင်းလတ်ဆတ်သော အစာများကို အာဟာရ လုံလောက်မျှတစွာ စားသုံးနိုင်မှသာ အိမ်ထောင်စုအဆင့် အစာဖူလုံသည်ဟု ဆိုလိုပါသည်။

ပြုစုစောင့်ရှောက်မှု

မွေးစမှ(၆)လအထိ မိခင်နို့ တစ်မျိုးတည်းတိုက်ကျွေးခြင်း၊ အသက်(၆)လမှစတင်၍ ဖြည့်စွက်အစာကျွေးခြင်း၊ လိုအပ်သော ကာကွယ်ဆေးများထိုးခြင်း ကူးစက်ရောဂါများကို ထိရောက်စွာကုသပေးခြင်း၊ ပတ်ဝန်းကျင်နှင့် တစ်ကိုယ်ရေသန့်ရှင်းရေးဆောင်ရွက်ခြင်း၊ ပတ်ဝန်းကျင်နှင့် လျော်ညီစွာ ဝတ်စားဆင်ယင်ပေးခြင်း၊ ချစ်ခင်ယုယခြင်း၊ စိတ်ပိုင်းဆိုင်ရာ ဖွံ့ဖြိုးအောင် စောင့်ရှောက်ခြင်း စသည်တို့သည် အစာစားသုံးမှုနှင့် အာဟာရအခြေအနေပေါ်တွင် အကျိုးသက်ရောက်မှု ရှိသည်။

ကျန်းမာရေးစောင့်ရှောက်မှု

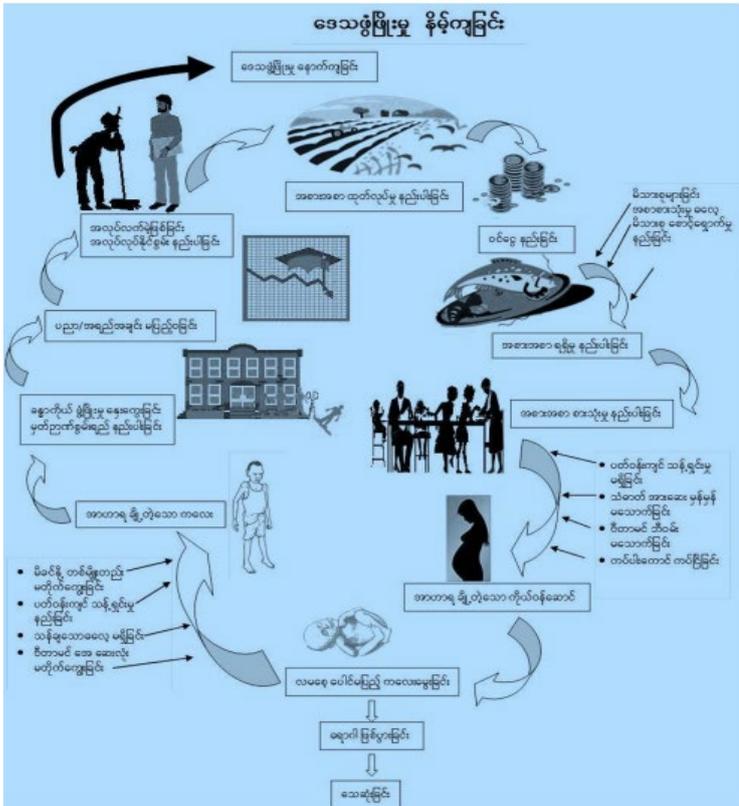
ကျန်းမာရေးဆေးပေးခန်းနှင့် ကျန်းမာရေးစောင့်ရှောက်မှုများ လက်လှမ်းမီပါမှ ကျန်းမာရေးနှင့် အာဟာရအခြေအနေ ကောင်းမွန်ပါမည်။

လူမှုစီးပွားရေးအခြေအနေ

ပညာတတ်ခြင်း၊ စီးပွားရေးနှင့် လူနေမှု အဆင့်မြင့်မားခြင်း၊ လူမှုရေးပြဿနာမရှိခြင်း တို့သည်လည်း အာဟာရ အခြေအနေပေါ်အကျိုးသက်ရောက်မှု ရှိပါသည်။

အာဟာရနှင့် ဒေသဖွံ့ဖြိုးမှု

ဒေသဖွံ့ဖြိုးတိုးတက်ရန် လူ့စွမ်းအားရင်းမြစ်သည် အဓိက အရေးပါသည်။ ဒေသအတွင်း ရှိသူများ အာဟာရပြည့်ဝပါမှ ကျန်းမာသန်ထွေး၊ ဉာဏ်ရည်မြင့်မားစွာဖြင့် မိသားစု နှင့်ဒေသအကျိုး သယ်ပိုးနိုင်မည်ဖြစ်သည်။



အာဟာရချို့တဲ့ လွယ်သူများ

သုံးနှစ်အောက်ကလေးများ၊ မူကြိုအရွယ် ကလေးများ၊ ကိုယ်ဝန်ဆောင်နှင့် နို့တိုက်မိခင်များ၊ အသက်ကြီးသူများ၊ နာတာရှည်ရောဂါ ရှိသူများသည် အာဟာရချို့တဲ့ လွယ်သူများ ဖြစ်သည်။

(က) ကလေးများ

- မိခင်နို့မစို့ရသော နို့တိုက်အရွယ် ကလေးငယ်
- မွေးစ ကိုယ်အလေးချိန် မပြည့်သော ကလေး (၅ ကီလိုဂရမ်ထက်နည်းခြင်း၊ မွေးစအလေးချိန် ၂)
- အမြှာပူး
- အစ်ကိုအစ်မများတွင် အာဟာရချို့တဲ့မှုရှိခြင်း

- ယောက်မြောက်အောက်ကလေးများ(၅) ယောက်မွေး၍(၁)နှစ်(၁) အထူးသဖြင့် (ကလေးနီးလျှင်
- အာဟာရချို့တဲ့၍ ကိုယ်အလေးချိန်မှတ်တမ်းတွင် အနီရောင်တွင်ရှိသောကလေး
- မိဘတစ်ဦးတည်းရှိခြင်း မိဘမရှိခြင်း (သို့မဟုတ်) (အိမ်ထောင်ပျက်သေ)
- ကျန်းမာရေးချို့တဲ့ခြင်း -ဥပမာ) မွေးရာပါချို့ယွင်းချက်ရှိသောကလေးများ) (အာခေါင်ကွဲ/နှုတ်ခမ်းကွဲ
- ဝက်သက်၊ ကြက်ညှာ ချောင်းဆိုးနှင့် ဝမ်းပျက်ဝမ်းလျော့ဖြစ်တတ်သောကလေးများ
- လစဉ်အလေးချိန်မှန်မှန်မတိုးပဲ ကြီးထွားမှုရပ်တန့်နေသောကလေးများ/

(ခ) မိခင်များ

- ကိုယ်ဝန်ဆောင်စဉ် ပိန်ချုံးနေသော မိခင်များ
- ကိုယ်ဝန်ဆောင်စဉ် အလေးချိန်မတိုးသောမိခင်များ
- ကလေးနီးသောမိခင်များ လအတွင်း (၆) မွေးပြီး) (ကိုယ်ဝန်ပြန်ရှိခြင်း
- ငယ်ရွယ်နုနယ်သော ကိုယ်ဝန်ဆောင် မိခင်များ (၁၈နှစ်အောက်မိခင်များ)
- ကလေးယောက်ထက်များသောမိခင်များ(၅)
- မွေးစကိုယ်အလေးချိန် (၅.၂) ကီလိုဂရမ်ထက်နည်းသောကလေးမိခင်များ

(ဂ) မိသားစုများ

လူမှုစီးပွားရေးဘဝ အခြေအနေအားနည်း၍ ဝင်ငွေနည်း သော မိသားစုများ

အာဟာရချို့တဲ့မှုနှင့် ဆက်နွယ်နေသောရောဂါများ

အာဟာရချို့တဲ့ပါက ကိုယ်ခံအားကျဆင်း၍ ကူးစက်ရောဂါ နှင့် အခြားရောဂါများ ဝင်ရောက်နိုင်ပါသည်။ ဆက်နွယ် လေ့ရှိသော ရောဂါများမှာ- ဝမ်းပျက်ဝမ်းလျော့ရောဂါ လတ်တလော အဆုတ်အတွင်း ပိုးဝင်ရောက်ခြင်း၊ အဆုတ်တီဘီရောဂါ၊ ခုခံအားကျဆင်းမှု အပါအဝင် နာတာရှည်ရောဂါများ စသည်တို့ဖြစ်ပါသည်။

အာဟာရနှင့် ဆက်နွယ်နေသော နာတာရှည်ရောဂါ

နေ့စဉ်စားသုံးနေသော အစားအစာများနှင့် နာတာရှည် ရောဂါအချို့ ဖြစ်ပွားပေါ်ပေါက်မှုတို့ နီးစပ်စွာ ဆက်နွယ်မှု ရှိကြောင်း အာဟာရသိပ္ပံပညာရှင်များ၏ လေ့လာ စူးစမ်းချက်အရ သိရှိလာခဲ့ကြသည်။ ယင်းရောဂါများမှာ နှလုံးသွေးကြော ကျဉ်းရောဂါ၊ သွေးတိုးရောဂါ၊ ဆီးချိုရောဂါ၊ သည်းခြေတွင် ကျောက်တည်ရောဂါ ကင်ဆာရောဂါများ၊ သွားပိုးစားရောဂါ အစာအိမ် လမ်းကြောင်း ရောဂါများနှင့် အရိုးအဆစ်ရောဂါများတို့ ဖြစ်သည်။ ကင်ဆာရောဂါများ အနက် သုံးပုံတစ်ပုံမှာ အစားအစာနှင့် ဆက်စပ်၍ ဖြစ်ပွားတတ်ကြောင်း တွေ့ရှိရသည်။ တိရိစ္ဆာန်မှရသော အဆီ စားသုံးမှု လွန်ကဲသူများတွင် နှလုံးသွေးကြောကျဉ်းရောဂါဖြစ်ပွားမှု ပိုမိုများပြားသည့် သာဓကများကိုလည်း တွေ့ရသည်။

စားသုံးမှုမလေ့ပြောင်းလဲမှုကြောင့် ဖြစ်ပေါ်တတ်သော ရောဂါများ

မြို့ပြလူနေမှုစနစ်နှင့် စားသုံးမှုမလေ့တို့ကြောင့် အလွန်ကဲခြင်းအပါအဝင် နာတာရှည်ရောဂါ အမျိုးမျိုးတို့ ဆက်နွယ်ဖြစ်ပွားလာကြောင်း လေ့လာတွေ့ရှိရသည်။ အကြောင်းမူ အသား(ငါး) အဆီနှင့် သကြားတို့ ပိုမိုစားသုံးလာခြင်းကြောင့် ဖြစ်သည်။

အစားအစာနှင့် နာတာရှည်ရောဂါများ ဆက်နွယ်မှု

(က) နှလုံးနှင့်သွေးကြောရောဂါများ
အစားအစာနှင့်ဆက်နွယ်သည့် နှလုံးနှင့်သွေးကြောရောဂါ များအနက် သွေးကြောကျဉ်းရောဂါ၊ သွေးကြောတွင် သွေးခဲရောဂါနှင့် သွေးတိုးရောဂါတို့သည် အဖြစ်အများဆုံး ဖြစ်သည်။ ယင်းရောဂါများသည် အစားအစာအချို့တွင် ပါဝင်သော ကိုလက်စထရော (Cholesterol) ဓာတ်ကြောင့် ဖြစ်ကြောင်း လေ့လာတွေ့ရှိရသည်။ တိရိစ္ဆာန်မှရသောအဆီ (ပြည့်ဝအဆီ) စားသုံးမှုသည် အင်အားဓာတ်အားလုံး၏ ၁၀ ရာခိုင်နှုန်းထက်ပိုမိုပါက နှလုံးသွေးကြောကျဉ်းရောဂါ သိသိသာသာဖြစ်ပွားမှု များပြားလာသည်ကို တွေ့ရသည်။ နေ့စဉ် စားသုံးသော ဟင်းသီးဟင်းရွက်တွင် ပါဝင်သော အမျှင်(fibre)များသည် ကိုလက်စထရော အဆီဓာတ်ကို လျော့နည်းနိုင်စေသောကြောင့် အသက်သတ်လွတ်စားသော သူများတွင် နှလုံးသွေးကြောကျဉ်း ရောဂါ ဖြစ်ပွားနှုန်း လျော့နည်းကြောင်း တွေ့ရှိရသည်။ အရက်သောက်သူများနှင့် ဆား(အိမ်သုံးဆား) အစားများ သူများတွင် သွေးတိုးရောဂါ အဖြစ်များသည်။ လူတစ်ဦး

တစ်နေ့လျှင် ဆား (၆)ဂရမ်အထိ စားသုံးခြင်းဖြင့် သွေးတိုးရောဂါ မဖြစ်နိုင်ကြောင်း စမ်းသပ်တွေ့ရှိရသည်။ အလွန်ကဲခြင်းနှင့် သွေးတိုးရောဂါမဖြစ်ပေါ်စေရန်အတွက် အဆီလျှော့စားခြင်း၊ အနည်းအကျဉ်းသာ အရက် သောက်သုံးခြင်းနှင့် အငန်ဓာတ် လျှော့စားသုံးခြင်းတို့သည် အဓိကလိုအပ်ချက်များဖြစ်သည်။

(ခ) ကင်ဆာရောဂါများ

အမျိုးသားများတွင် ၄၀ ရာခိုင်နှုန်းနှင့် အမျိုးသမီးများတွင် ၆၀ ရာခိုင်နှုန်းသော ကင်ဆာရောဂါ ဝေဒနာရှင် များသည် ၎င်းတို့ စားသုံးသော အစားအစာများနှင့် ဆက်နွယ်လျက် ရှိသည်ဟု တွေ့ရှိထားပါသည်။ အရက်သောက်သူ များနှင့် ဆေးလိပ်သောက်သူများသည် ခံတွင်း၊ လည်မျို၊ လည်ချောင်းနှင့် အစာရေမျို ကင်ဆာရောဂါများ ဖြစ်ပေါ်မှု နှင့် ဆက်စပ်လျက်ရှိသည်ကို လေ့လာတွေ့ရှိရသည်။ အစာရေမျို ကင်ဆာရောဂါသည် ဟင်းသီးဟင်းရွက်၊ လတ်ဆတ် သောသစ်သီး၊ အသား၊ ဗီတာမင်အေနှင့် ဗီတာမင်စီဓာတ်စားသုံးမှုနည်းသူများ၊ အသီးအရွက်သနပ်များ၊ ချဉ်ဖတ်များ၊ မှိုတက်သည့် အစားအစာ စားသုံးမှုများနှင့် ပူလွန်းသော အစားအစာနှင့် အဖျော်ယမကာ သောက်သုံးသူများတွင် ပိုမိုဖြစ်ပွားသည်ကို တွေ့ရသည်။ မီးကင်း၊ ကျပ်တင်ကျပ်တိုက်ထားသော အစားအစာများနှင့် ဆားစိမ် (သို့) ဆားနှင့်တာရှည်ခံအောင်ထားသည့် အစား အစာများ စားသုံးသူများ၊ လတ်ဆတ်သော ဟင်းသီးဟင်းရွက်နှင့် သစ်သီးဝလံများ စားသုံးမှု နည်းသော သူများ တွင်လည်း အစာအိမ်ကင်ဆာရောဂါဖြစ်မှု ပိုမို များပြားသည်ကို သုတေသနပြုလုပ်ချက်များအရ သိရှိ ရသည်။ အဆီစားလွန်းပြီး အမျှင် စားသုံးမှုနည်းသူများတွင် အူမကြီး ကင်ဆာရောဂါဖြစ်ပွားမှု ပိုမိုများသည်ကို လေ့လာတွေ့ရှိရသည်။ အဆီနှင့် ကိုလက်စထရော အလွန်စားသုံးသူများနှင့် အဆုတ်ကင်ဆာရောဂါ ဖြစ်ပေါ် နိုင်မှုတို့ ဆက်နွယ်မှု ရှိနေသည် ကိုလည်း လေ့လာတွေ့ရှိ ရသည်။ တိရိစ္ဆာန်မှရသောအဆီ စားသုံးမှုလွန်ကဲသည့် အမျိုးသမီးများ သားမြတ် (ရင်သား) ကင်ဆာဖြစ်မှုနှင့် ၎င်းကြောင့် သေဆုံးမှု နှုန်းများကြောင်းတွေ့ရသည်။ အဆီ စားသုံးမှု လွန်ကဲသော အမျိုးသားများတွင်မူ ဆီးကျိတ် ကင်ဆာရောဂါ ပိုမိုဖြစ်တတ်သည်ကို တွေ့ရသည်။ အရက်နှင့် အချို့သော ဘီယာသောက်သုံးခြင်းဖြင့် စအို ကင်ဆာ ဖြစ်နိုင်ကြောင်း လေ့လာချက်များအရသိရသည်။

အသည်းကင်ဆာရောဂါသည် အဓိကအားဖြင့် ဗိုင်းရပ် ပိုး(ဘီ) အမျိုးအစားကြောင့် ဖြစ်တတ်သည့်ပြင် စားသုံး သည့် အစားအစာတွင် မှီတစ်မျိုးပါဝင်ပါက အသည်း ကင်ဆာ ဖြစ်နိုင်သည်။ အရက်သောက်စားမှုနှင့် အသည်း ကင်ဆာတို့ ဆက်စပ်မှု ရှိကြောင်း သိရှိရသည်။ ဆေးလိပ်သောက်ခြင်းကြောင့် အဆုတ်ကင်ဆာရောဂါ ဖြစ်သည်ကို သိရှိလာခဲ့ပြီးနောက် အစိမ်းနှင့်အဝါရောင် ဟင်းသီးဟင်းရွက်နှင့် သစ်သီးစားသုံးမှုနည်းပါကလည်း အဆုတ်ကင်ဆာရောဂါဖြစ်နိုင်သည်ကိုထပ်မံတွေ့ရှိရသည်။

(ဂ) အင်ဆူလင်ဓာတ်နှင့် မဆက်နွယ်သော ဆီးချိုရောဂါ
ယင်းဆီးချိုရောဂါသည် လူရွယ်လူလတ်ပိုင်းတွင် အများဆုံး ဖြစ်တတ်သည်။ နေ့စဉ်စားသုံးသော ကစီနှင့် အသားဓာတ် သို့မဟုတ် ခန္ဓာကိုယ်တွင်းမှ ဂလိုက်ကိုဂျင်ဓာတ်နှင့် အသား ဓာတ်များကို ကောင်းမွန်စွာ မခြေဖျက်နိုင်သောကြောင့် ဖြစ်သည်။ အဆိုပါဆီးချိုရောဂါကြောင့် နှလုံးသွေးကြော ကျဉ်းရောဂါ၊ ကျောက်ကပ် ဦးနှောက် အာရုံကြောနှင့် မျက်စိရောဂါများ ဖြစ်ပေါ် လာနိုင်သော အန္တရာယ်များ ပိုမိုလာသည်။ ဤဆီးချိုရောဂါကို အဝလွန်ကဲ သူများတွင် တွေ့ရတတ်သည်။ ဟင်းသီးဟင်းရွက် အစားများသူများ အသက်သတ်လွတ်စားသူများသည် ဤဆီးချိုရောဂါ ဖြစ်ပေါ်မှုနှုန်း နည်းသည်ကို တွေ့ရသည်။

(ဃ) အခြားရောဂါများ
သည်းခြေအိတ်ကျောက်ကပ်ရောဂါသည် အဝလွန်ကဲ သူများတွင် အများဆုံးဖြစ်တတ်သည်။ အမျှင်ပေါများပြီး ကစီဓာတ်ပါသည့်အစားအစာကို စားသုံးခြင်းဖြင့် အဝလွန်ကဲမှုကို ဟန့်တားနိုင်သည့်အပြင် သည်းခြေရည် တွင် ကိုလက်စထရော အဆီဓာတ်ပါဝင်မှုကို ဟန့်တားနိုင်သဖြင့် သည်းခြေအိတ် ကျောက်တည်ရောဂါ ဖြစ်ပွားမှုကို လျော့နည်း စေနိုင်သည်။ အမျှင်များသော အစားအစာများ ပိုမိုစားသုံးခြင်းဖြင့် ဝမ်းချုပ်မှုကို ကာကွယ်နိုင်သည်။ ဝမ်းချုပ်လေ့ရှိသူများသည် လိပ်ခေါင်း ရောဂါ ဖြစ်ပွားတတ်သည်ကို တွေ့ရသည်။ သို့ဖြစ်ရာ လူတစ်ဦးသည် တစ်နေ့လျှင် အမျှင်ပါသော အစားအစာ အနည်းဆုံး (၃၀)ဂရမ်မျှ စားသုံးသင့်သည်။ တာရှည်စွာ အရက်အလွန်အမင်း သောက်တတ်သူများသည် အသည်းကျွမ်းသည့်ရောဂါ သာမက ဦးနှောက်နှင့် အာရုံကြောချို့တဲ့သော ရောဂါများလည်း ခံစားရတတ် သည်။ ကိုယ်ဝန်ဆောင်မိခင်များ ကိုယ်ဝန်ရှိစဉ်ကာလ

အတွင်း အရက်အလွန်အကျွံသောက်ပါက မွေးလာသည့် ကလေးငယ်များသည် မွေးစကိုယ်အလေးချိန် မပြည့်ခြင်း၊ ဉာဏ်ရည်ဖွံ့ဖြိုးမှုနည်းခြင်း၊ ကိုယ်ခန္ဓာကြီးထွားမှုနည်းခြင်း နှင့် မွေးရာပါနှလုံးရောဂါ ဖြစ်တတ်ခြင်းတို့ ခံစားရတတ် ပါသည်။

အဆီ (ကိုလက်စထရော) နှင့် သွေးကြောပိတ်ရောဂါ

အသီးအနှံများမှရရှိသော စားသုံးဆီများအနက် အုန်းဆီမှ အပ အခြားသောအဆီများတွင် မပြည့်ဝသောအဆီ အက်ဆစ် (Unsaturated Fatty Acid) အများအပြား ပါလေ့ရှိသည်။ တိရိစ္ဆာန်မှရသော အဆီများမှာ ပြည့်ဝအဆီ အက်ဆစ် (Saturated Fatty Acid) များ ဖြစ်သည်။ ကြွယ်ဝချမ်းသာသော နိုင်ငံများတွင် အဆီစားသုံးမှုနှုန်းသည် တစ်နေ့တာလိုအပ်သော အင်အား ဓာတ်၏ (၂၀ %) မှ (၄၀ %) အထိ ရှိသည်။ ပြည့်ဝအဆီအက်ဆစ်များကို စားသုံးသူများ၏သွေးတွင် ကိုလက်စထရောဟုခေါ်သော အဆီဓာတ် တစ်မျိုးသည် မြင့်မားသောနှုန်းဖြင့် ပါဝင်လျက်ရှိကြောင်းတွေ့ရသည်။ ကိုလက်စထရောကို ခန္ဓာကိုယ်အတွင်း၌ အဆီအက်ဆစ် များမှ ထုတ်လုပ်နိုင်ပြီး နေ့စဉ်စားသုံးသောအစားအစာများ အထူးသဖြင့် ကြက်ဥအနှစ်များမှာလည်း တွေ့နိုင်သည်။ ချမ်းသာသောနိုင်ငံ များတွင် သွေးကြောပိတ်ရောဂါများ အဖြစ်များသောကြောင့် သွေးတွင်း ကိုလက်စထရော များပြားခြင်းသည် (Cardiac Infarct) ဖြစ်ပေါ်ရခြင်း အကြောင်းတစ်ရပ်ဟု သံသယရှိကြသည်။ ပြည့်ဝအဆီအက်ဆစ်များအစား မပြည့်ဝအဆီအက်ဆစ် များကို စားသုံးလျှင် ကိုလက်စထရောပါဝင်နှုန်း လျော့သွား ကြောင်း တွေ့ရသည်။ သို့ဖြစ်၍ မပြည့်ဝသောအဆီ အက်ဆစ် ကြွယ်ဝသော အသီးအနှံဆီများကို စားသုံးရန် ပညာပေး ဆောင်ရွက် သွားရမည်ဖြစ်သည်။ (ဥပမာ- နေကြာဆီ၊ ပြောင်းဖူးဆီ၊ သံလွင်ဆီ၊ မြေပဲဆီ)

နာတာရှည်ရောဂါများ ကာကွယ်ရန် နည်းလမ်းများ

၁။ ကျန်းမာရေးနှင့်လျော်ညီသော အစာများ စားသုံးမှု မြှင့်တင်ခြင်း

- (က) အသက်(၆)လအောက်ကလေးများ မိခင်နို့ တစ်မျိုး တည်း တိုက်ကျွေးမှုမြှင့်တင်ရန်
- (ခ) အသက်(၆)လမှစ၍ လုံလောက်သော ဖြည့်စွက် အစာများ ကျွေးရင်း မိခင်နို့ကို(၂)နှစ်အထိ တိုက်ကျွေးရန်
- (ဂ) အမျိုးသားအစာနှင့် အာဟာရမူဝါများ လုပ်ငန်းစဉ်များ ရေးဆွဲအကောင်အထည်ဖော်ရန်
- (ဃ) မြန်မာတို့အတွက် စားသောက်နည်းလမ်းညွှန်စာအုပ် ပြုစုထုတ်ဝေ၍ အာဟာရပညာပေးရန်
 - အငန်လျော့စားရန်
 - ပြန်ကြော်ဆီများစားသုံးမှုလျော့ချရန်
 - ပြည့်ဝအဆီများစားသုံးမှုလျော့ချရန်
 - အချို စားသုံးမှု လျော့ချရန်
 - အဖျော်ယမကာ၊ ဘီယာနှင့် အရက်သောက်သုံးခြင်း၊ စီကရက်သောက်ခြင်းဆင်ခြင်ပါ

၂။ ကိုယ်လက်လှုပ်ရှားမှုပုံမှန်ပြုလုပ်ခြင်း

မြန်မာနိုင်ငံ၏ အဓိကအာဟာရပြဿနာ (၅)မျိုး

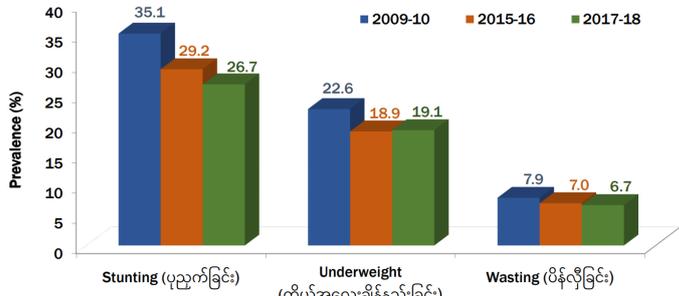
မြန်မာနိုင်ငံ၏ အဓိကအာဟာရပြဿနာများမှာ ပရိုတင်း အင်အားချို့တဲ့မှု၊ အိုင်အိုဒင်း ချို့တဲ့မှု၊ ဗီတာမင်အေ ချို့တဲ့မှု၊ သံဓါတ်ချို့တဲ့ သွေးအားနည်းရောဂါနှင့် ဗီတာမင်ဘီဝမ်း ချို့တဲ့မှုတို့ဖြစ်ကြပါသည်။

MALNUTRITION

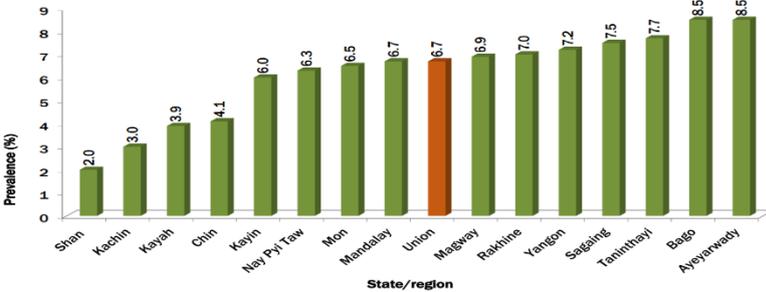
Under Nutrition
Over Nutrition
Malnutrition means under as well as over nutrition. Mostly, it is used to call “Malnutrition” means “Undernutrition”. Compare to “Over Nutrition”, “Under Nutrition” is common. That is why, “Malnutrition” used to refer “Under Nutrition”.
A. Acute Malnutrition
 a. Severe Acute Malnutrition (SAM)
 b. Moderate Acute Malnutrition (MAM)
B. Chronic Malnutrition
C. Micronutrient deficiencies

Epidemiology of Malnutrition

Trend in nutritional status among under-five year children in Myanmar (2009-2018)



Source: Lwin Mar Hlaing (IMAM Virtual Training for IPs & EHOs), July 2020
Wasting among children 6-59 months in Myanmar



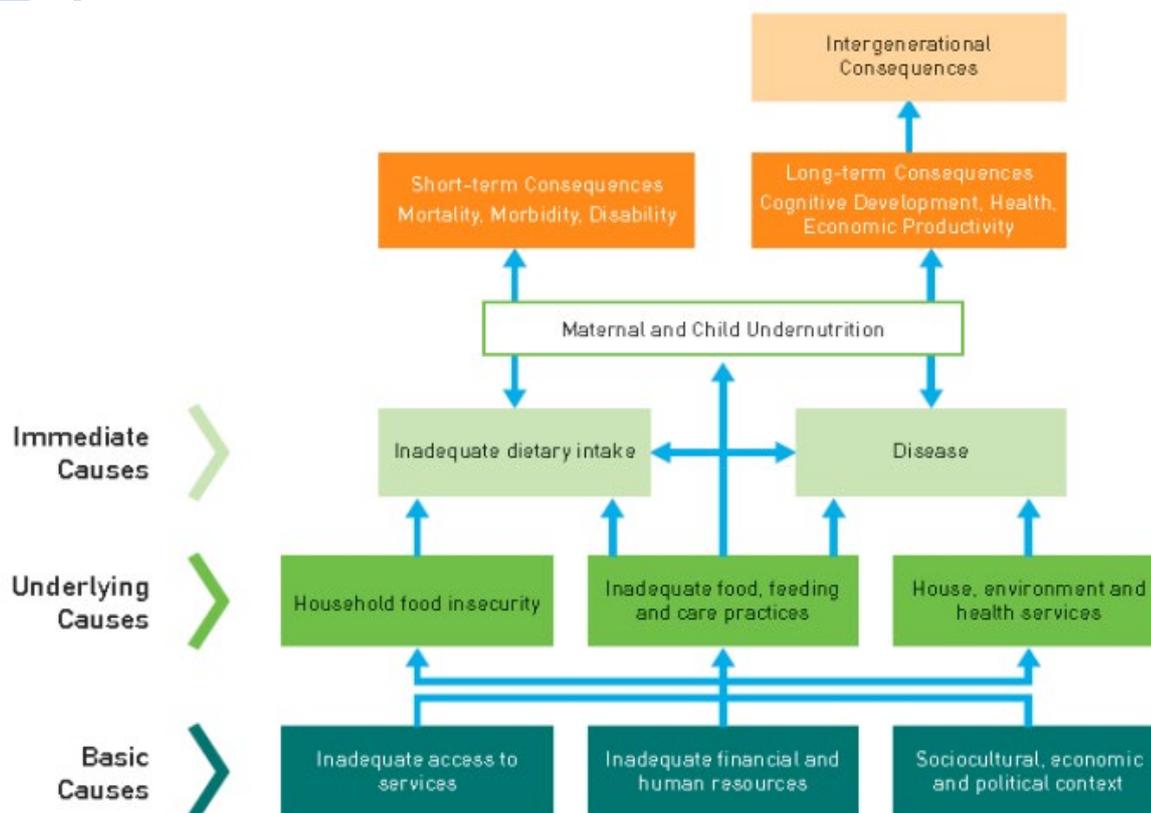
(2017-18)
Source: Myanmar Micronutrient and Food Consumption Survey (2017-2018)

For wasting and overweight, the thresholds are the same: ‘very low’ (<2.5 %); ‘low’ (≈1–2 times 2.5 %); ‘medium’ (≈2–4 times 2.5 %); ‘high’ (≈4–6 times 2.5 %); and ‘very high’ (>≈6 times 2.5 %). For stunting, the new thresholds are: ‘very low’ (<2.5 %); ‘low’ (≈1–4 times 2.5 %); ‘medium’ (≈4–8 times 2.5 %); ‘high’ (≈8–12 times 2.5 %) and ‘very high’ (>≈12 times 2.5 %).

Importance (Impact) of Acute Malnutrition

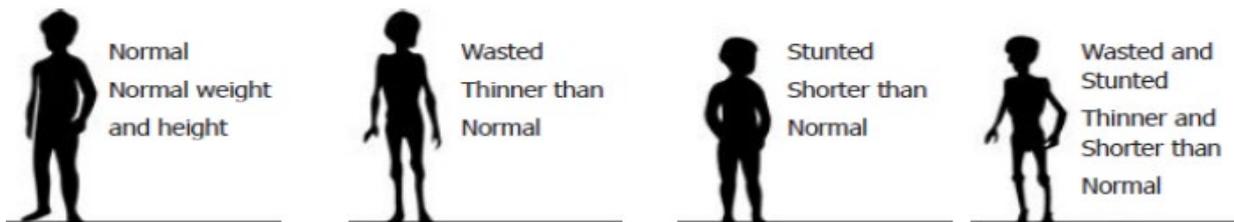
- Acute malnutrition: **Life-threatening form of malnutrition**
- In 2016, WHO emphasizes nutrition-related factors **contribute to about 45% of deaths** in children under 5 years of age
- Moderate acute malnutrition (MAM): **3-4 times more likely to die** before the age of 5 years compared to those children without acute malnutrition
- Severe acute malnutrition (SAM): **9 times more likely to die** before the age of five compared to normal children
- Wasting associated with stunting: **More than 12 times more likely to die**
- Strong evidence on synergism between under nutrition & child mortality due to common childhood illnesses (diarrhea, acute respiratory infections, malaria, measles)

Conceptual Framework of Malnutrition



Indicators for Different Forms of Undernutrition

	Wasting (Acute malnutrition)	Stunting (Chronic undernutrition)	Underweight (Acute or chronic)	Micronutrient Deficiencies
Indicators	# Presence of bilateral oedema OR # Low (MUAC) OR # Low weight for Height Z-score (WFH)	# Low Height for Age Z-score (HFA)	# Low Weight for Age (WFA) Combination of wasting & stunting	# Clinical signs & symptoms Bio-chemical markers



Types of Acute Malnutrition (Classification & Diagnosis of Acute Malnutrition)

Indicators	Moderate Acute Malnutrition (MAM)	Severe Acute Malnutrition (SAM)
Bilateral Pitting Oedema and/or wasting	Absent	Present
Mid Upper Arm Circumference (MUAC)	>= 115 mm and <125 mm (Between 115 to 124mm)	<115 mm
Weight for Height Z-Score	Between -3SD and < -2SD	<-3 SD

Clinical Features of Severe Acute Malnutrition (SAM)



၁၁။ Marasmus (ရှေ့)



၁၁။ Marasmus
(ကလေး၏နောက်ကျော)



၁၁။ Marasmus



၂၁။ Kwashiorkor



၂၁။ Kwashiorkor



၂၁။ Marasmus Kwashiorkor

Oedema Grading



၃၁။ ဖောရောင်မှုအဆင့် (+)



၃၁။ ဖောရောင်မှုအဆင့် (++)



၃၁။ ဖောရောင်မှုအဆင့် (+++)



၅-က။ (+) မပြင်းထန်သော Dermatitis

အရေပြား အရောင်ပြောင်းခြင်းနှင့် အကွက်များ



၅-ခ။ (++) အတန်အသင့် ပြင်းထန်သော Dermatitis

လက်နှင့်/သို့မဟုတ် ခြေထောက်များပေါ်ရှိ အရေပြား အကွက်များ



၅-ဂ။ (+++) ပြင်းထန်သော Dermatitis

အရေပြားများ အလွှားလိုက် ကွာခြင်း၊ အသားနီလန်ခြင်း၊ ကွဲအက်ခြင်း

Eye Signs for Vitamin A deficiency



ဗီတာမင်အေချို့တဲ့မှု လက္ခဏာဖြစ်သည့် Bitot's spot



ဗီတာမင်အေချို့တဲ့မှု လက္ခဏာဖြစ်သည့် Corneal clouding



မျက်ကြည်လွှာအနာ (များဖြင့်ပြထား) ဗီတာမင်အေချို့တဲ့မှုအရေးပေါ် လက္ခဏာ

Management of Acute Malnutrition

- 1) Management of Moderate Acute Malnutrition (MAM)
- 2) Management of Severe Acute Malnutrition (SAM)

1) Management of Moderate Acute Malnutrition (MAM)

Supplementary Feeding Programme for Moderate Acute Malnutrition

(1) Supplementary Feeding; RUSF – 1 Sachet/Day for 2 weeks & F Breast Feeding. (RUSF: Ready to use supplementary Feeding)
 Ready-to-use supplemental food (RUSF) is a palatable, protein, and energy-dense lipid paste comprised of **peanut butter, milk powder, and oil**, initially developed for children and adults in resource-poor settings for the treatment for moderate acute malnutrition (MAM). RUSF is for children over 6 months, for a period of 2-3 months. RUSF is intended to be eaten **directly** from the package with no dilution, mixing or cooking.



(2) Routine Medicines

- i. Deworming: On admission check on the health record and/or ask the mother if the child has received Albendazole in the last six months. If not, administer Albendazole to all children over 11 months.
 - < 12 months: No
 - 12-23 months: 200 mg Albendazole
 - ≥ 24 months: 400 mg Albendazole
- ii. Vitamin A Supplementation: Administer Vitamin A if it has not already been taken in the past one month and it is not anticipated that it will be given in other programs within the next 2 months.
 - 6-11 months: 100000 IU po on admission
 - ≥ 12 months: 200000 IU po on admission

iii. Iron/Folic Acid Supplementation: once in 2 weeks

- <10kg: 1 tablet
- ≥10kg: 2 tablets

iv. Nutrition Education and IYCF Counselling

(3) **Monitoring of SFP:** FU every 2 weeks.

- Check the followings:
 - MUAC
 - Oedema
 - Weight
 - Medical illness/Danger signs
- Decide Failure to respond or not
- IYCF Counselling

(4) Criteria for Failure to Respond

Criteria for Failure to Respond	Times after Admission
Failure to gain any weight	5 weeks
Weight loss since admission to programme	14 days
Weight loss more than 5% of body weight	At any visit
Failure to reach discharge criteria	3 months

(5) Discharge Criteria from SFP

Age Group	Discharge Criteria
6 -59 months	<ul style="list-style-type: none"> • MUAC ≥= 125 mm for two consecutive visits OR • WFH-Z Score ≥=-2 for two consecutive visits

2) Management of Severe Acute Malnutrition (SAM)

Criteria for identifying children with severe acute malnutrition for treatment

a. Criteria for SAM without complication

- Child 6 – 59 months with
- Presence of bilateral pitting oedema + and ++ **OR**
 - MUAC < 115 mm **OR**
 - WFH <-3 Z-Score
- ANY OF THE ABOVE AND**
- Good Appetite (Appetite Test positive) and no medical complications

- Observe the child eating the RUTF during 30 minutes and decided if the child passes or fails the test.
- Wash hands before giving the RUTF
- Sit with the child in lap and gently offer the RUTF
- Encourage the child to eat the RUTF without force feeding
- Offer plenty of clean water to drink from a cup when child is eating RUTF.

Appetite Test

Why Appetite test is important?

- Poor appetite can differentiate a complicated from an uncomplicated case of SAM
- Poor appetite is a sign of a significant infection or a major metabolic abnormality such as liver dysfunction, electrolyte imbalance, and cell membrane damage or damaged biochemical pathways
- A child with a poor appetite will not take enough therapeutic diet at home to prevent deterioration.

How do Appetite test do?

- Conduct the appetite test in a quiet separate area.
- Provide an explanation regarding the purpose of the test to the care giver and describe the procedure. But do not tell mother if test fail, the child need admission.
- Do not force the client to eat the RUTF. Children may need gentle encouragement to eat, especially if they are sick.

Passed Appetite Test: The child eats at least one-third to half of a packet of RUTF (92 g), or three teaspoons in 30 minutes.

Failed Appetite Test: The child does not eat one-third to a half of a packet of RUTF (92 g), or three teaspoons in 30 minutes.

Medical Complications

- | | |
|------------------------|--|
| ▪ Hypothermia | ▪ Dehydration |
| ▪ Hyperthermia | ▪ Shock |
| ▪ Severe anaemia | ▪ Convulsion |
| ▪ Vitamin A deficiency | ▪ Coma |
| ▪ Difficult breathing | ▪ Pneumonia/ Diarrhoea or other diseases |

Plan of Treatment for SAM without complications

- | | |
|---------------------------------|-------------------------------------|
| 1) Nutritional Treatment (RUTF) | 6) Measles Vaccination |
| 2) Antibiotic | 7) IYCF counseling & Breast Feeding |
| 3) Deworming | 8) Follow-up and Monitoring |
| 4) Vitamin A | 9) Failure to Respond |
| 5) Malaria | 10) Referral and Discharge |

1) Nutritional Treatment (RUTF)



- Give 150-200kcal/kg/day(500kcal/packet of 92gm)
- It is a groundnut paste composed of vegetable fat, peanut butter, skimmed milk powder, lactoserum, maltodextrin, sugar and mineral and vitamin complex, energy dense food.
- Oil based can be eaten straight from the packet
Daily requirement to eat
 - 150 – 200 kcal/kg/day (RUTF 1 packet 500 kcal)

Child Weight (kg)	RUTF packet (Sachet) 92 Gm	
	Sachet/day	Sachet/week
3 – 3.4	1.25	8
3.5 – 4.9	1.5	10
5 – 6.9	2	15
7 – 9.9	3	20
10 – 14.9	4	30
≥ 15	5	35

Key Messages for Caretaker on RUTF

For Breastfed children: always give breast-milk before RUTF and also on demand.

- RUTF is a special food and medicine for SAM children. It should not be shared with other family members.
- Explain RUTF is only food. It contained, all ingredients that patient need to recover. Not necessary to give other food to child with SAM
- The child may be thirsty with RUTF. Always offer the child plenty of clean water to drink while he or she is eating RUTF.
- Sick children do not like to eat. Give small regular meals of RUTF & encourage the child to eat often (8meals/day)

- Keep food clean & cover
- Wash hands before feeding (both child and caregiver)

2) Antibiotic

Even no sign of infection, antibiotic must be prescribed.

- Amoxicillin: 15 mg/kg/dose X 8 hourly X 5 days
- Cotrimoxazole: 24 mg/kg bd X 5 days.

3) Deworming

Albendazole: < 1 yr do not give. 1-2 yr: 200 mg; > 2 yr: 400mg

4) Vitamin A

- If F-75/100 or RUTF is on treatment do not need to give Vitamin A for SAM without Vitamin A deficiency.
- If there is sign of Vitamin A deficiency, admit hospital urgently.
- If the child had measles recently, give Vitamin A should give accordingly

Day	Dose	6 – 12 month	> 12 months
1 st day	1 st Dose	100,000 IU	200,000 IU
2 nd day	2 nd Dose	100,000 IU	200,000 IU
15 th day	3 rd Dose	100,000 IU	200,000 IU

5) Malaria

- If the child has malaria, the child can treat at clinic according to the malaria treatment guideline.
- If there is malaria complication, refer to hospital.

6) Measles Vaccination

- If the child is 9 month or above and has no measles vaccination yet, the child should have vaccination at 4th visit follow up.

7) IYCF counseling & Breast Feeding

8) Follow Up & Monitoring: Follow Up Chart

Followup Chart

အမည်	Mg San Lwin					အဝပမာဏချွတ်ပုံတင်အမှတ်						017/017/016/Kyaukseaw SRHC/001/01P/001				
ရက်သတ္တဝင်	၈	၁၅	၂၂	၃၀	၄	၅	၆	၉	၁၁	၁၃	၁၅	၁၈	၂၂	၂၄	၂၆	၂၈
ရက်စွဲ	21Jan	14/Jan	21/Jan	28/Jan	4/Feb											
ခန္ဓာကိုယ်အပူချိန်အသွင်ပေးခြင်း																
ကိုယ်အပူချိန် (°C)*	20	27	28	28	26											
ကိုယ်အပူချိန်လျှော့ပြောင်း (ဒီ/မဒီ)		-	+	-	-											
အပူ (cm)	50															
WFH Z-Scores	<-3	<-3	-3	>3.4	>3.4											
MUAC (mm)	110	111	111	123	123											
အဆေးဆေးခြင်း (၀ = ၀၊ ၂၊ ၃)	၀	၀	၀	၀	၀											
* နေ့စဉ်အပူချိန်ပေးဆောင်ခြင်းတွင် ကိုယ်အပူချိန်ဆင်းကျပါက (ဆိုမဟုတ်) ပြုစုဆောင်ရွက်ခြင်း ဖြစ်ပါက ကိုယ်အပူချိန်ကောင်းပါက (ဆိုမဟုတ်) ဆည်သည့်အခြေအနေအထားရှိ ခန္ဓာကိုယ်အပူချိန်၏ ၅% လျော့နည်းပါက စစ်ဆေးခြင်းအစီအစဉ်အရ ဆေးပေးသင့်ပါသည်။																
ရောင်ခြည်																
ဝမ်းဗိုက်ခြင်း (ရက်)	-	-	-	-	-											
အနံ့ခြင်း (ရက်)	-	-	-	-	-											
ဖျားခြင်း (ရက်)	-	-	+	-	-											
အဆူခြင်း (ရက်)	-	-	+	-	-											
ခန္ဓာကိုယ် စစ်ဆေးရမည့်အခြေအနေအထား																
အစားအစာလိုက်နာမှု စစ်ဆေးခြင်း (ဒီ/မဒီ)	+	+	+	+	+											
ကိုယ်ပူချိန် (°C)	37	37	39.5	37	37											
တစ်မိနစ်အသက်နှုန်း	25	25	33	25	25											
အဆူပိုင်းခြားခြင်း (ဒီ/မဒီ)	-	-	-	-	-											
အဆူအနည်းဆုံးခြင်း (ဒီ/မဒီ)	-	-	-	-	-											
အဆူအများဆုံးခြင်း (ဒီ/မဒီ)	-	-	-	-	-											
အဆူပိုင်းခြားခြင်း (ဒီ/မဒီ)**	NR	NR	+	NR	NR											
အမြှေးအားစစ်ဆေးခြင်း (ရွေးတွင်လည်ကြည့်ပါ)	-	-	+	-	+											
RUTP အသွင်အပြင်အရ	1x7	1x7	1x7	1x7	1x7											
အဆူပိုင်းခြားခြင်း																
ရောင်ခြည်***	P	P	P	P	P											
*** P = အဆူပိုင်းခြားခြင်း၊ A = အဆူပိုင်းခြားခြင်းမရှိ၊ C = တုသိန်ပျောက်ကင်း၊ D = တုသိန်ပျောက်ကင်း (စိမ်းတောက်စိမ်းတောက်ပြင်းမရှိ)၊ X = အဆူပိုင်းခြားခြင်း၊ NR = တုသိန်ပျောက်ကင်း၊ R = ITP သို့မဟုတ် အဆူပိုင်းခြားခြင်း၊ RF = လှုပ်ရှားမှုပျောက်ကင်းခြင်း၊ HV = အဆူပိုင်းခြားခြင်း																
ရက်စွဲ	**အပူချိန်ပေးဆောင်ခြင်း ပြုစုဆောင်ရွက်မှုအစီအစဉ်အရ ဆေးပေးသင့်ပါသည်။															
21/Jan	ARI; Amoxil 52.5 mg tabs x 5 days															
4/Feb	Measles 1st Dose; Albendazole 1 Tab															

- Monitoring: Every week
1. MUAC
 2. Body weight (better to use same machine)
 3. Oedema status
 4. Danger signs: infection, high fever, diarrhoea, fast breathing, shortness of breath etc
 5. Appetite

6. < 2 yr children feeding counselling
7. Height: start programme
8. WFH: Programme in and out

9) Failure to Respond

Features of Failure to respond	From Programme start
Since register body weight reducing (non-oedema child)	Within 14 days
Weight not increasing (non-oedema child)	Within 21 days
Oedema subsiding	Within 14 days
Still oedema present	Until 21 days
Failed Appetite test	Any time
Reduced 5% body weight	Any time
Oedema develop	Any time
Reduced body weight 2 continuous visit	Any time
Weight not gaining for # After subsiding oedema in Kwashiorkor # From 14 day onward in Marasmus	Any time

10) Discharge criteria

- Two continuous visit shows
- # No oedema **OR**
- # ≥ -2 SD Z-score **OR**
- # ≥ 125 cm MUAC

b. Criteria for SAM with complications

- Bilateral Pitting Oedema
 - Bilateral Pitting Oedema (+++) **(OR)**
 - Bilateral Pitting Oedema (+/++) **(Plus)** No Appetite (and/or) Medical complications present **(OR)**
- Anthropometry
 - MUAC < 115mm **(Plus)** No Appetite (and/or) Medical complications present **(OR)**
 - Wt For Ht < -3 Z Score **(Plus)** No Appetite (and/or) Medical complications present
Press with thumb on swollen area for 3 minutes
 - ✓ Mild (+): oedema in both feet/ankles
 - ✓ Moderate (++) : oedema in both feet plus lower legs, hands or lower arms
 - ✓ Severe (+++): generalized oedema including both feet, legs, hands, arms and face

- i. **Criteria for inpatient or outpatient care**
Outpatient Care: Children who are identified as having SAM should first be assessed with a full clinical examination to confirm whether they have medical complications and whether they have an appetite. *Children who have appetite (pass*

the appetite test) and are clinically well and alert should be treated as outpatients.

Inpatients Care: Children who have medical complications, severe oedema (+++), **OR** poor appetite (fail the appetite test) **OR** present with one or more IMCI danger signs should be treated as inpatients. IMCI Danger signs: Unable to drink or breastfeed; vomits everything; has had convulsions in this sickness; lethargic or unconscious.

NOTE: *Visible severe wasting is not included as a diagnostic criterion. However, all malnourished children should be clinically examined when undressed, as part of routine management.*

ii. Criteria for transferring children from inpatient to outpatient care

Children with severe acute malnutrition who are admitted to hospital can be transferred to outpatient care when their medical complications, including oedema, are resolving and they have good appetite, and are clinically well and alert. *The decision to transfer children from inpatient to outpatient care should be determined by their clinical condition and not on the basis of specific anthropometric outcomes such as a specific mid-upper arm circumference or weight-for-height/length.*

iii. Criteria for discharging children from treatment

Children with severe acute malnutrition should only be discharged from treatment when their:

- weight-for-height/length (WFH) is ≥ -2 Z-scores and they have had no oedema for **at least 2 weeks**, **OR**
- Mid-upper-arm circumference is ≥ 125 mm and they have had **no oedema for at least 2 weeks**.
- Percentage weight gain should not be used as a discharge criterion.

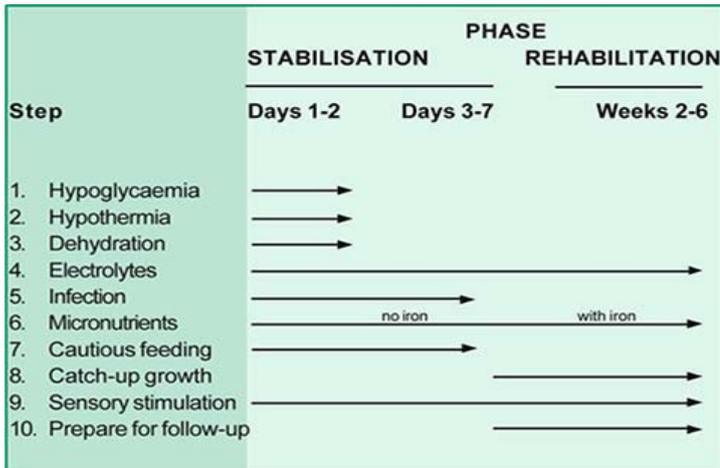
If the child was decided for admission using WFH, use WFH when discharge. If MUAC, then use MUAC when discharge. On admission, decided only pitting oedema +++, then should be discharged from treatment based on either MUAC or WFH is routinely used in hospital.

iv. Follow-up of infants and children after discharge from treatment for severe acute malnutrition

Children with severe acute malnutrition who are discharged from treatment programmes should be periodically monitored to avoid a relapse.

Clinical Management of SAM in Hospital

In this section only describe Phases of management, Hypoglycaemia and Hypothermia. Many details and other steps need to read in “Treatment protocol: IMAM, 2017 MOHS” under the heading of “Inpatient Treatment Programme”.



Treatment of Hypoglycaemia

If the child is conscious and dextrostix shows $<3\text{mmol/l}$ or 54mg/dl give:

- 50ml bolus of 10% glucose or 10% sucrose solution (1 rounded teaspoon of sugar in 3-5 tablespoons of water), orally or by NGT.
- Give the first feed of F-75 (1/4 of recommended amount of 2-hour feed at every 30 minutes) then continue feeds every 2 hours. Start appropriate antibiotic treatment IV or IM.

If the child is unconscious, lethargic or convulsing give:

- IV 10% glucose (5ml/kg), followed by 50ml of 10% glucose or sucrose by Ng tube. If IV access or IV glucose is not quickly available, give one teaspoon of sugar moistened with one or two drops of water sublingually, and repeat every 20 minutes to prevent relapses.
- When clinically appropriate, start F-75 feeds and continue with 2 hourly oral or NG feeds to prevent recurrence, day and night.
- Start appropriate antibiotic treatment IV or IM.
- If convulsion persists after IV glucose give Per Rectal Diazepam (0.3-0.5mg/kg)

Monitor:

Recheck blood glucose after 30 mins. If a very lethargic or unconscious patient does not respond in this way, then there is another cause for the clinical condition that has to be found and treated (e.g. cerebral malaria, dehydration etc.)

If blood glucose falls to $<3\text{mmol/l}$ give a further 50ml bolus of 10% glucose or sucrose solution, and continue feeding every 30 min. If temperature falls to $<35^\circ\text{C}$ or level of consciousness deteriorates, repeat dextrostix and treat accordingly.

Prevention:

- Frequent feeding is important to prevent Hypoglycaemia.
- During transitional phase, feeding should be given 3 hourly including waking the child during the night.
- The likelihood of Hypoglycaemia is reduced if the child is given required amounts of feeding.
- Sugar water should also be given to the children who get hypothermia or have septic shock, whether or not they have low blood glucose

Treatment and Prevention of Hypothermia

Hypothermia is defined when the Rectal temperature is $<35.5^\circ\text{C}$ ($<95.9^\circ\text{F}$) / Axillary temperature is $<35.0^\circ\text{C}$.

- Check and treat hypoglycaemia and infection in Hypothermic child
- Re warm the child: either clothe the child (including head), cover with a warmed blanket and place a heater or lamp nearby, or put the child on the mother's bare chest (skin to skin) and cover them with a warmed blanket
- Do not use hot water bottles/bags for warming due to danger of burning fragile skin
- Start appropriate antibiotic treatment IV or IM
- Frequent feeding is important to prevent Hypothermia

Monitor:

- Body temperature: during re warming. Take Rectal/Axillary temperature
- every 30 minutes until it rises to $>36.5^\circ\text{C}$
- Ensure the child is covered at all times, especially at night; keep the head covered. Room temperature should not be less than 27°C
- Check for hypoglycaemia whenever hypothermia is found

Prevention:

- Kangaroo mother care for preterm/LBW babies
- Keep the child covered and away from drop of air
- Avoid regular bathing and keep child dry
- Change wet nappies, clothe and bedding
- Feed regularly throughout the day and night especially during Phase I.

Dehydration

It is very difficult to assess clinical signs of dehydration with SAM because many of the signs are present even with no dehydration. If the child has watery diarrhoea you can assume they are dehydrated.

SAM patients need special Oral Rehydration Solution (ORS) with less **Na** and more **K**, which is called Rehydration Solution for Malnutrition (**ReSoMal**). Never use the normal ORS unless cholera is suspected.

Do not use IV fluid unless patient is in shock or cannot tolerate ORS.

If dehydration:

Give 5-10 ml/kg/hour ORS for the first 4-10 hours. Adjust the amount according to how much diarrhoea and vomiting and the response.

Once dehydration improved replace the ORS with **F-75** for example at hours 4, 6, 8 and 10 and then continue 2 hourly **F-75**.

Use severe chart for 1-2 hourly observations until stabilised.

Electrolytes imbalance

Do not give fluid with high **Na**, or food with salt. Do not give diuretics for oedema.

Give systematic **K** and **Mg** to all children:

Potassium: < 5 kg give ½ tab (250 mg) BD for 2 weeks
 ≥ 5 kg give 1 tab (500 mg) BD for 2 weeks

Magnesium: Give 50 % magnesium sulphate intramuscularly stat (0.3 ml/kg max 2 ml)

All children with SAM have too much Na in their body (even if their blood level is low). They will have low **K** and **Mg**. It may take 2 weeks for the electrolytes to become normal.

Infection

Check malaria smear.

Start antibiotics even if no obvious sign of infection See box below

Check HIV test

Take history for TB and consider Chest X-Ray (CXR) or /NG aspirate.

If immunisations not up to date refer to immunisation department when the patient's condition is stable.

Children with SAM often will not have fever or inflammation so infection is easy to miss.

Patient condition	Antibiotic	Duration
If stable	PO amoxicillin 25 mg/kg TID	Give for 5 days
If unstable	IV/IM ceftriaxone 50 mg/kg/day OD (80 mg/kg/day if suspect meningitis)	If at 5 days patient still has no appetite, continue antibiotics for 10 days
If suspect aspiration pneumonia or abdominal infection	Add PO metronidazole 7.5 mg/kg TID	

Micronutrient deficiencies

All children with SAM will have micronutrient deficiency.

Iron should not be started until child is in phase 2 because iron can make infections worse at the start of treatment.

Give the following supplements:

	Age	Dose	Duration
Vitamin A*	< 6 months	50,000 IU	D1, D2, D8
	6 -11 months (< 8 kg)	100,000 IU	
	≥ 1 year (≥ 8 kg)	200,000 IU	
Vitamin B1		10 mg OD	6 weeks
Folic acid		5 mg on admission and then once per week	3 months
Zinc	< 6 month	10 mg OD	2 weeks
	≥ 6 month	20 mg OD	
Multivitamin		1 tsp OD	2 weeks
Iron	(start in phase 2) See dose in chapter 2		

Severe anaemia

Give blood transfusion if Hb is:

- < 4 g/dl or
- 4-6 g/dl with difficult breathing or clinical signs

If you give transfusion:

- Give 10 ml/kg slowly over 4 hours.

It is common for children with SAM to have a low Hb, however due to the risk of infection iron supplements should not be started until phase 2

- Give 1 mg/kg furosemide with the transfusion.
- Do not repeat the transfusion within 4 days even if Hb is still low. Repeated blood transfusion will increase the risk of heart failure.
- Once in phase 2 start iron supplements ferrous sulphate 3 mg/kg/day for 3 months.

Initiate feeding – start milk feeds

Phase 1 (Stabilization)

The priority during phase 1 is:

- treat infections
- correct electrolyte imbalance
- get rid of oedema
- get organs and cells working

Phase 1 (stabilisation phase) may take 2-7 days – during this time there may not be any weight gain.

- During phase 1 the child's intestines cannot tolerate complex foods. The child should not be given other foods until they are stable. If the child is breastfed, the mother should be encouraged to continue breastfeeding, but also give the F-75.
- F-75 milk is designed to provide the right balance of protein (1-1.5 g/kg/day) and carbohydrate (100 kcal/kg/day).
- The carer will need good education and demonstration how and why to give the feeds regularly. They will need to be observed to make sure they are feeding correctly.
- Start 130 ml/kg/day (or 100 ml/kg/day if oedema +++)
- If very unwell give 1-2 hourly feeds
- Once stable can start 3 hourly feeds
- Always try to give by spoon/cup/syringe
- Check for a safe swallow
- If too weak to take milk or swallow not safe, insert NG tube

Nasogastric feeds

Insert NG tube if:

- Intake is < 80 % for 2 or 3 feeds

Remove NG tube if:

- Child takes 80 % of day's amount orally **OR**
- 2 consecutive feeds fully by mouth

Always offer orally first if the child can swallow safely

Always aspirate the NG tube before giving feed to check position and check absorption of previous feeds

Example: A child weighs 5.4 kg. Total milk for 1 day = 130 x 5.4 = 702 ml.

To calculate 80 % of the intake = (total feed/100) x 80
= (702/100) x 80
= 7 x 80
= 560 ml

So if she takes less than about 560 ml in one day the intake is not enough.

F-75 - isotonic - for diarrhoea

F-75 milk has 75 kcal / 100 ml and 0.9 g protein / 100 ml

F-100 milk has 100 kcal / 100 ml and 2.9 g protein / 100 ml

This is a special F-75 with rice powder. It is good for children with diarrhoea. In MTC it is the most common F-75 used.

Transition

The main sign that the child is improving and ready to move to phase 2 is if they have an appetite and any oedema is better.

Some children with neurological disorders may not be easy to assess. Change to phase 2 if clinically they are improving and they are tolerating the F-75 (not vomiting/diarrhoea).

Change to F-100 130 ml/kg/day

Give this volume for 48 hours

Then increase by 10ml/kg/day until the child does not eat all the milk i.e. 140 ml/kg/day, then 150 ml/kg/day, then 160 ml/kg/day ...

Usually the child will take 200 ml/kg/day

If at any time the child does not tolerate the transition either try decreasing the volume, or go back to F-75 130 ml/kg/day until condition is stable.

Catch up growth

Phase 2 (rehabilitation)

- This is the time when the child will gain weight quickly. They should have unlimited milk.
- Feed freely up to 220 ml/kg/day
- Minimum intake 150 ml/kg/day
- Feed 3 hourly
- Do not leave child alone to eat
- Actively encourage eating
- Record amounts offered and taken to decide if intake is enough
- Senior staff should review daily the milk volumes

Monitor weight gain

Weigh the child every day. If weight gain is:

Poor (< 5 g/kg/d), child requires full reassessment including looking for infection, TB, HIV. Check child is being given all feeds (especially all night feeds).

Moderate (5-10 g/kg/d), re-calculate weight gain within next week. If not improving, fully reassess the child as for poor.

Good (≥ 10 g/kg/d), carer and staff are doing a good job – continue!

Example: g/kg/d = Weight gain/ weight/ number of days

Day 10 weight 4.8 kg, Day 17 weight 5.1 kg

The child has gained 300 g (5.1 kg - 4.8 kg = 0.3 kg = 300 g)

Weight gain 300 g. Weight = 5.1 kg. Number of days = 7

(300 / 7) / 5.1 = 8.4 g/kg/d = moderate weight gain.

Discharge planning follow up

Before discharge the carer should have a plan about what and how to feed the child at home. Discuss with the carer and give suggestions, how in their situation they will manage to feed the child each day – who will cook, how often, what food.

Before discharge the child should have:

- Weight for height ≥ 2 SD
- Good appetite
- No untreated infections
- Immunizations up to date
- Plan for follow up
- Recheck height before discharge

Treatments

Children less than 6 months

Day of diagnosis (D 1) - 50,000 IU
 Next day (D 2) - 50,000 IU
 One week later (D 8) - 50,000 IU

Children between 6 and 11 months (<8 kg)

Day of diagnosis(D 1) 100,000 IU
 Next day (D 2) 100,000 IU
 One week later (D 8) 100,000 IU

Vitamin Deficiencies

Vitamin A Deficiency

Vitamin A deficiency is a major cause of blindness, and is a significant factor in many childhood illnesses, especially diarrhoea and pneumonia. Vitamin A deficiency mostly affects small children but can also affect adults, especially women of reproductive age.

Signs and Symptoms

The signs and symptoms of vitamin A deficiency are found in the eyes. These include night blindness ('chicken blindness'), Conjunctival dryness, Bitot's spots (grey-white spots on conjunctiva), dry cornea and some types of cornea damage.

Children aged 1 year and older and adults (>8 kg)

Day of diagnosis (D 1) 200,000 IU
 Next day (D 2) 200,000 IU
 One week later (D 8) 200,000 IU

Women of reproductive age

25,000 IU once a week for 8 weeks

Vitamin A capsules are available in two sizes: 200,000 IU (International Units) and 25,000 IU capsules. Read the bottle for the strength of the capsules. Write down carefully on the record the date and dose of treatment.

Treatment for pregnant woman:

- In case of night blindness and Bitot's spot: Vitamin A 10,000 IU PO daily OR 25,000 IU PO per week for at least 4 weeks
- In case of corneal dryness and corneal ulcer/keratomalacia risk of blindness outweighs risk to baby:
 - Day of diagnosis (day 1) 200,000 IU
 - Next day (day 2) 200,000 IU
 - 1 Week later (day 8) 200,000 IU

Give a treatment dose of vitamin A even if they have received a recent prevention dose to:

- All patients with confirmed signs or symptoms of vitamin A deficiency
- All cases of moderate and severe malnutrition
- All children with measles
- All children with severe respiratory infections and severe diarrhoea requiring admission to IPD

Prevention

The cause of vitamin A deficiency is a lack of food containing vitamin A. This is found in leafy green vegetables, eggs, many kinds of meat, mango, papaya, pumpkin, and many fruits. The mother's breast milk is a very important source of Vitamin A. Rice, bananas and oranges contain little or no vitamin A.

As many people cannot afford meat, eggs and other foods with vitamin A, capsules need to be distributed to children to prevent deficiency. A single dose of 200,000 IU will provide one child with enough vitamin A to last for four to six months.

Newborn	50,000 IU	at birth
Less than 6 months (if not given at birth)	50,000 IU	
Children 6 months to one year	100,000 IU	every 4-6 months
Children one year and older	200,000 IU	every 4-6 months
Mothers (within 1 month of delivery)	200,000 IU	at delivery of baby and 200,000 the next day

Most capsules are 200,000 IU (International Units) in strength. If you need to give a smaller dose, such as 100,000 IU cut the capsule with scissors and give 3 drops to the child.

Do NOT give a high dose to a woman who is pregnant or could be pregnant (age 15 – 50 years). If a treatment dose has been given in the past 1 month, do not treat again. Wait for one month to pass between treatments and re-evaluate.

Vitamin B1 Deficiency

Vitamin B1 deficiency occurs when there is not enough vitamin B1 in the body due to an insufficient diet. This is prevalent on the Thailand/Myanmar border, especially in pregnant and breastfeeding women and their babies. The disease may present in different ways, known as 'Dry Beriberi,' and 'Wet Beriberi,' or in combination. In alcoholics or very severe malnutrition, low vitamin B1 levels can cause Wernicke's Encephalopathy or Korsakoff's syndrome. Most vitamin B1 deficiency seen on the border is mild.

BERI BERI

IN ADULTS

Signs and Symptoms

A. Dry Beriberi

- Mild
 - Numbness.
 - Burning sensation or tingling in lower legs or hands.
- Severe
 - Weakness: the person cannot walk alone or stand up from squatting position.
 - Reduced tendon reflexes.

B. Wet Beriberi

- Oedema (legs, trunk, face), hepatomegaly.
- Difficulty breathing.
- A rapid pulse that can lead to heart failure.

Treatment

Note: take vitamin B1 tablets 1 hour before meals.
For mild deficiency (Mild dry Beriberi).

- Vitamin B1 PO 100mg OD x 7 days. Then 10mg OD x 6 weeks.

For severe deficiency

(Wet Beriberi and Dry Beriberi with severe signs)

- Admit to IPD.
- Vitamin B1 IM 100mg TID for 1 day, then:
- Vitamin B1 PO 100mg OD x 7 days. Then PO 10mg OD x 6 weeks.
- Consider giving B-Complex or multivitamins, as other B vitamins may be deficient in the patient as well.

Prevention

Patients should be advised to do the following to prevent vitamin B1 deficiency:

- Eat a variety of foods (for example yellow beans, meat, fruits, and vegetables).
- Do not chew betel-nut or lepetho (fermented tea-leaf salad) just before or after eating – wait several hours.
- Wash rice only once before cooking and use the cooking water to make other food
- Advise to eat unpolished rice and to cut down fish paste if possible.

IN INFANTS

Beriberi is common in babies <1 year who are breast-fed and whose mothers have Vitamin B1 deficiency or low intake of Vitamin B1.

Note: this is a very dangerous condition in infants and can lead to death within only a few days.

Emergency

Signs and Symptoms

Think of Beriberi in previously healthy babies when they present with one or more of the following signs:

- Difficulty breathing, or very fast breathing with RR >50/min.
- Clear lungs on auscultation.
- Generalized oedema.
- Voice change or loss of voice.
- Cyanosis
- Fast pulse.
- Low urine output.
- Not sucking well.
- Enlarged palpable liver.
- Vomiting.
- Convulsions

Treatment

Admit to IPD	50mg (0.5ml) TID for 1 day, then
Vitamin B1 IM	10mg OD x 6 weeks
Vitamin B1 PO	Vitamin B1 PO 100mg OD x 7 days, then 10mg OD x 6 wks
Treat the mother:	Tell the mother to stop eating betel nut and snack food (e.g. Tea leaf salad) for 6 weeks as these make the symptoms worse. Take vitamin B1 tablets 1 hour before meals. Vitamin B1: 1 vial = 1ml = 100mg.

GROWTH MONITORING & PROMOTION (GMP)

Growth monitoring and promotion (GMP) refers to the process of tracking child growth by regularly measuring the child and comparing his or her growth (i.e., height or weight) to a standard, assessing growth adequacy, and linking the growth trend with a target action through tailored counseling and referral. These actions support children's optimal growth through increased caregiver awareness of child growth trends, improved caring practices, and increased use of other services. These contacts also provide an important opportunity for health workers to deliver essential nutrition, child health, and development services. Over 186 countries currently provide GMP services for young children.

Poor growth monitoring of children continues to be a major source of early death for children under five worldwide (UNICEF, 2014). The World Health Organisation (WHO, 2009) describes growth monitoring and promotion (GMP) as an essential nutritional intervention for under-five children. Weight and length/height measurement charts are required for GMP (Chotivichien et al., 2006). An estimated 6.3 million under-five children died, mainly in developing countries, due to common treatable diseases in 2013 (World Health Organisation, 2015). Many of these challenges could effectively be prevented or treated by using simple techniques, such as oral rehydration therapy and measuring the growth of the children.

Growth indicators are used to assess growth considering a child's age and measurements together. The following growth indicators can measure the nutrition status of children and monitor the growth of children.

1. Weight for Age (Wt X Age)
2. Length/Height for Age (Lt/Ht X Age)
3. Weight for Length/Height (Wt X Lt/Ht)
4. Mid Upper Arm Circumference (MUAC)
5. Head Circumference (HC)
6. Body Mass Index (BMI)

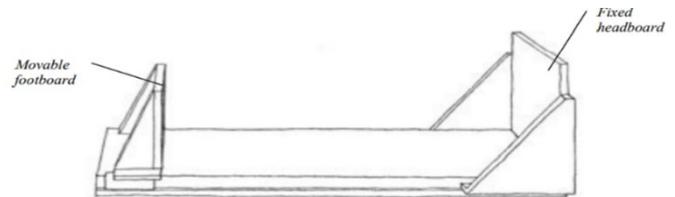
All weight, age and length/height graphs have male and female graph because the growth rate is not same. That is why, it is essential to use the correct graph. If the child is 2 years or above use height and less than 2 years use length (length can measure by lying down)

HOW TO MEASURE HEIGHT/LENGTH & WEIGHT

Measuring Weight

- Recommended scale: Electronic (digital reading)
- Measures up to 150 kg
- Measures to a precision of 0.1 kg (100g)

- Allows tared weighing (Advantages: no need to subtract weights to determine the child's weight alone (reducing the risk of error and the child is likely to remain calm when held in the mother's arms for weighing.)
- Preparing for weighing
- Minimum dress (underclothes)
- Record the child's weight to the nearest 0.1 kg.
- Remain still until the weight appears on the display.



Measuring Height & Length

- Less than 2 years old, measure recumbent length.
- Aged 2 years or older and able to stand, measure standing height.
- In general, standing height is about 0.7 cm less than recumbent length. This difference was taken into account in developing the WHO growth standards used to make the charts in the Growth Record. Therefore, it is important to adjust the measurements if length is taken instead of height.
- Equipment needed to measure length is a length board (sometimes called an infantometer) which should be placed on a flat, stable surface such as a table. To measure height, use a height board (sometimes called a stadiometer) mounted at a right angle between a level floor and against a straight, vertical surface such as a wall or pillar.
- Keep the equipment clean and
- store it at normal indoor temperature
- protected from humidity and wetness

Measuring Length



- Cover the length board with a thin cloth or soft paper for hygiene and for the baby's comfort.
- Ask mother to place the baby's head (against the fixed headboard)
- Check that the child lies straight along the board and does not change position.
- Shoulders should touch the board, and the spine should not be arched. Ask the mother to inform you if the child arches the back or moves out of position.
- Hold down the child's legs with one hand and move the footboard with the other. Apply gentle pressure to the knees to straighten the legs as far as they can go without causing injury. If a child is extremely agitated and both legs cannot be held in position, measure with one leg in position.
- While holding the knees, pull the footboard against the child's feet. The soles of the feet should be flat against the footboard, toes pointing upwards. If the child bends the toes and prevents the footboard from touching the soles, scratch the soles slightly and slide in the footboard quickly when the child straightens the toes.
- Read the measurement and record the child's length in centimetres to the last completed 0.1 cm
- Remember: If the child whose length you measured is 2 years old or more, subtract 0.7 cm from the length and record the result as height.

Measuring Height

- Ensure that the height board is on level ground. Check that shoes, socks and hair clips have been removed.
- Help the child to stand on the baseboard with feet slightly apart. The back of the head,

shoulder blades, buttocks, calves, and heels should all touch the vertical board. This alignment may be impossible for an obese child, in which case, help the child to stand on the board with one or more contact points touching the board.

- The trunk should be balanced over the waist, i.e., not leaning back or forward.
- Ask the mother to hold the child's knees and ankles to help keep the legs straight and feet flat, with heels and calves touching the vertical board.
- If necessary, push gently on the tummy to help the child stand to full height.
- Keep the head not to tilted, hold the bridge between your thumb and forefinger over the child's chin.
- Still keeping the head in position, use your other hand to pull down the headboard to rest
- Firmly on top of the head and compress the hair.
- Read the measurement and record the child's height in centimetres to the last completed 0.1 cm in Growth Record. This is the last line that you can actually see. (0.1 cm = 1 mm) When reading the measurement, eye level should be same level with the recorded height.
- Remember: If the child whose height you measured is less than 2 years old, add 0.7 cm to the height.



Common Errors in Measurement





Photo credit: national Nutrition Centre, MOHS



HOW TO PLOT THE GROWTH CHARTS?

In order to plot points, one needs to understand certain terms related to graphs:

- X-axis – the horizontal reference line at the bottom of the graph. In the *Growth Record*. Some x-axes show age and some show length/height.
- Y-axis – the vertical reference line at the far left of the graph. In the *Growth Record*. The y-axes show length/height, weight, or BMI.
- Plotted point – the point on a graph where a line extended from a measurement on the x-axis (e.g. age) intersects with a line extended from a measurement on the y-axis (e.g. weight)

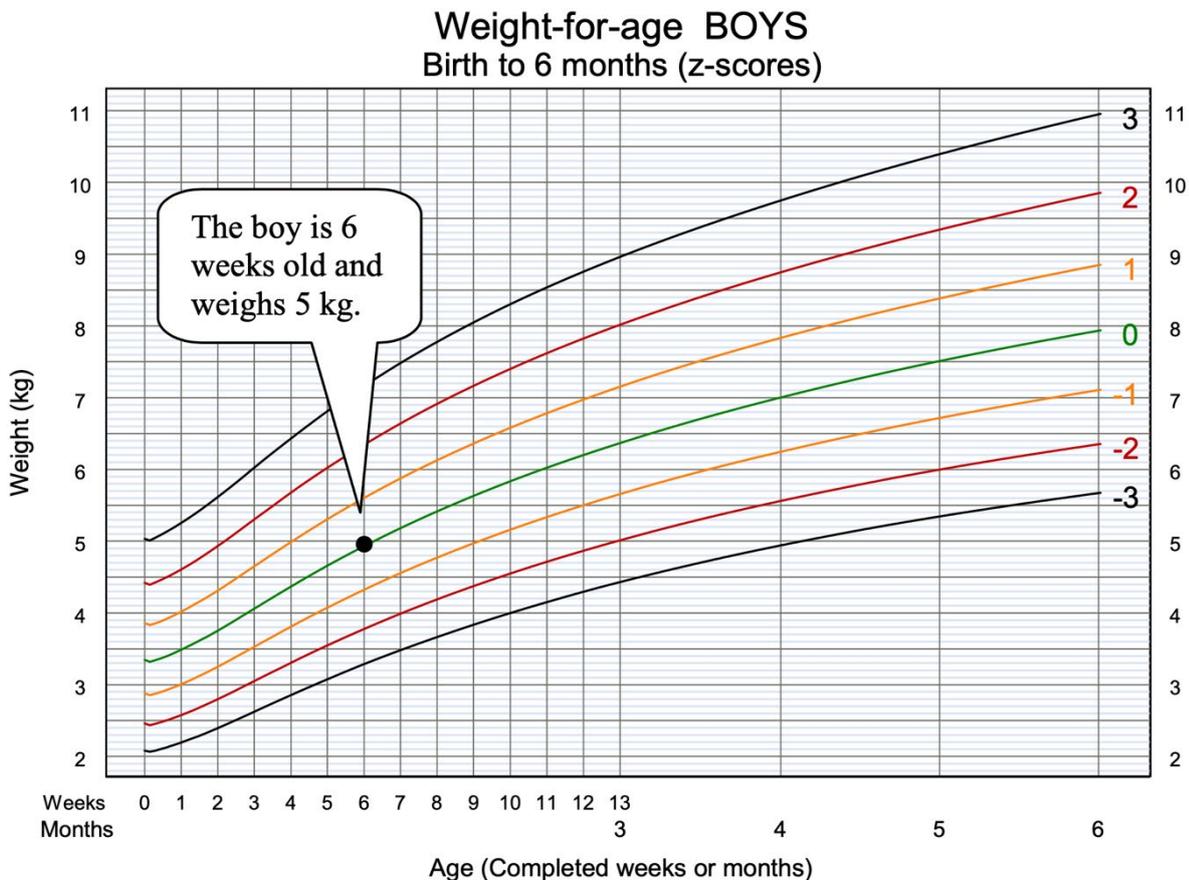
On the graph below, age (in weeks or months) is on the x axis; weight in kilograms is on the y axis. A point has been plotted for an infant boy who is 6 weeks old and weighs 5 kg. The curved lines on the graph are reference lines that will help you interpret the plotted points and trends.

PLOT WEIGHT-FOR-AGE

- Weight-for-age reflects body weight relative to the child's age on a given day.
- This indicator is used to assess whether a child is underweight or severely underweight, **but it is not used to classify a child as overweight or obese**. Because weight is relatively easily measured, this indicator is commonly used, but it cannot be relied upon in situations where the child's age cannot be accurately determined, such as refugee situations.

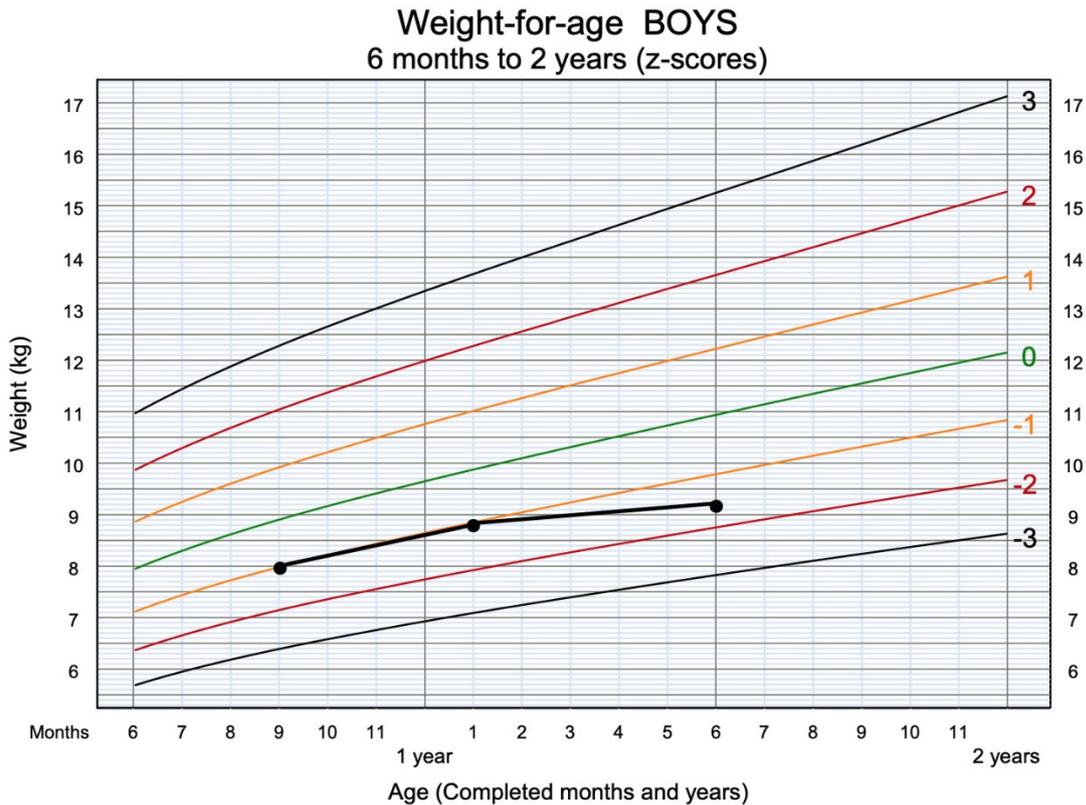
To plot weight-for-age:

- Plot completed weeks, months, or years and months on a vertical line (not between vertical lines).
- Plot weight on a horizontal line or in the space between lines to show weight measurement to 0.1 kg, e.g. 7.8 kg.
- When points are plotted for two or more visits, connect the points with a straight line to better observe trends.



Example – Amahl

The following graph shows weight-for-age at three visits of a boy named Amahl. The horizontal lines represent 0.1 kg (100 g) increments.



Exercises for plotting

Refer to Amahl's weight-for-age chart above to answer the following questions:

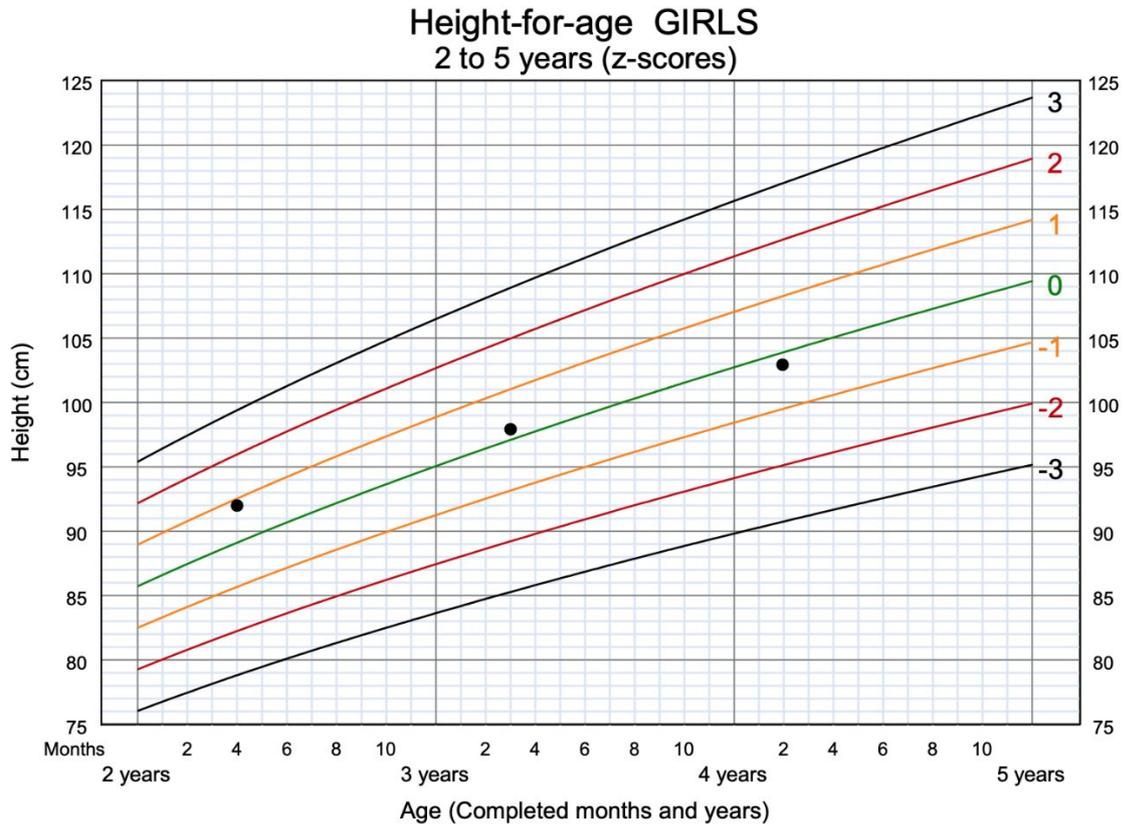
1. How much did Amahl weigh at age 9 months?
2. How old was Amahl at the visit when he weighed a little less than 9 kg?
3. What was Amahl's age and weight at the last visit shown?
4. Plot a point for Amahl's next visit, when he is age 1 year and 11 months and weighs 11.2 kg. Draw a line to connect this visit to the previous one.

PLOT LENGTH/HEIGHT-FOR-AGE

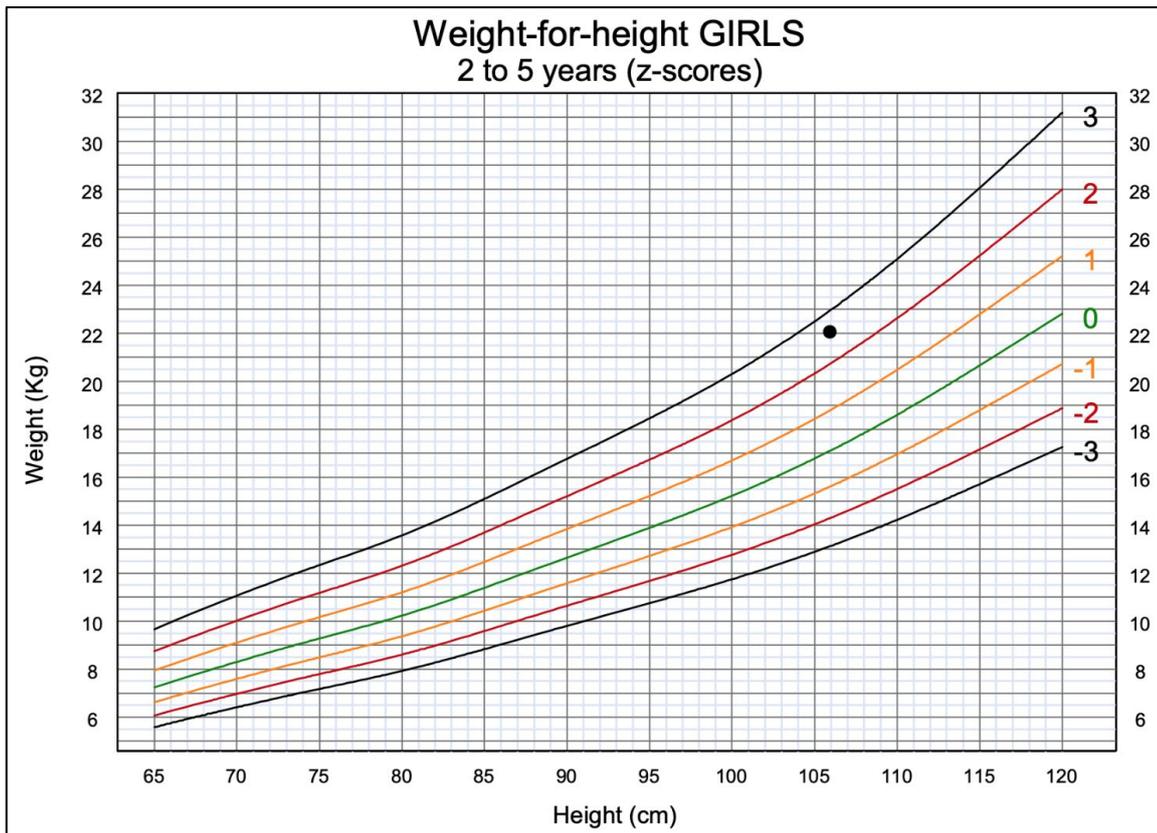
- This indicator can help identify children who are stunted (short) due to prolonged under nutrition or repeated illness. Children who are tall for their age can also be identified, but tallness is rarely a problem unless it is excessive and may reflect uncommon endocrine disorders.
- Plot completed weeks, months, or years and months on a vertical line (not between vertical lines). For example, if a child is 5 ½ months old, the point will be plotted on the line for 5 months (not between the lines for 5 and 6 months).
- Plot length or height on or between the horizontal lines as precisely as possible. For example, if the measurement is 60.5 cm, plot the point in the middle of the space between horizontal lines.
- When points are plotted for two or more visits, connect the points with a straight line to better observe the trend.
- Judge whether a plotted point seems sensible, and if necessary, re-measure the child. For example, a baby's length should not be shorter than at the previous visit. If it is, one of the measurements was wrong.

Example – Anna

The following graph shows Anna’s height-for-age at three visits. The horizontal lines represent 1 cm increments. At the first visit, Anna was 2 years and 4 months of age and was 92 cm in height.



INTERPRETING GROWTH CHARTS



The curved lines printed on the growth charts will help you interpret the plotted points that represent a child's growth status. The line labeled 0 on each chart represents the **median**, which is, generally speaking, the average. The other curved lines are **z-score lines**, which indicate distance from the average. The median and the z-score lines on each growth chart were derived from measurements of children in the WHO Multicentre Growth Reference Study.

Z-score lines on the growth charts are numbered positively (1, 2, 3) or negatively (-1, -2, -3). In general, a plotted point that is far from the median in either direction (for example, close to the 3 or -3 z-score line) may represent a growth problem, although other factors must be considered, such as the growth trend, the health condition of the child and the height of the parents.

Next to each growth chart in the *Growth Record*, there is a list of the growth problems represented by plotted points that are above or below certain z-score lines. Read points as follows:

A point between the z-score lines - 2 and - 3 is "below - 2."

A point between the z-score lines 2 and 3 is "above 2."

Interpretation of 3 growth charts as follows

Plot 3 growth charts (Age X Wt, Age X Lt / Ht, Wt X Lt/Ht) and interpret the status of the child. i.e. normal, stunted, severely stunted, wasting, severely wasting, underweight, severely underweight, overweight, obese etc. Answer: end of this chapter.

Weight for Age (Wt X Age) growth chart
• If the point is < -2 and -3: underweight
• If the point is < -3: severely underweight
Length/Height for Age (Lt/Ht X Age)
• If the point is < -2 and -3: stunted
• If the point is < -3: severely stunted
Weight for Length/Height (Wt X Lt/Ht)
• If the point is < -2 and -3: wasted
• If the point is < -3: severely wasted
• If the point is > 1: possible risk of overweight
• If the point is > 2 and 3: overweight
• If the point is > 3: obese

- A. Boy; Age 1 year and 1 month old, Weighs 7.5 kg, Length 70.1 cm.
- B. Girl: Aged 1 year 0 months, Length 67.8 cm, Weighs 7.6 kg.
- C. Boy; Age 3 years and 11 months. weighs 19.5 kg, Height 109.6 cm.
- D. Boy; Age 3½ months, weight 10 kg, Length 63 cm
- E. Girl; Age 1 year 8 months, weight 6.5 kg and length 67 cm with generalized oedema

RELATION BETWEEN AGE, WEIGHT AND HEIGHT/LENGTH

- What does it mean if weight is low (underweight) – wasting and/or stunt?
- **Stunt related to height / length (Lt/Ht X age)**
- **Wasting related to weight (Lt/Ht X Wt)**
- **Age X Wt reflects both either stunt or wasting**

Growth Classification Table

Z- Score	Growth Indicators		
	Length/height for age	Weight for age	Weight for length/ height
Above 3	(Child very tall – rarely endocrine disorder)	May be growth problem. Assess from next indicator or BMI	Obese
Above 2			Overweight
Above 1			Possible risk of overweight
0 (median)			
Below -1			
Below -2	Stunted	Underweight	Wasted
Below -3	Severely stunted	Severely underweight	Severely wasted

Why we need to measure all 3 growth charts? It is NOT enough to plot only one or two.

- In Myanmar only Wt X Age measurement.
- Wt X Age is underweight or severe underweight, at least one of the other 2 GCs will be abnormal. (Either stunt or waste)
- Wt X Age measurement alone can describe under wt or severe under wt. But can't identify stunt or wasting)
- Even Wt X Age is normal, sometimes the child has stunt or waste.
- Review previous case reviews.

BENEFIT OF DIFFERENT GROWTH CHARTS

It is important to consider all of a child's growth charts together, particularly if only one of the charts shows a problem. For example, if a child is underweighted according to the weight-for-age chart, you must also consider the child's length-for-age and weight-for-length. Focus more on the weight-for-length/height and the length/height-for-age charts:

Length/height-for-age reflects attained growth in height. Stunting (length/height-for-age below -2) implies that for a long period the child received inadequate nutrients to support normal growth and/or that the child has suffered from repeated infections. A stunted child may have a normal weight-for-height but have low weight-for-age due to shortness.

Weight-for-length/height is a reliable growth indicator even when age is not known.

Wasting (weight-for-length/height below -2) usually results from a recent severe event, such as drastically reduced food intake and/or illness that caused severe weight loss.

Looking at the growth charts all together will help you to determine the nature of growth problems. It will also be important to consider trends observed over time.

Important Points to Be Considered in Interpretation of Growth Charts

- Both "Point" and "Trend" are important in growth charts interpretation. To identify trends in a child's growth, look at points for growth indicators plotted at a series of visits.
- Trends may indicate that a child is growing consistently and well, or they may show that a child has a growth problem, or that a child is "at risk" of a problem and should be reassessed soon.
- "Normally" growing children follow trends that are, in general, parallel to the median and z-score lines.
- Most children will grow in a "track," that is, on or between z-score lines and roughly parallel to the median; the track may be below or above the median.

Note: *Sharp incline or decline in the growth line; it may serious problem*

- If a child has gained weight rapidly, look also at height. If the child grew in weight only, this is a problem.
- If the child grew in weight and height proportionately, this is probably catch-up growth from previous undernutrition, because of improvement in feeding or cure of previous infection.
- In this situation, the weight-for-age and height-for-age charts should show inclines, while the weight-for-height growth line tracks steadily along the z-score curves.

- A sharp decline in the growth line of a normal or undernourished child indicates a growth problem to be investigated and remedied.
- Any sharp incline or decline in a child's growth line requires attention.
- If a child has been ill or severely undernourished, a sharp incline is expected during the refeeding period as the child experiences "catch-up" growth.
- Otherwise, a sharp incline is not good, as it may signal a change in feeding practices that will result in overweight.
- Always double check the plotting error. Use the common sense. (i.e the previous height is higher than recent height it is not make sense)

HOW OFTEN GROWTH CHARTS SHOULD MEASURE AS A ROUTINE?

1. Wt. X Age
 - Every month until 1 yr
 - Every 2 months until 2 yr
 - Every 3 months until 5 yr
 - If there is problem: prn
2. Wt X Lt/Ht and Age X Lt/Ht
 - Start measure from 6 months (like MUAC)
 - Measure every 6 months until 5 years
 - If there is problem: prn

PLOT BMI-FOR-AGE

BMI-for-age is an indicator that is especially useful for screening for overweight and obesity. The BMI-for-age chart and weight-for-length/height chart tend to show very similar results.

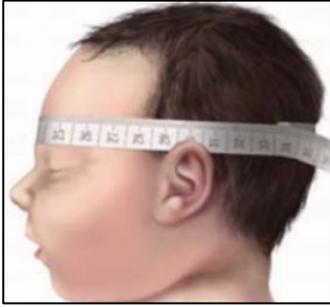
$$\text{BMI} = \frac{\text{weight (kg)}}{\text{Height (meter)}^2}$$

Usually, BMI measure for adult.

BMI	Weight Status
< 18.5	Underweight
18.5 to 24.9	Normal
25 to 29.9	Overweight
30 and above	Obese

MEASUREMENT OF HEAD CIRCUMFERENCE

Head circumference is measured because it's an easy way to tell if there's a potential problem or if something needs to be watched. For example, if the head grows too fast, it could sign



hydrocephalus or water on the brain. If the head grows too slowly, it could be a sign of microcephaly or a smaller head than normal.

How to measure: To measure your head circumference, take a sewing measuring tape or even a string, and wrap around above the ears and across your eyebrows. The tape must not be stretchable. Widest part of the head (just above eyebrow to back of the head).

Microcephaly: small

Macrocephaly: (Hydrocephalus) big: need to observe

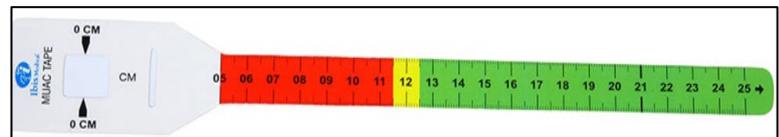
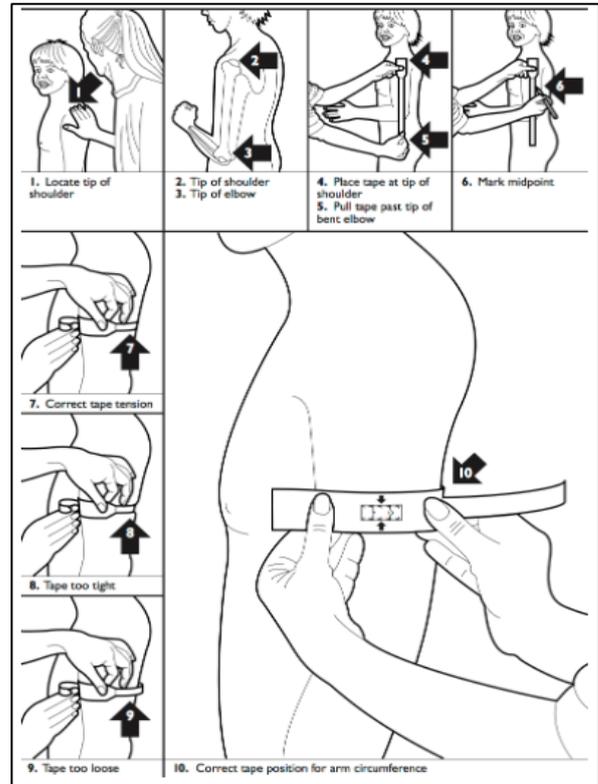
Routine measurement:

- At birth (Normal HC is 35 cm average)
- 14 weeks ((Normal HC is 38-43 cm)
- 1 year (Normal HC is 43.5 – 46.5 cm)

Refer to hospital if out of this range.

MID UPPER ARM CIRCUMFERENCE (MUAC)

- Measure every 3 months start from 6 – 12 months up to 5 years.
- Measurement: Midline between tip of the left shoulder to tip of the elbow demonstration.
- Severe Acute Malnutrition (SAM): < 11.5 cm.
- Moderate Acute Malnutrition (MAM): 11.5 – < 12.5 cm.
- The advantage of MUAC tape is easy to carry for health workers and measurement is easy and duration for procedure is much shorter than plotting growth charts.
- It is more appropriate for survey and assessment in humanitarian crisis.
- If MUAC and growth charts both are available, plotting the growth charts is more accurate than MUAC.
- The cost for weighing machine and stadiometer for height/length is much higher than MUAC tape.



Weight-for-height GIRLS

2 to 5 years (z-scores)

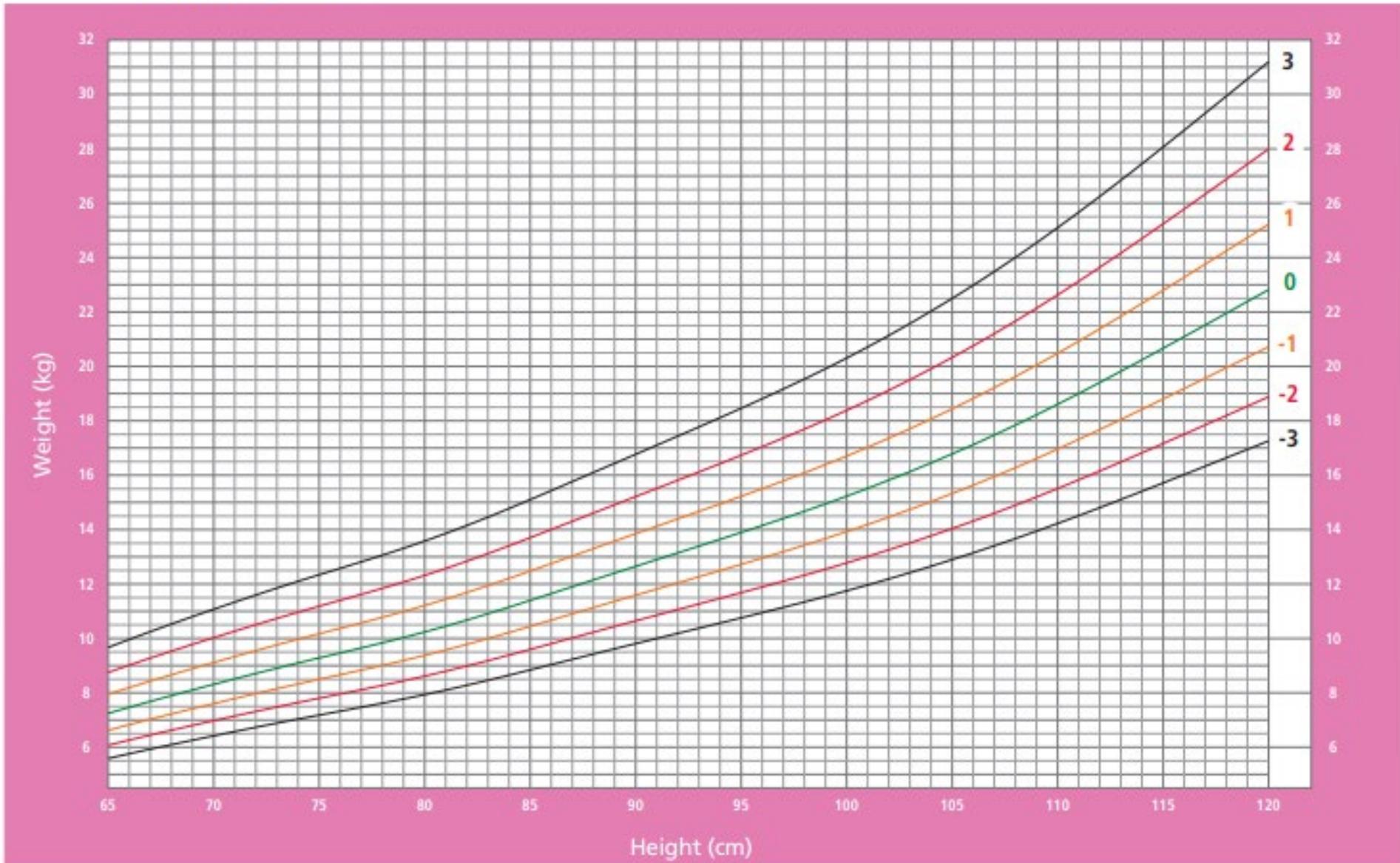


Height (cm)	L	M	S	Z-scores (weight in kg)						
				-3 SD	-2 SD	-1 SD	Median	1 SD	2 SD	3 SD
65.0	-0.3833	7.2402	0.09113	5.6	6.1	6.6	7.2	7.9	8.7	9.7
65.5	-0.3833	7.3523	0.09109	5.7	6.2	6.7	7.4	8.1	8.9	9.8
66.0	-0.3833	7.4630	0.09104	5.8	6.3	6.8	7.5	8.2	9.0	10.0
66.5	-0.3833	7.5724	0.09099	5.8	6.4	6.9	7.6	8.3	9.1	10.1
67.0	-0.3833	7.6806	0.09094	5.9	6.4	7.0	7.7	8.4	9.3	10.2
67.5	-0.3833	7.7874	0.09088	6.0	6.5	7.1	7.8	8.5	9.4	10.4
68.0	-0.3833	7.8930	0.09083	6.1	6.6	7.2	7.9	8.7	9.5	10.5
68.5	-0.3833	7.9976	0.09077	6.2	6.7	7.3	8.0	8.8	9.7	10.7
69.0	-0.3833	8.1012	0.09071	6.3	6.8	7.4	8.1	8.9	9.8	10.8
69.5	-0.3833	8.2039	0.09065	6.3	6.9	7.5	8.2	9.0	9.9	10.9
70.0	-0.3833	8.3058	0.09059	6.4	7.0	7.6	8.3	9.1	10.0	11.1
70.5	-0.3833	8.4071	0.09053	6.5	7.1	7.7	8.4	9.2	10.1	11.2
71.0	-0.3833	8.5078	0.09047	6.6	7.1	7.8	8.5	9.3	10.3	11.3
71.5	-0.3833	8.6078	0.09041	6.7	7.2	7.9	8.6	9.4	10.4	11.5
72.0	-0.3833	8.7070	0.09035	6.7	7.3	8.0	8.7	9.5	10.5	11.6
72.5	-0.3833	8.8053	0.09028	6.8	7.4	8.1	8.8	9.7	10.6	11.7
73.0	-0.3833	8.9025	0.09022	6.9	7.5	8.1	8.9	9.8	10.7	11.8
73.5	-0.3833	8.9983	0.09016	7.0	7.6	8.2	9.0	9.9	10.8	12.0
74.0	-0.3833	9.0928	0.09009	7.0	7.6	8.3	9.1	10.0	11.0	12.1
74.5	-0.3833	9.1862	0.09003	7.1	7.7	8.4	9.2	10.1	11.1	12.2
75.0	-0.3833	9.2786	0.08996	7.2	7.8	8.5	9.3	10.2	11.2	12.3
75.5	-0.3833	9.3703	0.08989	7.2	7.9	8.6	9.4	10.3	11.3	12.5
76.0	-0.3833	9.4617	0.08983	7.3	8.0	8.7	9.5	10.4	11.4	12.6
76.5	-0.3833	9.5533	0.08976	7.4	8.0	8.7	9.6	10.5	11.5	12.7

WHO Child Growth Standards

Weight-for-Height GIRLS

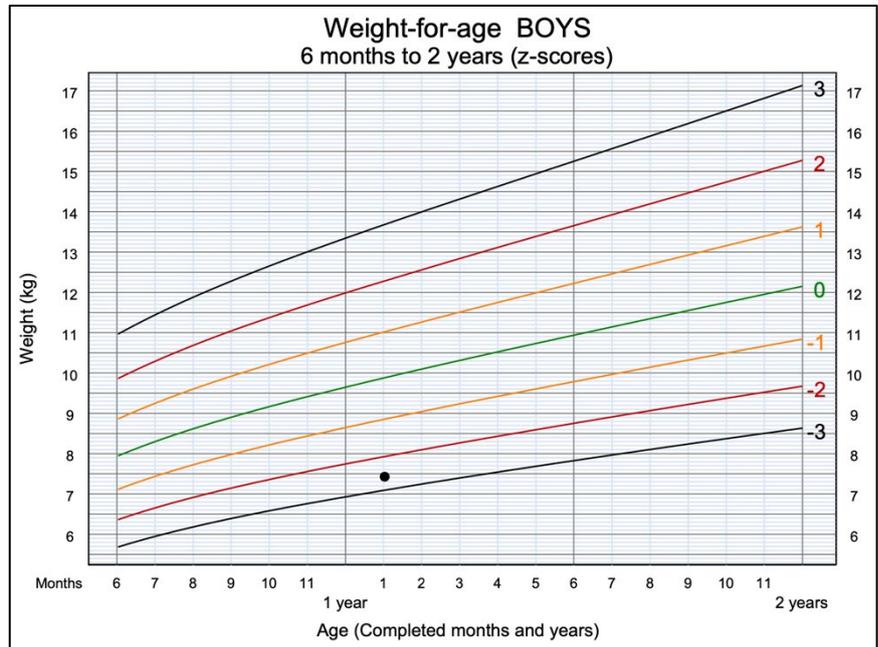
2 to 5 years (z-scores)



Growth Charts exercises answers

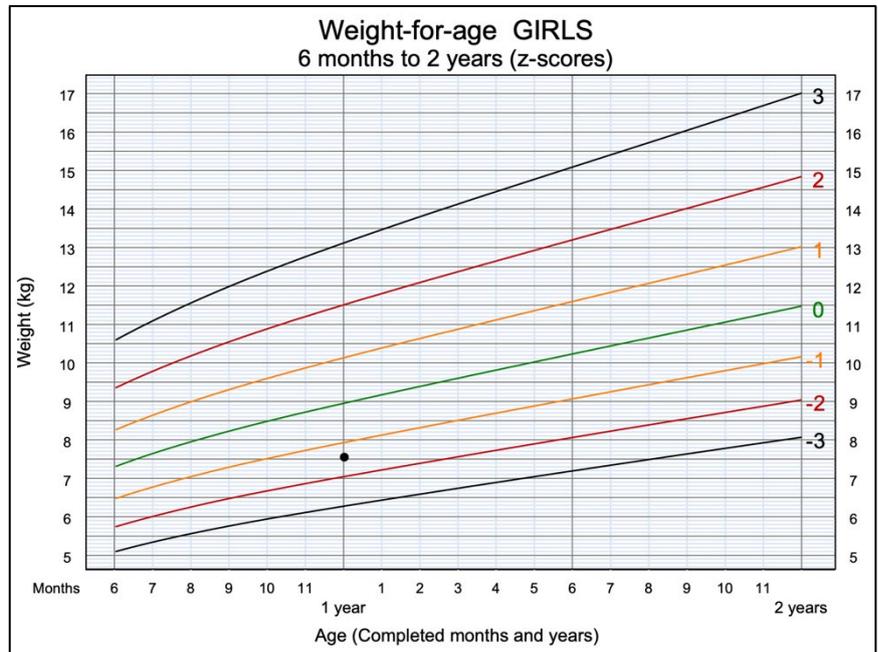
A. Boy; Age 1 year and 1 month old, Weighs 7.5 kg, Length 70.1 cm.

Weight for Age is < -2 z-score line –underweight
 Length for Age is also < -2 z score line – stunted
 Length for Weight is < -1 z score – within normal

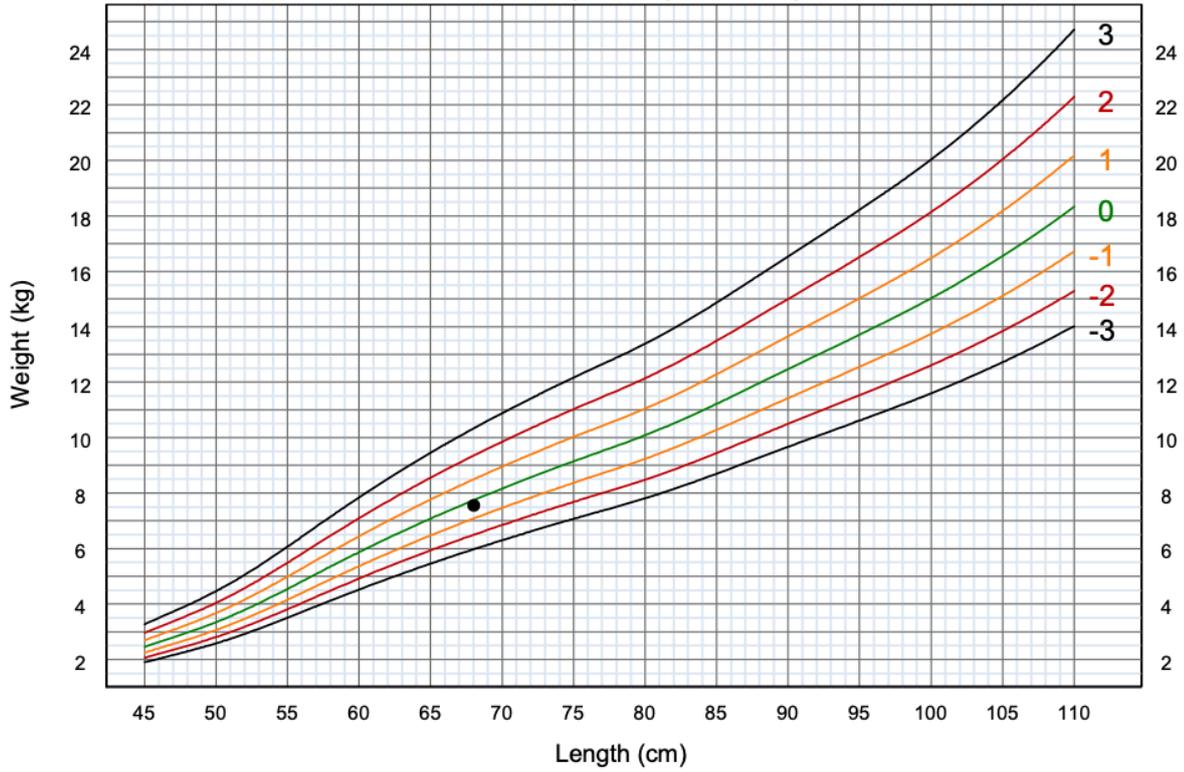


B. Girl: Aged 1 year 0 months, Length 67.8 cm, Weighs 7.6 kg.

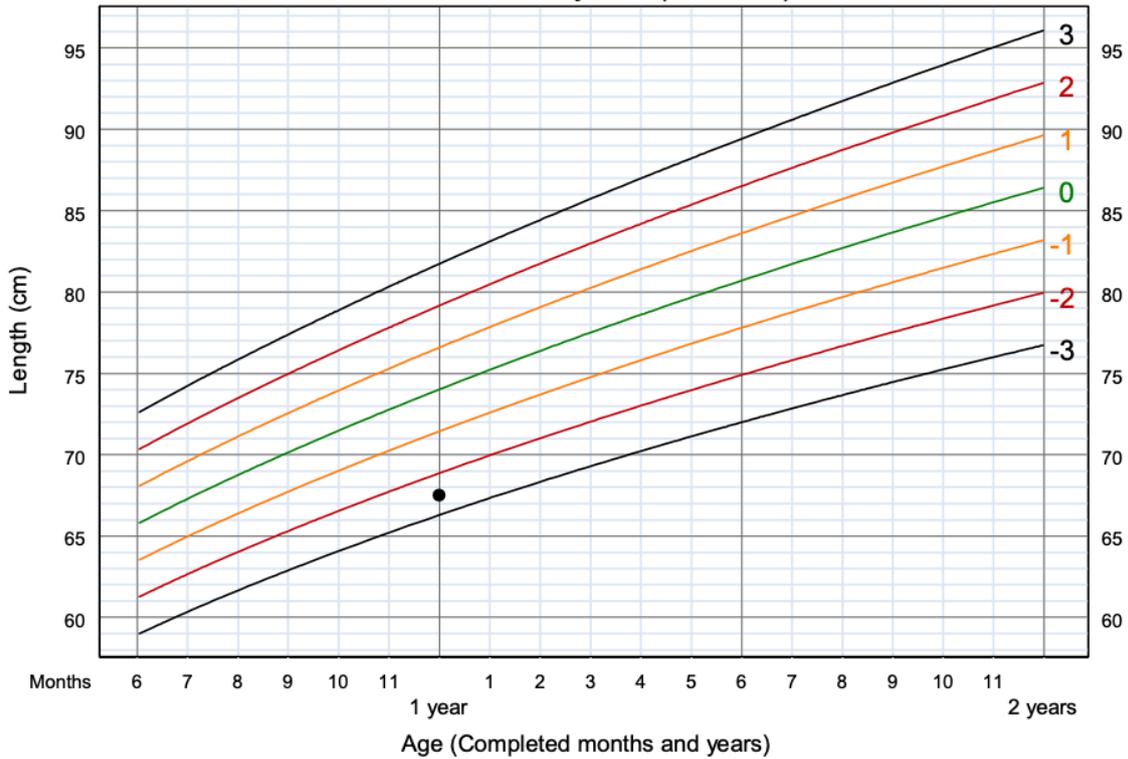
- Weight-for-Age is < -1 z score low, but still in the normal range.
- Weight for Length – Median
- Length-for-Age is < -2 z-score line, she is stunted.



Weight-for-length GIRLS Birth to 2 years (z-scores)



Length-for-age GIRLS 6 months to 2 years (z-scores)



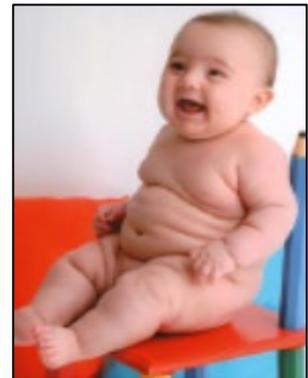
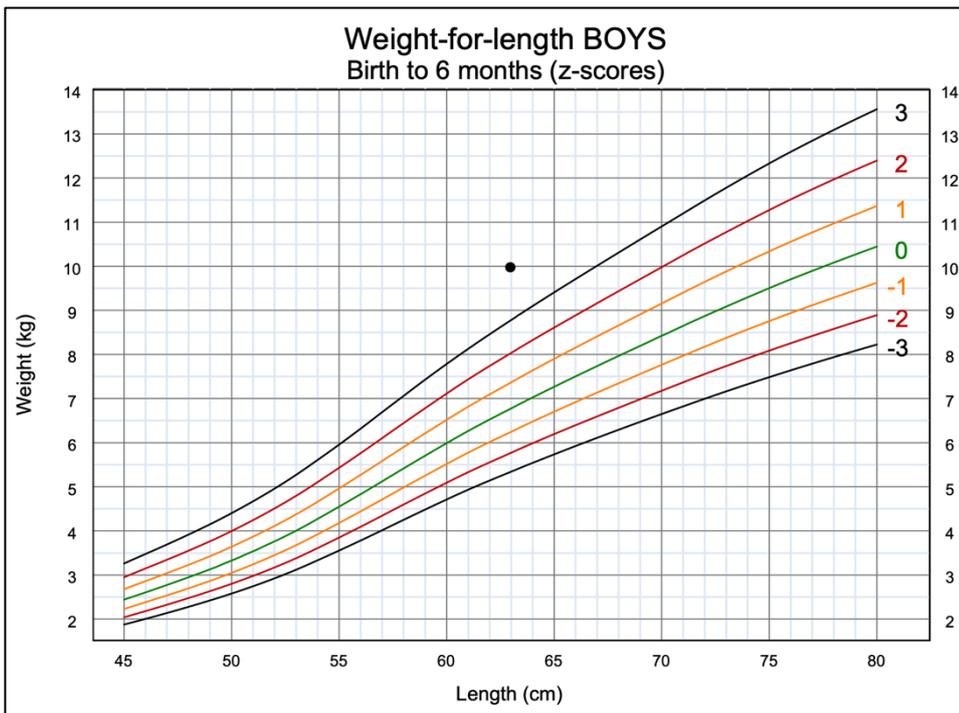
C. Boy; Aged 3 years and 11 months. weighs 19.5 kg, Height 109.6 cm.



- Weight-for-Age -> 1 z-score
- Height-for-Age is > 1 z score
- Weight-for-height -> median
- All 3 growth charts are normal range

D. Boy; Age 3½ months, weight 10 kg, Length 63 cm

- Weight for Age -> + 3 z score
- Length-for-Age -> median.
- Weight-for-Length -> 3 z-score line. Obese



E. Girl; Age 1 year 8 months, weight 6.5 kg and length 67 cm with generalized oedema

Note: If a child has oedema of both feet, fluid retention increases the child's weight, masking what may actually be very low weight. Plot this child's weight-for-age and weight-for-length/height but mark clearly on the growth charts (close to the plotted point) that the child has oedema. This child is automatically considered severely undernourished and should be referred for specialized care.

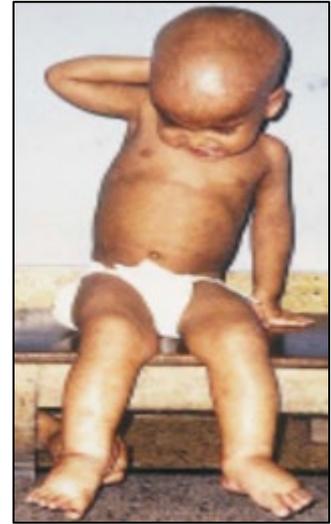
Child with Oedema

Because of oedema, wt is more than it should be although the child has malnutrition. It leads to misinterpretation. (Oh! The child weight is fine)

When the child comes in next visit, the child is better, oedema subsided. Although the child is better, the child weight becomes drop compared to previous visit. It also leads to misinterpretation. (Oh! The child weight is dropping)

That is why, the staff must put note down on the weight chart mention "oedema". Then if the child comes at next visit, the other staff will aware the problem.

If the child has bilateral oedema (feet, legs, face, arm etc.) consider as acute severe malnutrition) even weight is above -3 line.



PRIMARY HEALTH CARE

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.

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.

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:

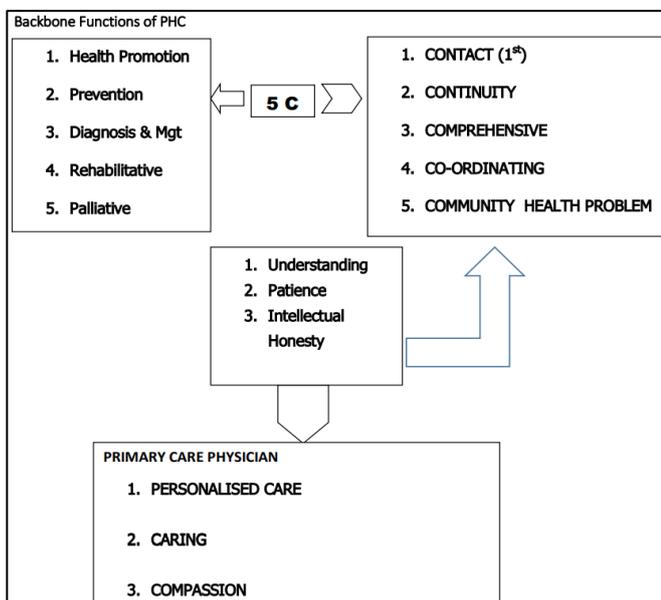
- 1) Governance
- 2) Economic conditions
- 3) Workforce development.

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

I. 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.

1. 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.
2. **For ensuring equity:** The population to be served must be known. The vulnerable groups are to be identified & reached.
3. 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.
4. 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.
5. To achieve this, PHC is supported by higher level of health care to which patients can be referred for extended care.

II. Community Participation

1. Involvement of individuals, families, & communities in promotion of their own health & welfare.
2. There must be a continuing effort to secure meaningful involvement of the community in: Planning, Implementation, Maintenance of health services, Evaluation of health services.
3. Maximum reliance on local resources such as: Manpower, Money, Materials.
4. 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.

III. Appropriate Technology

1. 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.

2. Health technologies are required not only for: Diagnostic and therapeutic maneuvers. But also for: Disease prevention, Disease control, Health promotion.
3. 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.
4. 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.

IV. 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	Community	Government
<ul style="list-style-type: none"> • Personal hygiene • Healthy lifestyles • Vaccination and preventing diseases • Medical examination/treatment • Healthy environment • Safe water, sanitation • Family planning and population management 	<ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • 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)

<p>1. CURATIVE CARE</p> <ul style="list-style-type: none"> • Treatment of common diseases & injuries • Provision of essential drugs • Reproductive health and mother & child health (MCH) <p>2. STATIC PHC PROGRAMMES</p> <ul style="list-style-type: none"> • Expanded programme of immunization (EPI) • Ante-, peri-, & postnatal care • Family planning, including abortions & help for couples <p>3. INTERVENTIONS TO IMPROVE NUTRITIONAL STATUS</p> <ul style="list-style-type: none"> • Protein-calorie malnutrition • Micro-nutrients <p>4. HEALTH PROMOTIONS</p>	<p>5. PREVENTION & CONTROL OF COMMON LOCAL DISEASES</p> <ul style="list-style-type: none"> • Malaria • Sexually transmitted diseases including aids • Diarrhoea • Tuberculosis • Leprosy • Common local diseases related to water • Other significant vector-bourne diseases • Infections prevented by better water & sanitation • HIV <p>6. WATER, SANITATION & WASTE DISPOSAL</p> <p>7. PALLIATIVE CARE</p> <p>8. REHABILITATION SERVICES</p> <ul style="list-style-type: none"> • Physiotherapy • Occupational Therapy • Speech & Audiology • Podiatry <p>9. CHRONIC DISEASES & PSYCHIATRY</p> <p>10. DENTAL CARE</p> <p>11. EYE CARE</p> <p>12. SOCIAL SERVICES</p>
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CURATIVE CARE

<p>Objectives of curative care</p> <ol style="list-style-type: none"> 1. Life sustainability 2. Restoration of health 3. Prevention of deterioration in health 4. Reduce suffering. (i.e. pain) 	<p>Challenges of curative health care in low resource setting</p> <ul style="list-style-type: none"> • Finance • Quality of care • Lack / insufficient resources (human, material: drugs, equipment) • Equity • Mal distribution of staff • Medical ethics
<p>Principles in curative care</p> <ul style="list-style-type: none"> • 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. 	<p>Strategies to improve the curative care</p> <ul style="list-style-type: none"> • Good referral system • Specialist service should provide in township level. • Ideal PHC services • Support diagnostic and therapeutic facilities. • Patient-centred, 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.

- 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.

COMMUNITY ORIENTED PRIMARY CARE (COPC)

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.

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.

THE RELATIONSHIP BETWEEN 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. Healthcare 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.

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. No universal health coverage without primary health care.

BASIC EPIDEMIOLOGY

PRINCIPLES OF EPIDEMIOLOGY

Definition of Epidemiology

- The branch of medical science which treats epidemics (Parkins, 1873)
- The science of the mass phenomenon of infectious diseases (Frost, 1927)
- The study of the distribution and determinants of disease frequency in man (MacMahon, 1960)
- Epidemiology is the study of distribution and determinants of health related states and events in populations and the application of this study to control health problems (Last, 1983)
- Epidemiology is the determinants and distribution of health-related states or events in specified populations, and the application of this study to the control of health problems (John M. Last, 1988).

Components of Epidemiology

Epidemiology is mainly the study of 3D (Disease frequency, Distribution and Determinants)

(A) Disease frequency

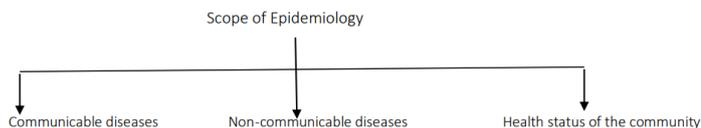
- Measured by **proportion, ratio and rates**.
- Rates are essential for comparisons, which are important clues to disease aetiology and also a vital step in development of strategies for prevention and control of health problems.

(B) Disease distribution

- described by time, place and person.
- patterns lead to generation of hypothesis for aetiology, measures how to prevent and control diseases.
- known as descriptive epidemiology.

(C) Disease determinants

- to test the aetiological hypothesis and identify the underlying causes (Risk factors).
- The real substance of epidemiology and known as Analytical epidemiology.



Aims of Epidemiology

Main Aims

- To describe the distribution and magnitude of health and disease problems in human population.
- To identify the aetiological (risk) factors in pathogenesis of disease.
- To provide data essential to
 - Planning, implementation and evaluation of services
 - Prevention, control and treatment of disease
 - Setting up prioritization (among those services)

Epidemiological Approach

Based on two major foundations

- Asking questions
- Making comparisons

Asking questions

Related to health events

- 1) What is the event?
- 2) What is its magnitude?
- 3) Where did it happen?
- 4) When did it happen?
- 5) Who are affected?
- 6) Why did it happen?
- 7) How does it occur?
- 8) So what interventions have been implemented?

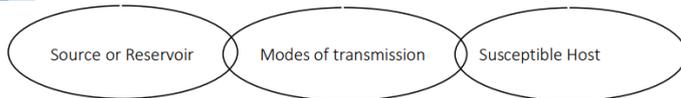
Related to health action

- 1) What can be done to reduce this problem and its consequences?
- 2) How can it be prevented in the future?
- 3) What actions should be taken by the community? By the health services? By other sectors? Where and for whom these activities be carried out?
- 4) What resources are required? How are the activities to be organized?
- 5) What difficulties may arise and how might they be overcome?

* ANSWERS may provide clue to aetiology and help the epidemiologist to guide planning and evaluation.

Uses of Epidemiology

- 1) To study historically, the rise and fall of disease in the population
- 2) To investigate the mode of transmission of a new disease
- 3) To determine the preventable causes of disease or injury
- 4) To determine the natural history of diseases
- 5) To study the biologic spectrum of diseases
- 6) To evaluate the individual's risk and chances
- 7) To define and refine syndromes
- 8) To plan and evaluate community public health interventions
- 9) To set the disease control priorities
- 10) To improve the diagnosis, treatment, and prognosis of clinical diseases
- 11) To improve health services and research
- 12) To provide expert testimony in courts of law



1) Source and Reservoir

These are starting point.

Source is the person, animal, object or substance from which an infectious agent passes or disseminates to the host.

Reservoir is any person, animal, arthropod, plant, soil or substance in which infectious agent lives and multiplies, on which it depends primarily for survival and then transmits. There are two types of reservoir.

- Homologous reservoir
- Heterologous reservoir

Classification of reservoirs

A. Human reservoir

- | | |
|---|--|
| <ul style="list-style-type: none"> ▪ Cases <ul style="list-style-type: none"> - clinical case - subclinical case - Index case - primary case - secondary case - latent case | <ul style="list-style-type: none"> ▪ Carriers <ul style="list-style-type: none"> - less infectious but more dangerous - Healthy carriers – e.g. HBV, HIV, Polio, Meningococcal meningitis. - Incubatory carriers – e.g. Measles, typhoid. - Convalescent carrier – e.g. typhoid, cholera, dysentery. |
|---|--|
-
- | | |
|---|--|
| <ul style="list-style-type: none"> ▪ By duration <ul style="list-style-type: none"> - Temporary - Permanent (chronic) | <ul style="list-style-type: none"> ▪ By portal of exist <ul style="list-style-type: none"> - Urinary - Intestinal - Respiratory - others |
|---|--|

B. Animal reservoir

- Cases
- Carriers

More than 100 zoonosis (vertebrate to man)
E.g. of animal reservoirs - Pigs, ducks, pigeons, wild birds and many Generic recombination of viruses create new strains.

C. Non-living reservoir

- Soil and inanimate matters e.g. tetanus, anthrax

2) Mode of Transmission

A. Direct Transmission

- Direct contact – kissing, skin contact, sexual contact etc.

- Droplet infection
- Contact with soil : Saprophytic existence – Hookworm larvae, tetanus, mycosis)
- Inoculation into skin or mucous
- Trans-placental transmission (vertical transmission).
 - Infection – TORCH agents.
 - Non-infection – drug (thalidomide), radiation, Rh antibody

B. Indirect Transmission (5F = Flies, Fingers, Formites, Food and Fluid)

- Vehicle borne – food, water, ice, blood, serum and tissue.
 - Vector borne
 - Mechanical
 - Biological
- Propagative – rat flea for plague bacilli
- Cyclo-propagative – Anopheles mosquito for malaria parasite.
- Cyclo-development – Culicine mosquito for filarial parasite.
- Air borne
 - Droplet nuclei
 - dust
 - Formites borne
 - Unclean hands and fingers

3) Susceptible Host

Four stages of successful parasitism

- Portal of entry
- Appropriate tissue or site of election
- Portal of exist
- Must survive in external environment for sufficient period.

Time Course of Infectious Diseases

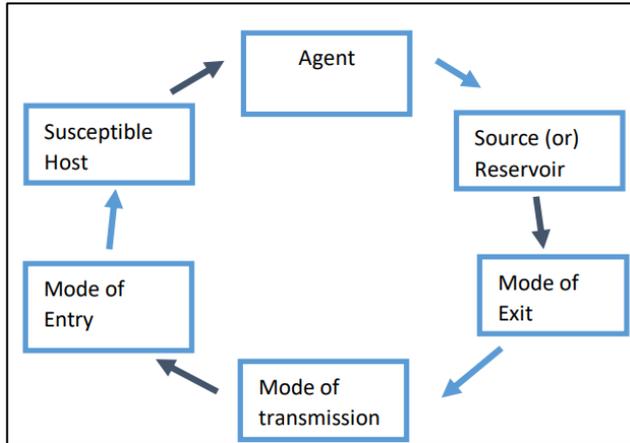
Latent Period: It is the time interval from initial infection until start of infectious period.

Incubation period: It is the interval of time infection of the host and the first appearance of symptoms and signs of the disease. The incubation period varies from disease to disease and for a particular disease has a range.

Period of communicability: The period during which that particular communicable disease (infectious agent) is transmitted from the infected.

Point Source: If all the patients get infection at the same time at the same place from the same source, this is called point source. Usually, point source outbreaks are associated with food poisoning where people get infection from eating the same food at a restaurant, wedding or funeral. Cholera or dysentery out break from contaminated well/stream is also another point source infection. Point source is also called common source infection.

Propagated Source: In propagated source, there is no common source of infection. Instead, infection is spread from one person to another. This is usually seen in outbreaks where infection is spread from person to person through close contacts. Examples of propagated source infection are measles, common cold, conjunctivitis and influenza.

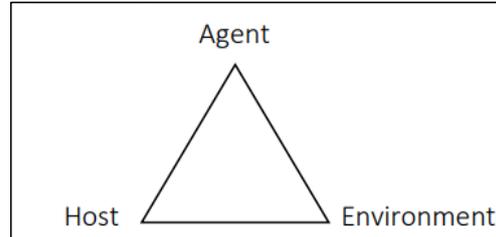


Chain of infectious disease process:

Example: Leptospirosis

Leptospirosis is caused by *Leptospira* species of bacteria (agent). It lives and thrives in infected wild and domestic animals, such as rats, cows and pigs (reservoir). The bacteria leave the infected animal in urine (portal of exit) and enter human (susceptible host) by direct contact (mode of transmission) through exposed skin (portal of entry).

Epidemiological Triad of Disease Causation



A. Agent factor

Definition of agent

Agent is a substance, living or non-living, or a force, tangible or intangible, the excessive presence or relative lack of which may initiate or perpetuate a disease process.

N.B. A disease may have a single, multiple or combined and complete agents.

Classification of agent

<p>A. Living agents - These are plant or animal origin. They may be metazoan, protozoa, fungi, yeast, bacteria, virus, Rickettsia, mycoplasma etc.</p> <p>1) Biological agent All the microorganisms such as Bacteria, Virus, Fungus, Protozoa, Parasites etc.</p>	<p>B. Non-living agents</p> <p>2) Physical agents – heat, cold, pressure, radial ion etc.</p> <p>3) Chemical agents</p> <ul style="list-style-type: none"> ▪ Endogenous – Urea, Creatinine, Uric acid, Bilirubin ▪ Exogenous – Dust, Allergens, Fumes <p>4) Mechanical agents – chronic friction, sprain, dislocation etc.</p> <p>5) Social agents – Poverty, Smoking, Abuses, Unhealthy lifestyle.</p> <p>6) Nutritional agents – Carbohydrate, protein, fat, vitamins, minerals.</p> <p>7) Excess, insufficiency, or absence of a factor necessary to health.</p> <ul style="list-style-type: none"> ▪ Chemical factors – Hormone ▪ Nutritional factors ▪ Lack of structure – Congenital absence of thymus ▪ Lack of part of structure – Down's syndrome ▪ Immunological factor – agammaglobulinemia
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B. Host factor

Human host acts as soil and disease agent acts as seed.

Classification of host factors

<p>1) Demographic characteristics</p> <ul style="list-style-type: none"> - Age - Sex - ethnicity <p>2) Biological characteristics</p> <ul style="list-style-type: none"> - Genetic factors – Each and every physical and physiological trait of the host is under the direct control of specific inherited gene. Genetic factors affect the resistance, immunity and tolerance of the host directly or indirectly. - Blood levels (Serum cholesterol level, blood glucose level etc.) - Blood groups - Physiological functions (Blood Pressure, Pulse rate) - Resistance – Overall non-specific defense mechanism of to ware off exogenous agents. E.g. Defense mechanism of skin and mucous membrane, Acidity of stomach and vagina, lymphatic barriers etc. - Tolerance – Increasing ability of the body to counteract quantitatively increase intensity of non-infectious exogenous physical and chemical agents. - Immunity – Ability of the body to ware off or neutralize the aggressiveness of biological agents through specific antibody and other immune mechanism. 	<p>3) Social and economic characteristics</p> <ul style="list-style-type: none"> - socio-economic status - Education - Occupation - Housing - Stress <p>4) Lifestyle factors</p> <ul style="list-style-type: none"> - Personality traits - Habits <p>5) Physiological and Hormonal Factors</p> <ul style="list-style-type: none"> - It affects resistance, tolerance and immunity against infectious and non-infectious disease directly or indirectly E.g. Physiological functions of tissue repair and degeneration <p>6) Psychological factors</p> <ul style="list-style-type: none"> - It affects the resistance, tolerance and immunity through the effect on physiological function. - It includes psychological, emotional and mental factors. - Important in personality development and coping with stress.
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C. Environmental factors

Study of disease = Study of man and environment
 Diseases due to preventable environmental conditions affect Hundreds of Millions of people.

There are two types of environment.

- 1) Internal or Microenvironment.
- 2) External or Macro- environment – External to human host which can again be divided into

A. Physical environment

- Heat, cold, air, water, radiation, atmosphere, pressure etc.
- Non-living things and physical factors.
- Altered physical environment



Development of new health problems

- Urbanization
- Pollution
- Radiation hazards
- Electro-magnetic hazards



More ingenious man - Highly complicated environment



Deleterious to Quality of Life we cherished

B. Biological environment

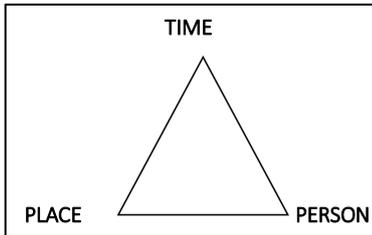
- Living things including man
- Some act as disease agents, reservoirs, intermediate host or vectors
- To remain healthy - we need
 - o Constant adjustment and readjustment
 - o Harmonious inter-relationship
 - o Peaceful co-existence

C. Psychosocial environment

- Cultural values - Beliefs
- Education - Social and Political organizations
- Customs - Attitudes
- Lifestyle - Morals
- Habits - Religions
- Health services - Religions

They have either plus or minus effect on health.

TIME	PLACE	PERSON
Three kinds of time trend 1. Short term fluctuation 2. Periodic fluctuations 3. Long-term or Secular trend	1. Local distribution fluctuations 2. Rural-urban distribution 3. National variation 4. International variation 5. Migration studies	1. Age 2. Sex 3. Ethnicity 4. Marital status 5. Education 6. Occupation 7. Social class 8. Behaviour 9. Stress 10. Migration



A. Time Distribution

Time distribution may yield important clues about the source or etiology of disease thereby suggesting potential preventive measures.

Three kinds of time trend

I. Short term fluctuation

Best known is an epidemic

1. Common Source epidemic
 - a. Single exposure or point source epidemic
 - b. Continuous or multiple exposure epidemic
2. Propagated epidemic
 - person to person
 - Arthropod vector
 - Animal reservoir
3. Slow (modern) epidemic

II. Periodic fluctuations

- Seasonal trend
- Cyclic trend

III. Long-term or Secular trend

B. Place Distribution

- Can study the fascinating differences in disease patterns
- Profoundly influenced our understanding of diseases
- A strong stimulant for national and international studies
- Provides clues about the cause of disease
- Variation of disease pattern is seen not only between countries, but also within country as the results environmental conditions, change in magnitude and dietary patterns etc.

1) Local distribution

Inner and outer city variations in disease frequency are usually seen. Best study with the aids of "SPOT MAPS" or "SHADED MAPS". The maps show areas of high/low frequencies, the boundaries and patterns at a glance. (Clustering of cases).

- 1854 Dr. John Snow identified cholera outbreak

2) Rural-Urban Differences

Variation in disease frequencies are seen between rural and urban area as result of differences in population density, socio-economic status, available health services, levels of sanitation and other environmental factors.

RURAL

- Skin diseases
- Zoonotic diseases
- Soil-transmitted helminths
- Malaria
- High MMR and IMR

URBAN

- chronic bronchitis,
- CA lung,
- cardiovascular diseases,
- Accidents,
- Dengue Haemorrhagic Fever,
- Mental illnesses,
- Drug dependence

3) National variations

Variations exist within countries or national boundaries

- Dry zone – Trachoma
- Hilly regions - Endemic goiters
- Forested areas – Malaria

Such information is needed to demarcate areas and to provide appropriate health services.

4) International variations

Marked differences of disease frequencies are noted in different parts of the world

CA stomach - Very common in Japan and rare in USA

Oral CA and CA cervix – Exceeding common in India and rare in the west

CA esophagus, liver, penis – High incidence in Africa and low in Europe

CA breast and colon - High incidence in Europe and low in Africa.

5) Migration studies

E.g. Japan migrants in the USA suffer more IHD but less CA stomach in 3rd Generation immigrants. Migrants have higher resistance to some infections than local populace. Also indicate the duration of stay to acquire a disease after leaving their homes at different ages.

C. Person Distribution

By age, sex, ethnicity etc.

Not necessarily represent aetiological factors, but they contribute a good deal to our understanding of natural history of disease.

1) Age

Age is most important factor. Some diseases are more frequent in certain age groups.

- Infant - Hypertrophic pyloric stenosis
- Children – measles, chickenpox
- Young adults – injuries, STDs, Occupational diseases
- Old age – degenerative diseases, metabolic diseases, osteoarthritis, IHDs

2) Sex

Male preponderance	Female Preponderance
- Gout (20 times)	- Rheumatoid arthritis
- Arteriosclerosis	- Anemia
- IHD	- Obesity

The variation may be due to hormonal factors, social factors, habits, environmental exposures, other aspects of day to day living etc.

3) Race (Ethnic group)

Race provides the concept of high risk group which may be linked to genetic or environmental factors.

Some race and the associated diseases are

- Negros - Sickle cell anemia
- Whites - skin cancer
- Mediterranean – Thalassemia
- Asians - G6 PD deficiency

4) Marital status

Mortality rates are lower in married persons because healthy, supported and secured conditions.

- Early marriage/ multiple partners/promiscuity - CA cervix
- Late marriage/single women - CA endometrium, CA breast.

5) Occupation

- Alternation of habit patterns e.g. Night shift
- Exposure to hazards
 - Pneumoconiosis, Silicosis, Brucellosis
 - Dermatitis
 - Accidents.

6) Social class

Social class is measured by education, occupation, income, residence, amenities.

- Upper level - Hypertension, Diabetes mellitus, IHD
- Lower level - Chronic bronchitis, Tuberculosis, Rheumatic heart disease, Ca cervix, leprosy.

7) Behavior

- Smoking
- Sedentary
- over-eating
- abuse
- STDs
- insect borne disease

8) Stress

- Hypertension

9) Migration

- short term/long term/ permanent according to age, sex, education, occupation
- internal/external
- urban/rural

** Triad of distribution is an important dimension that could be a starting point to formulate aetiological hypotheses and to identify high risk groups.

MEASUREMENT OF MORBIDITY AND MORTALITY

Measurement of Morbidity

(a) Incidence

Incidence rate is defined as "The number of NEW cases occurring in a defined population during a specified period of time".

*Note

- Incidence rate refers
- only to new cases
- during a given period
- in a specified population or population at risk unless other denominators are chosen
- It can also refer new spells or episodes of disease arising in a given period of time per 1000 population.

A person may suffer from Influenza more than once in a year. If he had suffered twice, he would contribute 2 spells of sickness in the year.

$$\text{Incidence} = \frac{\text{Number of new cases of specific during a given time period}}{\text{Population at risk during that period}} \times 1000$$

E.g. If there had been 50 new cases of Influenza in a population of 10000 in a year

$$\begin{aligned} \text{Incidence rate} &= \frac{50}{10000} \times 1000 \\ &= 5 \text{ per } 1000 \text{ population per year} \end{aligned}$$

(b) Attack Rate

- It is special incidence rate
- Usually expressed as percent
- Used only when the population is exposed to risk for a limited period of time such as during an epidemic.

$$\text{Attack rate} = \frac{\text{Number of new cases of specified disease during a specified time interval}}{\text{Total population at risk during the same interval}} \times 100$$

(c) Prevalence

Prevalence rate refers specifically to all current cases (old and new cases) existing at a given period of time in a given population

$$\text{Prevalence rate} = \frac{\text{Total number of individual who had disease at a given year}}{\text{Total number of population at risk during that year}} \times 1000$$

Prevalence is of two types:

- 1) Point prevalence
- 2) Period prevalence

1) Point prevalence

Point prevalence of a disease is defined as the number of all current cases (old and new) of a disease at one point in time in relation to a defined population. The point may be a day or several days or a week or several weeks or a month etc.

$$\text{Point prevalence} = \frac{\text{Number of all current cases (old and new) of a specified existing at a given point in time}}{\text{Estimated population at the same point in time}} \times 100$$

Point prevalence can be calculated for age, sex and other relevant factors or attributes.

2) Period Prevalence

Period prevalence is less commonly used. It measures the frequency of all old and new cases existing during a defined period of time.

$$\text{Period prevalence} = \frac{\text{Number of existing cases (old and new) of a specified disease during a given period of time}}{\text{Estimated mid-interval population}} \times 100$$

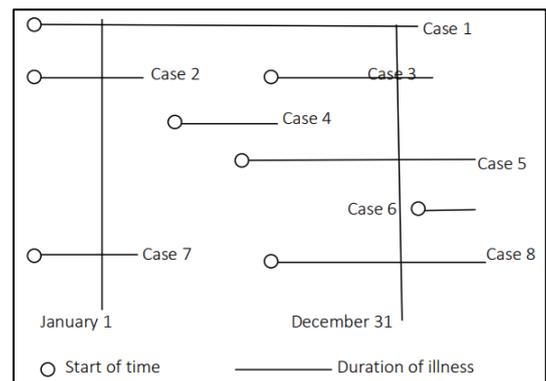
E.g. Incidence and Prevalence

Incidence would include case – 3, 4, 5, and 8.

Point prevalence January 1 cases – 1, 2 and 7

Point prevalence December 31 cases – 1, 3, 5, and 8.

Period prevalence January 1 to December 31 cases – 1, 2, 3,4,5,7 and 8



Measurement of Mortality

Mortality data are easy to obtain, and it can be useful for the epidemiologist.

(a) Crude Death Rate (CDR)

- The simplest measure of mortality
- It is defined as "the number of deaths from all causes per 1,000 estimated mid-year population in one year, in a given place".

$$\text{Crude Death Rate} = \frac{\text{Number of deaths during the year}}{\text{Mid-year population}} \times 1000$$

- It summarizes the effect of two factors
 - population composition
 - age-specific death rates (which reflects the probability of dying)
- Disadvantage of CDR is it lacks the comparability for communities with population that differ by age, sex, race etc.

(b) Specific Death Rates

- The specific death rates may be
 - cause or disease specific e.g. tuberculosis, cancer, accident etc.
 - related to specific groups e.g. age specific, sex specific, age and sex specific etc.
- Specific death rates can indicate particular group or groups at risk.

$$\text{Specific Death Rate due to a disease} = \frac{\text{Number of deaths from that disease during a calendar year}}{\text{Mid-year population}} \times 1000$$

$$\text{Specific Death Rate for male} = \frac{\text{Number of deaths among males during a calendar year}}{\text{Mid-year population}} \times 1000$$

$$\text{Specific Death Rate due to age group 15-20 years} = \frac{\text{Number of deaths persons aged 15-20 years during a calendar year}}{\text{Mid-year population}} \times 1000$$

$$\text{Specific Death Rate for January} = \frac{\text{Number of deaths persons in January} \times 12}{\text{Mid-year population}} \times 1000$$

(Note: multiplied by 12 is to make the monthly death rate comparable with annual death rate)

(c) Case Fatality Rate (CFR)

- It represents the killing power of the disease.
- It is typically used for acute infectious diseases.

$$\text{CFR} = \frac{\text{Total number of death due to particular disease}}{\text{Total number of cases due to the same disease}} \times 100$$

CFR for the same disease can vary in different epidemic because of changes in the agent.

HEALTH PROMOTION AND DISEASE PREVENTION

Name of module - **Health Promotion for Training**
Target group - Medic trainee from EHOs
Training objective and learning outcome - to understand and apply health education in work

BACKGROUND HISTORY

- In the **1970s** , the focus was on preventing disease and reducing risk behaviors through health education
- **1974-Lalonde Report (Canada)** -credited with the term health promotion into prominence
- **1978- WHO** – Declaration of Alma-Ata on primary health care-emphasized the need for health promotion (multiple sectors and players must be involved to improve health)
- **1986- WHO- Ottawa Charter for Health Promotion**
- **1997- Jakarta Declaration on Leading Health Promotion in the 21st Century**
- **2005- Bangkok Charter for Health Promotion**
- **2016- Shanghai Declaration on promoting health in the 2030 Agenda for Sustainable Development (9th Global Conference on Health Promotion, Shanghai 2016)**

The Ottawa Charter for Health Promotion First International Conference on Health Promotion Ottawa, 17-21 November 1986. The first International Conference on Health Promotion, meeting in Ottawa this 21st day of November 1986, hereby presents this CHARTER for action to achieve Health for All by the year 2000 and beyond.

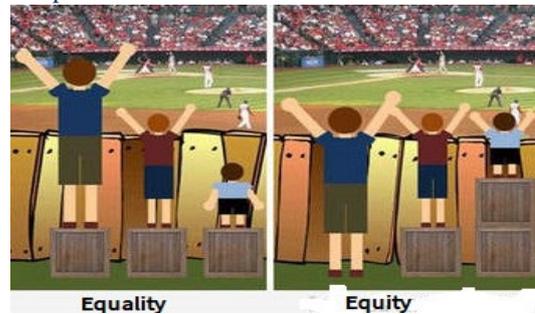
This conference was primarily a response to growing expectations for a new public health movement around the world. Discussions focused on the needs in industrialized countries, but took into account similar concerns in all other regions. It built on the progress made through the Declaration on Primary Health Care at Alma-Ata, the World Health Organization's Targets for Health for All document, and the recent debate at the World Health Assembly on intersectoral action for health.

Health Promotion

Health promotion is the process of enabling people to increase control over, and to improve, their health. To reach a state of complete physical, mental and social well-being, an individual or group must be able to identify and to realize aspirations, to satisfy needs, and to change or cope with the environment. Health is, therefore, seen as a resource for everyday life, not the objective of living. Health is a positive concept emphasizing social and personal resources, as well as physical capacities.

Therefore, health promotion is not just the responsibility of the health sector, but goes beyond healthy life-styles to well-being.

Prerequisites for Health



The fundamental conditions and resources for health are:

- peace,
- shelter,
- education,
- food,
- income,
- a stable eco-system,
- sustainable resources,
- social justice,
- equity.

Improvement in health requires a secure foundation in these basic prerequisites.

THE OTTAWA CHARTER FOR HEALTH PROMOTION

What is Ottawa Charter?

- The very 1st international conference on health promotion was held on Ottawa on 1st November, 1986 which presented a charter for action known as Ottawa Charter.
- The objective/aim of the conference was to take action for achieving Health for All by the year 2000.
- This conference was primarily focused on the needs of the developing nations. However, it incorporated the health needs of the entire global arena.
- It is one of the major international conferences till date which has explored major health promotion strategies and issues
- It is also considered as a milestone event in global health
- The conference took place after the Alma Ata Conference on Primary Health Care held on 1978. Furthermore, it was backed up by other international conferences on health promotion held in different parts of the world like Adelaide, Sundsvall, Jakarta, Mexico, Bangkok and Nairobi.
- Ottawa Charter gave rise to certain determinants necessary for good health condition, three basic strategies for health promotion and five areas for priority actions.

- The charter identifies certain determinants which are essential for good health condition. These prerequisites are: peace, shelter, education, income, food, sustainable resources, stable ecosystem and social justice and equity.
- Basic strategies for health promotion includes: advocacy for health, enabling people to achieve their fullest potential health and mediated and coordinated actions among all the relevant stakeholders.

HEALTH PROMOTION ACTION

Mediate

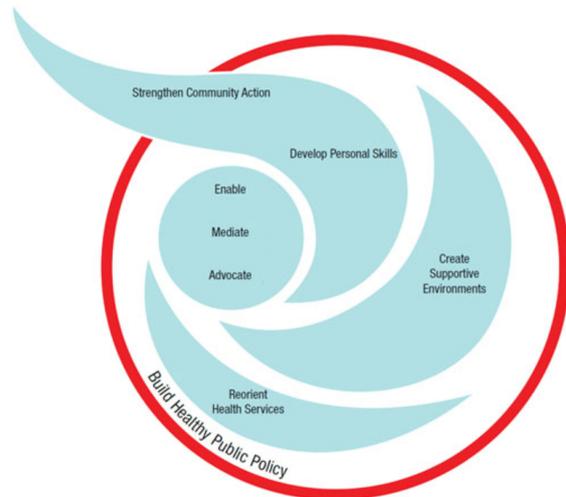
The prerequisites and prospects for health cannot be ensured by the health sector alone. More importantly, health promotion demands coordinated action by all concerned: by governments, by *health and other social and economic sectors*, by nongovernmental and voluntary organization, by *local authorities*, by *industry and by the media*. People in all walks of life are involved as individuals, families and communities. *Professional and social groups and health personnel have a major responsibility to mediate between differing interests in society for the pursuit of health. **Health promotion strategies and programmes should be adapted to the local needs and possibilities of individual countries and regions to take into account differing social, cultural and economic systems.***

Advocate

Good health is a major resource for social, economic and personal development and an important dimension of quality of life. Political, economic, social, cultural, environmental, behavioural and biological factors can all favour health or be harmful to it. Health promotion action aims at making these conditions favourable through advocacy for health.

Enable

Health promotion focuses on achieving equity in health. Health promotion action aims at reducing differences in current health status and ensuring equal opportunities and resources to enable all people to achieve their fullest health potential. This includes a secure foundation in a supportive environment, access to information, life skills and opportunities for making healthy choices. People cannot achieve their fullest health potential unless they are able to take control of those things which determine their health. This must apply equally to women and men.



The main graphic elements of the HP logo are:

- one outside circle,
 - one round spot within the circle, and
 - three wings that originate from this inner spot, one of which is breaking the outside circle.
- a) The outside circle, originally in red colour, is representing the goal of "Building Healthy Public Policies", therefore symbolising the need for policies to "hold things together". This circle is encompassing the three wings, symbolising the need to address all five key action areas of health promotion identified in the Ottawa Charter in an integrated and complementary manner.
 - b) The round spot within the circle stands for the three basic strategies for health promotion, "enabling, mediating, and advocacy ", which are needed and applied to all health promotion action areas. (Complete definitions of these terms can be found in the [Health Promotion Glossary, WHO/HPR/HEP/98.1](#))
 - c) The three wings represent (and contain the words of) the five key action areas for health promotion that were identified in the Ottawa Charter for Health Promotion in 1986 and were reconfirmed in the Jakarta Declaration on Leading Health Promotion into the 21st Century in 1997. More specifically:
 - the upper wing that is breaking the circle represents that action is needed to "strengthen community action" and to "develop personal skills". This wing is breaking the circle to symbolise that society and communities as well as individuals are constantly changing and, therefore, the policy sphere has to constantly react and develop to reflect these changes: a "Healthy Public Policy" is needed;
 - the middle wing on the right side represents that action is needed to "create supportive environments for health"

- the bottom wing represents that action is needed to "reorient health services" towards preventing diseases and promoting health.

The Health Promotion emblem and its interpretations in successive conferences



- Ottawa 1986 Australia
- Adelaide 1988 Sweden
- Sundsvall 1991
- Jakarta 1997
- Mexico 2000
- Bangkok 2005
- Nairobi 2009 Kenya

The Health Promotion emblem and its interpretations in successive conferences

- Priority areas for action towards health promotion identified by Ottawa charter includes six areas. They are: build healthy public policy, create supportive environment, strengthen community actions, develop personal skills, and reorient health services and moving into the future. Further explanation of these areas are:



Build healthy public policies:

- Healthy public policy merges diverse and complementary approaches for health promotion
- It keeps health as a major agenda among policy makers in all areas and all levels
- It includes legislation, fiscal measures, taxation and organizational change
- It involves identification of the impediments for adopting healthy public policies and identifies the ways of removing these obstacles.

Creating supportive environment:

- There is inextricable link between human beings health and their environment

- The way society functions should help create a better health for the people.
- As health cannot be separated from the environmental factors, protection and maintenance of both natural and built environment along with the preservation of natural resources is very necessary for health promotion
- Thus reciprocal maintenance of the environment is the major guiding principle

Strengthen community actions

- Health promotion works through effective community actions for setting priorities, making decisions, planning and implementing actions.
- Its core idea entails the empowerment of the communities through community participation, involvement and engagement in matters of health.
- It develops flexible system for strengthening public participation
- The objective is to empower and strengthen communities to improve health promotion and its outcome.

Develop personal skills

- Health promotion supports personal and social development by providing information, education and enhancement of life skills.
- Enabling people to learn to prepare themselves to cope up with health events.
- Developing personal skills will prepare and increase the chances of an individual to control their own health through their own initiatives.

Reorient health services

- Reorient health service includes shifting towards a system that focuses on health promotion rather than curative aspects
- Health services should be connected / interlinked with physical, social, political and economic environments.
- Health services should be oriented in such a way that it fulfills the need and demand of the communities for their better health.
- Focus on need of an individual includes need in a holistic aspect rather than limiting it to just injury and diseases.

▪ **Moving into the future:**

- People create their health in a setting of their everyday life where they perform their daily activities.
- Health is created by taking decisions about own health and having control over one's life circumstances.
- Thus, caring each other, holism and ecological aspects are the essential issues while developing health promotional strategies
- The major guiding principle is that men and women should become equal partners in all phases of planning, implementation and evaluation of health promotion activities.
- Ottawa charter was created more than three decades ago and currently different countries bases its health promotion using these action areas suggested by the charter. One example of such country is Australia which has the foundation of health promotion based on this charter.
 - It aimed to reduce inequity in health targeting the most vulnerable groups like people with disabilities, poor, diseased, unemployed and socially backward and disadvantaged families/communities.

Typical Activities for Health Promotion

Communication: Raising awareness about healthy behaviors for the general public. Examples of communication strategies include public service announcements, health fairs, mass media campaigns, and newsletters.

Education: Empowering behavior change and actions through increased knowledge. Examples of health education strategies include courses, trainings, and support groups.

Policy, Systems, and Environment: Making systematic changes – through improved laws, rules, and regulations (policy), functional organizational components (systems), and economic, social, or physical environment – to encourage, make available, and enable healthy choices.

Barriers to Health Promotion

- Higher poverty rates, which can make it difficult for participants to pay for services or programs
- Cultural and social norms surrounding health behaviors
- Low health literacy levels and incomplete perceptions of health
- Linguistic and educational disparities
- Limited affordable, reliable, or public transportation options
- Unpredictable work hours or unemployment
- Lower population densities for program economies of scale coverage
- Availability of resources to support personnel, use of facilities, and effective program operation
- Lack of access to healthy foods and physical activity options

Opportunities for Health Promotion

- Strong social networks and connections
- Emphasis on relationships with family and neighbors
- Supportive communities
- Common shared values and collective interest in improving health
- Smaller scale and scope of programs, which may accelerate opportunity
- Willingness and confidence to confront challenges
- Centralized communication channels
- Creativity and devotion to achieving success

IMPLEMENTATION

<p>Partnerships and Coalitions To identify appropriate partners, organizations should consider the following:</p> <ul style="list-style-type: none"> • Engaging organizations with an established history. • Involving partners from unique community sectors. • Identify platforms for information sharing. • Identifying strengths and weaknesses. • Remaining flexible. • Involving coalition partners early. 	<p>Implementation Considerations Before implementing a health promotion and disease prevention program, consider the environment, staff, and systems that will support the program. The following factors should be considered:</p> <ul style="list-style-type: none"> • Identify the target population and their key health needs. • Involve passionate people in all program aspects. • Assess staff capacity. • Seek and maintain support from partners. • Facilitate administrative support for the program.
<p>Recruiting and retaining program participants Successful health promotion and disease prevention programs engage participants and maintain their participation over time. To achieve this, programs use a combination of strategies to develop a targeted implementation approach. To reach and involve participants in health promotion and disease prevention activities, consider the following strategies and approaches:</p> <ul style="list-style-type: none"> • Identify the target population: • Spread the word: • Develop culturally relevant materials: • Encourage participation: • Increase interest among the target population: • Engage participants: • Motivate participants: 	
<p>Facilitators to Health Promotion The following factors can facilitate the success of rural health promotion and disease prevention programs:</p> <ul style="list-style-type: none"> • <i>Access to local leaders:</i> • <i>Strong relationships:</i> • <i>Common social centers:</i> • <i>Flexibility:</i> • <i>Importance of word of mouth:</i> 	<p>Health Promotion Program Challenges Prior to implementing rural health promotion, the following challenges may need to be addressed:</p> <ul style="list-style-type: none"> • <i>Appropriate communication methods:</i> • <i>Keeping the community motivated:</i> • <i>Cultural and social issues:</i> • <i>Resources and sustainability:</i> • Barriers to participation: geography can influence program implementation and operations. The program design should accommodate lengthy travel times, availability of (or lack of) transportation, childcare needs, and site availability to minimize potential barriers to program participation.

SUSTAINABLE DEVELOPMENT GOALS (SDGS)

HISTORY OF MILLENNIUM DEVELOPMENT GOALS RELATED TO HEALTH

In September 2000, representative from 189 countries met at The Millennium Summit in New York to adopt the United Nations Millennium Declaration.

Three of the eight goals are directly health-related and all of other goals have important indirect effects on health.

- 1) To eradicate extreme poverty and hunger
- 2) To achieve universal primary education
- 3) To promote gender equality and empowering women
- 4) To reduce child mortality rates
- 5) To improve maternal health
- 6) To combat HIV/AIDS, malaria, and other diseases
- 7) To ensure environmental sustainability
- 8) To develop a global partnership for development



The purpose of this note is to provide a brief outline the similarities and differences between the Millennium Development Goals (MDGs) launched in 2000, and the Sustainable Development Goals (SDGs), launched in 2015 when the MDGs expire.

SUSTAINABLE DEVELOPMENT GOALS RELATED TO HEALTH



The Sustainable Development Goals make a bold commitment to end the epidemics of AIDS, tuberculosis, malaria and other communicable diseases by 2030. The aim is to achieve universal health coverage and provide access to safe and affordable medicines and vaccines for all.

SDG 3 “Ensure healthy lives and promote wellbeing for all at all ages”

The goals within a goal: Health targets for SDG 3.

- By 2030, reduce the global maternal mortality ratio to less than 70 per 100 000 live births.
- By 2030, end preventable deaths of newborns and children under 5 years of age, with all countries aiming to reduce neonatal mortality to at least as low as 12 per 1000 live births and under-5 mortality to at least as low as 25 per 1000 live births.
- By 2030, end the epidemics of AIDS, tuberculosis, malaria and neglected tropical diseases and combat hepatitis, water-borne diseases and other communicable diseases.
- By 2030, reduce by one third premature mortality from non-communicable diseases through prevention and treatment and promote mental health and well-being.
- Strengthen the prevention and treatment of substance abuse, including narcotic drug abuse and harmful use of alcohol.
- By 2020, halve the number of global deaths and injuries from road traffic accidents.
- By 2030, ensure universal access to sexual and reproductive health-care services, including for family planning, information and education, and the integration of reproductive health into national strategies and programmes.
- Achieve universal health coverage, including financial risk protection, access to quality essential health-care services and access to safe, effective, quality and affordable essential medicines and vaccines for all.
- By 2030, substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination.

MEDICAL ETHICS

Medical ethics is an applied branch of ethics which analyzes the practice of clinical medicine and related scientific research. Medical ethics is based on a set of values that professionals can refer to in the case of any confusion or conflict.

WHAT IS MEDICAL ETHICS, AND WHY IS IT IMPORTANT?

1. Medical Ethics Problems Can Be Challenging

Medical ethics involves examining a specific problem, usually a clinical case, and using values, facts, and logic to decide what the best course of action should be.

Some ethical problems are fairly straightforward, such as determining right from wrong. But others can also be more perplexing, such as deciding between two "rights"—two values that are in conflict with each other—or deciding between two different value systems, such as the patient's versus the doctor's.

Doctors may deal with a great variety of perplexing ethical problems even in a small medical practice. Here are some common problems identified in a 2016 Medscape survey, where at least some physicians held different opinions ^[1]:

- Withholding treatment to meet an organization's budget, or because of insurance policies;
- Accepting money from pharmaceutical or device manufacturers;
- Upcoding to get treatment covered;
- Getting romantically involved with a patient or family member;
- Covering up a mistake;
- Reporting an impaired colleague;
- Cherry-picking patients; (What is cherry picking in healthcare?)

The practice of insurance companies taking only those businesses or individuals that are good health risks, and avoiding higher health risks.)

- Prescribing a placebo;
- Practicing defensive medicine to avoid malpractice lawsuits;
- Dropping insurers; and
- Breaching patient confidentiality owing to a health risk.

Professional standards are a way to provide some guidance on ethical problems, but they cannot address every issue, and they may not address troubling nuances, such as reconciling two conflicting values.

2. Key Values for Deciding Ethical Issues

Many professional ethicists recommend using four basic values, or principles, to decide ethical issues:

1. Autonomy: Patients basically have the right to determine their own healthcare.
2. Justice: Distributing the benefits and burdens of care across society.

3. Beneficence: Doing good for the patient.

4. Nonmaleficence: Making sure you are not harming the patient.

However, ethical values are not limited to just these four principles. There are other important values to consider, such as truth-telling, transparency, showing respect for patients and families, and showing respect for patients' own values.

In addition, medical ethics is not just a thought process. It also involves people skills, such as gathering the facts needed to make a decision and presenting your decision in a way that wins over the confidence of all parties.

Ethics is often seen as a proscriptive activity—telling you what you cannot do. But in many cases it can be very freeing. It can affirm that you are doing the right thing.

Listening skills are an essential part of medical ethics. Quite often, ethical disputes result from not knowing all the facts, or not providing all the facts to patients. Tactfulness and respect are also important. A well-constructed ethical decision could be ignored if you have not won the patient's confidence.

Ethics is often seen as a proscriptive activity—telling you what you cannot do. But in many cases it can be very freeing. It can affirm that you are doing the right thing. If you go through the proper ethical thought process, you'll have greater certainty that what you're doing is the right thing. Relieved of nagging doubts, you will be able to proceed more directly and more vigorously with your care plan.

As the health system evolves, ethical decisions could become more challenging. For example, mounting difficulties in finding affordable insurance prompt patients to forgo the care they need, and this affects the clinician's care plan.

3. Practical Implications of Medical Ethics

Some doctors think of medical ethics as a very esoteric field, removed from the practical considerations of clinical practice. It is true that medical ethics is first and foremost a matter of conscience, but it also has some very practical implications and applications.

Physicians who can describe their ethical concerns and use negotiating skills may be able to change the organizational policies that produce burnout.

Here are some reasons to take medical ethics seriously:

To help resolve disputes between family, patients, physicians, or other parties. Often, the parties involved are operating strictly on emotion, which makes it difficult to come to a logical and fair decision. Ethics adds another dimension to help make decisions.

To maintain a clear conscience. All doctors want to be sure they have done the right thing. Being an ethical physician is more important than making money or seeing as many patients as possible.

To not make yourself look uninformed. Physicians sometimes stumble onto poor decisions because they did not understand their role, had not bothered to identify an ethical challenge, or hadn't thought the situation through to its logical conclusion.

To maintain the respect of your patients. Ethical missteps can destroy the bond between doctor and patient. Patients often implicitly trust their doctors, but once that trust has been breached, it is difficult to repair.

To maintain respectful relationships with other clinicians. Your colleagues often have very definite opinions about what is ethical, often enshrined in various codes of ethics of the profession or learned from mentors. Those codes and ethics role-modeling are created by people who practice some form of ethical decision-making.

To maintain some efficiency. Although ethical decision-making often requires extra time, it also can save time by anticipating disagreements that can slow down the care process. If you aren't ethical, patients or other caregivers who are upset with your decisions can seriously impede your work.

To reduce burnout. One cause of burnout is incongruence between physicians' personal values and those of their organization. Physicians who can describe their ethical concerns and use negotiating skills may be able to change the organizational policies that produce burnout.

4. Does Being Ethical Take More Time?

Ethical decisions require a more deliberative style than many physicians are used to, outside of clinical decision-making. Doctors have to collect information, explore the ethical issues, and ask more questions if need be.

To have the time to take these actions, you can't be constantly overwhelmed with work. As an ethical physician, you need to schedule your time, be efficient in obtaining medical information, and pass off some responsibilities to other qualified caregivers.

You also have the option of sharing your decisions with colleagues. And once you have worked through an ethical issue, it will be much easier to deal with it the next time it comes up. You will have developed a basic strategy.

Getting to a useful ethical conclusion about a specific problem means starting with solid values that most people can accept, such as upholding patients' health, telling patients the truth, and giving people a choice about being in a medical experiment. These basic values are rarely in dispute.

Many other values are also widely accepted, such as patient autonomy. The same applies to being fair with your patients, meaning that all patients are essentially treated alike regarding critical healthcare decisions.

But it's not always so easy. These widely accepted values often conflict with each other. For example,

when patients refuse a treatment that could help them, the physician faces a conflict between respecting patient autonomy and doing what's best for the patient.

Closing off your practice to new patients is another example of an ethical dilemma. Physicians are fully justified in not accepting every patient who comes through the door. Accepting every patient may or may not be a good business decision. However, rejecting a patient may mean that patient does not get needed care. Many physicians struggled with this ethical decision.

After working through this dilemma, you may still decide to close off your practice, but you will have thought the issue through. You will be aware that the people you are turning away still need a doctor, and some physicians might decide to find a way in which they can help such people without burning themselves out, such as volunteering in a free clinic occasionally.

5. Ethics, Morality, and Religion

Medical ethics differs from morality. Ethics is based on values and reasoning, and it uses persuasion to get its message across, whereas morality involves adhering to a specific belief system or code of conduct. Morality relies on an authority, such as the Bible, to justify its message. Morality does not just involve religion. It can be political or personal, such as having a fascist or communist point of view, grounded in faith or tradition rather than facts or arguments. In contrast, medical ethics has a flexible set of solutions. It is based on facts and logic, and not religious doctrine. You can still have political opinions and religious faith, but you will need to set them aside when forming and offering an ethical opinion to those who do not follow your personal morality. Some people view medicine almost as the new religion. People often come to the doctor with the same hopes that they bring to a minister: "Save me, prepare me, redeem me." Of course, science cannot redeem anyone, but it does need to have a heart. A pure scientist, simply observing medical phenomena, would have a pragmatic attitude about life, sickness, and death. Science needs an ethical framework to make it humane.

Ethical decisions should respect the values and attitudes of patients. If patients oppose vaccinations or blood transfusions for their child, their beliefs have to be taken into account, even if you, the doctor, will not ultimately follow their requests.

Respecting the patient's wishes has a practical consequence: Doctors who simply overrule the patient often end up seeing their treatments fail, because patients will probably be fighting them the whole way. Patients who are overruled do not tell the truth. But patients who are in dialogue and negotiation with their doctors are more likely to come to a reasonable compromise—even if it's one the doctor doesn't entirely endorse.

6. When Patients or Families Disagree With the Doctor

Sometimes when patients or their families disagree with the doctor, the obvious ethical decision isn't the right one. Here's an example that actually occurred. A child from Southeast Asia had a clubfoot that was easily treatable, but the parents wouldn't allow treatment, evidently because they believed God had ordained clubfeet.

The caregivers rightly put the child's health first, so they went to court and obtained an order for the operation. But the outcome was appalling. The family felt that the child had lost favor with God and abandoned the child. The child in effect became an orphan. The caregivers had won the battle but lost the war.

Although physicians need to respect patients' values, physicians' own values should not sway their decisions. Conscience and the religious faith of the physician should not automatically overrule the patient's need to get the best treatment possible.

For example, let's say an emergency physician refuses to give a patient a morning-after pill, on the basis of the physician's own values, even though the pill has been clinically proven to work.

The patient's needs, however, should come before the doctors' principles. Caregivers are expected to set their beliefs aside and focus on the best interests of the patient. If you cannot bring yourself to treat a patient, you must find another doctor who will.

7. How Medical Values Developed

Values are not set in stone. They evolve as the attitudes of society change. Half a century ago, when societal norms and educational standards were changing, the medical profession shifted from paternalism (the doctor knows best) to individual autonomy (patients must be consulted).

Medical values tend to be loosely based on what a majority of the public holds to be true. However, ethics decisions cannot be based on public opinion because the people may not heed the values of minorities or those with views outside of the mainstream. The bottom line is that no one would want their own care decided by a bunch of inattentive and ill-informed people taking a 2-minute survey.

So when you make an ethical decision in a coherent, thoughtful way, you may well diverge from current public opinion, but your values would still be sensitive to what the mainstream accepts.

8. Who Decides Medical Ethics?

Unlike with religious matters, there is no ultimate arbiter of medical ethics, and ethicists intentionally do not have a set ethical code that the profession upholds.

Physicians often consult the ethical codes of their professional organizations, such as the American Medical Association (AMA).^[2] These codes cannot take the place of ethical decisions in situations in

which a variety of competing factors are involved, but they can provide direction for decision-makers. Also, professional codes by doctors' own organizations can help convince them that a particular ethical decision makes sense.

Doctors may also look to their hospitals' ethics committees for answers, but these committees aren't intended to be the final authorities on medical ethics. These committees are educators and work in an advisory capacity. Their role is to develop specific hospital policies, educate staff about clinical ethics, and oversee ethical consultants on staff.

So who is the ultimate arbiter of clinical medical ethics? It is the individual caregiver, working in concert with the patient. Caregivers' ethical decisions go hand-in-hand with their clinical and technical decisions. Getting the ethics right depends on the integrity of the caregiver.

9. Can Ethical Decisions on the Same Problem Differ?

Because there is no preordained answer to most ethical dilemmas, even trained ethicists may disagree on solutions to the same ethical problem. Although they tend to hold the same core values and use the same logic, they may not have gathered the same set of facts.

Ethical decisions cannot be avoided. Whenever doctors make a clinical decision, they are almost always making an ethical decision, consciously or not.

Ethical decisions can change over time. The values that inform a particular ethical decision may change, or the implications of a particular decision may sink in. For example, as the public has become more comfortable with physician-assisted dying, some ethicists who once opposed it have come around to supporting it.

Ethical decisions cannot be avoided. Whenever doctors make a clinical decision, they are almost always making an ethical decision, consciously or not. Rather than not thinking about the ethical dimension of your care, it makes more sense to be aware of it and make sure it is sound.

10. Is It Ethical to Refrain From Judging Colleagues' Behavior?

Administrative doctors clearly cannot overlook the behavior of doctors whom they oversee. It's part of their job title. But even doctors who don't have a supervisory role over colleagues have an implicit responsibility.

Doctors are expected to uphold the well-being of patients in general, not just their own patients. This means they have a duty to report a doctor who is abusing drugs or molesting patients, for example.

Indeed, the AMA Code of Medical Ethics states that physicians should report colleagues' behavior "in the first instance so that the possible impact on patient welfare can be assessed and remedial action taken."

MEDICAL ETHICS AND THE LAW

Medical ethics may have different standards from the law. The law is created by legislators and may not share the values and reasoning of ethical physicians. For example, Baby Doe laws require doctors to treat premature babies even when they are severely disabled, but some doctors have concluded that preemies who are too sick to survive should not be treated.

Physicians who disobey the Baby Doe laws (also referred to as "regulations") are rarely, if ever, prosecuted. In many cases, prosecutors are reluctant to take action against doctors who violate such laws out of respect for their clinical judgment.

With most malpractice cases, courts examine clinical standards of care and determine whether the defendant doctor has met them. In many cases, unethical conduct does not rise to the level of medical malpractice.

For example, a few years ago a patient recorded a gastroenterologist making disparaging remarks about him when he was under sedation. The gastroenterologist was clearly unethical in that he was not showing respect to the patient, but the patient did not file a malpractice lawsuit and instead filed a defamation lawsuit. (The patient lost the case, because defamation must involve transmitting remarks to a third party.)^[4]

On the other hand, not getting a patient's informed consent for a procedure, another clearly ethical problem, is also an important element in a malpractice complaint. Physicians who do not get informed consent can be liable for malpractice, even if the procedure meets all the standards of clinical care.

Unethical Behavior and Medical Boards

Medical malpractice cases require some evidence of harm, but this is not the standard for reporting physicians' conduct to medical licensing boards. Medical boards can and do take action against many behaviors that are widely considered unethical even when no harm takes place.

The definition of unprofessional conduct promulgated by the Federation of State Medical Boards, the trade group for state boards, includes "patient abuse" and "dishonesty." (The exact wording may vary from state to state.)

<https://www.medscape.com/courses/section/898060>

Hippocrates (born 460 BC) is widely credited as being the father of modern medicine. One of his huge contributions in advancing the field was the insight into the fact that diseases could have natural (rather than supernatural) causes. Also of enormous significance was his oath of conduct for physicians which is still used worldwide today.

Hippocratic Oath (တစ်ပိုဒ်ရေးတီးစ် (ပဋိညာဉ် -

November 20, 2014

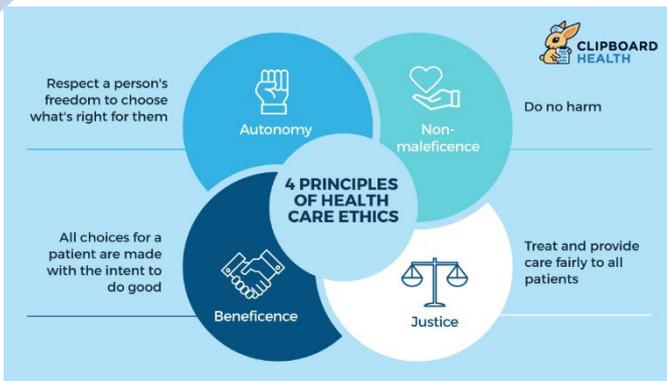
- I promise that my medical knowledge will be used to benefit people's health; patients are my first concern. I will listen to them, and provide the best care I can. I will be honest, respectful, and compassionate towards them.
- ကျွန်ုပ်၏ ဆေးပညာသည် လူတို့၏ အကျိုးစီးပွားအတွက် အသုံးပြုမည်ကို ကတိပေးပါသည်။ လူနာသည် ပထမ ဦးစားပေး ဖြစ်သည်။ သူတို့ပြောသည်ကို နားထောင်၍ တတ်စွမ်းသရွေ့ စောင့်ရှောက်ပါမည်။ ရိုးသားသော ကရုဏာဖြင့် လေးစားခြင်းကို ရယူပါမည်။
- I will do my best to help anyone in medical need, in emergencies. I will make every effort to ensure the rights of all patients are respected, including vulnerable groups who lack means of making their needs known.
- မည်သူ့ကိုမဆို အရေးပေါ် ကျန်းမာရေး လိုအပ်ချက်ရှိလာလျှင် အကောင်းဆုံး အကူအညီပေးပါမည်။ လိုအပ်ချက် မပြည့်စုံကြသော ရောဂါဝေဒနာ ရလွယ်ကြသူများ အပါအဝင် လူနာတို့၏ အခွင့်အရေးကို မည်သည့် အခါမဆို လေးစားပါမည်။
- I will exercise my professional judgment as independently as possible, uninfluenced by political pressure or the social standing of my patient. I will not put personal profit or advancement above my duty to my patient.
- ကျွန်ုပ်၏ ပညာပိုင်းဆိုင်ရာ ဆုံးဖြတ်အား နိုင်ငံရေး၊ လူမှုရေးတို့၏ သက်ရောက်မှုများမှ ကင်းပလျက် အတတ်နိုင်ဆုံး လွတ်လပ်စွာ ချမှတ်ပါမည်။ လူနာအတွက် ထမ်းရွက်မှုအပေါ်မှာ အမြတ်ထုတ်ခြင်း၊ ရာထူး တိုးခြင်းတို့အတွက် လုပ်ဆောင်မည် မဟုတ်ပါ။
- I recognize the special value of human life, but I also know that prolongation of life is not the only aim of health care. If I agree to perform abortion, I agree it should take place only within an ethical and legal context.
- ကျွန်ုပ်သည် လူ့အသက်၏ အထူးအရေးပါမှုကို သိရှိပါသည်။ သို့တစေ အသက်ဆက်လက် ရှင်သန်ရေးဆိုသည် ကျန်းမာရေး စောင့်ရှောက်ခြင်း၏ တခုတည်းသော ရည်ရွယ်ချက် မဟုတ်သဖြင့် အကယ်၍ ကိုယ်ဝန်ဖျက်ရန် လိုအပ်လာပါက ဥပဒေကြောင်းအရ လည်းကောင်း ကျင့်ဝတ် အရလည်းကောင်း ညီညွတ်စေပါမည်။

- I will not provide treatments that are pointless or harmful, or which an informed and competent patient refuses. I will help patients find the information and support they want to make decisions on their care.
- ကျွန်ုပ်သည် အကျိုးမများစေသော-ဒုက္ခရောက်စေသော-ရှင်းပြသည့်အခါ နားလည် တတ်သိသောလူနာများက ငြင်းဆန်သော၊ ကုသမှုကို မပြုလုပ်ပါ။ လူနာများအား ဆုံးဖြတ်ချက် ချနိုင်စေရန် လိုအပ်သော သတင်း အချက်အလက်များ ပေးကာ ကူညီပါမည်။
- I will answer as truthfully as I can, and respect patients' decisions, unless that puts others at risk of substantial harm. If I cannot agree with their requests, I will explain why.
- အခြားသူများအား ဒုက္ခရောက်ရန် မရှိပါက လူနာ၏ အဆုံးအဖြတ်ကို လေးစားလျက် တတ်နိုင်သမျှ ရိုးသားစွာ ဖြေဆိုပါမည်။ အကယ်၍ တောင်းဆိုချက်က မဖြစ်နိုင်ပါက အဘယ့်ကြောင့် ငြင်းရသည်ကို ရှင်းပြပါမည်။
- If my patients have limited mental awareness, I will still encourage them to participate in decisions as much as they feel able. I will do my best to maintain confidentiality about all patients.
- အကယ်၍ လူနာသည် စိတ်ခွန်အား မပြည့်မီပါက စိတ်မှန်သူများအလား ဆုံးဖြတ်ချက် ချနိုင်ရန် အားပေးပါမည်။ ကျွန်ုပ်သည် လူနာများ၏ အတွင်းရေး ကိစ္စများကို အတတ်နိုင်ဆုံး ထိန်းသိမ်းပေးပါမည်။
- If there were overriding reasons preventing my keeping a patient's confidentiality I will explain them, I will recognize the limits of my knowledge and seek advice from colleagues as needed. I will acknowledge my mistakes.
- အကယ်၍ ထိုသို့ လုပ်မဖြစ်သော အခြေအနေရှိပါက ကျွန်ုပ်၏ အသိနည်းမှုအား ရှင်းပြပါမည်။ မိတ်ဆွေများ၏ အကြံဉာဏ်ကို ရယူပါမည်။ အမှားကို ဝန်ခံပါမည်။
- I will do my best to keep myself and my colleagues informed of new developments, and ensure that poor standards or bad practices are exposed to those who can improve them.
- ကျွန်ုပ်သည် မိတ်ဆွေများအား အသစ် တိုးတက် ဖြစ်ပေါ်မှုများကို ပြောပြပေးနေလျက် အရည်အသွေး ညံ့ဖျင်းမှုများကို ဖော်ထုတ်ကာ တိုးတက်စေရန် အတတ်နိုင်ဆုံး ဆောင်ရွက်ပါမည်။

- I will show respect for all those with whom I work and be ready to share my knowledge by teaching others what I know. I will use my training and professional standing to improve the community in which I work.
- ကျွန်ုပ်သည် လုပ်ဖော် ကိုင်ဖက်များအား လေးစား သမှုဖြင့် မိမိသိရှိ တတ်ကျွမ်းမှုများကို မျှဝေ သင်ကြား ပေးပါမည်။ မိမိ၏ လူမှုအသိုင်းအဝိုင်း တိုးတက် လာစေရန် တတ်မ်း နားလည်မှုများကို အသုံးချ သွားပါမည်။
- I will treat patients equitably and support a fair and humane distribution of health resources. I will try to influence positively authorities whose policies public health.
- ကျွန်ုပ်သည် လူနာများအား ကျန်းမာရေး အရင်အမြစ် များကို လူ့အသိဖြင့် အညီအမျှ ဝေငှပေးကမ်းပါမည်။ လူထု ကျန်းမာရေး ပေါ်လစီ ချမှတ်သူများအပေါ် အပြုသဘောသက်ရောက်စေပါမည်။
- I will oppose polices which breach internationally accepted standards of human rights. I will strive to change laws that are contrary to patients' interests or to my professional ethics.
- နိုင်ငံတကာ အသိအမှတ်ပြု လူ့အခွင့်အရေးများကို ချိုးဖောက်ရာ ရောက်သည့် ပေါ်လစီများကို ဆန့်ကျင် သွားပါမည်။ လူနာများ၏ ကောင်းကျိုး၊ ဆေးပညာ ကျင့်ဝတ်များနှင့် ဆန့်ကျင်သော ဥပဒေများကို ပြောင်းလဲစေရန် ကြိုးပမ်းပါမည်။
- While I continue to keep this Oath unviolated, may it be granted to me to enjoy life and the practice of the Art, respected by all, in all times.
- ဤပြဋ္ဌာန်ကို မကျိုးမပေါက် လိုက်နာ စောင့်ထိန်းပါက သာယာ ချမ်းမြေ့သည့် ဘဝကို ရရှိလျက်၊ ဆေးကုသ ခြင်း အတတ်ဖြင့် လူအများ၏ လေးစားမှုကို အစဉ်ရယူနိုင်သူ ဖြစ်ပါစေသော။

(ဒေါက်တာတင့်ဆွေ မြန်မာပြန် November 20, 2014)

HOW THE 4 PRINCIPLES OF HEALTH CARE ETHICS IMPROVE PATIENT CARE



Working in the health care field can be both rewarding and challenging. Each shift you work is filled with new patients, sometimes unexpected experiences, and many choices that will have positive and negative consequences on someone's health.

Due to health care being such a dynamic environment, the four principles of health care ethics were created to support professionals as you navigate patient care. These principles are autonomy, beneficence, non-maleficence, and justice.

Each of these principles has a unique objective, but the four come together to empower you as a health care professional and ensure that patients are receiving high quality and ethical health care.

#1 – Autonomy



The literal **Autonomy** Requires that the patient have autonomy of thought, intention, and action when making decisions regarding health care procedures. Therefore, the decision-making process must be free of coercion or coaxing. In order for a patient to make a fully informed decision, she/he must understand all risks and benefits of the procedure and the likelihood of success. Because ARTs are highly technical and may involve high emotions, it is difficult to expect patients to be operating under fully-informed consent.

At its base definition, autonomy is the control that you exercise when making individual decisions, especially regarding your well-being. In health care, autonomy is the right or freedom of the patient to

maintain control of their body before and after treatment.

The practice of autonomy prevents health care professionals from potentially coercing or persuading the patient to take a specific action or treatment plan that might not be in their best interest. Ideally, autonomy aims to improve patient welfare by allowing the patient to be in full command of their treatment and care as much and as often as possible. This principle is vital in the delivery of evidence-based care. Every individual has different beliefs and experiences that shape their opinions on a variety of topics, and the health care profession is no different. Not all medical professionals agree with certain treatment options and medication processes.

As such, this principle addresses the clause of the best treatment option that the health care provider made independently. Health care professionals like nurses should not try to influence a patient's decision based on that nurse's own personal beliefs; however, it's their responsibility to ensure that patients are educated and informed, so they can make the best decision for themselves.

Patients and caregivers will often have contrasting beliefs, customs, and ideas. Additionally, the best course of action for one patient could be detrimental for another, even if they share the same signs and symptoms. So it's a health care professional's responsibility to help empower each patient to take control of their own health care.

Autonomy fosters self-respect, self-knowledge, and self-worth.

#2 – Beneficence



Requires that the procedure be provided with the intent of doing good for the patient involved. Demands that health care providers develop and maintain skills and knowledge, continually update training, consider individual circumstances of all patients, and strive for net benefit.

Beneficence is the act of showing kindness or mercy. The actions of any health care provider should always bring positivity.

Benevolence should not be confused with the closely related ethical principle of non-malevolence, which states that one should do no harm to patients. This principle acts as an obligation for nurses to protect their patients from harm by removing and preventing bad situations and promoting good ones.

At its core, benevolence is an essential principle of health care ethics and ethical selfishness. The principle encourages health care workers to consciously invest the time and effort to make sure that each patient benefits in each situation.

Most people who choose health care as a profession do so because they want to help other people, and part of the profession is seeking out every way that you can help make a patient's treatment experience a little bit better, safer, and more effective. Even the smallest positive change can have a big impact on a patient's wellbeing.

The difficulty with this principle often lies in defining what good means to each patient. Before acting with benevolence in mind, you have to learn and consider each patient's specific wants, needs, and experiences. Being aware of a patient's culture, religious beliefs, past experiences, and likes or dislikes can help guide you in determining what might be good for them.

#3 – Non-Malevolence



Requires that a procedure does not harm the patient involved or others in society. Infertility specialists operate under the assumption that they are doing no harm or at least minimizing harm by pursuing the greater good. However, because assistive reproductive technologies have limited success rates uncertain overall outcomes, the emotional state of the patient may be impacted negatively. In some cases, it is difficult for doctors to successfully apply the do no harm principle.

Of the four principles of health care ethics, non-malevolence is the one that is generally the one most commonly prioritized.

Non-malevolence means that you as a health care professional must do no harm. According to the ANA code of ethics, all health care workers should carefully evaluate each situation before making decisions. Whether knowingly or unknowingly, some decisions can cause harm to patients, the community, or even other health care workers, and

it's up to each health care professional to be aware of how each of their decisions can impact others.

Non-malevolence covers four factors. First, an act should not be truly wrong. Second, every action should have a positive benefit. Third, a good effect should never be a result of the wrong action. Lastly, good outcomes should always outweigh the bad.

For example, a patient comes in with a health complication. There are several solutions to treat the complication, such as different prescription medications. The attending doctor chooses to prescribe one of those medications that has possible allergic effects without informing the patient. Later, the patient suffers from adverse drug effects.

Such a case is considered malevolence, because the physician had other better options. Additionally, each the health care professionals must inform the patient of any potential good or bad effects from any treatment, so the patient can make the best decision for themselves if able to.

On the other end of the spectrum, the goal of health care workers is to save the life of the patient by all means possible. An example of non-malevolence is a case where a patient needs surgical treatment. Though surgeons use anesthetics during surgery, a patient feels pain after the surgery. However, this particular instance is not malevolence, because the surgery was the only solution to save the life of the patient.

Keep in mind that the non-malevolence principle does not only apply to patients but also to fellow health care professional colleagues. Every health care provider should provide a comfortable working environment for other employees. Actions intended to harm other employees are considered malevolence. Even verbal abuse at work is treated as malevolence. The non-malevolence principle was developed to protect health care workers and patients.



Justice

Treat and provide care fairly to all patients



The idea that the burdens and benefits of new or experimental treatments must be distributed equally among all groups in society. Requires that procedures uphold the spirit of existing laws and are fair to all players involved. The health care provider must consider four main areas when evaluating justice: fair distribution of scarce resources, competing needs, rights and obligations, and potential conflicts with established legislation. Reproductive technologies create ethical dilemmas because treatment is not equally available to all people. There have been numerous cases where patients fail to get the necessary treatment due to economic status, ethnicity, sexual orientation, etc.

Following the ANA code of ethics, the top priority of all health care workers should be saving the lives of all patients. For example, say a patient comes into a hospital for emergency treatment. During the evaluation of the patient's situation, the health care staff realize that the patient is an undocumented immigrant. A competent health care worker would proceed with the emergency treatment first to make sure that the patient receives the best care possible to help them with their emergency situation.

Additionally, health care workers should listen to each patient's interests before beginning medical procedures. For instance, if there are alternative treatments, a patient deserves to be given the information and the opportunity to make an informed decision for themselves. For individuals under the age of 18, their parents or guardians should approve the intended medical choices.

A current debate revolves around reproductive health technologies. Justice would call for equitable access to reproductive health services for all women.

Justice does not only apply to patients; it also impacts health care providers. All physicians, nurses, and other health experts have a right to practice their profession in a pleasant environment. Each and every health care professional and member of a health care team deserve equal chances of assisting in the decision-making process.

Health care professionals must hold strong to a moral compass. That's why we only take the best nurses and healthcare professionals at Clipboard Health. Holding yourself to a high ethical standard will

benefit the trust present between you and your patient. When ethical dilemmas arise, health care workers must consider the four principles of health care ethics when formatting the best response.

HISTORY OF MEDICAL SCIENCE

Assessment – MCQ test to assess knowledge.

After the lesson, trainees -

- will know importance on history of medicine.
- will see background of medical history.
- will have knowledge on timeline of medical history.

Importance of History of Medicine

How important is the history of medicine?

While studying the history of medicine can lead to improvements in the context of clinical healthcare, it also teaches valuable and timeless lessons in the realm of medical ethics. As future and current healthcare professionals, we should follow the ancient adage of learning from mistakes to avoid repeating them.

Absolutely it is important, for several reasons:

1. History tells us how we came to know what we know, why research is critical, and why doing it is difficult.
2. History has many lessons on what can go wrong, in medicine, ethics, and the relationship between medicine and society.
3. History recognizes the people and institutions that advanced medicine and made it scientific and so motivate students to do better.
4. History teaches us humility because there were so many dead ends and mistakes in the past that involved really bright people.
5. History tells us how we got where we are, because trying to change something like the health care system is impossible unless one knows why it is structured the way it is.

The basic function of medicine is to cure sicknesses and to restore one's health. Medical science is related to a lot of branches of science as well such as Biology, Physics, Genetics, Chemistry and Molecular biology etc.

Background History

Origins of Modern Medicine

- In the ancient world, people used to think that the illnesses that occurred to human body were due to some supernatural abilities of Gods and demons or other spirits in nature. As a result, during those days medical field was believed to be witchcraft, and it involved a lot of praying.
- However, in 460 BC **Hippocrates** - was born in Greece the person who revolutionized this pattern of thinking and introduced a type of treatment that is entirely based on diagnosis. He also introduced the ethics of medicine that is followed even today. As a result, he was called as the father of medicine.

How did his method differ from other methods that were used by then?

- Instead of leaning totally on gods and their virtual abilities to heal a person, he developed a more rational and a physical approach that could be supported by a lot of evidence.
- So, he concluded all of his treatments by two main steps, they are observation and study of human body. Through this method, he was able to describe what a symptom is exactly, and also, he was able to predict the symptoms of pneumonia correctly.
- He also believed in natural healing ability and allowed his patients to be healed using the simple steps of **rest**, good **diet**, good **physical hygiene**, and **good air**. Hippocrates was the first person to scientifically prove that the thoughts arise from our brain and not from the soul.
- Later this rationally thinking man also founded a medical school in his homeland to **teach his concepts to the future generations and made an oath himself for his students to follow**. Until today, this oath is followed by many doctors.
- Even if Hippocrates died in 377 BC, his theories are still practiced in healing many illnesses. However, the ancient types of medicine have also been passed down and gifted to the modern world, and it is called as folk medicine or as traditional medicine.

How are Patients Treated with Modern Medicine?

In today's medical field the root of the disease will be identified at first using a variety of tests or simply by seeing the symptoms. Then the identified causes are treated by the use of drugs or by using surgeries in extreme cases. Sometimes other practices like physiotherapies and exercises or behavioral therapies will also be used. Modern medicine which they establish in **Urocare** London, has a higher success rate than the traditional medicine and is guaranteed to give better results over a short duration of time. Plastic Surgery outcomes have drastically improved over the last generation thanks to innovative surgeons like: **Dr. Ali Sadeghi**.

Conclusion

Medicine does not exist in a vacuum; it is related to many other branches of science. And technology is also playing a big part in modern medicine. You can find out a lot about medical equipment from websites such as medinstrum.

History of Medicine

When was medicine first introduced?

Modern medicine, or medicine as we know it, started to emerge after the **Industrial Revolution** in the **18th century**. At this time, there was rapid growth in economic activity in Western Europe and the Americas.

Who was considered the father of medicine?

Hippocrates

He is considered to be the father of modern medicine because in his books, which are more than 70. He described in a scientific manner, many diseases, and their treatment after detailed observation. He lived about 2400 years ago.

Harun Al-Rashid

The **earliest general hospital** was built in **805 AD in Baghdad** by Harun Al-Rashid. By the tenth century, Baghdad had five more hospitals, while Damascus had six hospitals by the 15th century and Córdoba alone had 50 major hospitals, many exclusively for the military.

If you're thinking of applying to medicine, it's probably useful to have an idea of where it all started!

So when did the practice of medicine begin? And who were the first doctors? While there are no straightforward answers to these questions, there is evidence from primitive societies that 'treatments' were attempted for common conditions, although often **superstition and religious beliefs would be intermingled with these.**

We do know that from **ancient Egyptian times (from around 3000 BC)** there were 'doctors' and in this context the medical practitioner **Imhotep** (around 2600 BC) produced a written work chronicling over 200 different medical conditions.

Hippocrates (born 460 BC) is widely credited as being the father of modern medicine. One of his huge contributions in advancing the field was the insight into the fact that diseases could have natural (rather than supernatural) causes. Also, of enormous significance was his oath of conduct for physicians which is still used worldwide today.

Famous doctors from the Roman world include **Galen** who dissected primates and attempted to extrapolate findings to the human body, although

with limited success. Advances in public health were also important during this period, including some of the first sewage systems.

In medieval times (AD 1100-1400), medical practices virtually unrecognizable today was commonplace. For example, bleeding those who were ill was seen as helpful in a wide range of conditions as was the administration of laxatives. Predominant in this time was the notion that the church had a duty to care for the sick with many hospitals being built.

However, the term 'doctor' itself did not arise until the 14th century in Britain and was typically used to refer to theologians and those who could 'teach'. **Leonardo da Vinci**, working in the 15th century contributed greatly to our understanding of human anatomy, with detailed sketches produced after careful dissection of human corpses. An important discovery in the **17th century** was made by the well-known physician **William Harvey** – that the heart pumps blood round the body. The idea of the four humors in the body – blood, phlegm, yellow bile, and black bile still predominated however, with much illness attributed to an imbalance in these.

Moving forward, the 19th century saw many advances, although to current day thinking many common practices of the era seem barbaric. This was the age of the first uses of anesthetics, of the 'germ theory of disease', the first vaccines and also the first woman to be awarded a medical degree.

Right at the turn of the last century blood groups were identified, paving the way for improvements in transfusion. The introduction of vaccines for conditions such as diphtheria, tuberculosis and vitally the development of antibiotics has revolutionized medicine. With the decrease in conditions that had previously decimated populations came the rise in diseases more rooted in lifestyle – diabetes, heart conditions and cancer.

HISTORY OF MEDICINE TIMELINE

Year	Person	Event
2600 BC	Egyptian Imhotep	Describes the diagnosis and treatment of 200 disease
500 BC	Alcmaepn of Croton	Distinguished veins from arteries
460 BC	-	Birth of Hippocrates, the Greek father of medicine begins the scientific study of medicine and prescribes a form of aspirin
300 BC	Diocles	wrote the first known anatomy book
280 BC	Herophilus	studies the nervous system
130 AD		Birth of Galen. Greek physician to gladiators and Roman emperors
910	Persian physician Rhazes	identifies smallpox
1010	Avicenna	The Book of Healing and The Canon of Medicine
1249	Roger Bacon	invents spectacles
1489	Leonardo da Vinci	dissects corpses
1543	Vesalius	publishes findings on human anatomy in De Fabrica Corporis Humani
1590	Zarcharius Jannssen	invents the microscope

1628	Willian Harvey	publishes An Anatomical Study of the Motion of the Heart and of the Blood in Animals which forms the basis for future research on blood vessels, arteries, and the heart
1656	Sir Christopher Wren	experiments with canine blood transfusions
1670	Anton van Leeuwenhoek	discovers blood cells
1683	Anton van Leeuwenhoek	observes bacteria
1701	Giakomo Pylarini	gives the first smallpox inoculations
1747	James Lind	publishes his Treatise of the Scurvy stating that citrus fruits prevent scurvy
1763	Claudius Aymand	Claudius Aymand performs the first successful appendectomy
1796	Edward Jenner	develops the process of vaccination for smallpox, the first vaccines for any disease
1800	Sir Humphry Davy	discovers the anesthetic properties of nitrous oxide
1816	Rene Laennec	invents the stethoscope
1818	James Blundell	performs the first successful transfusion of human blood
1842	Crawford W.Long	uses ether as a general anesthetic
1844	Dr. Horace Wells	uses nitrous oxide as an anesthetic
1846	William Morton (dentist)	the first to publish the process of using anesthetic properties of nitrous oxide
1847	Ignaz Semmelweis	discovers how to prevent the transmission of puerperal fever
1849	Elizabeth Blackwell	the first woman to gain a medical degree from Geneva Medical College in New York
1853	Charles Gabriel Pravaz and Alexander Wood	develop the syringe
1857	Louis Pasteur	identifies germs as cause of disease
1867	Joseph Lister	develops the use of antiseptic surgical methods and publishes Antiseptic Principle of the Practice of Surgery
1870	Robert Koch & Louis Pasteur	establish the germ theory of disease
1879		First vaccine developed for cholera
1881	Louis Pasteur	First vaccine developed for anthrax
1882	Louis Pasteur	First vaccine developed for rabies
	Koch	discovers the TB bacillus
1887		First contact lenses developed
1890	Emil von Behring	discovers antitoxins and develops tetanus and diphtheria vaccines
1895	Wilhelm Conrad Roentgen	discovers X-rays
1896		First vaccine developed for typhoid fever
1897		First vaccine developed for Bubonic plague
1899	Felix Hoffman	develops aspirin
1901	Karl Landsteiner	introduces the system to classify blood into A, B, AB, and O groups
1913	Dr. Paul Dudley White	pioneers the use of the electrocardiograph – ECG
1921	Edward Mellanby	discovers that lack of vitamin D in the diet causes rickets
	Earle Dickson	invented the Band-Aid (used for a small adhesive strip with a gauze pad for covering minor wounds)
1922		Insulin first used to treat diabetes
1923		First vaccine developed for diphtheria
1926		First vaccine developed for whooping cough
1927		- First vaccine developed for tuberculosis - First vaccine developed for tetanus
1928	Sir Alexander Fleming	discovers penicillin
1935		First vaccine developed for yellow fever
	Percy Lavon Julian	synthesized the medicines - physostigmine for glaucoma and - cortisone for rheumatoid arthritis
1937		First vaccine developed for typhus
	Bernard Fantus	pioneers the use of the first blood bank in Chicago
1942	Doctor Karl Theodore Dussik	publishes the first paper on medical ultrasonic – ultrasound

1943	Selman A. Waksman	discovers the antibiotic streptomycin
1945		First vaccine developed for influenza
1950	John Hopps	invented the first cardiac pacemaker
1952	Paul Zoll	develops the first cardiac pacemaker
	Jonas Salk	develops the first polio vaccine (inactivated)
	Rosalind Franklin	uses X-ray diffraction to study the structure of DNA
1953	James Watson and Francis Crick	work on the structure of the DNA molecule
1954	Gertrude Elion	patented a leukemia-fighting drug
	Dr. Joseph E. Murray	performs the first kidney transplant
1955	Jonas Salk develops	develops the first polio vaccine (first use)
1961	Albert Sabin	oral polio vaccine was developed and came into commercial use
1963	Thomas Fogarty	invented the balloon embolectomy catheter
1964		First vaccine developed for measles
1967		First vaccine developed for mumps
	Dr. Christian Bernard	performs the first human heart transplant
1970		First vaccine developed for rubella
1974		First vaccine developed for chicken pox
1975	Robert S. Ledley	invents CAT-Scans
1977		First vaccine developed for pneumonia
1978		First test-tube baby is born
		First vaccine developed for meningitis
1980		Smallpox is eradicated
1981		First vaccine developed for hepatitis B
1983		HIV, the virus that causes AIDS, is identified
1984	Alec Jeffreys	devises a genetic fingerprinting method
1985	Willem J. Kolff	invented the artificial kidney dialysis machine
1996		Dolly the sheep becomes the first clone
2006		First vaccine to target a cause of cancer

CONFLICTS

Conflicts can happen between health care providers and patients and/or family, among health care providers and among family members.

CONFLICTS IN MORAL VALUES (ETHICAL DILEMMA)

When moral values are in conflict, the result may be an ethical dilemma. Sometimes, no good solution to a dilemma exists in medical ethics. Occasionally, the values of the medical community conflict with the values of the individual patient, family, or non-medical community. For example, the principles of autonomy and beneficence clash when patients refuse blood transfusions for his religious purpose while medical persons consider it as life-saving. Possible causes of ethical dilemma are due to lack of communication and cultural concerns.

COMMUNICATION

Communication breakdowns between patients and their healthcare team, between family members, or between members of the medical community, can all lead to disagreements and strong feelings. Many ethical conflicts can be solved with open lines of communication.

CULTURAL CONCERNS TRADITIONAL BELIEFS

Cultural differences can create difficult medical ethics problems. For example, some cultures have spiritual or magical theories about the origins of disease treatment and these beliefs sometime have conflict with western medicine.

TRUTH-TELLING

Some cultures rarely used truth-telling in medical cases especially when informing the patient of his diagnosis, for example, HIV in children or cancers.

CONFLICTS OF INTEREST

Health care workers should not allow conflict of interest to influence their medical judgment. In some cases, these conflicts are hard to avoid but medical persons have a responsibility to avoid entering such situations.

Some examples of conflict of interest are:

Referral

For example, some health care workers who receive incentive money from referring patients for medical tests or to buy drugs at private pharmacy shops refer more patients for these medical tests or to these shops without any reasonable medical concern. It is considered unethical and unacceptable in most parts of the world.

Vendor Relationship

Prescribing specific brand of drugs from the pharmaceutical companies who sponsored gifts or food to the medical community is also considered unethical.

Treatment of Family Members

Treating family members can also create conflicts of interest in medical ethics due to over-concerned or inappropriate treatment.

Sexual Relationship

Sexual relationship between health care person and patient is also an ethical conflict because patient may give sexual consent to the medical person who holds the patient's trust in medical responsibility. Sexual relationships between health care provider and patient's relatives may also be prohibited in some cases.

MEDICAL FUTILITY

Medical futility is referred to as "non-beneficial care." This is about what should be done when the family members insist on advanced care for a patient who has no or very few chances to survive. The better solution for this conflict is to emphasize on the fact that what the patient would want in this situation instead of what the relatives would like to do.

CONTROL AND RESOLUTION

To ensure that appropriate ethical values are being applied within health care settings and medical research, there are ethical guidelines and ethical committees to control the ethical problems.

ETHIC COMMITTEES

When communication between health care providers and patients is not enough to resolve a conflict, ethics committee must take over the role to decide a complex matter. This committee is composed mostly of health care professionals, but may also include philosophers, jurists and other lay people in order to provide balance.

GUIDELINES

There are various ethical guidelines. For example, Hippocrates' Oath and Declaration of Geneva are regarded as the most commonly used medical ethics guideline.

DECLARATION OF GENEVA (ORIGINAL VERSION)

At the time of being admitted as a Member of the medical profession:

1. I solemnly pledge to consecrate my life to the service of humanity
2. I will give to my teachers the respect and gratitude which is their due
3. I will practice my profession with conscience and dignity
4. The health and life of my patient will be my first consideration
5. I will respect the secrets which are confided in me
6. I will maintain by all means in my power, the honour and the noble traditions of the medical profession
7. My colleagues will be my brothers
8. I will not permit considerations of religion, nationality, race, party politics or social standing to intervene between my duty and my patient
9. I will maintain the utmost respect for human life, from the time of its conception, even under threat, I will not use my medical knowledge contrary to the laws of humanity
10. I make these promises solemnly, freely and upon my honour

PHARMACY MANAGEMENT

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.

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

PRECAUTIONS IN DRUG USE

NOTICE and COMMUNICATE with your supervisor!

- 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.

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

= 30 capsules x 5 patients/day x 180 days (6 months)

= 27000 capsules

Amoxicillin

One bottle contains 1000 capsules.

So 27 bottles is needed to order/require.

adult patient

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

ORDERING DRUGS

Same procedures as equipment

- requirements should be listed
- Complete the order form.

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 Card System

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.

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.

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

PREPARING DRUGS FOR THE OUTPATIENT DEPARTMENT

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

INTEGRATED MANAGEMENT OF CHILDHOOD ILLNESS (IMCI)

(ကလေးရောဂါများကို

ဘက်ပေါင်းစုံပေါင်းစည်းထားသော

နည်းလမ်းများဖြင့် ကုသမှုပေးခြင်း)

IMCI

- IMCI ဆိုသည်မှာ ကလေး၏ ကျန်းမာရေးအခြေအနေကို စနစ်တကျ ဘက်ပေါင်းစုံမှ ဆန်းစစ်ကုသသော နည်းလမ်းဖြစ်သည်။
- IMCI သည် အသက် ၅ နှစ်အောက်ကလေးများ သေဆုံးမှု၊ ဖျားနာမှု၊ မသန်မစွမ်းဖြစ်မှုများကို လျော့နည်းလာစေရန် နှင့် ကလေးများကျန်းမာစွာ ဖွံ့ဖြိုးကြီးထွားလာစေရန် ရည်ရွယ်ပြီး ကမ္ဘာ့ကျန်းမာရေးအဖွဲ့က ညွှန်ကြားထားသော ကုသမှု နည်းလမ်းများ ဖြစ်သည်။
- IMCI တွင်မွေးစမှ အသက် (၂) လအထိ နှင့် အသက် (၂) လ မှ (၅) နှစ်အထိ ဟူ၍ ကုသနည်း လမ်းညွှန် (၂) မျိုးရှိသည်။ ကုသနည်းလမ်းညွှန် တစ်ခုချင်းစီတွင် ကလေး၏ ကျန်းမာရေး အခြေအနေကို ဘက်ပေါင်းစုံ ဆန်းစစ်ပြီး မည်သို့ ဆက်လက် လုပ်ဆောင်ရမည်ကို
 1. ရောဂါလက္ခဏာများကို ဆန်းစစ်ခြင်း၊
 2. ရောဂါအဆင့်ခွဲခြားခြင်း
 3. ပြုစုကုသခြင်းနှင့် လိုအပ်ပါက လွှဲပြောင်းပေးခြင်း (မလွှဲပြောင်းမီ အခြေအနေပို၍ ဆိုးဝါးလာခြင်းမရှိစေရန် လိုအပ်သည် များကို ပြုစုကုသပေးရမည်) ဟူ၍ ခွဲခြားပြီး ပြည့်စုံစွာဖော်ပြထားသည်။

(က) မွေးစမှ အသက် (၂) လအထိ (0-2 months)

(ခ) အသက် (၂) လမှ အသက် (၅)နှစ်အထိ (2 months - 5 years)

ဆန်းစစ်ခြင်း	ရောဂါအဆင့်ခွဲခြားခြင်း	ကုသခြင်း
နီ	အရေးပေါ် လွှဲပြောင်း လိုအပ်သည်။ (မလွှဲပြောင်းမီလိုအပ်သည် များကို ကုသပေးရမည်။)	ကုသပေးရန်
ဝါ	ပြုစုကုသမှုပေးရမည်။ အိမ်တွင် ပြုစုကုသ နည်းများကို မိခင်အား သင်ကြားပေးရမည်။	
စိမ်း	အိမ်တွင် ကုသမှု ပေးနိုင်သည်။	

IMCI ပေါ်ပေါက်လာပုံ

- ၁၉၉၀ ခုနှစ်ဝန်းကျင်၌ ကမ္ဘာပေါ်တွင် အသက်(၅)နှစ် မပြည့်မီကလေးပေါင်း(၁၂)သန်းသည်သေဆုံးကြသည်။

- ကလေး(၁၀)ယောက်တွင် (၇) ယောက်မှာ ဝမ်းပျက် ဝမ်းလျော့ခြင်း၊ အသက်ရှူလမ်းကြောင်း ပိုးဝင်ခြင်း (အဓိကအားဖြင့် နမိုးနီးယား)၊ ဝက်သက်၊ ငှက်ဖျားနှင့် အဟာရချို့တဲ့ခြင်းကြောင့် သေဆုံးကြရသည်။
- အဆိုပါရောဂါများမှာ ကာကွယ်ကုသ၍ရသော ရောဂါများ ဖြစ်သည်။
- IMCI သည် ထိုရောဂါများကို ပြုစုကုသနည်းများနှင့် လိုအပ်ပါက လွှဲပြောင်းရမည့် အခြေအနေများကို ပြည့်စုံစွာ ဖော်ပြထားသည်။ **ထိုကလေးသေဆုံးမှု များစေသော ရောဂါများကို IMCI နည်းဖြင့် ကုသနိုင်ပါက ကမ္ဘာပေါ်တွင် (၅) နှစ်အောက် ကလေးသေဆုံးနှုန်းကို များစွာလျော့ကျအောင် ဆောင်ရွက်နိုင်မည်ဖြစ်သည်။**

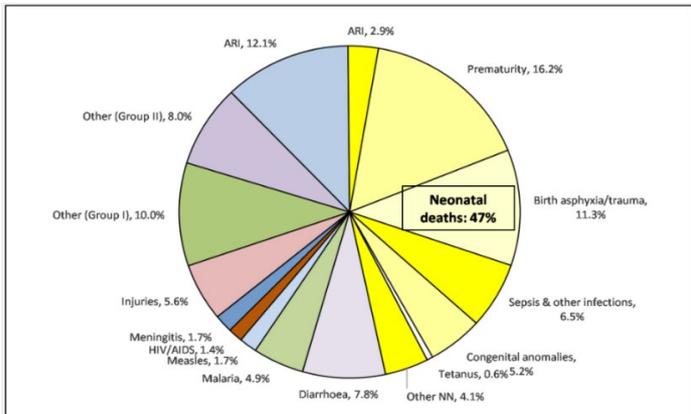
CAUSES OF UNDER 5 MORTALITY IN MYANMAR

(ငါးနှစ်အောက် ကလေးသေစေသည့်အကြောင်းအရင်း)

- လေ့လာမှုများအရ ဖွံ့ဖြိုးဆဲနိုင်ငံများတွင် ဖျားနာသော ကလေးတစ်ယောက် ဆေးခန်းသို့ ရောက်ရှိလာပါက ထိုကလေးတွင် ရောဂါတစ်ခု ထက်မက ရှိနေ တတ်သည်။ ဥပမာ- ဝမ်းလျော့နေသော ကလေးတွင် နမိုးနီးယားရောဂါ ဖြစ်နေခြင်း၊ ငှက်ဖျားရောဂါဖြင့် ဆေးခန်းသို့ ရောက်လာသော ကလေးတွင် အဟာရချို့တဲ့မှု လက္ခဏာများ ရှိနေခြင်း။
- ထိုသို့သော အခြေအနေမျိုးတွင် ရောဂါတစ်မျိုးတည်းကို ကုသပေးရုံဖြင့် မလုံလောက်တော့ပေ။
- ကလေးရောဂါများကို ဘက်ပေါင်းစုံဆန်းစစ်ကုသရန် လိုအပ်လာသည်။ ထို့ကြောင့် ၁၉၉၂ ခုနှစ်တွင် UNICEF နှင့် ကမ္ဘာ့ကျန်းမာရေးအဖွဲ့ (WHO) တို့ပူးပေါင်းပြီး IMCI ကို စတင်အကောင်အထည်ဖော် ဆောင်ရွက် ခဲ့ကြသည်။
- IMCI ကို စတင်အသုံးပြုပြီးနောက် ၂၀၁၃ ခုနှစ်တွင် ကမ္ဘာပေါ်၌ အသက် (၅)နှစ်မပြည့်မီ သေဆုံးသော ကလေးအရေအတွက်မှာ (၇) **သန်းအထိ** ကျဆင်း လာခဲ့သည်။
- IMCI သည် အသက် (၅) နှစ်အောက် ကလေးငယ်များ သေဆုံးနှုန်း လျော့နည်းစေရန် အတွက် တခုတည်းသော နည်းလမ်းအဖြစ် ကမ္ဘာတဝှမ်း ဆက်လက်အကောင် အထည်ဖော် အသုံးပြုနေကြပြီဖြစ်သည်။

- ကလေးများသေဆုံးရသော ရောဂါများ၏ ထက်ဝက် မျှသော နောက်ခံအကြောင်းရင်း မှာ အာဟာရချို့တဲ့ခြင်းကြောင့် ဖြစ်သည်။
- IMCI သည် ကုသမှုနည်းလမ်းများကို ကျန်းမာရေးလုပ်သားများသာမက မိမိရပ်ရွာ၊ မိသားစုဝင်များပါ ပြုစုကုသမှု ပေးနိုင်ရန် စီစဉ်ထားပြီး ကာကွယ်ရေး၊ ကုသရေး လုပ်ငန်းစဉ်များ ပါဝင်သည်။
- အောက်ပါဇယားတွင် ကျန်းမာရေးဝန်ထမ်းများ အသုံးပြုနိုင်သော IMCI များကို ဖော်ပြထားသည်။
- IMCI ကုသနည်းအသေးစိတ်များကို IMCI Chart booklet တွင်ဖော်ပြထားသည်။

သူနာပြုများ , MCH ဝန်ထမ်းများ , Medic , Health Assistant များ, CHW များ	Integrated Management of Childhood Illness (IMCI)
Village Health Worker	Integrated Community Case Management (ICCM)



<https://colinmathers.com/2018/12/09/new-estimates-of-the-causes-of-child-death-under-age-5/>

အန္တရာယ်ရောဂါလက္ခဏာ (၁၁) ချက်

1. (၂၁) ရက် သို့မဟုတ် (၂၁) ရက်နှင့်အထက် ချောင်းဆိုးခြင်း။
2. ၁၄ ရက် (သို့မဟုတ်) ၁၄ရက်နှင့်အထက် ဝမ်းပျက်ဝမ်းလျှော့ခြင်း။
3. ဝမ်းထဲသွေးပါခြင်း။
4. (၇) ရက် (သို့မဟုတ်) (၇) ရက်ထက်ပို၍အဖျားတက်ခြင်း။
5. အတက်ရောဂါဖြစ်ခြင်း။
6. လုံးမမစားနိုင် မသောက်နိုင်ဖြစ်ခြင်း။
7. စားသောက်သမျှ အကုန်အန်ခြင်း။
8. အသက်ရှူသွင်းစဉ် ရင်ဘတ်အောက်ချိုင့်ဝင်ခြင်း။
9. ကလေးမှိန်းခြင်း (သို့မဟုတ်) သတိလစ်ခြင်း။
10. လက်မောင်းပတ်တိုင်းသောအပတ်ပြားတွင် အနီရောင်ဖြစ်နေခြင်း။
11. ခြေထောက်နှစ်ဖက်လုံး ဖောရောင်နေခြင်း။

ICCM (INTEGRATED COMMUNITY CASE MANAGEMENT)

ICCM သည် IMCI ကိုအခြေခံပြီး Village Health Worker များကို (၅) နှစ်အောက် သေနန်းများသော ရောဂါများအနက် ငှက်ဖျား၊ ဝမ်းပျက်ဝမ်းလျှော့ခြင်းနှင့် နမိုးနီးယားရောဂါများကို မိမိစွမ်းဆောင်နိုင်သော အခြေအနေအတွင်း ကုသပေးသော နည်းလမ်းများကို ဖော်ပြထားခြင်း ဖြစ်သည်။

COMMUNITY – IMCI (လူထုအခြေပြု IMCI)

C-IMCI တွင် အန္တရာယ်ရောဂါလက္ခဏာ (၁၁) ချက်ကို ဖော်ပြထားသည်။ အန္တရာယ်ရောဂါလက္ခဏာများ မှ အချက် တစ်ချက်ချက်ရှိပါက ကလေးကို နီးစပ်ရာ ဆေးရုံ၊ ဆေးခန်းသို့ အမြန်ဆုံးလွှဲပြောင်းကုသပေးရမည်။ နာမကျန်း ဖြစ်နေသော ကလေးတွင် အန္တရာယ်လက္ခဏာများ မရှိပါက ဆက်လက် ပြုစုကုသမှု ပေးရမည့် နည်းလမ်းများ ကိုလည်း ဖော်ပြထားသည်။

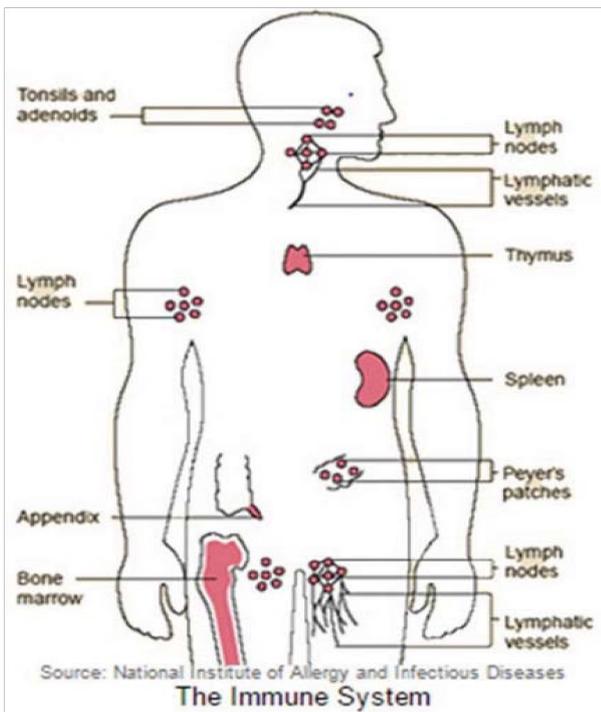
IMMUNIZATION

ကာကွယ်ဆေးထိုးခြင်း (IMMUNIZATION)

- ကာကွယ်ဆေးထိုးခြင်းသည် လူများကူးစက်ရောဂါများကို ကာကွယ်ရန် ပြုလုပ်ထားသောဖြစ်စဉ် ဖြစ်သည်။
- လူ၏ကိုယ်ခံစွမ်းအားကို လှုံ့ဆော်ပေးပြီး ရောဂါကူးစက်ခြင်းကို ကာကွယ်ပေးခြင်း (Active immunization) (သို့) အဆင်သင့်ရှိသော ပြင်ပမှ ပြုလုပ်ထားသော ကိုယ်ခံစွမ်းအားကို ခန္ဓာကိုယ်တွင်းသို့ ထိုးသွင်းပေးပြီး ရောဂါကူးစက်ခြင်းကို ကာကွယ်ပေးခြင်း (Passive immunization) ဟူ၍ ကာကွယ်ဆေး ၂ မျိုးရှိသည်။
- ကာကွယ်ဆေးပေးခြင်းသည် ကုန်ကျစရိတ်သက်သာသော ကျန်းမာရေး စောင့်ရှောက်မှု တစ်ခုဖြစ်သည်။
- သန်းနှင့်ချီသောလူများကို နေမကောင်းခြင်း၊ မသန်မစွမ်းဖြစ်ခြင်းနှင့် သေဆုံးခြင်းမှ ကာကွယ်ပေးသည်။ ကာကွယ်ဆေးအသစ်များလည်း ပေါ်လာပြီဖြစ်သည်။

ကိုယ်ခံအားစနစ် (THE IMMUNE SYSTEM)

ခုခံအားစနစ်သည် ရောဂါပိုးတိုက်ဖျက်သော ဆဲလ်များဖြင့် ဖွဲ့စည်းထားသည်။ အောက်ဖော်ပြပါ လူ့ခန္ဓာကိုယ်၏နေရာများတွင် ကိုယ်ခံအားစနစ် (The Immune System) ပါဝင်သည်။



Antigens & Antibodies

- ရောဂါပိုး (ဘတ်တီးရီးယားနှင့် မိုင်းရပ်) နှင့် ၎င်း၏အစိတ်အပိုင်းများအပါအဝင် ပြင်ပမှအရာမှန်သမျှသည် ရောဂါဖြစ်စေသော Antigen များဖြစ်သည်။ ကိုယ်ခန္ဓာထဲဝင်လာလျှင် ခုခံအားစနစ်မှ သိရှိပြီး ရောဂါဖြစ်ပွားမှုကို ကာကွယ်ပေးသည်။ ထိုသို့ ကာကွယ်ခြင်းကို ခုခံအားစနစ်တုန့်ပြန်မှုဟု ခေါ်သည်။ Antibody သည် Protein တစ်မျိုးဖြစ်ပြီး Antigens ကိုသိရှိ၍ ပေါင်းစပ်ပြီး လူကိုရောဂါမဖြစ်အောင် ပြုလုပ်ပေးသည်။
- ဥပမာ။ ။ နော်အဲလှ နှင့် နော်အဲဖူးတို့သည် ကျောင်းတွင်ဆုံကြသည်။ နော်အဲလှသည် ရေကျောက်ပေါက်နေသည်။ နော်အဲလှ နှာချိုသော် နော်အဲဖူးရှူမိသည်။ နော်အဲဖူးသည် တစ်ခါမျှ ရေကျောက်မပေါက်ဖူးပေ။ သူမ၏ ကိုယ်ခန္ဓာတွင် ရေကျောက်ရောဂါပိုးကို တိုက်ဖျက်နိုင် antibodies မရှိပေ။ ထို့ကြောင့် နော်အဲဖူး နေမကောင်းဖြစ်သည်။ ပိုးသည် သူမကိုယ်ထဲတွင် ပွားများပြီး ထိုပိုးများကို တိုက်ထုတ်ရန် antibodies ပေါ်လာသည်။ နောက်တစ်ခါ ရေကျောက် ပေါက်လာလျှင် နော်အဲဖူး မည်သို့ဖြစ်မည်နည်း။
- သူမတွင် ရေကျောက်ပိုးအတွက် Antibodies ပေါ် ပြီးဖြစ်၍ ဝင်လာသောရေကျောက်ပိုးကို သိရှိတိုက်ထုတ်မည် ဖြစ်သည်။ သူမ နေမကောင်းမဖြစ်နိုင်တော့ပေ။
- Antibodies သည် ခန္ဓာကိုယ်တွင်းသို့ ဝင်ရောက်လာသော ပိုးတစ်မျိုးကိုသာ သိနိုင်သည်။ ဥပမာ ရေကျောက် antibodies သည်ဝက်သက်ရောဂါပိုးကို မသိနိုင်ပေ။ ရောဂါပိုးအသစ်ဝင်လျှင် antibodies အသစ်ကို ထိုရောဂါပိုး (Antigen) နှင့် သက်ဆိုင်သော (Antibody) ကိုခန္ဓာကိုယ်မှ ထုတ်လုပ်သည်။

လုပ်ယူရသော ခုခံအားစနစ် နှင့် အလိုလျောက်ရသော
ခုခံအားစနစ် (Active & Passive Immunity)

- လုပ်ယူရသောခုခံအားစနစ်သည် (Active immunization) ခန္ဓာကိုယ်တွင်းသို့ ဝင်လာသော ရောဂါပိုးကြောင့် (antigens) ကြောင့် ၎င်းပိုးကို ကာကွယ်သော ခုခံအား (Antibodies) ဖြစ်ပေါ်လာသည်။ ကာကွယ်ဆေးထိုးခြင်းဖြင့် Antibodies ရနိုင်သည်။ ကာကွယ်ဆေးထိုးခြင်းသည် ရောဂါဖြစ်စရာမလိုဘဲ ၎င်းရောဂါကို ကာကွယ်ပေးနိုင်သည်။
- ရေကျောက်ကူးစက်ခံရလျှင် ပိုးသည် လူ့ကိုယ်ထဲတွင် ပွားများပြီး ထိုပိုးများကို တိုက်ထုတ်ရန် Antibodies ပေါ်လာသည်။ နောက်တစ်ခါ ရေကျောက် ပေါက်လာလျှင် ဝင်လာသော ရေကျောက်ပိုးကိုသိရှိ

- တိုက်ထုတ်မည်ဖြစ်သည်။ ထို့ကြောင့် နောက်တစ်ခါ ရေကျောက်ရောဂါ မဖြစ်နိုင်တော့ပေ။ ၎င်းကို သဘာဝခုခံစနစ် ရသည်ဟုခေါ်သည်။ (Natural Immune Response)
- အလိုအလျောက်ရသော ခုခံအားစနစ်သည် လူ(သို့) တိရိစ္ဆာန်တွင်ထုတ်လုပ်ပြီး တခြားလူ တစ်ယောက်၏ ကိုယ်တွင်းသို့ သွင်းခြင်းဖြင့် ရရှိသည်။
 - ခုခံအား နည်း ၂ နည်းရှိသည်။
၁။ ကိုယ်ဝန်သည်အမျိုးသမီးတွင် အချင်း မှတဆင့် ကလေးသို့ မမွေးခင်ကူးပြောင်းခြင်း။ ၎င်းကို အမေ၏ antibodies ဟုခေါ်ပြီး ကလေးတစ်နှစ်အထိ ကာကွယ်ပေးသည်။
၂။ လူ (သို့) တိရိစ္ဆာန်တွင်ထုတ်လုပ်ပြီး တခြားလူတစ်ယောက်သို့ ၎င်း antibodies ကိုသွင်းခြင်း။

Different Between Active and Passive Immunity

	Active Immunity	Passive Immunity
ထုတ်လုပ်နည်း	• မိမိခန္ဓာကိုယ်မှ ခုခံအားထုတ်လုပ်	• တခြားလူ (သို့) တိရိစ္ဆာန်
ထုတ်ယူသည့်နေရာ	• ရောဂါဖြစ်ခြင်း • ကာကွယ်ဆေးထိုးခြင်း	• မိခင်ကိုယ်ဝန်ဆောင်စဉ်အတွင်း သန္ဓေသားကို ရောက်ရှိခြင်း • ပြင်ပတွင်ထုတ်လုပ်ထားသောခုခံအား (antibodies)ကို ခန္ဓာကိုယ်တွင်းသို့ထိုးသွင်းခြင်း
ကာကွယ်နိုင်သည့်ကာလ	• ခန္ဓာကိုယ်အတွင်း ခုခံအားသည် ကြာရှည်ခံသည်	• အချိန်နှင့်အမျှ ခုခံနိုင်မှု(ရောဂါကာကွယ်နိုင်မှု)ကျဆင်းလာမည်

အစုလိုက်အပြုံလိုက်ကာကွယ်ပေးခြင်း Herd Immunity (Community Immunity)

- အစုလိုက်အပြုံလိုက်ကာကွယ်ပေးခြင်း (လူထုကာကွယ်ဆေး)သည် ရောဂါပိုးကူးစက်ခြင်း ကာကွယ်သော နည်းလမ်း ဖြစ်သည်။ လူထုအများစုကို ကာကွယ်ထားခြင်းဖြင့် ကာကွယ်ဆေးမရသော (သို့) ခုခံအားမရသောလူများကို ကာကွယ်ခြင်းအတွက် ရည်ရွယ်သည်။
- လူများများ ကာကွယ်ထားလျှင် ရောဂါနှင့်ထိတွေ့သော်လည်း ရောဂါမဖြစ်ဘဲ ဆက်လက်၍ လည်း သူတပါးသို့ မကူးစက်နိုင်တော့ပါ။
- အစုလိုက်အပြုံလိုက် ကာကွယ်ဆေးပေးခြင်းကို အလွန် ငယ်သောကလေးများ၊ ခုခံအားကျဆင်း၍ ကာကွယ်ဆေးထိုး၍မရသောသူများ၊ ကာကွယ်ဆေးထိုးသော်လည်း လုံလောက်သောခုခံအား မပေါ်ပေါက်သော သက်ကြီးရွယ်အိုများ၊ ကာကွယ်ဆေးမရသော

- နေရာများရှိ ကလေးများ၊ ကာကွယ်ဆေးမထိုးသော ကလေးများအတွက် အကျိုးရှိသည်။
- ဝက်သက်အစုလိုက်အပြုံလိုက် ကာကွယ်ဆေးပေးခြင်း သည် လူထု၏ ၉၀-၉၅% ထိုးရန်လို အပ်သည်။ အစုလိုက် အပြုံလိုက် ကာကွယ်ဆေးပေးခြင်းကို ရာခိုင်နှုန်းနှင့် တွက်ချက်သည်။

ကာကွယ်ဆေးအမျိုးအစားများ TYPE OF VACCINES

1. Live attenuated vaccines ကိုရောဂါဖြစ်သောဗိုင်းရပ်စ်၊ ဘက်တီးရီးယား တို့မှထုတ်လုပ်သည်။ ထိုအကောင်များသည် ရောဂါမဖြစ်စေနိုင်တော့သော်လည်း အသက်ရှိကြသည်။ သို့သော် အားနည်းနေကြသည်။ ထို့ကြောင့် ကိုယ်ခန္ဓာတွင် ပွားနိုင်ပြီး ရောဂါမဖြစ်နိုင်ပေ။

2. Inactivated vaccines သည် သေသော ဗိုင်းရပ်စ်၊ ဘက်တီးရီးယားတို့မှ ထုတ်လုပ်သည်။ ၎င်းတို့သည် မပွားနိုင်ကြပေ။ သေနေသောကြောင့် antigen ပမာဏ နည်းသည်။ ထို့ကြောင့် ခုခံအားရရန် အကြိမ်များများထိုးရန် လိုအပ်သည်။

အထက်ပါ ကာကွယ်ဆေးအမျိုးအစားအပြင် အခြား နည်းပညာများဖြင့် ထုတ်လုပ်သော ကာကွယ်ဆေးများလည်း အများအပြား ပေါ်ပေါက်နေပြီ ဖြစ်ပါသည်။

ကာကွယ်ဆေးမပေးရသည့်အခြေအနေများ (CONTRAINDICATIONS)

1. ဆုံဆို့နာကာကွယ်ဆေး (Pertussis) ပါဝင်သော ကာကွယ်ဆေးများအတွက် မထိုးသင့်သော အခြေအနေများ ရှိသည်။

- DPT ဆေးထိုးပြီး ၂ ရက်အတွင်း အပြင်းဖျား (၁၀၅ ဒီဂရီဖာရင်ဟိုက်)
- DPT ဆေးထိုးပြီး ၂ ရက်အတွင်း သတိလစ်ခြင်း
- DPT ဆေးထိုးပြီး ၂ ရက်အတွင်း ၃ နာရီအထက် ဝိခြင်း
- DPT ဆေးထိုးပြီး ၃ ရက်အတွင်း တက်ခြင်း (ဖျား သို့မဟုတ် မဖျား)

2. ကိုယ်ဝန်သည်များအား live attenuated vaccines ထိုး၍မရပါ။ အဘယ်ကြောင့်ဆိုသော် သန္ဓေသား အန္တရာယ်ရှိသော ကြောင့်ဟုဆိုသည်။ Inactivated vaccines ပေးနိုင်သည်။

3. ပြင်းထန်အဖျားရောဂါများ

4. ခုခံအားကျဆင်းခြင်းတွင်လည်း live attenuated vaccines နှင့် နှာခေါင်းတွင်းပေးသော တုပ်ကွေး ကာကွယ်ဆေး မပေးရ။

5. Antibody သွင်းထားပြီးသောလူကို live attenuated vaccines (MMR, Varicella, and MMRV) ပေး၍မရ။ ထို antibody သည် ကာကွယ်ဆေး၏ လုပ်ဆောင်ချက်များကို နှောင့်ယှက်သောကြောင့် ဖြစ်သည်။

အဘယ်ကြောင့် ကာကွယ်ဆေးကို ပုံမှန်ပေးသင့်သနည်း။

- ကာကွယ်ဆေးစောပေးလျှင် ကလေးသည် ကိုယ်ခံစွမ်းအား လုံလောက်စွာ မဖွံ့ဖြိုးသေး၍ ရောဂါကို ကာကွယ်နိုင်မည် မဟုတ်ပေ။
- ကာကွယ်ဆေးကို နောက်ကျမှပေးလျှင် ကာကွယ်ဆေး မပေးမှီ ရောဂါဖြစ်ပွားခြင်းများ ဖြစ်တတ်သည်။

- ပထမအကြိမ်ပေးပြီး နောက်တစ်ကြိမ်တွင် စောပေး မိပါက မျှော်မှန်းထားသည့် ရောဂါကာကွယ်မှုမျိုး မရနိုင်ပါ။

ကာကွယ်ဆေးပေးသင့်သည့်အချိန်တွင် မပေးမိ၍သော် လည်းကောင်း၊ တစ်ခါမျှ မစရသေး၍သော်လည်းကောင်း မည်သို့ ပြုလုပ်ရမည်နည်း။

- ကလေးအသက်နှင့် မည်သည့်ကာကွယ်ဆေး မပေးမိ သည်ပေါ်တွင် မူတည်သည်။
- အကယ်၍ ကာကွယ်ဆေး စ မပေးရသေးပါက ချက်ချင်းစပြီး ခြားသင့်သည့် ကာလခြားကာ နောက်တစ်ခါ ထပ်ပေးနိုင်သည်။ (ဥပမာ။ DPT ဆေးကိုပထမထိုးပြီး ၄ ပတ်ခြား၍ ဒုတိယအကြိမ် ပေးရမည်။)
- တချို့ကာကွယ်ဆေးများသည် ကလေး အသက်ကြီး လာလျှင် မလိုအပ်တော့ပေ။ ဥပမာ - ဆုံဆို့နာသည် ကလေး ၁ နှစ်ခွဲတွင် မလိုအပ်တော့ပေ။ BCG (တီဘီ ကာကွယ်ဆေး) နှင့် Hib (တုပ်ကွေးကာကွယ်ဆေး) တို့သည် ကလေး ၁ နှစ်တွင် မလိုအပ်တော့ပေ။ ဝက်သက်ကာကွယ်ဆေးသည် ၁ နှစ်ခွဲတွင် ထပ်မံထိုးရန် မလိုအပ်တော့ပေ။

HIV ပိုးရှိသော ကလေးကို ကာကွယ်ဆေး ပေးသင့် ပါသလား။

HIV ပိုးရှိသော်လည်း လက္ခဏာမပြပါက (သွေးဖြူဥဆဲလ် CD4 အလွန်မကျပါက) ကာကွယ်ဆေးပေးသင့်သည်။ BCG ပိုလီယို၊ ဝက်သက်ကဲ့သို့ ကာကွယ်ဆေးကိုပေးရန် မသင့်ပါ။ HIV ပိုး ထိန်းချုပ်ဆေးပေးပြီး CD4 ပုံမှန် ဖြစ်လာ သည်အထိ စောင့်ပြီး ပိုလီယိုနှင့်ဝက်သက် ကာကွယ်ဆေး ပေး၍ရသည်။ တခြားပုံမှန် ကာကွယ်ဆေးများကိုမူ ပေးနိုင်သည်။

မည်သည့်အချိန်တွင် ကာကွယ်ဆေးထိုး၍ မရသနည်း။

ကာကွယ်ဆေးထိုး၍ မရသောအခြေအနေ အနည်းငယ်သာ ရှိသည်။ နေမကောင်း အနည်းငယ်ဖြစ်ရုံနှင့်၊ အရေပြား ယားနာ၊ ဓာတ်မတည့်မှု အနည်းငယ်ရှိရုံနှင့် မထိုးပဲ မနေသင့်ပါ။ နေမကောင်းဖြစ်သောကလေး၊ အာဟာရ ချို့တဲ့သောကလေး နေပြန်ကောင်းလာပါက အိမ်ပြန်ခွင့် မပြုမီ ထိုးပေးသင့်သည်။

ပုံမှန်ကာကွယ်ဆေးထိုး/တိုက်ခြင်းနှင့် ပုံမှန်ကာကွယ်ဆေး ထိုး/တိုက်ရန် အသင့်တော်ဆုံး အသက်အရွယ်တွင် မထိုး/မတိုက် လိုက်ရသော ကလေးများအတွက် လမ်းညွှန်

ကာကွယ်ဆေး	မွေးစ*	၂ လ	၄ လ	၆ လ	၉ လ	၁ နှစ်	၁ နှစ်ခွဲ	၃ နှစ်	၅ နှစ်
ဘီစီဂျီ**	■	■	■	■	■	■	■	■	■
အသည်းရောင် အသားဝါ (ဘီ)	■	■	■	■	■	■	■	■	■
ငါးမျိုးစပ် ကာကွယ်ဆေး- ပထမအကြိမ်	■	■	■	■	■	■	■	■	■
ငါးမျိုးစပ် ကာကွယ်ဆေး- ဒုတိယအကြိမ်	■	■	■	■	■	■	■	■	■
ငါးမျိုးစပ် ကာကွယ်ဆေး- တတိယအကြိမ်	■	■	■	■	■	■	■	■	■
ပိုလီယို- ပထမအကြိမ်	■	■	■	■	■	■	■	■	■
ပိုလီယို- ဒုတိယအကြိမ်	■	■	■	■	■	■	■	■	■
ပိုလီယို- တတိယအကြိမ်	■	■	■	■	■	■	■	■	■
ဝက်သက်- ပထမအကြိမ်	■	■	■	■	■	■	■	■	■
ဝက်သက်- ဒုတိယအကြိမ်	■	■	■	■	■	■	■	■	■

*မွေးဖွားသည်မှ ၂၄ နာရီအတွင်းထိုးရန်၊ အကယ်၍ မထိုးနိုင်ပါက (၇) ရက်အတွင်းထိုးပေးနိုင်ပါသည်။

**ဘီစီဂျီကာကွယ်ဆေးကို မွေးစတွင် မထိုးနိုင်ပါက အသက် (၂)လ မတိုင်မီတွင် လည်းကောင်း၊ အသက် (၂)လတွင် အခြားကာကွယ်ဆေးများနှင့်အတူ လည်းကောင်း ထိုးနှံရပါမည်။

- တကြိမ်နှင့် တကြိမ်ကြားတွင် အနည်းဆုံး ၂၈ ရက် ခြားရပါမည်။
- အပိုဆောင်း ကာကွယ်ဆေးထိုး/တိုက်ခြင်းကို ပုံမှန်ကာကွယ်ဆေးထိုး /တိုက်ခြင်း တွင် ထည့်သွင်းရေတွက်ခြင်း မပြုရပါ။

■	ကာကွယ်ဆေးထိုး/တိုက်ရန် အသင့်တော်ဆုံးအသက်အရွယ် ဖြစ်ပါသည်
■	အသင့်တော်ဆုံးအချိန်တွင် မထိုး/မတိုက်လိုက်ရပါက ဤအသက်အရွယ်တွင် ကာကွယ်ဆေးထိုး/ တိုက်ပေးနိုင်ပါသည်
■	ဤအသက်အရွယ်တွင် ကာကွယ်ဆေး မထိုး/မတိုက်ရပါ။



ပုံမှန်ကာကွယ်ဆေးထိုး၊ ဆေးတိုက်ခြင်း အစီအစဉ်

အသက်	ကာကွယ်ဆေးများ	ကာကွယ်ပေးသည့်ရောဂါများ
မွေးပြီးပြီးချင်း	ဘီစီဂီ*	ပြင်းထန်တီဘီရောဂါ
	အသည်းရောင်အသားဝါ (ဘီ)	အသည်းရောင်အသားဝါ(ဘီ)
၂ လ	ဘီစီဂီ*	ပြင်းထန်တီဘီရောဂါ
	ပိုလီယို (ပထမ)	ပိုလီယိုအကြောသေရောဂါ
	ပြင်းထန်ဝမ်းပျက်ဝမ်းလျှော (ရိုတာ) (ပထမ)	ပြင်းထန်ဝမ်းပျက်ဝမ်းလျှောရောဂါ
	ပြင်းထန်အဆုတ်ရောင် (ပီစီစီ) (ပထမ)	ပြင်းထန်အဆုတ်ရောင်ရောဂါ
	ဆုံဆို့ ကြက်ညှာ၊ မေးခိုင်း အသည်းရောင်အသားဝါ (ဘီ)၊ ဦးနှောက်အမြှေးရောင် (ငါးမျိုးစပ်ကာကွယ်ဆေး) (ပထမ)	ဆုံဆို့နှာ၊ ကြက်ညှာ၊ မေးခိုင်း အသည်းရောင်အသားဝါ (ဘီ)၊ ဦးနှောက်အမြှေးရောင်ရောဂါ/အဆုတ်ရောင်ရောဂါ
၄ လ	ပိုလီယို (ဒုတိယ)	ပိုလီယိုအကြောသေရောဂါ
	ပြင်းထန်ဝမ်းပျက်ဝမ်းလျှော (ရိုတာ) (ဒုတိယ)	ပြင်းထန်ဝမ်းပျက်ဝမ်းလျှောရောဂါ
	ပြင်းထန်အဆုတ်ရောင် (ပီစီစီ) (ဒုတိယ)	ပြင်းထန်အဆုတ်ရောင်ရောဂါ
	ပိုလီယိုထိုးဆေး	ပိုလီယိုအကြောသေရောဂါ
	ဆုံဆို့ ကြက်ညှာ၊ မေးခိုင်း အသည်းရောင်အသားဝါ (ဘီ)၊ ဦးနှောက်အမြှေးရောင် (ငါးမျိုးစပ်ကာကွယ်ဆေး) (ဒုတိယ)	ဆုံဆို့နှာ၊ ကြက်ညှာ၊ မေးခိုင်း အသည်းရောင်အသားဝါ (ဘီ)၊ ဦးနှောက်အမြှေးရောင်ရောဂါ/အဆုတ်ရောင်ရောဂါ
၆ လ	ပိုလီယို (တတိယ)	ပိုလီယိုအကြောသေရောဂါ
	ပြင်းထန်အဆုတ်ရောင် (ပီစီစီ) (တတိယ)	ပြင်းထန်အဆုတ်ရောင်ရောဂါ
	ဆုံဆို့ ကြက်ညှာ၊ မေးခိုင်း အသည်းရောင်အသားဝါ (ဘီ)၊ ဦးနှောက်အမြှေးရောင် (ငါးမျိုးစပ်ကာကွယ်ဆေး) (တတိယ)	ဆုံဆို့နှာ၊ ကြက်ညှာ၊ မေးခိုင်း အသည်းရောင်အသားဝါ (ဘီ)၊ ဦးနှောက်အမြှေးရောင်ရောဂါ/အဆုတ်ရောင်ရောဂါ
	ဝက်သက် - ဂျီကီသိုး (ပထမ)	ဝက်သက်ရောဂါ၊ ဂျီကီသိုးရောဂါ
၉ လ	ဂျပန်ဦးနှောက်ရောင်	ဂျပန်ဦးနှောက်ရောင်ရောဂါ
	ဝက်သက် - ဂျီကီသိုး (ဒုတိယ)	ဝက်သက်ရောဂါ၊ ဂျီကီသိုးရောဂါ
၁၀ နှစ်ခွဲ	ဆုံဆို့ ကြက်ညှာ၊ မေးခိုင်း အသည်းရောင်အသားဝါ (ဘီ)၊ ဦးနှောက်အမြှေးရောင် (ငါးမျိုးစပ်ကာကွယ်ဆေး) (၁၀/၅၅)	ဆုံဆို့နှာ၊ ကြက်ညှာ၊ မေးခိုင်း အသည်းရောင်အသားဝါ (ဘီ)၊ ဦးနှောက်အမြှေးရောင်ရောဂါ/အဆုတ်ရောင်ရောဂါ
	အိတ်(ချုံ)ပီစီ (ပထမ)	သားအိမ်ဝေါင်းကင်းဆေးရောဂါ
၁၀ နှစ်	အိတ်(ချုံ)ပီစီ (ဒုတိယ)	သားအိမ်ဝေါင်းကင်းဆေးရောဂါ

*ထည့်ပေးသောနေ့တွင် မွေးမွေးသောကာလများကို မွေးမွေးပြီးပြီးချင်း ၂၄ နာရီအတွင်း အသည်းရောင်အသားဝါ(ဘီ)ကာကွယ်ဆေးထိုးပေးရမည်။
*ဘီစီဂီကာကွယ်ဆေးကို မွေးကင်းစင်ပြီးနောက် အသက် ၂၂လတွင် ခြောက်လပြည့်ကျော် အသက်(၂)လတွင် အခြားကာကွယ်ဆေးများနှင့်အတူထည့်သွင်း ထိုးပေးရမည်။



ကာကွယ်ဆေးများအကြောင်း

ကမ္ဘာပေါ်တွင်အသုံးပြုနေသော ကာကွယ်ဆေး များပြားစွာ ရှိသော်လည်း အောက်တွင်ဖော်ပြထားသော ရောဂါ ကာကွယ်ဆေး (၁၁) ခုကို မြန်မာနိုင်ငံတွင် လက်ရှိအသုံးပြုလျက်ရှိသည်။

၎င်းကာကွယ်ဆေးများမှာ.....

- (၁) ဆုံဆို့နှာ
- (၂) ကြက်ညှာချောင်းဆိုး
- (၃) မေးခိုင်းကာကွယ်ဆေး (ဆ.က.မ)
- (၄) ဝက်သက်ကာကွယ်ဆေး
- (၅) အစက်ချ နှင့် အသားဆေး ပိုလီယိုရောဂါ ကာကွယ်ဆေး (OPV)
- (၆) ပြင်းထန်သော တီဗီရောဂါ ကာကွယ်ဆေး (BCG)
- (၇) အသည်းရောင်အသားဝါဘီ ရောဂါကာကွယ်ဆေး
- (၈) ဦးနှောက်အမြှေးရောင် ရောဂါကာကွယ်ဆေး
- (၉) ပြင်းထန်သော အဆုတ်ရောင် ရောဂါကာကွယ်ဆေး (PCV)
- (၁၀) ဂျီကီသိုး ရောဂါကာကွယ်ဆေး (Rubella)
- (၁၁) ဂျပန်ဦးနှောက်ရောင် ကာကွယ်ဆေး

- အထက်ပါ ကာကွယ်ဆေးများကို ထိုးဆေး ၊ အစက်ချ ဆေးအနေဖြင့် အသုံးပြုပါသည်။ အချို့ကာကွယ်ဆေး များသည် ၅ မျိုးစပ်ထားပြီး ထိုးပေးသည်။ (ငါးမျိုးစပ် ကာကွယ်ဆေး)
- ငါးမျိုးစပ် ကာကွယ်ဆေး ။ ဆုံဆို့ ကြက်ညှာ၊ မေးခိုင်း အသည်းရောင်အသားဝါဘီ နှင့် ဦးနှောက်အမြှေးရောင်
- ကာကွယ်ဆေးပေါ်မူတည်၍ အချို့ကာကွယ်ဆေးသည် အရေပြားအတွင်း (Intradermal) ၊ အစက်ချ (drop) ၊ အသားဆေး (Intramuscular) နှင့် အရေပြားအောက် (Subcutaneous) ဆေးထိုးနည်းများကို အသုံးပြုကြ သည်။

အအေးလမ်းကြောင်းစနစ်အကြောင်း (COLD CHAIN SYSTEM)

ကာကွယ်ဆေးများသည် အပူဓာတ် (သို့) အအေးဓာတ်ကြောင့် ထိခိုက် ပျက်စီး လွယ်သည်။ သို့ဖြစ်၍ ကာကွယ်ဆေးများကို စက်ရုံမှ ထုတ်လုပ်လိုက်သည့် အချိန်မှစ၍ ကလေး တစ်ဦးချင်းအား ထိုးပေးသည့် အချိန်အထိ ကာကွယ်ဆေး အမျိုးအစားပေါ် မူတည်၍ မှန်ကန်သော အပူချိန်တွင် သိမ်းဆည်းထားရန် လွန်စွာ အရေးကြီးပါသည်။ ထိုကဲ့သို့ ကာကွယ်ဆေးများကို မပျက်စီးစေရန် ထိန်းသိမ်းပြီး သိမ်းဆည်းသိုလှောင်ခြင်း နှင့် ဖြန့်ဝေခြင်း (ကလေးကို ကာကွယ်ဆေးပေးသည့် အချိန်ထိ) တို့ကို အအေး လမ်းကြောင်းစနစ် ဟုခေါ်ဆိုသည်။

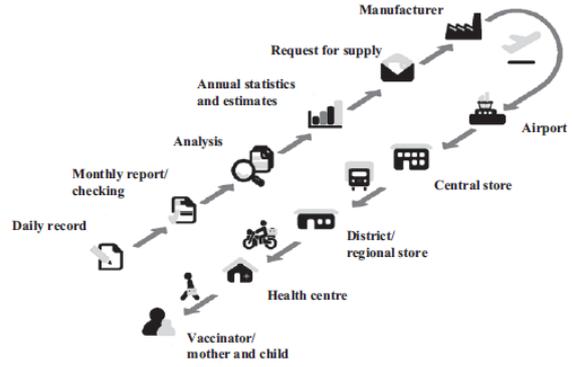
ကာကွယ်ဆေးများ

အခြေခံကျန်းမာရေးဌာနသို့ရောက်ရှိလာပါက

1. ကျန်းမာရေးဌာနရှိ ရေခဲသေတ္တာတွင် မှန်ကန်သော အပူချိန်တွင် ကာကွယ်ဆေးများကို သိမ်းဆည်းရန်
2. ကာကွယ်ဆေးပေးရန် သွားရောက်ပါကလည်း သယ်ယူရာတွင် ရေခဲဘူး (သို့) ရေခဲများကို အသုံးပြုခြင်း
3. ကာကွယ်ဆေးထိုး/တိုက် အစီအစဉ် ပြုလုပ်နေချိန် တွင် ကာကွယ်ဆေးများကို ရေခဲဘူး (သို့) ရေခဲများဖြင့် အအေးဓာတ်မပြတ်ဘဲ ရှိသင့်သည့်အပူချိန်တွင် ထိန်းသိမ်း ထားရန် လိုအပ်ပါသည်။

အအေးလမ်းကြောင်းဆိုင်ရာ ပစ္စည်းကိရိယာများ

Figure 2.1 The cold chain



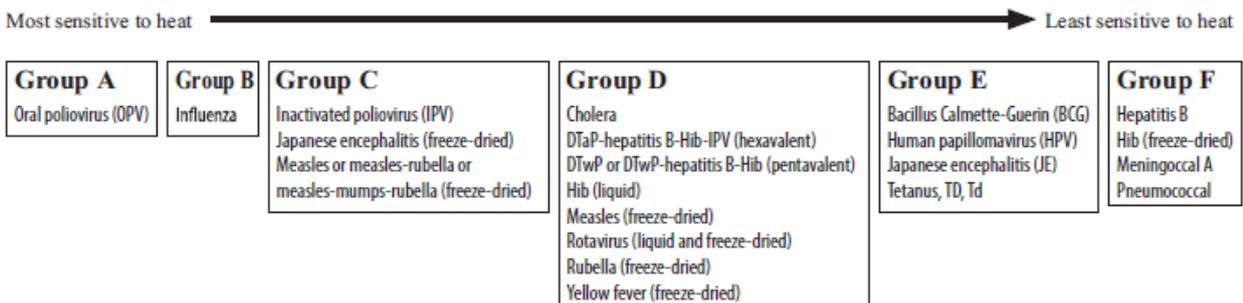
Source: PATH/WHO

ကာကွယ်ဆေးများအတွက် အပူချိန်လိုအပ်ချက်များ

ကာကွယ်ဆေးများသည် ထိခိုက်ပျက်စီးလွယ်သော ဇီဝဗေဒ ဆိုင်ရာထုတ်ကုန်များ ဖြစ်ပါသည်။ အချို့ ကာကွယ်ဆေး များသည် အေးခဲခြင်းကြောင့် သော်လည်းကောင်း၊ အချို့မှာ အပူကြောင့် သော်လည်းကောင်း၊ အချို့မှာ အလင်းရောင် ကြောင့် သော်လည်းကောင်း ပျက်စီးလွယ်ပါသည်။ ကာကွယ်ဆေးသည် မသင့်လျော်သော အပူချိန်နှင့် ထိတွေ့သောအခါ ကာကွယ်ဆေးထိုးပြီးသူများကို လုံလောက်စွာ ကာကွယ်မှု ပေးနိုင်သော ကာကွယ်ဆေး၏ စွမ်းရည်ဖြစ်သည့် ကာကွယ်ဆေး အာနိသင်ကို လျော့ပါးစေပါသည်။ သို့ဖြစ်ရာ ကာကွယ်ဆေး၏ အာနိသင် ထိန်းသိမ်းထားနိုင်ရန် ကာကွယ်ဆေးများကို လွန်ကဲသော အပူချိန်များမှ ကာကွယ်ထားရှိရမည်။ အအေးလမ်းကြောင်း စနစ်ကို အသုံးပြုခြင်းဖြင့် ကာကွယ်ဆေးများကို အတိအကျ သတ်မှတ်ထားသော လိုအပ်သည့် အပူချိန်တွင် ထားရှိနိုင်ပြီး ကာကွယ်ဆေး၏ အရည်အသွေးကို ထိန်းသိမ်းထားနိုင် ပါသည်။

Vaccine Heat Sensitivity

Figure 2.3 Vaccine heat sensitivity



အပူနှင့် အေးခဲခြင်းကြောင့်ပျက်စီးခြင်း

ပုံ ၂-၃ သည် ကာကွယ်ဆေးအမျိုးအစားအလိုက် အပူကြောင့် ပျက်စီးလွယ်မှုကို ဖော်ပြပါ သည်။ ကာကွယ်ဆေးများကို အုပ်စုဖွဲ့၍ အမျိုးအစား ၆ မျိုးခွဲထားပါသည်။ အဆိုပါ အမျိုးအစား (၆) မျိုးအတွင်း ကာကွယ်ဆေးများကို အကွာအဝေးအစဉ်လိုက် စီစဉ်ထားရှိပါသည်။ အုပ်စုအတွင်း အပူရှိန်ကြောင့် ပျက်စီးလွယ်မှုအလိုက်စီထားခြင်းမဟုတ်ပါ။ အုပ်စု A တွင် အပူ ကြောင့်အလွန်ပျက်စီး လွယ်သော ကာကွယ်ဆေးများရှိပြီး အုပ်စု F ရှိ ကာကွယ်ဆေး များသည် အပူကြောင့်ပျက်စီးမှု အနည်း ဆုံး ဖြစ်ပါသည်။ သတိပြုရန်မှာ အေးခဲခြောက် ကာကွယ်ဆေးများ အတွက် အပူခံနိုင်ရည်ရှိမှု သတင်းအချက်အလက်များသည် မဖွင့် ဖောက်ရသေးသော ကာကွယ် ဆေးပုလင်းများ အတွက်သာ အသုံးပြုရပါမည်။ အေးခဲခြောက် ကာကွယ်ဆေး အများအပြားသည် ဖျော်စပ်ပြီးနောက် အာနိသင်လျင်မြန်စွာ လျော့နည်း သွားပါသည်။ ထို့အပြင် အေးခဲခြောက်ဖြစ်စေ၊ အရည်ပုံစံဖြစ်စေ လူအများစာပါဝင်သော ဖွင့်ဖောက်ပြီး ကာကွယ်ဆေး ပုလင်းများ (သို့မဟုတ်) ထိန်းသိမ်းပစ္စည်း မပါဝင်သော ကာကွယ်ဆေးများအား ကာကွယ်ဆေးထိုးစုရပ် ဆောင်ရွက်နေစဉ်အတွင်း (သို့မဟုတ်) ဖွင့်ဖောက်ပြီး ၆ နာရီအတွင်း မည်သည့်အချိန်က စောသည်ဖြစ်စေ အပူချိန် +2 'C နှင့် + 8 'C အကြား အေးအောင်ထားရှိရန် အရေး ကြီးပါသည်။

အောက်ဖော်ပြပါ ကာကွယ်ဆေးများကို အေးခဲခြင်း မပြုပါနှင့်။

- ၁) ငါးမျိုးစပ်ကာကွယ်ဆေး
- ၂) အသည်းရောင်အသားဝါဘီကာကွယ်ဆေး
- ၃) ပိုလီယိုကာကွယ်ဆေးထိုးဆေး
- ၄) ပြင်းထန်အဆုတ်ရောင်ရောဂါပိုးကာကွယ်ဆေး
- ၅) မေးခိုင်ကာကွယ်ဆေးပါဝင်သော ကာကွယ်ဆေး များ (TT, DT, Td)
- ၆) သားအိမ်ခေါင်းကင်ဆာရောဂါကာကွယ်ဆေး
- ၇) ရိုတာဗိုင်းရပ်ပိုးကာကွယ်ဆေး
- ၈) HIB (Liquid)

အလင်းရောင်ကြောင့်ပျက်စီးခြင်း

အချို့ကာကွယ်ဆေးများသည် အလင်းရောင်ကြောင့် အလွန် ပျက်စီးလွယ်ပြီး အလင်းရောင်နှင့် ထိတွေ့သောအခါ အာနိသင် လျော့နည်းသွားနိုင်ပါသည်။ အဆိုပါ ကာကွယ်ဆေးများကို နေရောင်ခြည် (သို့မဟုတ်)

ပြင်းထန်သော သဘာဝ မဟုတ်သည့် အလင်းရောင်များမှ အမြဲတမ်းပုံမှန် ကာကွယ်ထားသင့်ပြီး ထိတွေ့မှု အနည်းဆုံးဖြစ်စေရန် ဆောင်ရွက်ရပါမည်။ အလင်းရောင် ကြောင့် ပျက်စီးလွယ်သော ကာကွယ်ဆေးများတွင် ဘီစီဂျီ၊ ဝက်သက်၊ ဝက်သက်ဂျိုက်သိုး၊ ဝက်သက်ဂျိုက်သိုး ပါးကြိတ်ရောင် ကာကွယ်ဆေးနှင့် ဂျိုက်သိုး ကာကွယ်ဆေး များ ပါဝင်ပါသည်။ ဤကာကွယ်ဆေးများကို အလင်းရောင် ကြောင့် ပျက်စီးခြင်းမှ ကာကွယ်နိုင်ရန် အညိုရင့်ရောင် ဖန်ပုလင်းဖြင့် ထုပ်ပိုးဖြန့်ဖြူးထားပါသည်။

ကာကွယ်ဆေးထိုးလုပ်ငန်း ဆောင်ရွက်နေစဉ် ဆက်သွယ် အသိပေးခြင်း

ဆေးထိုးစုရပ်စတင်ချိန်

- မိဘအုပ်ထိန်းသူများအား ရင်းနှီးခင်မင်စွာ နှုတ်ခွန်း ဆက်ပါ။ ကာကွယ်ဆေးထိုးရန် လာရောက်ခြင်းနှင့် စောင့်ဆိုင်းရမှုကို စိတ်ရှည်သည်းခံခြင်း အတွက် ကျေးဇူးတင်ကြောင်း ပြောပါ။
- မိဘအုပ်ထိန်းသူများက သိလိုသည့် အချက်များကို မေးမြန်းပါ။ ၎င်းတို့အား ယဉ်ကျေးစွာ ပြန်လည် ဖြေကြားပေးပါ။

ကာကွယ်ဆေးထိုးရန် စစ်ဆေးကြည့်ရှုခြင်း

- ကာကွယ်ဆေး ထိုးနှံ၊ တိုက်ကျွေး ပေးသော ရက်စွဲကို ကာကွယ်ဆေးထိုး မှတ်တမ်းကတ်ပြားတွင် ရေးမှတ်ပါ။ ကာကွယ်ဆေး နှင့် ၎င်းတို့ ကာကွယ်ပေးနိုင်သော ရောဂါများအကြောင်း ရှင်းလင်းပြောကြားပါ။ ရိုးရှင်း သော စကားများ၊ ဒေသခံ ဘာသာစကားများကို အသုံးပြုပါ။
- ပိုစတာများ၊ ရုပ်ပုံများ ရှိပါက အသုံးပြု၍ ရှင်းလင်း ပြောကြားပါ။
- ကာကွယ်ဆေးထိုးနှံတိုက်ကျွေးပြီး ဖြစ်ပေါ်လာနိုင်သော နောက်ဆက်တွဲ ကျန်းမာရေး ပြဿနာများ နှင့် ဖြေရှင်းရမည့် နည်းလမ်းများကို ရှင်းလင်း ပြောကြားပါ။

- ကလေးများကို ရောဂါများမှ အပြည့်အဝ ကာကွယ်မှု ရရှိရန် ကာကွယ်ဆေးထိုး အစီအစဉ်အရ လိုအပ်သော ကာကွယ်ဆေးများ အကြိမ်ပြည့် ထိုးနှံ တိုက်ကျွေး ရမည်ဖြစ်ကြောင်း ရှင်းလင်းပြောကြားပါ။ ကာကွယ် ဆေးထိုး မှတ်တမ်းကတ်ပြားကို ညွှန်ကြားချက် လမ်းညွှန်အဖြစ် အသုံးပြုနိုင်ပါသည်။ အကယ်၍ ကလေးသည် ကာကွယ်ဆေး အကြိမ်ပြည့် ရရှိပြီး ဖြစ်ပါက မိဘအုပ်ထိန်းသူကို ချီးကျူးစကား ပြောကြားပါ။
- နောက်တစ်ကြိမ် ကာကွယ်ဆေး ထိုးရမည့် ရက်စွဲကို ကာကွယ်ဆေးထိုးမှတ်တမ်း ကတ်ပြားတွင် ရေးမှတ်၍ မိဘအုပ်ထိန်းသူများကို မှာကြားပါ။ မိဘအုပ်ထိန်းသူ များ မှတ်မိစေရန်- ထင်ရှားသောပွဲတော်၊ အားလပ်ရက်၊ တစ်ရာသီ အချိန်အလိုက် အရေးကြီးသည့် ဖြစ်ရပ်များ နှင့် ယှဉ်တွဲ၍ ဆေးထိုးရမည့် ရက်စွဲကို ပြောကြားပါ။
- ဆေးထိုးရမည့်ရက်စွဲကို နားလည် သဘောပေါက် ကြောင်း သေချာစေရန် မိဘအုပ်ထိန်းသူကို ပြန်လည် မေးမြန်းရမည်။
- အကယ်၍ ကလေးသည် ဆေးထိုးရမည့် ရက်စွဲတွင် မလာရောက်နိုင်ပါက ဆေးထိုးရန် အချိန်သင့်သည့် ရက်စွဲ နှင့် အနီးဆုံး အခြား ရက်စွဲတစ်ခု (သို့မဟုတ်) သွားရောက်နိုင်သော အခြားစုရပ်နေရာ နှင့် ရက်စွဲကို မိဘအုပ်ထိန်းသူကို ရှင်းပြပါ။
- နောက်တစ်ကြိမ် ကာကွယ်ဆေးထိုးရန် လာပါက ကာကွယ်ဆေးထိုးမှတ်တမ်း ကတ်ပြား ယူဆောင်လာရန် မိဘ အုပ်ထိန်းသူကို သတိပေးပါ။ ဤအခန်း၏ အပိုင်း(၄)တွင် ဖော်ပြထားသည့်အတိုင်း ကလေး၏ အနေအထားကို ရှင်းလင်းပြောကြားခြင်းနှင့် ကာကွယ် ဆေးထိုးနှံတိုက်ကျွေးခြင်းကို ဆက်လက်ဆောင်ရွက်ပါ။

ကာကွယ်ဆေးထိုးပြီးနောက်

- ကလေးအား မည်သည့်အချိန် ပြန်လည် ခေါ်ဆောင် လာရမည်ကို မိဘအုပ်ထိန်းသူကို သတိပေးပါ။
- ဆေးထိုးစုရပ်တွင် ကာကွယ်ဆေး တစ်မျိုးမျိုး ပြတ်လပ်မှု ရှိခဲ့ပါက မည်သည့် နေရာ၊ မည်သည့် အချိန်တွင် ပြန်လာရမည်ကို မိဘအုပ်ထိန်းသူကို အသိပေးပါ။
- ကာကွယ်ဆေးထိုးစုရပ် ဆောင်ရွက်နေစဉ်အတွင်း အခြား ကျန်းမာရေး စောင့်ရှောက်မှုများ (ဥပမာ- ဗီတာမင်အေ ဆေးလုံးများ ဖြည့်စွက်ပေးခြင်း၊

အမျိုးသမီးများကို မေးခိုင် ကာကွယ် ဆေးထိုးပေးခြင်း) အကြောင်းကို မိဘအုပ်ထိန်း သူများအား သတိပေး ပြောကြားပါ။

- အကယ်၍ အစုလိုက် ကာကွယ်ဆေး ထိုးနှံတိုက်ကျွေး ခြင်း လုပ်ငန်းကို လာမည့်လများတွင် ဆောင်ရွက်မည့် အစီအစဉ်ရှိပါက အစုလိုက် လုပ်ငန်းစီမံချက် ဆောင်ရွက်မည့်ရက်စွဲ၊ ထိုးနှံ / တိုက်ကျွေးပေးမည့် ကာကွယ်ဆေးနှင့် စုရပ်နေရာ စသည်တို့ကို မိဘအုပ်ထိန်းသူများအား ပြောကြားပါ။
- စာတတ်မြောက်သော မိဘအုပ်ထိန်းသူများအား ပုံနှိပ် ထုတ်ဝေထားသော သတင်းအချက်အလက်များကို ဖြန့်ဝေပါ။
- မိဘအုပ်ထိန်းသူများအား ၎င်းတို့ သိလိုသည့် မေးခွန်းများ ရှိ/မရှိမေးမြန်းပါ။ မေးခွန်းများကို ယဉ်ကျေးစွာ ပြန်လည်ဖြေကြားပါ။

ကာကွယ်ဆေး ထိုးနှံတိုက်ကျွေးရန် ကလေးငယ်အား စစ်ဆေးခြင်း

ကာကွယ်ဆေး ထိုးနှံတိုက်ကျွေးခြင်း မပြုမီ မည်သည့် ကာကွယ်ဆေးများ ပေးရမည်ကို စစ်ဆေးရန် အရေးကြီးသည်။

ကာကွယ်ဆေး ထိုးနှံတိုက်ကျွေးရန် အကျုံးဝင်ခြင်း ရှိ/မရှိစစ်ဆေးပါ။ ကျန်းမာရေးဌာနသို့ တစ်နှစ်အောက် ကလေးတစ်ဦး ရောက်ရှိလာသည့် အခါတိုင်း ကာကွယ်ဆေး ထိုးနှံ တိုက်ကျွေးရန်အတွက် စိစစ်ပြီး လိုအပ်သော ကာကွယ်ဆေး အားလုံး ထိုးနှံ တိုက်ကျွေး ပေးရမည်။ ထိုနေ့တွင် ကာကွယ်ဆေးထိုးစုရပ် မရှိပါက အစောဆုံး ဆေးထိုးနိုင်မည့် နေ့ရက်ကို သတ်မှတ်၍ မိဘအုပ်ထိန်းသူအား ရှင်းလင်း ပြောကြားပါ။ အောက်ဖော်ပြပါ အဆင့်များကို ကျန်းမာရေးဌာနသို့ ဆေးကုသရန်လာ သည့်အခါနှင့် ဆေးထိုးစုရပ်များတွင် လိုက်နာ ဆောင်ရွက်ရပါမည်။

(၁) ကာကွယ်ဆေးထိုးကတ်ပြားတွင် ကလေး၏ အသက်ကို စစ်ဆေးပါ။

- ဆေးထိုးမှတ်တမ်းကတ်ပြား မပါလာပါက ကလေး၏ အသက်ကို မိဘအုပ်ထိန်းသူအား မေးမြန်းပါ။

- မိဘအုပ်ထိန်းသူက ကလေးအသက်ကို မသိပါက၊ ရာသီအလိုက် ကျင်းပခဲ့သော ပွဲလမ်းများ၊ မှတ်သားလောက်သော အရေးပေါ်ဖြစ်ရပ်များနှင့် ကလေးမွေးဖွားသော လကို ချိန်ကိုက်၍ ကလေးအသက်ကို ခန့်မှန်းတွက်ချက်ပါ။

(၂) ကာကွယ်ဆေးထိုးမှတ်တမ်းကတ်ပြားကို စစ်ဆေး၍ ကလေးရရှိထားပြီးသော ကာကွယ်ဆေးများကို အတည်ပြုပါ။

- ကာကွယ်ဆေးထိုးမှတ်တမ်းကတ်ပြား မရှိပါက ယခင် ကျန်းမာရေးဌာနသို့ ရောက်ဘူးလျှင် မှတ်ပုံတင်စာအုပ်တွင် ပြန်လည်စိစစ်၍ ကတ်ပြားအသစ် ထုတ်ပေးပါ။ အကယ်၍ ကျန်းမာရေးဌာနသို့ မရောက်ဘူးပါက အုပ်ထိန်းသူအား ယခင်ထိုးခဲ့ဘူးသော ကာကွယ်ဆေးကို မေးမြန်း၍ ကတ်ပြားအသစ် ထုတ်ပေးပါ။

- မှတ်တမ်းမရှိ (သို့မဟုတ်) ပြန်လည် မမှတ်မိပါက ဘယ်ဘက်လက်မောင်းတွင် ဘီစီဂျီ ကာကွယ်ဆေးထိုးထားသော အမာရွတ်ကို စစ်ဆေးကြည့်ရှုပါ။

- မှတ်တမ်းမရှိခြင်း၊ ပြန်လည်မမှတ်မိခြင်းနှင့် ဘီစီဂျီ အမာရွတ်လည်းမရှိခြင်း စသည်ဖြင့် ကာကွယ်ဆေးထိုးနှံပြီးစီးမှု မသေချာသော အခြေအနေတွင် ကာကွယ်ဆေးထိုးရန် မသင့်သော အခြေအနေမရှိပါက ကလေးကို ကာကွယ်ဆေးထိုးပေးပါ။ ကာကွယ်ဆေးထိုးမှတ်တမ်းကတ်ပြား အသစ် ထုတ်ပေးပါ။

(၃) ပြည့်စုံစွာ ပြင်ဆင်နိုင်ရန် ယခုစုရပ်တွင် ကလေးများ အတွက် လိုအပ်သော ကာကွယ်ဆေး အားလုံးကို စိစစ်ပါ။

- ကလေးသည် ကာကွယ်ဆေး တစ်မျိုးထက် ပိုမို လိုအပ်ပါက ကာကွယ်ဆေး အမျိုးမျိုးကို နေရာခြား၍ ယခုစုရပ် အကြိမ်တွင် တစ်ခါတည်း ထိုးနှံ တိုက်ကျွေးပေးပါ။
- ကာကွယ်ဆေးတစ်မျိုးတည်းကို တစ်ချိန်တည်းတွင် တစ်ကြိမ်ထက် ပို၍မပေးရပါ။
- ကာကွယ်ဆေးထိုးရန် သတ်မှတ်ရက် ကျော်လွန်နေပါက ဆေးထိုးအစီအစဉ်ကို အသစ်ပြန်၍ မစပါနှင့်။ ယခင်အစီအစဉ်မှဆက်လက်၍ ထပ်မံလိုအပ်သည့် ဆေးအကြိမ်ကိုသာ ဆက်လက်ပေးပါ။
- ကာကွယ်ဆေးထိုး အစီအစဉ်စတင်ရန် နောက်ကျနေပါက နိုင်ငံ၏ ကာကွယ်ဆေးထိုးအစီအစဉ်အတိုင်း လိုအပ်သော ကာကွယ်ဆေးများကို ထိုးနှံ

တိုက်ကျွေးပေးပါ။ သတ်မှတ်ထားသော ကြားကာလ အချိန်အပိုင်း အခြားအတိုင်း နောက်တစ်ကြိမ် ထိုးနှံတိုက်ကျွေးပေးပါ။

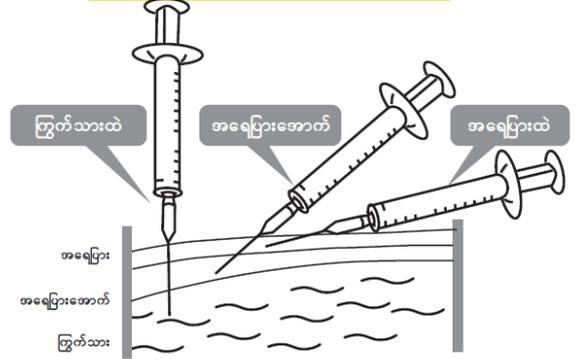
ဆေးထိုးရန် မသင့်သော အခြေအနေများ ရှိ/မရှိ စစ်ဆေးပါ။ ကာကွယ်ဆေး ပထမအကြိမ် ထိုးနှံတိုက်ကျွေးပြီးနောက် ပြင်းထန်သော ရောဂါ လက္ခဏာ ရှိ/မရှိ စစ်ဆေးပါ။ ဆေးထိုးအစီအစဉ်တွင် နောက်တစ်ကြိမ် ထိုးနှံတိုက်ကျွေးရန်အတွက် ယခင်ဆေး ထိုးအကြိမ်များတွင် ပြင်းထန်သော ဓာတ်မတည့်ခြင်း ရှိ/မရှိ မိဘအုပ်ထိန်းသူကို မေးမြန်းပါ။

အောက်ပါ အခြေအနေများမှလွဲ၍ ကလေးအားလုံးကို ကာကွယ်ဆေး ထိုးပေးသင့်ပါသည်။

(၁) ယခင်ကာကွယ်ဆေးထိုးပေးသည့် အကြိမ်က ကာကွယ်ဆေး (သို့) ကာကွယ်ဆေးတွင် ပါဝင်သော ပစ္စည်းတစ်ခုခုကြောင့် ကလေးတွင် ပြင်းထန်သော ဓာတ်မတည့်ခြင်း ဖြစ်ခဲ့ဘူးပါက မထိုးပေးပါနှင့်။

(၂) သာမန်ဖျားနာခြင်းသည် ကာကွယ်ဆေးထိုးရန်မသင့်သော အခြေအနေမဟုတ်ကြောင်း ရှင်းလင်း ပြောကြားသော်လည်း မိဘအုပ်ထိန်းသူက ကာကွယ်ဆေးထိုးရန် ငြင်းဆန် နေပါက ကာကွယ်ဆေး မထိုးပေးပါနှင့်။ ကလေးနေကောင်းသောအခါ ပြန်လာရန် မိဘအုပ်ထိန်းသူကို မှာကြားပါ။

ပုံ (၅-၆) အရေပြားထဲ (Intradermal) အရေပြားအောက် (Sub-cutaneous) နှင့် ကြွတ်သားထဲ (Intra-muscular) ထိုးဆေးများအတွက် ဆေးထိုးအပ် အနေအထားများပုံ



နေမကောင်းသောကလေးများကို ကာကွယ်ဆေး

ထိုးနှံပေးခြင်း

ကျန်းမာရေးဝန်ထမ်း အများစုသည် နေမကောင်းသော တစ်နှစ်အောက် ကလေးငယ်များကို ကာကွယ်ဆေး ထိုးပေးလိုကြပါ။ တစ်နှစ်အောက် ကလေးငယ်များသည် ရောဂါမျိုးစုံ ဖြစ်နိုင်သောအရွယ် ဖြစ်ပါသည်။ ကလေးများအတွက် ဘေးကင်းစွာ ကာကွယ်မှု ရရှိနိုင်သည့် အရွယ်တွင် ကာကွယ်ဆေးထိုးရန် နှောင့်နှေးခဲ့ပါက ကာကွယ်ဆေးဖြင့် ကာကွယ်နိုင်သော ရောဂါများ ဖြစ်ပွားနိုင်သော ဘေးအန္တရာယ် ပို၍ များစေပါမည်။

- သာမန်ဖျားနာခြင်းများနှင့် (၃၈.၅) ဒီဂရီစင်တီဂရိတ် အောက်အဖျားရှိသော တစ်နှစ်အောက် ကလေးငယ်များ ကို ပုံမှန်အတိုင်း ကာကွယ်ဆေးထိုး ပေးရမည်။ အသက်ရှူလမ်းကြောင်း ရောဂါပိုး ကူးစက် ဝင်ရောက်ခြင်း၊ ဝမ်းပျက်/လျှော့ဖြစ်ခြင်း၊ သိသိသာသာ အဖျားမရှိသော အလားတူ သာမန်ရောဂါများ ပါဝင်သည်။
- ဆေးရုံတက်ရန်လိုအပ်သည့် ရောဂါပြင်းထန်သော တစ်နှစ်အောက်ကလေးငယ်များ နှင့် အပြင်းဖျားသော တစ်နှစ်အောက်ကလေးငယ်များကို ဖြစ်နိုင်ပါက ကာကွယ်ဆေးထိုးပေးပါ။ လူနာတစ်ဦးချင်းစီအတွက် ဝါရင့်ကျန်းမာရေးဝန်ထမ်း /ဆရာဝန်က ဆုံးဖြတ်ပေးရ မည်။ သို့သော် ဆေးရုံ၌ ကူးစက်နိုင်သောရောဂါများ (ဥပမာ-ဝက်သက်ရောဂါ) မှ ကာကွယ်မှုရရှိရန် ကလေးငယ်များ အတွက် လိုအပ်ပါသည်။
- အာဟာရချို့တဲ့သောကလေးငယ်များကို ပုံမှန်အတိုင်း ကာကွယ်ဆေးထိုးပေးပါ။ အာဟာရချို့တဲ့သော ကလေးငယ်များသည်လည်း ကာကွယ်ဆေးထိုးပီး နောက် ရောဂါခုခံမှုစွမ်းအား ဖြစ်ထွန်းစေပါသည်။ ကာကွယ်ဆေးမထိုးထားပါက အာဟာရချို့တဲ့သော ကလေးများသည် ကာကွယ်ဆေးဖြင့် ကာကွယ်နိုင်သော ရောဂါများကြောင့် အာဟာရ ပြည့်ဝသော ကလေးငယ်များ ထက်ပို၍ သေဆုံးနိုင်ပါသည်။

တစ်နှစ်အောက်ကလေးများကို ကာကွယ်ဆေး ထိုးနှံပေးသင့်သော အခြားအခြေအနေများ အောက်ဖော်ပြပါ အခြေအနေများသည် ကာကွယ်ဆေး မထိုးသင့်သော အခြေအနေများမဟုတ်ပါ။ ယင်းအခြေအနေ ရှိသည့် ကလေးငယ်များအား ကာကွယ်ဆေး ထိုးပေးသင့် ပါသည်။

- ဓာတ်မတည့်ခြင်းများ (သို့မဟုတ်) ပန်းနာရောဂါ (ကာကွယ်ဆေးတွင် ပါဝင်သော ပစ္စည်း တစ်မျိုးမျိုး ကို ဓာတ်မတည့်ခြင်း မပါဝင်ပါ။)
- ပဋိဇီဝဆေးများ အသုံးပြု၍ ဆေးကုသမှု ခံယူနေခြင်း၊
- မိသားစုရာဇဝင်တွင် ကာကွယ်ဆေးထိုးပြီး နောက်ဆက်တွဲ ဖြစ်ရပ်များရှိခြင်း၊
- လမစေ့မွေးခြင်း၊ မွေးစ ကိုယ်အလေးချိန် မပြည့်ခြင်း၊
- မွေးကင်းစ အသားဝါရောဂါဖြစ်ခဲ့သည့် ရာဇဝင် ရှိခြင်း၊
- မိခင်နို့တိုက်ကျွေးနေခြင်း၊
- မကြာသေးမီက (သို့မဟုတ်) လာမည့်ကာလတွင် ခွဲစိတ်မှုပြုလုပ်ခြင်း၊
- နာတာရှည်ကူးစက်နိုင်သော နှလုံး၊ အဆုတ်၊ ကျောက်ကပ်နှင့် အသည်းရောဂါဖြစ်ခြင်း၊
- အခြေအနေတည်ငြိမ်သော ဦးနှောက်အာရုံကြော ရောဂါဖြစ်နေခြင်း၊ (ဥပမာ- Cerebral Palsy/ Downs Syndrome)
- မိသားစုရာဇဝင်တွင် အတက်ရောဂါနှင့် ဝက်ရူးပြန် ရောဂါရှိခြင်း

ကာကွယ်ဆေးထိုးပြီး နောက်ဆက်တွဲ ပြဿနာများ (AEFI) အတွက် အချက်အလက်များကို မည်ကဲ့သို့ စုစည်းရန်နှင့် သတင်းပို့အစီရင်ခံရန်ကို ရှင်းလင်းဖော်ပြထားပါသည်။ ကာကွယ်ဆေးထိုးပြီး နောက်ဆက်တွဲ ပြဿနာများ စောင့်ကြပ် ထောက်လှမ်း ကြည့်ရှုခြင်း (Surveillance of AEFI cases) သည် မလိုလားအပ်သော ဖြစ်ရပ်များ၏ အကြောင်းတရားများကို ရှာဖွေဖော်ထုတ်ရန် နှင့် ကောင်းမွန် မှန်ကန်စွာ ကာကွယ်ဆေး ကိုင်တွယ်အသုံးပြုခြင်းနှင့် ထိုးနှံတိုက်ကျွေးခြင်းများ ရှိမရှိ ပြန်လည်ဆန်းစစ်ခြင်းများ ပြုလုပ်ရန် လိုအပ်မှုအခြေအနေကို ဆုံးဖြတ်ရန် ကူညီဆောင်ရွက်ပေးပါမည်။

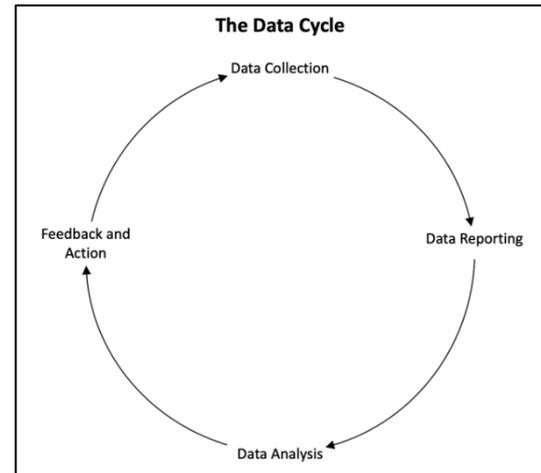
စောင့်ကြပ်ထောက်လှမ်းကြည့်ရှုခြင်းအတွက်
အထောက်အကူပစ္စည်းများ (TOOLS FOR
SURVEILLANCE)

ကျန်းမာရေးဌာနတိုင်းသည် ကာကွယ်ဆေးထိုးလုပ်ငန်းကို စောင့်ကြပ်စိစစ်ရန်အတွက် ကာကွယ်ဆေး ထိုးနှံခြင်း ဆိုင်ရာ အချက်အလက်များကို မှတ်တမ်းတင်ခြင်းစနစ် ထားရှိရန် လိုအပ်သကဲ့သို့ ကာကွယ်ဆေးဖြင့် ကာကွယ် နိုင်သောရောဂါများနှင့် ကာကွယ်ဆေး ထိုးပြီး နောက်ဆက်တွဲ ပြဿနာများ (AEFI) စောင့်ကြပ်ထောက်လှမ်း ကြည့်ရှုရန် အချက်အလက်များ မှတ်တမ်းတင်ခြင်း စနစ်တစ်ခုလည်း လိုအပ်ပါသည်။

ကမ္ဘာ့ကျန်းမာရေးအဖွဲ့၏ AEFI အဓိပ္ပာယ်ဖွင့်ဆိုချက်နှင့် AEFI အမျိုးအစားများကို အောက်တွင် ဖော်ပြထား ပါသည်။ AEFI ဖြစ်ရပ်တစ်ခုသည် စုံစမ်းစစ်ဆေးခြင်း အားဖြင့် အမျိုးအစားများ (၅) မျိုးအနက် တစ်မျိုးတွင် ပါဝင်ရပါမည်။ ပုံမှန်အားဖြင့် ကျန်းမာရေးဌာန၏ သံသယ AEFI ဖြစ်ပွားမှု ကနဦး သတင်းပေးပို့ချက်ကို အခြေခံ၍ စုံစမ်းစစ်ဆေးခြင်းဆောင်ရွက်ရပါမည်။

ယေဘုယျအားဖြင့် မိဘများ (သို့မဟုတ်) ကျန်းမာရေး ဝန်ထမ်းများကို စိတ်ပူပန်မှုဖြစ်စေသော မည်သည့် AEFI ဖြစ်ပွားမှုကိုမဆို သတင်းပေးပို့သင့်ပါသည်။ ပြင်းထန်သော AEFI ဆိုသည်မှာ အသက်အန္တရာယ်ခြိမ်းခြောက်မှု (သို့မဟုတ်) ဆေးရုံ တက်ရသည်အထိ၊ မသန်မစွမ်း ဖြစ်သွားသည်အထိ (သို့မဟုတ်) သေဆုံးသည်အထိ ဖြစ်စေ သော ကာကွယ်ဆေးထိုးပြီး နောက်ဆက်တွဲပြဿနာများ ဖြစ်ပါသည်။ ကာကွယ်ဆေးကို ပထမဦးဆုံး အပြစ်တင် ခြင်းမှ ရှောင်ရှားရန် အရေးကြီးပါသည်။ ချွတ်ယွင်းချက် ကင်းပြီး လုံးဝပြည့်စုံကောင်းမွန်သည့် ကာကွယ်ဆေးများ မရှိသကဲ့သို့ ကာကွယ်ဆေး တုံ့ပြန်မှုများကိုလည်း ကြိုတင်ခန့်မှန်းနိုင်ခြင်းမရှိသဖြင့် AEFI ဖြစ်ပွားမှုသည် မည်သည့်အခြေအနေတွင်မဆို ဖြစ်နိုင်ပါသည်။ ကျန်းမာရေး ဝန်ထမ်းများသည် စုံစမ်းမေးမြန်းခြင်း ပြုလုပ်နိုင်ရန်အတွက် AEFI ဖြစ်ပွားမှုများကို သတင်းပေးပို့ရန် တွန့်ဆုတ် မနေသင့်ပါ။

HEALTH INFORMATION SYSTEM
INTRODUCTION



The role of a Health Information System (HIS) is to collect, compile analyze and disseminate health data. These data are used to define the health profile of the camp population, to define health priorities and to monitor the quality and effectiveness of the programme.

OBJECTIVES OF THE HIS

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 (MoH) 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. 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, refugee, 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.

5. 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.

PROCESS OF THE HIS

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.

How and When should the Data be Reported?

At the end of each week the daily Tally Sheets used by each clinical officer should be collected by the clinical officer in-charge and compiled into the Weekly Morbidity Report.

The dates of the reporting weeks are shown in the Reporting Calendar, defined for all 9 camps along the Thai Burmese Border. It is important that all staff are aware of these dates, and that copies the calendar are distributed to all inpatient wards.

How and When should the Data be 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 enable 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 UNHCR.

CONTENTS OF THE HIS

The following ten sections comprise the HIS. These are based upon the core elements of primary health care:

Population

The population data are collected every month or quarter by the home visitor/community health workers.

Mortality

Mortality data should be routinely collected from both health facilities and community sources. Responsibility for gathering and reporting this information is shared among a number of key informants including guardians of burial places, community leaders, and health staff within health facilities and referral hospitals

It is essential that a complete record of all deaths within each camp is maintained centrally in a Mortality Register. This includes deaths in the community, in health facilities, and in referral centers outside the camp. The cause of death should be clearly indicated in the mortality register

Morbidity

A case definition is a set of standard criteria for deciding whether a person has a particular disease. It states clear and objective criteria that must be met before a diagnosis is reported.

No diagnosis should be recorded unless it meets the case definition.

Definitions of “New Visit” and “Re-visit”

New visit

A patient with no previous history of the diagnosis; or a patient with a history of the diagnosis and in whom a minimum period of time has elapsed since the most recent diagnosis was made.

Revisit

A patient with a history of the diagnosis and in whom the minimum period of time has not yet elapsed since the most recent diagnosis was made.

Time that should to elapse before a patient with a history of a diagnosis can be considered a “new” visit

At least 1 week	At least 1 month	At least 1 year	Lifelong*
Malaria	Skin disease	Vitamin A def.	Measles
URTI, LRTI	Malnutrition	Tuberculosis	Polio
Diarrhea	Anemia	Meningitis	Hypertension
Eye disease	STI		Diabetes
Intestinal worms	Gastritis		HIV/AIDS
	Dental conditions		Leprosy

IPD AND REFERRAL

One register book should be kept in each ward and should record information on the identity of the patient, presenting signs and symptoms, diagnosis and treatment.

All IPD admissions must be referred from (and therefore also reported in) the OPD section. Similarly, all IPD deaths must be reported in the mortality register.

LABORATORY DISEASE CONTROL

The main purpose of data collection in the HIS is to monitor the number of patients enrolled within the program for purposes of resource management and advocacy.

EXPANDED PROGRAMME OF IMMUNIZATION (EPI)

(Including Vitamin A, Tetanus Toxoid and Growth Monitoring)

Data Collection and Monitoring Tools

EPI, Vitamin A, Tetanus Toxoid and Growth Monitoring

Doses of vaccine should be tallied immediately after they have been administered to each child. A tally should not be made before the vaccine is administered, as the child may not receive the vaccine. Nor should tallying be left to the end of a session and based on the number of doses left in the used vials as this can lead to “wasted” doses being recorded.

If a child has received all required vaccine doses in the immunization schedule, only then can s/he can be declared fully immunized and tallied accordingly. Clinic staff should not record a child as fully immunized until the complete vaccination history has been verified

To ensure accurate reporting, it is vital that all staff appreciate the important distinction between ‘vials’ and ‘doses’ of vaccine. The figure entered in the weekly report must also take into account any unused doses of vaccine which were able to be returned to the fridge.

SUPPLEMENTARY FEEDING PROGRAM

SFP admission category definition: children under 5

New admission	<ul style="list-style-type: none"> ▪ MUAC < 125 mm ▪ Less than 80% median / -2 Z-score WFH ▪ Discharge from the OTP/SC
Re-admission	<ul style="list-style-type: none"> ▪ Admission within 2 months of being discharged cured from SFP

SFP exit category definitions: children under 5

Discharged cured	<ul style="list-style-type: none"> ▪ More than 85% median WFH / -1.5 Z-score WFH for two consecutive weighing (for MUAC admissions a fixed length of stay may be required, as for OTP). ▪ After being discharged from OTP, have received at least 8 weeks (two months) follow up in the SFP and have been more than 85% median / -1.5 Z-score WFH for two consecutive weightings.
Death	<ul style="list-style-type: none"> ▪ Died during time registered in SFP
Default	<ul style="list-style-type: none"> ▪ Absent for three consecutive weeks
Referral	<ul style="list-style-type: none"> ▪ Have to be transferred to a stabilization center or hospital due to severe medical complications. ▪ Repatriation is considered under the category of referral as a reason for exit.
Non-cured	<ul style="list-style-type: none"> ▪ Are non-responding, i.e. the child does not reach the target weight after three months of treatment**

SFP admission category definitions: pregnant and lactating women

New admission	<ul style="list-style-type: none"> ▪ MUAC < 210mm and second or third trimester (visibly pregnant) or ▪ MUAC < 210mm and the baby is under six months of age.
Re-admission	<ul style="list-style-type: none"> ▪ Admission within 2 months of being discharged cured from SFP.

SFP exit category definitions: pregnant and lactating women

Discharged cured	• MUAC \geq 230mm or when their baby reaches six months of age
Death	• Died during time registered in SFP
Default	• Absent for three consecutive weeks
Referral	• Have to be transferred to a hospital due to severe medical complications • Repatriation is considered under the category of referral as a reason for exit

During the reporting of information from the register, length of stay should only be reported for refugee children under five who are successfully discharged. This important to ensure the indicator is correctly calculated and interpreted.

THERAPEUTIC FEEDING PROGRAM

Length of stay and Average Weight Gain should be calculated for all exits, though only reported at the end of the week for refugee children under five who are discharged.

TFP Exit Category Definitions: Children Under 5

Discharged cured	• More than 80% median / -2 Z-score WFH for two consecutive weighing (for MUAC admissions a fixed length of stay may be required, as for OTP) • At least 15% weight gain
Death	• Died during time registered in TFP
Default	• Absent for three consecutive days
Referral	• Have to be transferred to a stabilization center or hospital due to severe medical complications • Repatriation is considered under the category of referral as a reason for exit.

ANTENATAL CARE

DELIVERY CARE

POSTNATAL CARE

Only the number who achieved 3 visits within 6 weeks of delivery should be entered into the report. Note that this is NOT equivalent to the total number of postnatal visits held each week.

FAMILY PLANNING

HIV COUNSELING AND TESTING (HCT)

The task of recording each counseling and testing session is the responsibility of the individual VCT counselor. The information system operates on the basis of shared confidentiality, Each counselor should be familiar with this principle of confidentiality, and access client information on a strictly 'need to know' basis. To adequately protect the confidentiality of VCT clients, all counseling and testing results in the HIS are coded to prevent identifying attributes (such as name and address) from being linked to HIV status in the same information source.

PMTCT (ANTENATAL)

The task of recording each counseling and testing session is the responsibility of the individual PMTCT counselor. Each must understand how to properly code and record information in the PMTCT Registers. The information system operates on the basis of shared confidentiality, each counselor should be familiar with this principle of confidentiality, and access client information on a strictly 'need to know' basis.

HEALTH EDUCATION

Estimated teaching time - 24 hours

After the lesson, trainees will:

- Know definition about health education.
- Get orientation of why health education is important.
- Know what the concept and components of health are education.
- Understand the areas and contents of health education.
- Get orientation to develop curriculum for health education.
- Overview on strategies and activities of health education
- Know Methods of health education.

Methods in training

- Lecture
- Discussion
- Role play

Assessment

- MCQ test
- Group performance

WHAT IS HEALTH EDUCATION?

Health education is a *profession of educating people about health*. Areas within this profession encompass environmental health, physical health, social health, emotional health, intellectual health, and spiritual health, as well as sexual and reproductive health education. (*Wikipedia*)

The World Health Organization (**WHO**) has defined health education as “any combination of learning experiences designed to help individuals and communities improve their health, by increasing their knowledge or influencing their attitudes”.

WHAT IS HEALTH EDUCATION IN YOUR OWN WORDS?

Health education is a profession of educating people about health. ... Health education can be defined as the principle by which individuals and groups of people learn to behave in a manner conducive to the promotion, maintenance, or restoration of health.

WHY IS HEALTH EDUCATION IMPORTANT?

Community health education looks at the health of a community as a whole, seeking to identify health issues and trends within a population and work with stakeholders to find solutions to these concerns.

The importance of health education impacts many areas of wellness within a community, including:

- Chronic disease awareness and prevention
- Maternal and infant health
- Tobacco use and substance abuse
- Injury and violence prevention
- Mental and behavioral health
- Nutrition, exercise, and obesity prevention.

Community health educators work with public health departments, schools, government offices and even local nonprofits to design educational programs and other resources to address a community's specific needs.

WHAT IS CONCEPT OF HEALTH EDUCATION?

Health education can be defined as the principle by which individuals and groups of people learn to behave in a manner conducive to the promotion, maintenance, or restoration of health.

WHAT ARE COMPONENTS OF HEALTH EDUCATION?

The health education curriculum includes a variety of topics such as

- personal health
- family health
- community health
- consumer health
- environmental health
- sexuality education
- mental and emotional health
- injury prevention and control of disease
- substance use and abuse.

WHAT IS THE MAIN PURPOSE OF HEALTH EDUCATION?

The goal of health education is to promote, maintain, and improve individual and community health through the educational process.

WHAT ARE THE PRINCIPLES/DIMENSIONS OF HEALTH EDUCATION?

According to this definition, physical, social, and psychological factors all contribute to health. Wellness is then expressed through the integration of:

- the physical
- intellectual
- emotional
- spiritual
- social
- environmental components

WHAT ARE THE SIX DIMENSIONS OF HEALTH

What are the 10 content areas of health education? These domains include the 10 components of the Whole School, Whole Community, Whole Child (WSCC) model: Health.

Education

- Physical Education
- Physical Activity
- Nutrition
- Environment

Services

- Health Services
- Counseling
- Psychological
- Social Services
- Social and Emotional Climate
- Physical Environment.

Curriculum for Health Education (Mississippi Department of Education)

The curriculum is designed to motivate and assist students to maintain and improve their health, prevent disease, and reduce health-related risk behaviors. It allows students to develop and demonstrate increasingly sophisticated health-related knowledge, attitudes, skills, and practices. The curriculum **includes 9 content strands** that include:

1. Personal and Consumer Health,
2. Mental Health,
3. Family and Social Health,
4. Human Growth and Development,
5. Disease Prevention and Control,
6. Nutrition and Fitness,
7. Substance Abuse Prevention,
8. Community/Environmental Health
9. Safety and First Aid.

HEALTH EDUCATION STRATEGY

Health education is one strategy for implementing health promotion and disease prevention programs. Health education provides learning experiences on health topics. Health education strategies are tailored for their target population. Health education presents information to target populations on particular health topics, including the health benefits/threats they face, and provides tools to build capacity and support behavior change in an appropriate setting.

Examples of Health Education Activities Include:

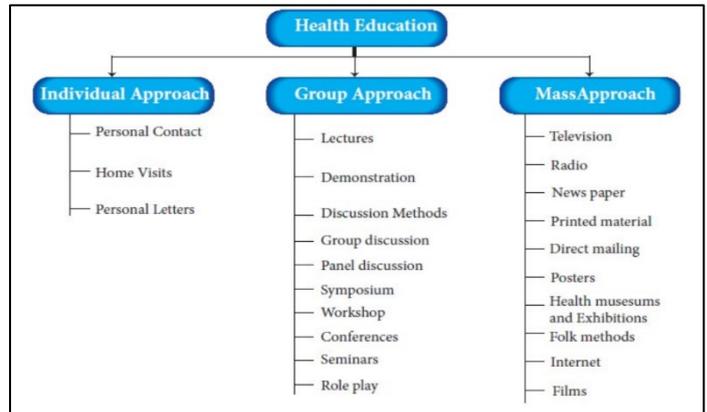
- Lectures
- Courses
- Seminars
- Webinars
- Workshops
- Classes

Characteristics of Health Education Strategies Include:

- Participation of the target population.
- Completion of a community needs assessment to identify community capacity, resources, priorities, and needs.
- Planned learning activities that increase participants' knowledge and skills.
- Implementation of programs with integrated, well-planned curricula and materials that take place in a setting convenient for participants.
- Presentation of information with audiovisual and computer-based supports such as slides and projectors, videos, books, CDs, posters, pictures, websites, or software programs.
- Ensuring proficiency of program staff, through training, to maintain fidelity to the program model.
- Health Education, Advocacy and Community Mobilization Module.
- How to Teach Health Education and Health Promotion.

HOW TO TEACH HEALTH EDUCATION AND HEALTH PROMOTION

Introduction



This study session focuses on your work as a health educator. Health education is a very important part of your work and if you do it well it will help you improve the health of the people for whom you are responsible. In this session you will learn about teaching methods as well as some of the teaching materials you will be using in your work. Teaching methods refers to ways through which health messages are used to help solve problems related to health behaviors. Teaching materials or aids are used to help you and support the communication process in order to bring about desired health changes in the audience.

Teaching Methods

There is a wide variety of teaching methods that you will be able to use in your health education work. You will be able to adapt these methods to your own situation, so that you can use the most effective way of communicating your health education messages.

1. Health talks

You may consider that the best way of communicating your health messages in certain situations is by using health talks. Talking is often the most natural way of communicating with people to share health knowledge and facts. In the part of your job that involves health education, there will always be many opportunities to talk with people.

Group size is also important. The number of people who you are able to engage in a health talk depends on the group size. However, you will find talks are most effective if conducted with small gatherings (5–10 people), because the larger the group the less chance that each person has to participate.

A large group of people gathered in a large community building. Think of some situations when you think it might be best to use health talks to get across your health education messages.

Reveal answer

Talking to a person who has come for help is much like giving advice. But as you will see, advice is not the same as health education. To make a talk educational rather than just a chat you will find it beneficial if it is combined with other methods, especially visual aids, such as posters or audiovisual material. Also, a talk can be tied into the local setting by the use of proverbs and local stories that carry a positive health message.

Preparing a talk

When you are preparing a talk there are many things to consider:

- Detailed knowledge on these topics is covered in the Nutrition Module.
- Begin by getting to know the group. Find out its needs and interests and discover which groups are active in your locality.
- Then select an appropriate topic. The topic should be about a single issue or a simple topic. For example, although local people need help about nutrition, this is too big as a single topic to address in one session. So, it should be broken down into simple topics such as breastfeeding, weaning foods, balanced diets, or the food needs of older people. Always ensure that you have correct and up-to-date information and look for sources of recent information. There may be leaflets available that can support your health messages.
- List the points you will talk about: Prepare only a few main points and make sure that you are clear about them.
- Next, write down what you will say: If you do not like writing, you must think carefully what to include in your talk. Think of examples, proverbs and local stories to emphasize your points and which include positive health messages.
- Visual aids are a good way to capture people's attention and make messages easier to understand. Think of what you have available to illustrate your talk. Well-chosen posters and photos that carry important health messages will help people to learn.
- Practice your talk beforehand: This should include rehearsing the telling of stories and the showing of posters and pictures.
- Determine the amount of time you need: The complete talk including showing all your visual aids should take not more than about 20 minutes. Allow another 15 minutes or more for questions and discussions. If the talk is too long people may lose interest.
- Look again at the list of seven features of preparing a talk. Think about those areas in this list that you are confident about, and then those areas where you feel you will have to do some learning and practicing.

Reveal answer

There are, of course other variations on talking. But all of them rely on the same key features, which are knowing your audience, being well prepared and practicing.

2. Lecture

You may have the opportunity to give a lecture, perhaps in your local school or in another formal setting. A lecture is usually a spoken, simple, quick and traditional way of presenting your subject matter, but there are strengths and limitations to this approach. The strengths include the efficient introduction of factual material in a direct and logical manner. However, this method is generally ineffective where the audience is passive, and learning is difficult to gauge. Experts are not always good teachers and communication in a lecture may be one-way with no feedback from the audience.

Lecture with discussion

You may have the opportunity to give a lecture and include a follow-up discussion, perhaps in a local formal setting or during a public meeting.

A health worker points to a poster on the wall at the health facility.

Make sure that you are well prepared for your lectures and talks so you can keep the attention of your audience.

However, there are also strengths and limitations to this approach. It is always useful to involve your audience after the lecture in asking questions, seeking clarification, and challenging and reflecting on the subject matter. It is important though to make sure discussion does happen and not just points of clarification.

3. Group discussion

A health worker leading a discussion. A small group of people are sitting outside their homes together listening.

Leading a group discussion after a health talk will improve the effectiveness of your health message.

Group discussion involves the free flow of communication between a facilitator and two or more participants. Often a discussion of this type is used after a slide show or following a more formal presentation. This type of teaching method is characterized by participants having an equal chance to talk freely and exchange ideas with each other. In most group discussions the subject of the discussion can be taken up and shared equally by all the members of the group. In the best group discussions, collective thinking processes can be used to solve problems. These discussions often develop a common goal and are useful in collective planning and implementation of health plans. Group discussions do not always go smoothly and sometimes a few people dominate the discussion and do not allow others to join in.

Your job as the facilitator is to establish ground rules and use strategies to prevent this from happening. Handling group members requires patience, politeness, the avoidance of arguments and an ability to deal with different people without excessive authority or belittling them publicly. Think for a moment about how you might prevent a few people from dominating a group discussion.

Groups can be disrupted by **several types of behavior:**

- **People who want a fight:** Do not get involved. Explore their ideas, but let the group decide their value.
- **Would like to help:** Encourage them frequently to give ideas and use them to build on in the discussion.
- **Focuses on small details:** Acknowledge his or her point but remind them of the objective and the time limit for the discussion.
- **Just keeps talking:** Interrupt tactfully. Ask a question to bring him or her back to the point being discussed and thank them for their contribution.
- **Seems afraid to speak:** Ask easy questions. Give them credit to raise their confidence.
- **Insists on their own agenda:** Recognize the person's self-interest. Ask him or her to focus on the topic agreed by the group.
- **Is just not interested:** Ask about their work and how the group discussion could help.

4. Buzz group

A buzz group is a way of coping if a meeting is too large for you. In this situation it is better to divide the group into several small groups, of not more than 10 or 12 people. These are called buzz groups. You can then give each small buzz group a certain amount of time to discuss the problem. Then, the whole group comes together again and the reporters from the small groups report their findings and recommendations back to the entire audience. A buzz group is also something you can do after giving a lecture to a large number of people, so you get useful feedback.

5. Demonstration

In your work as a health educator, you will often find yourself giving a demonstration. This form of health education is based on learning through observation. There is a difference between knowing how to do something and actually being able to do it. The aim of a demonstration is to help learners become able to do the skills themselves, not just know how to do them.

A health worker demonstrates how to use the bed net. Make sure that your demonstration is relevant to the local situation.

Can you think of health-related things that would be best taught through demonstration?

Reveal answer

You should be able to find ways to make health related demonstrations a pleasant way of sharing skills and knowledge. Although demonstration sessions usually focus on practice — they also involve theoretical teaching as well 'showing how is better than telling how.'

- **If I hear, I forget.** ကြားရုံကြားရင် မေ့ဖို့လွယ်
- **If I see, I remember.** မြင်ဖူးတဲ့အခါ သတိရမယ်
- **If I do, I know.** လက်တွေ့လုပ်တော့ သိသွားတယ်
(Chinese proverb)

Note that:

You remember **20% of what you hear**

You remember **50% of what you hear and see**

You remember **90% of what you hear, see, and do - with repetition, close to 100% is remembered.**

Giving a demonstration

There are **four steps** to a demonstration:

- Explaining the ideas and skills that you will be demonstrating
- Giving the actual demonstration
- Giving an explanation as you go along, doing one step at a time
- Asking one person to repeat the demonstration and giving everyone a chance to repeat the process

A woman demonstrating hygiene in the kitchen to a woman and her family.

Giving a good demonstration is worth a thousand words.

Qualities of a good demonstration

For an effective demonstration you should consider the following features: the demonstration must be realistic, it should fit with the local culture, and it should use familiar materials. You will need to arrange to have enough materials for everyone to practice and have adequate space for everyone to see or practice. People need to take enough time for practice and for you to check that everyone has acquired the appropriate skill.

Zahara is a Health Extension Practitioner. She is working in **Asendabo kebele**. During home visits she educates the families by showing them demonstrations on how to prevent malaria. List at least three features of an effective demonstration that Zahara should follow during her health education activities.

6. Role play

In role play, some of the participants take the roles of other people and act accordingly. Role play is usually a spontaneous or unrehearsed acting out of real-life situations where others watch and learn by seeing and discussing how people might behave in certain situations. Learning takes place through active experience; it is not passive.

It uses situations that the members of the group are likely to find themselves in during their lives. You use role playing because it shows real situations. It is a very direct way of learning; participants are given a role or character and have to think and speak immediately without detailed planning, because there is usually no script. In a role-playing situation people volunteer to play the parts in a natural way, while other people watch carefully and may offer suggestions to the players. Some of the people watching may decide to join in with the play.

The purpose of role play is that it is acting out real-life situations in order that people can better understand their problems and the behaviour associated with the problem. For example, they can explore ways of improving relationships with other people and gain the support of others as well. They can develop empathy, or sympathy, with the points of view of other people. Role play can give people experiences in communication, planning and decision making. For example, it could provide the opportunity to practice a particular activity such as coping with a difficult home situation. Using this method may help people to re-evaluate their values and attitudes.

Examples of role play

Ask a person to get into a wheelchair and move around a building to develop an understanding of what it feels like to have limited mobility.

Ask the group to take up the roles of different members of a district health committee. One person acts as the health educator and tries to convince the people to work together and support health education programmes in the community. Problems of implementing health education programmes and overcoming resistance can be explored in the discussion afterwards.

Ask a man to act out the role of woman, perhaps during pregnancy, to develop an understanding of the difficulties that women face.

Role play is usually undertaken in small groups of 4 to 6 people. Remember role play is a very powerful thing.

Role play works best when people know each other. Do not ask people to take a role that might embarrass them.

Role play involves some risk of misunderstanding because people may interpret things differently.

Reveal answer

7. Drama

Drama is a very valuable method that you can use to discuss subjects where personal and social relationships are involved. Basic ideas, feelings, beliefs and values about health can be communicated to people of different ages, education and experience. It is a suitable teaching method for people who cannot read because they often

experience things visually. However, the preparation and practice for a drama may cost time and money.

The general principles in drama are:

- Keep the script simple and clear
- Identify an appropriate site
- Say a few words at the beginning of the play to introduce the subject and give the reasons for the drama
- Encourage questions and discussions at the end.

8. Traditional means of communication

Traditional means of communication exploit and develop the local means, materials, and methods of communication, such as poems, stories, songs and dances, games, fables, and puppet show.

Some of the benefits of traditional means of communication are that they are realistic and based on the daily lives of ordinary people; they can communicate attitudes, beliefs, values, and feelings in powerful ways; they do not require understanding that comes with modern education in the majority of instances; they can communicate problems of community life; they can motivate people to change their behaviour and they can show ways to solve problems. Local traditional events are usually very popular, and they can be funny, sad, serious, or happy. Also, they are easily understood, and they usually cost little or no money. All they require is imagination and practice.

Remember that effective health education is seldom achieved through the use of one method alone. Therefore, a combination or variety of methods should be used to make sure that people really understand your health education messages.

Think of an important health issue in your own community. What methods do you think might be best to deliver health messages about this subject to members of your own community?

Reveal answer

HEALTH LEARNING MATERIALS

Health learning materials are those teaching aids that give information and instruction about health specifically directed to a clearly defined group or audience. The health learning materials that can be used in health education and promotion are usually broadly classified into four categories: printed materials, visual materials, audio, and audio-visual materials.

1. Printed Materials

Printed health learning materials can be used as a medium in their own right or as support for other kinds of media. Some printed health learning materials that you will already be familiar with include posters, leaflets, and flip charts.

Posters

A funny poster promoting the use of condoms.

Posters do not always have to be serious to catch the eye and transmit important messages.

In recent years, the use of posters in communicating health messages has increased dramatically. Since a poster consists of pictures or symbols and words, it communicates health messages both to literate and illiterate people. It has high value to communicate messages to illiterate people because it can serve as a visual aid.

The main purposes of posters are to reinforce or remind people of a message received through other channels, and to give information and advice - for example to advise people to learn more about malaria. They also function to give directions and instructions for actions, such as a poster about practical malaria prevention methods. Posters can also serve to announce important events and programmes such as World Malaria Day.

Visual aids like posters explain, enhance, and emphasize key points of your health messages. They allow the audience to see your ideas in pictures and words.

Preparing a poster

Written messages should be synchronized with pictures or symbols.

All words in a poster should be in the local language or two languages.

The words should be few and simple to understand. A slogan might contain a maximum of seven words. The symbols used should be understood by everyone, whatever their educational status.

The colors and pictures should be 'eye-catching' and meaningful to local people.

Put only one idea on a poster. If you have several ideas, use a flip chart.

The poster should encourage practice-action oriented messages.

It is better to use real-life pictures if possible.

It should attract attention from at least 10 meters away.

Flip chart

Flip charts are useful to present several steps or aspects that are relevant to a central topic, such as, demonstration of the proper use of mosquito nets or how HIV is transmitted. When you use the flip chart in health education you must discuss each page completely before you turn to the next and then make sure that everyone understands each message. At the end you can go back to the first charts to review the subject and help people remember the ideas.

Leaflets

Leaflets are the most common way of using print media in health education. They can be a useful reinforcement for individual and group sessions and serve as a reminder of the main points that you have

made. They are also helpful for sensitive subjects such as sexual health education. When people are too shy to ask for advice, they can pick up a leaflet and read it privately.

In terms of content, leaflets, booklets, or pamphlets are best when they are brief, written in simple words and understandable language. A relevant address should be included at the back to indicate where people can get further information.

Think for a moment about how you have seen printed materials used for health education messages. Think about posters which have been successful and made an impact, about how other health educators have used flip charts. So, you can always 'copy' the way that other people do things. If you have a talent yourself or know someone else who does, you can experiment with posters and flip charts. A collection of home-made posters hanging up. Home-made posters and visual aids can be cheap and very effective.

2. Visual Materials

Visual materials are one of the strongest methods of communicating messages, especially where literacy is low amongst the population. They are good when they are accompanied with interactive methods. It is said that a picture tells a thousand words. Real objects, audio and video do the same. They are immediate and powerful, and people can play with them!

Think about what real visual materials you might take with you to a health education meeting. We have already mentioned bed netting for demonstrating prevention of malaria, but there are other real objects too. Think about family planning, nutrition, hygiene and so on.

Reveal answer

A poster with contraceptive devices fixed onto it. Using real visual materials will help you deliver your health messages.

3. Audio and Audio-Visual Materials

Audio material includes anything heard such as the spoken word, a health talk or music. Radio and audio cassettes are good examples of audio aids. As the name implies, audio-visual materials combine both seeing and listening. These materials include TV, films or videos which provide a wide range of interest and can convey messages with high motivational appeal. They are good when they are accompanied with interactive methods. Audio-visual health learning materials can arouse interest if they are of high quality and provide a clear mental picture of the message. They may also speed up and enhance understanding or stimulate active thinking and learning and help develop memory.

Summary of Study

In Study, you have learned that:

To be most effective you will have to decide which type of teaching methods and materials will suit the specific messages that you want to convey. It is also important to understand who your target groups are and what resources you have at hand to meet your communication objectives.

The most important teaching methods are talks, lectures, group discussions, buzz groups, demonstrations, role-plays, dramas, and traditional means of communication such as poems, stories, songs, dances and puppet show.

Health learning materials include posters, flip charts and leaflets, visual materials such as real objects, and audio-visual material such as TV, films, and videos. Often more than one approach is more effective than a single type of activity. Using the right teaching methods and learning materials for the right target group in your health education programmes helps you to convey effective messages to individuals and communities. This stands the best chance of bringing about health-related behavioral change.

Self-Assessment Questions (SAQs)

Now that you have completed this study session, you can assess how well you have achieved its Learning Outcomes by answering these questions. Write your answers in your Study Diary and discuss them with your Tutor at the next Study Support Meeting. You can check your answers with the Notes on the Self-Assessment Questions at the end of this Module.

SAQ

Explain the difference between teaching methods and health learning materials and give examples of each of them.

Reveal answer

SAQ

Which of the following statements is false? In each case explain why it is incorrect.

A - The health education method which is superior to any other method is drama.

B - The lecture method is good for helping an individual with their health problems.

C - Role play is a method which is spontaneous and often unscripted.

D - The teaching method that has the saying 'Telling how is better than showing how?' is the demonstration method.

E - A poster should contain more than one idea and its importance is to give information only.

Reveal answer

SAQ

Which of the following statements is false? In each case explain why it is incorrect.

A - Audio-visual materials and real objects are particularly useful in situations where the literacy rate of a group is very high.

B - Real objects are useful learning aids because people can actually see and touch, them-and they are immediate.

C - Audio-visual materials and real objects are used only as a last resort when there are not enough posters to show.

D - Demonstrations are activities where the use of real objects enhances the learning that people achieve.

Reveal answer

Health Education, Advocacy and Community Mobilization Module: How to Teach Health Education and Health Promotion.

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FAMILY MEDICINE

1. THE PHILOSOPHY OF FAMILY MEDICINE

The approach to patient care is holistic and not merely disease-oriented. Subjectivity as opposed to pure objectivity is important, that is, the fears, feelings, and expectations of the patient are significant and are taken into account in the three-stage assessment of the individual. The patient is seen as a person rather than a disease and this person

is seen in their context and not in isolation. This approach is very specific and relevant to the needs and problems of the patient.

Differences between Traditional & Family Medicine Approach

Traditional and family medicine approach is differing because of the basis of the philosophy of the family medicine.

Traditional Approach	Family Medicine Approach
Biomedical model	Bio-psychosocial model
Objective way	Subjective way
Concept of disease	Concept of the person
Individual in isolation	Consider Contextual relationship
Making rules and harsh reaction	Explanation, try to make understandable & Personal responsibility

2. DOCTOR-PATIENT RELATIONSHIP

Prototypes of Doctor-Patient Relationship

1. Paternalism
2. Consumerism
3. Mutuality
4. Default

1. Paternalism

- Traditional form of doctor-patient relationship
- Doctor takes on role of parent
- Doctor is the expert and patient expected to cooperate
- Tightly controlled interviewing style aimed at reaching an organic diagnosis
- Passive patient and a dominant doctor
- Focus is on care, rather than autonomy

“If I’ve told you once I told you 1,000 times, stop smoking!!”

2. Consumerism

- we can simplify the complicated relationship with “buyer and seller” relationship,
- The patient can challenge to unilateral decision making by physicians in reaching diagnosis and working out treatment plans
- Reversing the very basic nature of the power relationship

3. Mutuality

- The optimal doctor-patient relationship model
- This model views neither the patient nor the physician as standing aside
- Each of participants brings strengths and resources to the relationship
- Based on the communication between doctors and patients
- Patients need to define their problems in an open and full manner
- The patient has right to seek care elsewhere when demands are not satisfactorily met.

- Physicians need to work with the patient to articulate the problem and refine the request
- The physician’s right to withdraw services formally from a patient if he or she feels it is impossible to satisfy the patient’s demand

Mutuality: Advantages & Disadvantages

Advantages	Disadvantages
<ul style="list-style-type: none"> • Patients can fully understand what problem they are coping with through physicians’ help • Physicians can entirely know patient’s value • Decisions can easily be made from a mutual and collaborative relationship 	<ul style="list-style-type: none"> • Physicians do not know what certain degree they should reach in communication. • Patient capable of making the important therapeutic.

4. Default

When patient and physician expectation are at odds, or when the need for change in the relationship cannot be negotiated, the relationship may come to a dysfunction standstill.

Doctor-patient relationship in the past

- Paternalism
- Because physicians in the past were people who have higher social status
- “doctor” is seen as a sacred occupation which saves people’s lives
- The advices given by doctors are seen as paramount mandate

Doctor-patient relationship at present

- Consumerism and mutuality
- Patients nowadays have higher education and better economic status
- The concept of patient’s autonomy
- The ability to question doctors

	Doctor Control (Low)	Doctor Control (High)
Patient Control (Low)	Default	Paternalism
Patient Control (High)	Consumerism	Mutuality

3. THE CONSULTATION

Basic way of the consultation is that it is an encounter between a clinician and a person seeking help with the purpose to improve or restore the health of that person. The consultation is under constant threat. It is being challenged on all levels of medical care. Economic-, cultural- and language differences are very common and place an extra burden on the clinician - patient relationship and effective communication. In resource constraints setting consultation is very challenging.

Communication is not an add-on to the consultation - it is right at the heart of patient care. The ability to not only hear what the patient said, but to understand the intended meaning is central to the patient-centred consultation.

Patient Centeredness

Being patient-centred is an attitude of respecting and valuing the patient which results in patient-centred actions. It is putting the patient first treating the patient as the most important person in the consultation; more important than yourself or her disease. Therefore, the patient should be in control of the consultation while being guided, supported and empowered by you as the clinician. It also means attempting to deeply understand the patient's feelings, thoughts, concerns and expectations, as well as her symptoms and how they impact on her ability to function at home or work.

Using patient-centred interviewing skills, you will be able to effectively communicate with your patients while making them comfortable in their communication with you. The intent of the patient-centred consultation is to encourage patients to offer information freely and honestly and to discuss those things that are of most concern to them. It is important to realize that the diagnostic consultation should also be therapeutic. As a result of the consultation and your competent use of the related skills, the patient should feel comforted, satisfied and able to deal better with her life and problems.

Patient-centred communication skills should allow you to elicit relevant medical and psychosocial information for use in the diagnosis, care and treatment of your patient's illness while promoting a positive and therapeutic exchange between you and your patient.

It does not mean that you have to be a 'nice guy' and meet all the patients' demands blindly. It is also more than just good bedside manners or good communication skills and it is definitely not merely an academic exercise or a way to manipulate the

patient. In essence, it is a way of being with your patient that is based on genuinely and deeply held respect and care for them as a person.

How do we do it practically?

- By using good communication skills – especially active listening techniques.
- By building a clinician–patient relationship characterized by genuine interest and respect, acceptance of the patient's views, trust, empathy, honesty and support
- By exploring the patient's perspective on their illness and the impact of the illness on her life By working to understand the whole person and not just the disease
- By mutual decision-making throughout the consultation – agreeing on the agenda, assessment and management plan.

The Breakdown of Consultation (Why, What, Where and When)

In a complex attempt like the consultation, it is important that the clinician is constantly aware of the purpose (why), the content (what), the process (how) and the sequence (when) of what is happening.

Purpose

The aim of any consultation should be to build the clinician–patient relationship, collaborate with the patient in managing his or her health and help the patient to identify and manage his or her health-related life challenges.

Content

The content of a consultation should be included the following format. The SOAP format can be used to summarize the medical content of the consultation in your notes:

S: Subjective – what the patient tells you and the evidence you gather from specific questions

O: Objective – what you observe by picking up clues, examining the patient, investigations

A: Assessment – comprehensive summary of what is going on at the time of the consultation

P: Plan – what you decide with the patient should be done to improve their health.

Process

The process is how things are happening. The clinician needs to be constantly aware of the process. The process can be understood as three essential tasks in the consultation namely

Facilitation. Listening – building relationship and enabling the patient to tell his/her story.

Clinical reasoning. Thinking – Finding the reason for the consultation, thinking of differential diagnoses and finding the evidence to shape a comprehensive assessment and plan.

Collaboration

Negotiating - involving the patient in the assessment and decision-making process, developing a mutually acceptable management plan with the patient and enabling the patient to participate actively in the plan.

These tasks happen simultaneously and continuously throughout the whole consultation. The clinician keeps on listening, thinking and collaborating throughout the consultation.

Sequencing

Time is of importance in every consultation. Although the three processes, listening, thinking and collaboration are ongoing, there is a sequence in the sense that you focus more on listening in the beginning, thinking in the middle and collaboration towards the end.

When you think about the sequence of things that needs to happen in the consultation, it helps you to structure your thoughts and the process in order to keep the consultation organized and make the best use of the available time.

The assessment is an important turning point in the consultation. You work through listening and thinking towards an assessment and then focus on collaboration in developing the plan.

Facilitation: Active Listening

Before the Consultation

This may be the first contact a patient has with the clinician. It is important to develop building trust and confidence in the relationship.

Build rapport

Initiation of the consultation consists of a few tasks which allow you to set the patient at ease, assess the patient's communication skills, choose a proper communication style, and invite the patient to speak about their problems. i.e. Greeting the patient, introduce yourself, assess the patient communication skills.

Beware of cross culture issue

All consultations involve bridging the cultural gap caused by different values, beliefs, socio-economic backgrounds, levels of education or use of language. When communicating with any patient, remember that the following aspects can help you to collaborate better with that patient:

- Be aware of your own values and beliefs so that you do not impose them on the patient
- Get to know the culture of your patient population, without applying generalizations too blandly to each individual
- Understand which cultural issues might influence treatment or your relationship
- Show respect and be honest about anything that you are unsure of

- Be open minded about cultural practices new to you
- Accommodate cultural ideas in the treatment plan, without compromising care
- Do not make assumptions, especially about the importance of the cultural issues or the effect they have on treatment and care
- Take special care regarding language. Even when you share a common language, there will still be metaphors, nuances and expressions that are not understood.

Recognize two agendas

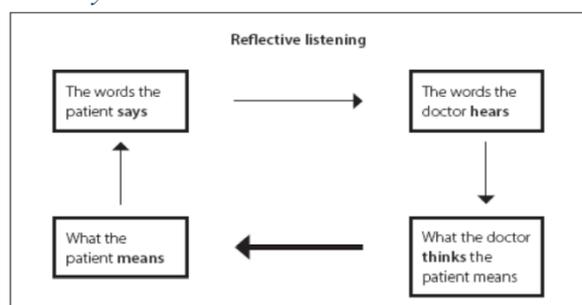
The clinician has to be aware that there are two distinct agendas for each consultation: that of the patient and that of the clinician. The patient's agenda is the real reason for the encounter from the patient's perspective. The sooner you can identify the patient's main ideas, concerns and expectations of the encounter, and your relationship, the better. This will guide you in addressing the patient's needs and avoid patient dissatisfaction and disappointment. You do not have to comply with all the patient expectations, but you have to acknowledge them.

The clinician usually has the following agenda:

- What is the real reason for this encounter – understanding the patient's perspective?
- What are the presenting problem(s) and the on-going problem(s)?
- What is my assessment (diagnosis) and options in the management plan (treatment)?
- How can I help to coordinate care for this patient between different parts of the health-care system, taking the available resources, his/her family and context into consideration?
- How can I help this patient to stay healthy and detect disease early? How can I appropriately influence future help-seeking behaviour?

Both agendas are important and the difference between the agendas is also valuable. As clinician, you need to identify and address the patient's agenda and be aware of your own agenda. Check with your patient during and at the end of the consultation that his/her agenda has been addressed and verbalize your own agenda to the patient. Identify areas that still need attention and either deal with them or defer them to the follow-up appointment.

Actively Listen



Listening requires good interviewing and relationship skills. Listening provides the clinician with relevant information for thinking. Listening is crucial for collaboration with the patient.

‘I know you believe you understand what you think I said, BUT I am not sure you realize that what you heard is not what I meant...’

The steps involved in active listening. Active listening means explicitly closing the gap between ‘what the patient means’ and ‘**what the doctor thinks the patient means**’ by use of **open-ended questions**, summaries or reflective listening statements.

The understanding can be disrupted if the patient expresses their meaning poorly, if the doctor does not hear everything that is said or misinterprets the meaning of what they have heard.

To be able to listen is one of the most important skills any person can have. By becoming a better listener, we can make better diagnoses, influence patients more, negotiate treatment better, and avoid conflicts and misunderstandings. Active listening happens when you make a conscious effort to hear not only the words, but to understand the total message. You actively facilitate the patient to share by showing the patient that you are interested and demonstrating that you are hearing through your body language, reflections clarification and summarizing. The following lists some tips for active listening

Tips to assist with active listening

- Make the patient the focal center of attention in the consultation.
- Look at the speaker directly, put aside distracting thoughts and avoid being distracted, and take note of your body language.
- Use open posture – arms uncrossed, facing the patient. Do not make notes while the patient is talking.
- Show that you are listening – nod, ‘uh-huh’, and smile.
- Be aware of your own personal reactions and their implications for or impact on the communication process between you and the patient (your countertransference).
- Listen not only to what, but also to how something is said. Attend to content and voice volume and pitch, fluency, rate and pattern of speech. Make sure that you pay attention to what is not said.
- Recognize the relationship between the patient’s verbal and nonverbal cues, that is, is there repetition, contradiction, complementation, substitution, accenting. For example: The patient might send different messages with his non-verbal cues to what his words are saying and that is a cue that you have to explore.

- Allow for appropriate silences and pauses, respecting and honoring the patient’s need for breaks or bridges when they talk. Instead of interrupting, allow patients to finish their sentences and thoughts – never impose your own thoughts while the patient is still speaking.
- Listen to the whole story, paying focused attention to the content, affect, behaviour, thoughts, context, meaning, and emphasis.
- Provide feedback to the patient to indicate that you have not only heard but also understood correctly and encourage elaboration. Ask questions to clarify and offer a summary or reflective listening statement.
- Avoid roadblocks to communications:
 - Not listening – inability to focus on the patient, inattentive, preoccupied, tired, hungry, stressed
 - Evaluative listening – makes judgements about what the patient is saying as the patient is saying it
 - Filtered listening – clinicians hear what they want to/expect to hear based on preconceived notions, or stereotypes
 - Fact-centred listening – only listens to the actual words and misses the personal and emotional message
 - Rehearsing while listening – when you are preoccupied with how to respond to the patient, formulating responses while the patient is still speaking and thus not attending fully
 - Sympathetic as opposed to empathetic listening – get caught up in the patient’s story and over identifies with the patient.

Communication Skills

Non-verbal communication skills

- **Visual** – eye contact, facial expressions, appearance, posture, hand movements and gestures
- **Vocal** – tone of voice, emphasis, and timing.
- **Tactile** – touch Time and space – body closeness, furniture arrangements.
- **Visual skills:** Eye contact and facial expressions. Cultural differences exist. Eye contact is more than looking a person in the eyes and usually communicates interest and attention. The best way to observe a patient is to use ‘soft eyes’. This means that you do not stare your patient down, but you focus just above the eyes or just under the eye on the cheekbone and use peripheral vision to observe. You then softly glide your eyes to make pupil-to-pupil contact as and when needed.

- Patient's appearance, posture, hand movements and gestures. Some people like to give meaning to these non-verbal cues based on their experience, lay interpretation or research. Be careful not to make assumptions about the meaning of body language, rather clarify with your patient what you observe. For example, if the patient sits with folded arms whilst talking to you, the reason may be that the patient has closed body language and does not really want to share information with you, may feel threatened, cold, have stomach cramps or may just sit like that for no apparent reason. If you observe and clarify, you are safe and professional, but if you just conclude that the patient 'has something to hide' you may be mistaken.
- Your appearance, posture, hand movements and gestures. Do not talk to your patient with folded arms or whilst standing with your hands in your pockets or on your hips. Keep your hands in a relaxed position where the patient can see them or even behind your back if you are more comfortable that way, but please do not fiddle with your fingers. Keep a good posture and lean a little forward. Slumping in your chair or hanging on the chair can seem as if you are not really in the mood to consult a patient. Do not chew anything whilst talking. Avoid scratching, sniffing, coughing or grunting whilst engaged with your patient. If necessary, remove yourself briefly to attend to your needs. Try to minimize note taking during the consultation (you can always make notes when the patient goes to the examination area).

Note: *taking interferes with the Flow of consultation and pauses communication.*

○ **Vocal Skills:**

- Tone of voice, emphasis, and timing. Tone of voice often communicates more about our underlying intentions or emotional state than we know. Doctors who speak in an authoritarian tone are more likely to be sued than those who speak in a tone that communicates empathy. The emphasis in your tone of voice can make the difference between a reflective listening statement and a question. A question usually goes up in tone at the end of the sentence. Pace yourself against your patient and use your tone of voice either to temper or inflate your patient's verbal frequency and speed, especially in emotional reactions.
- Language preference and verbal mannerisms. The patient's language preference must be respected where

possible. Language is more than words and allows deeper cultural expressions or nuances of meaning which may be difficult to translate. Using a patient's language suggests respect and enhances interaction and understanding. Patients feel they are heard and understood if you also reflect their words, for example, 'My stomach is fuzzy', 'Tell me more about this fuzzy stomach'. Do not use medical jargon; use lay terminology to explain the diagnosis and management. Listen to the vocabulary the patient uses but be aware that patients sometimes want to impress you by using medical jargon without really understanding it. When medical terminology slips through, explain it immediately in lay terms, for example, 'you have hypertension, which means that your blood pressure is too high'. Most of us also use verbal mannerisms such as 'Okay. Okay' and 'Shame'. Although these may indicate that you are listening, they can also be irritating or intrusive. Listen to yourself and expand your vocabulary to indicate feelings, listening and appropriate verbal responses.

- **Tactile Skills:** *Touch.* Some patients might comfort in you placing a hand on their shoulders or touching their arms or backs, while some patients might find this inappropriate, intrusive or intimidating. All patients do however appreciate being greeted with a handshake. It shows respect and validation. Don't be put off when the patient has a different handshake than you – use the opportunity to learn it from him! You will win a lot of respect by acknowledging his customs. Be mindful of the patient's personal body space and recognize if the patient feels uncomfortable with you too close to him/her. Be mindful of the fact that you have to protect your own body space as well when a patient invades your space without been invited to do so.

Skills for Time and Space:

- Seating arrangements. The seating arrangements must enhance trust, comfort and communication. Try not to have a desk between you and the patient. 'L-shaped' seating will allow an approximate diagonal distance of 1.25 meter between you and the patient. Allow enough space to have an unobstructed view of the patient and leave room for comfortable leg movement. If the room dictates that you have a desk between you and the patient, clear the table of unnecessary items that act as barriers.

Time constraints. Respect the patient's time. Where possible, work on an appointment basis to decrease waiting time. Patients feel irritable if they wait for hours and are more likely not to disclose sensitive issues as they think it will take up too much time. When a large number of patients are waiting, the health-care professional also experiences pressure and unintentionally conveys a message of impatience and unapproachability.

Olfactory skills:

Body odours. Other personal aspects such as halitosis or the lingering smell of garlic from your meal of the previous evening may interfere with communication. Be aware of your body smell and avoid excessive use of strong smelling perfume or

deodorant. It is a skill to balance your personal preferences and self-expression with the contextual expectations of patients.

Questioning Techniques

The most effective way to obtain information is to use open-ended questions as often as possible. Use closed-ended questions to obtain specific answers. In general, one should start with open-ended questions and then move to more closed-ended questions. Common mistakes made by students and clinicians include asking too many questions without pausing to give patients the opportunity to answer, asking complicated, long and confusing questions, or asking a question in a way that can bias the answer, and ignoring the patient's questions. Three types of questions have been identified.

Type of question	Purpose of question
1. Open-ended questions	Ask a question that provides the patient with the opportunity to elaborate or give the answer in the format they want. This will provide information that is more relevant, in-depth and rich. Patients feel more involved and can express their concerns and anxieties. The difficulty is that it may take longer and some of the information gathered might not be clearly relevant. An example is 'Tell me about the chest pain.' It is useful in establishing rapport, exploring the reason for the encounter and eliciting the patient's perspective.
2. Closed-ended questions	These questions have one answer and don't provide the patient with the choice to elaborate. For example, 'Is the pain burning or stabbing?' They are used to obtain specific detail about a particular topic. These questions are useful to obtain specific information that is needed as part of the clinical reasoning process. When there are communication barriers, we often resort to closed-ended questions.
3. Clarifying questions	These questions are used to clarify ('What do you mean by that?'), justify ('What makes you think that?'), check accuracy ('You definitely took three tablets?'), interpret an event or a relationship, check one's interpretation of a patient's behaviour or emotional state. These questions create insight and awareness and may lead to solving the problem.

Listening Skills

- i. Silence: Not talking for a few seconds to a few minutes and tolerating the patient not responding immediately. i.e. Non-verbal: leaning forward, nodding head, open posture
- ii. Encouraging statements: Encourages the patient to elaborate and explore. Adds nothing new. I.e. Simple repetition of word/phrase: Semi verbal encouragers: 'uh-huh', 'oh', 'aha'
- iii. Simple reflection: Reflect back the patient's exact words (parroting or echoing) or the simple direct meaning, usually in the form of a statement. i.e. 'You feel that...' 'What you are saying is...'
- iv. Complex reflection: Reflects back a tentative understanding of the deeper feeling or meaning behind what has been said. i.e. 'You were angry when he did that...' 'You seem angry right now, just talking about it...'
- v. Summarization: Your own synopsis of what has been said during part of the consultation. i.e. 'Let me see if I've got everything...'

Thinking: Clinical Reasoning

Clinical reasoning is central to the consultation. This is an ongoing process where the clinician gathers information and makes sense of it in a logical and comprehensive assessment that can lead to a mutual plan.

Process

The clinical reasoning process is how you use the information gathered to arrive at a comprehensive and justifiable assessment for your patient. The clinical reasoning process includes:

- Observing verbal and non-verbal cues
- Hypothesis formation and testing
- Focused history taking
- Focused physical examination
- Focused investigations
- Rational decision-making
- Evidence-based practice
- Comprehensive assessment: clinical, individual and contextual
- Comprehensive management plan: clinical, individual and contextual.

The following questions will help you to structure the clinical reasoning process.

- **Why did the patient decide to present today?**
- **What does this patient present with?**
- **What is the history of the main complaint?**

The following issues may be relevant:

S: Site – where is this problem?

Q: Quality – describe the problem?

I: Intensity – how bad is it?

T: Timing – when does this occur?

A: Aggravating factors

R: Relieving factors

S: Symptoms or signs – other symptoms or signs associated with the main complaint.

What are the possible diagnoses from the main complaint (list of hypotheses)?

This is a very important step. You now have enough information to list a number of possibilities for your diagnosis. You can use different sieves to help you:

Anatomical sieve: Link of all the anatomical structures involved in the complaint, for example, for a patient complaining of chest pain, the list will include the heart, the lungs, the skin, the ribs, and the esophagus

Systems sieve: Link of all the systems implied by the complaint, for example, a patient complaining of chest pain may involve the cardiovascular system, respiratory system, gastrointestinal system, or musculoskeletal system
Pathological sieve: Link of all the possible pathological processes that might apply to the relevant anatomical structures or systems:

- | | |
|------------------|-------------------|
| M - metabolic | H – hematological |
| E – endocrine | A – autoimmune |
| D – degenerative | T – traumatic |
| I – infectious | P – psychological |
| C – congenital | I – infectious |
| | C – congenital |
| | H – hematological |
| | A – autoimmune |
| | T – traumatic |
| | P – psychological |
| | I – inflammatory |
| | N – Neoplastic |

Now you have to prioritize your list, taking into consideration: the information you have gathered from the history and the cues you observed Your knowledge of diseases and their patterns Your experience of variations on the normal patterns of disease Your knowledge of this person and their reason for encounter the probability of different diseases in your context – how do people present with illness in this community; is there an epidemic at the moment; is somebody else in the family presenting with the same symptoms? The serious diseases that you would not want to miss.

In practice, these steps happen continuously and iteratively in your mind while you are talking to the patient and exploring different hypotheses. Making the process more conscious can be helpful. It also helps to rethink your hypotheses while you write your notes when the patient undresses before the examination. It will also help you to identify information you still need to gather during the examination. Sometimes the patient's symptoms and signs trigger a pattern that you easily recognize from having seen many patients with the same condition in your community. This can helpfully truncate the clinical decision-making process and speed up the consultation as long as one is mindful that you may be avoiding other hypotheses.

What evidence can I find in the focused history and focused examination to either confirm or refute each of my hypotheses?

Now you gather more information in a focused way. You need to know the likely presenting symptoms and signs of the diseases on your list of hypotheses in order to look for the evidence for or against each potential diagnosis. Each question that you ask or examination that you perform should help you to either prioritize or eliminate a diagnosis from your hypothesis list. Evidence-based practice tries to quantify the predictive value of different signs and symptoms. A thoughtless, ritualistic history and examination will add nothing to your clinical thinking process.

No consultation is complete without a physical examination. Patients expect to be examined and usually you should examine even if you think that you know what is going on. Examination skills need to be practiced. Before you start with the examination, remember to ask permission from the patient, and to have a witness in the room during sensitive examinations. Make sure that there is appropriate privacy for the patient to undress if necessary. Communicate your findings to the patients as appropriate and prepare the patient for uncomfortable examinations like a rectal exam. A focused physical examination is performed to objectively evaluate the subjective information that was obtained and to find evidence for or against specific diseases. It is always advisable to do all the vital signs and a quick general examination before you move to the focused systemic examinations.

During the physical examination you are looking for clinical signs that can provide the evidence for or against your hypotheses. For example, if you want to make the diagnosis of a pneumonia, you have to be able to elicit the signs of an increased respiratory rate, high temperature, dullness on percussion in the lungs, bronchial breathing or crepitation. During the examination it might be necessary to ask more questions and gather additional information.

It is unnecessary to do a full examination on every patient for the same reason that it is unnecessary to ask irrelevant questions. The skill is to know which physical signs would aid your clinical reasoning. Signs may usefully be present or absent and may support or refute a particular hypothesis. It is therefore essential to be focused on your physical examination while you are busy with the thinking process.

What are the personal and contextual issues that I have to consider?

No disease is ever just biological. It always has an effect on the person and the environment around that person. In the same way the person him-/herself as well as their context might have a significant effect on the disease. If we don't address these issues, our patient is less likely to have a good healthy outcome. For example, a person suspected to have HIV may have concerns about the adverse effects of antiretrovirals, believe that HIV is a death sentence, and fear the consequences of disclosing the results to their family. These individual and contextual issues may impact significantly on their willingness to be test and to be adhere to your management plan.

Recognizing, acknowledging and eliciting when necessary, the person's ideas, beliefs, concerns and expectations is important. Be aware of how the illness may impair their function and limit their functioning at home or at work. Sometimes explore the patient's feelings and emotions about their illness. Be aware of the typical challenges faced by someone at their developmental stage or part of the life cycle.

Build up a picture of the person's context in terms of their household members, family, community, living environment, work and socioeconomic status. Family usually play a big role in the life of any patient in terms of providing support and dealing with the management of the disease, but also in terms of the prevention of the disease and promotion of health.

Do I need to do any side room or special investigations to confirm my diagnosis?

When you have not gathered enough evidence from the history and examination to confidently make a diagnosis or if you want to confirm your suspicion, it might be useful to do side room tests or special investigations. These investigations can include point of care tests you do in your consultation room such as peak flow rate (PFR), capillary blood glucose or urinalysis. Special investigations might include blood tests that are sent to the laboratory, radiographs or ultrasound imaging. Here you have to be mindful of economic and resource constraints and only request investigations that are likely to make a significant contribution to your clinical reasoning. Investigations can also be helpful to observe change over time.

Approaching the goalpost of the assessment

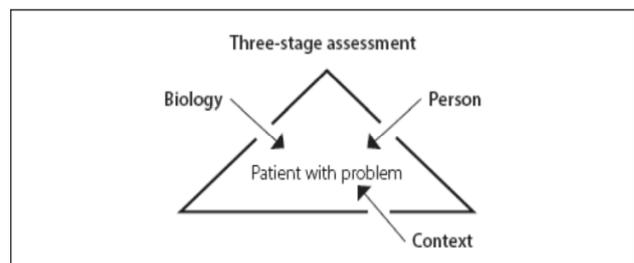
Once you have explored the patient and the problem sufficiently, you make a three-stage assessment and move on to the plan. The "three stage assessment" is described in more detail in blow.

Plan

Making a management plan is the ultimate goal of the thinking process and the consultation. In the plan you and the patient have to address each of the identified challenges while taking into consideration current evidence, available resources, as well as the patient's perspective, values, and culture. During this phase, the clinician's agenda and the patient's agenda need to be integrated.

Optionality is a way of thinking where you consider and explore options and decide how you will monitor the impact of the options to guide future assessment and plans. You and the patient will observe the impact of the plan to see whether things improve or not and whether the assessment needs to be reconsidered and other options explored. Thinking of your plan as a menu of options to be agreed on with your patient rather than a list of orders to be complied with helps you to maintain a collaborative approach. Within the plan, you may also take the opportunity to address issues of disease prevention and health promotion. Behavioural change is one of the biggest challenges of our practice.

THE COMPREHENSIVE THREE-STAGE ASSESSMENT



An assessment is a justified summary of the most recent situation of a patient taking into consideration the available information and your own conclusions after you have reasoned about and structured the information. The aim of an assessment is to clearly identify and describe all the challenges of the patient in a way that will help you and the patient to make a plan on how to manage his health.

The three-stage assessment makes a comprehensive assessment and considers the biological, individual (personal) and contextual aspects of the patient and their problem(s). This means viewing the patient and the problem from three different viewpoints.

1. Clinical Assessment

The clinical assessment is what traditionally would be called the diagnosis and is based on an understanding of abnormal biology, disease and pathology. It might include Acute or chronic, active or inactive diseases or conditions Current medication and any allergies Level of control, changes since the last visit, adherence or side effects to medication in chronic diseases Complications (end organ damage) as a result of disease(s) Underlying causes, risk factors or behaviours such as underweight, obesity, tobacco smoking, or harmful alcohol use.

Consider if there are danger signs indicating that this is an emergency. It may also be helpful to clarify what has been ruled out of the clinical assessment – what this is definitely not. Often a definitive clinical diagnosis is not possible, and one must record the assessment at the level of certainty that is possible at the time.

2. Individual Assessment

Always start with the person – any unique aspect of this person that may have an impact on their health, disease or illness experience.

Reason for coming. Why did the patient decide to consult today? Was it because they could no longer tolerate the symptoms or was it more because of their fears and concerns about what the symptoms might mean? Is this really a problem of living presenting with medical symptoms? Are they coming for administrative reasons because they need a sick certificate for example? Are they actually well but wanting some advice or preventative intervention?

Ideas. What does the person think or believe is wrong with them?

Concerns. What does the person fear might be wrong with them?

Expectations. What does the person expect to happen as a result of this consultation?

Function. How has this illness impaired the person's ability to function at home or at work? Which coping mechanisms are they using?

Emotions. What does the person feel about their illness or situation? Developmental or life cycle stage.

For example, an adolescent may be prone to more risk-taking behaviour, while a frail elderly man may be facing issues of independence and autonomy.

Although the individual assessment can be deconstructed into these concepts, it is a mistake to think that exploring the person's perspective is simply a matter of asking more questions about each of these issues. At heart it is a way of being with the person that expresses genuine interest and curiosity and allows them to share their viewpoint and have it acknowledged. Sometimes one must ask specific or clarifying questions, but not just as another list of questions.

3. Contextual Assessment

This includes anything of relevance that is outside the patient in order to understand and manage the patient with the problem better in their context:

Family. Who lives in the household? What is the family history of disease? What are the family dynamics? A genogram can summarize the family context.

Home. What is the living environment like? Is there running water and electricity? Is there overcrowding?

Work. Is the person working and what do they do? Where does their income come from?

Community. What is their community like and what may help or hinder this patient?

Other resources: An ecomap can summarize the network of resources available to the person.

Many clinicians find the three-stage assessment challenging. The three-stage assessment is often not used because people are not trained in it or have not seen the benefit of it or are so threatened by the severity of the individual and/or contextual assessments that they feel they cannot do anything about them. The reality is that particularly in the primary care setting, the individual and his context are undeniably part of every disease – chronic or acute – and have an impact on the management of the disease. If we try to separate the three components, it will be very hard to provide effective health care. The more you use it, the easier it will be, and the more effective you can become in helping your patient deal with his challenges.

Self-Management

It is important for you to know your own way of thinking and problem solving, your own communication style as well as your strengths and weaknesses in terms of how you deal with uncertainty and challenges. It is also important for you to understand your current stress level and the effect it has on you, whether you are tired or not, and how you are dealing with your own personal issues. Simple measures like frequent meals, bathroom breaks, and rest periods may well increase your productivity and effectiveness. The most important factor is to be able to identify when you are not at your best and to be honest enough with yourself to do something about it. When you are healthy, rested and fed, it makes it much easier to focus your attention on the patient and the interview and not on your own needs.

It is also important that your knowledge is current, and your skills are honed before you start with the consultation. Your ability to elicit the relevant information and clinical signs will directly influence your clinical thinking process.

Continuing professional development keeps you up to date, but more importantly, being able to access information if you need it is of utmost importance in the thinking process. Being an experienced practitioner in a specific community over a period time also informs your clinical reasoning process as you learn to recognize common patterns and ways in which people present illness in your practice.

COLLABORATION: NEGOTIATING

The clinician works on collaboration throughout the consultation. Collaboration is crucial in-patient care and the ability to collaborate is a sign of a really good clinician. Successful collaboration is built on the relationship with the patient developed through facilitation and active listening. The patient will sense that the clinician works collaboratively when the clinician negotiates actions from the beginning. Questions that build collaboration include: ‘Can we go ahead with the consultation?’, ‘Do you mind me asking you questions about your family/your work/sensitive issues?’ and ‘Can I go ahead and examine you?’. The aim of collaboration is to involve the patient in both the assessment and the management plan.

Clarify and Agreeing on the Assessment

There should be agreement between you and the patient on the nature of the problem. Surprisingly, research tells us that at the end of many consultations, the doctor and patient do not even agree on what the main problem was that needed to be addressed. This means that there needs to be an active process of explaining and agreeing on the assessment that you have made.

Clarify and Agree on the Management Goals

Having agreed on your assessment of the main problems, it may be necessary to also agree on the management goals. In some consultations, the goal is obvious and clearly shared by both parties. In other consultations, however, it may be necessary to be explicit about the goals. For example, in a patient with multimorbidity, the doctor’s goal may be to comply with the recommendations of multiple clinical guidelines, while the patient’s goal may be more quality of life related, such as improved mobility. Ideally the patient’s goals and expectations will have been elicited earlier. Clearly it will be important to explore the patient’s expectations and goals for the consultation – for example, do they expect to be referred or sent for special examinations? The doctor may have additional goals beyond the management of the acute problem which need to be made explicit:

- Management of ongoing problems: lifestyle modifications, medication and procedures.
- Rational use of available resources
- Health promotion and prevention of disease

- Alteration of help seeking behaviour.

Be Aware of the Preferred Roles of the Patient and the Clinicians

Ideally both the clinician and the patient should have some degree of control over the decision-making process. The clinician brings their expertise and experience to the table, while the patient brings their knowledge of what is possible or preferable for them. Some patients may prefer or expect the doctor to make the decisions with the risk that the plan is inappropriate. Other patients may feel that the doctor should just comply with their expectations and the clinician may feel it necessary to keep the patient happy – often with a waste of resources.

Mutual Decision Making

Having agreed on the assessment and management goals, and aware of the roles that doctor, and patient are taking, one then needs to make decisions about the details of the management plan. This takes place within the framework of

Finding common ground with the patient. Failure to involve the patient in the decision-making process often leads to non-adherence to therapy or management. Shared decision-making means the clinician shares the treatment recommendations or options with the patient and is willing to negotiate them with the patient. This not only increases patient satisfaction, but also increases the effectiveness of treatment modalities and leads to a reduction in the use or waste of resources.

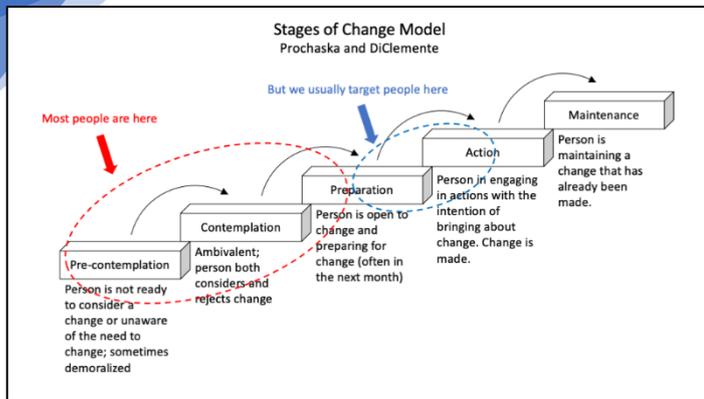
Management Plan

For each of the possible management options, you and the patient have to consider:

- Expected benefit: both short and long term
- Possible harms
- Cost to the patient and to the health services
- How you will observe and assess the effect or outcome.

Always consider doing nothing as an option or just being supportive of the natural healing process or continuing to monitor and follow-up until the nature of the illness is clearer. Sometimes the clinician and the patient have significant differences of opinions. This can be about the assessment, but more often about the plan. Such differences indicate a significant mismatch between the clinician’s and the patient’s agendas, and potentially is an opportunity to stand back, listen again and look for common ground to make the consultation more functional. Always try to preserve the relationship when negotiating over such differences of opinion. Recognizing that there is a difference, understanding what the difference is about, clarifying it, and making it explicit can be helpful. Explore common ground, ways of resolving the disagreement, or solutions that are mutually agreeable.

Brief Behavioral Change Counselling (BBCC)



In the second half of the consultation, there is sometimes an opportunity to counsel the patient about changing their risky behaviours. Typically brief behaviour change counselling is defined as a short intervention of 3–5 minutes, usually delivered opportunistically as part of the normal consultation. The aim is to motivate and assist patients to both adopt and sustain healthier lifestyles. Brief behaviour change counselling (BBCC) is an important, evidence-based and cost-effective strategy for the prevention of chronic diseases and their risk factors.

A patient-centred approach is essential in assisting a patient to self-manage their chronic conditions and associated risk factors.

There are two evidence-based approaches to behaviour change counselling that are currently being widely used and promoted as best practice.

1. Five As approach (**Ask, Alert, Assess, Assist & Arrange**)

2. Motivational Interviewing

The five “As” are a brief step-wise approach that provides structured guidance to primary care providers on how to counsel patients with risky lifestyle behaviours: It has been adopted internationally, as an evidence-based approach when engaging in general behaviour change counselling. The “five As” is a straightforward, easy-to-learn acronym, which may take 5–10 minutes to perform depending on the clinical setting. The steps can also be divided between different staff members for even greater efficiency. These “5 As” are

Ask, Alert, Assess, Assist & Arrange

Following the “five As” approach in a guiding style also involves a number of communication skills. The most important of these is probably reflective listening but the others included the use of open questions, exchanging information, affirming strengths, and summarizing ideas. Each of these skills is briefly outlined below.

The guiding style is fundamentally different from the traditional directive and confrontational approaches used in clinical practice. Traditionally, clinicians embody the role of the expert advice giver, and try to convince the patient why, what and how they should change (Everett-Murphy, Mash, Malan, 2014). In the guiding style, the argument for change is evoked from the patient, expertly guided by the clinician through a shared decision-making process. Essentially the directive style is clinician-centred, whilst the guiding style is patient-centred. The patient is recognized as the expert in their own lives, and the clinician values and respects their autonomy about how, when and what needs to change. The patient plays an active role, whilst the clinician provides structured direction, and negotiates change sensitively. BBCC involves the integration of the “five As” with the guiding style derived from motivational interviewing. The integrated approach has been summarized.

The second approach to behaviour change counselling is motivational interviewing (MI). MI was initially developed for substance abuse issues but has since developed as an approach that can be used more broadly within health-care settings (Miller, Rollnick, 2013). MI has a 55% increased chance of producing a positive outcome relative to comparable interventions. Practicing MI may take more time than BBCC and require a greater commitment to training. Nevertheless, it is possible to distill some of the key principles and skills which have been referred to as the guiding style of communication. The guiding style is collaborative, respectful, empathic and evocative.

The following table is BBCC described in briefly

5 As Steps	Task in guideline style
Ask	Ask about and document behavioural risks: Identify risky behaviour and document in record. Ask the patient what he/she already knows about the risks associated with the behaviour or would like to know. Respectfully affirm what he/she knows. Request permission to provide further information
Alert	Provide relevant information in a neutral manner: <ul style="list-style-type: none"> • Before giving information, emphasize that your role is to assist the patient in making informed choices, not to compel them to a particular course of action. Offer information on the health risks or benefits of change in neutral ways. • Exchange information using the ‘E-P-E’ method which is to elicit what the patient already knows or wants to know, provide information relevant to their answer, and elicit the patient’s understanding of this or application to their lifestyle. • If there is already a health problem related to the risk behaviour, clearly link the two.
Assess	Assess readiness to change: <ul style="list-style-type: none"> • Ask the patient how they feel about the information provided and the possibility of making a change at this time. • Assess how important change is for the patient and how confident is she/he feels about change. Recognize and respond to ‘change talk’ which are statements by the patient revealing a desire, ability, reason, need, or commitment to change. • Respect the patient’s decision.
Assist	If response is ‘Not ready to change’: <ul style="list-style-type: none"> • Ask about and acknowledge patient’s concerns with empathy. Avoid any arguments. • Offer help if he/she comes to a decision to change in the future. • Request permission to give patient materials (if available), which could assist in them making a decision in the future. If response is ‘Yes, am ready to change’, provide practical assistance to change such as: <ul style="list-style-type: none"> • Positively reinforce any intentions to change which the patient expressed, no matter how small they may be. • Express confidence in their capacity to achieve health goal. • Offer materials which share behavioural change strategies and skills and express confidence that they will help. • Prompt the patient to anticipate problems and barriers and to consider how to overcome these. • Prompt patient to seek social support in their social environment. Prescribe medication if appropriate.
Arrange	Arrange for follow-up and/or referral: <ul style="list-style-type: none"> • Document decisions made and materials given in the clinic record, add a reminder to discuss progress during the next visit and schedule follow-up contact. • Reiterate your and clinic staff’s commitment to provide further information and support during behavioural change process. • Refer patient to other health-care providers for more intensive counselling if possible or to community-based resources.

SPECIAL SITUATION

The Patient with a Chronic Disease

The five Cs are important in the history and examination of every chronically ill patient:

Complaints. Is there a problem today? Is there something else bothering the patient?

Compliance. This is a very common cause of poor control of chronic diseases. It is very important to understand why a patient is not taking his/her treatment if that is the case. Remember that the treatment consists of life style modification and possibly medications. Nowadays family physicians use the term 'adherence' more than compliance as this is more evocative of a collaborative approach. The following questions can help you: How and when is she/he taking his medication? When was the last dose taken? Pill count? What does s/he understand the medicine is for? Why is she/he having difficulty taking the medicine? How does she/he remember to take the medicine (use of cellphone alarm, pill boxes or other means)? Does she/he experience any side effects? Where does she/he get the medication and how often does she/he need to go to the clinic/hospital? How easy is it to get there? Does the medication need to be taken with food and is this an issue? Who supports him in taking the treatment?

Control. Indicators of control differ for each disease. For hypertension you have to take the blood pressure to know if a patient is controlled or not, for diabetes you look at the HbA1c level or blood glucose levels, and for asthma you ask about specific symptoms.

Complications. End organ damage is one of the main causes of disability and morbidity in our patients. You can examine and monitor for early signs of or established end organ involvement. For example, left heart failure gets diagnosed early on through a good history, but retinopathy will only be detected on examination, while nephropathy may require urinalysis.

Co-morbidity. Many patients with chronic disease have more than one condition. You have to consider what other chronic disease(s) may be present. Diabetes and hypertension frequently coexist, and more patients surviving with HIV are likely to develop other chronic conditions such as diabetes.

Breaking of Bad News

We often have to tell patients bad news. Any news that drastically and negatively alters the patient's view of his/her future can be defined as bad news. There are several reasons why giving bad news is difficult:

- You will be dealing with a human being in distress
- We are always afraid of causing pain
- We are afraid of being blamed

- Many of us have never been taught how to do it properly
- Patients could have many different reactions to the news, and you will have to deal with that
- Fear of saying 'I don't know'; patients and their families might have questions where you don't have the answers
- Fear of expressing your own emotions
- You will have to face your own fears of illness and death.

Telling the patient the bad news has two components: divulging the information, and then having a therapeutic dialogue that can help the patient to cope with the news. It is a process over time and might need more than one consultation.

Step 1: Getting started, prepare yourself and accept that you are not to blame for the bad news and/or are unable to cure the condition. Make sure you have all the information to hand and are familiar with it. Anticipate possible questions and try to be prepared to answer them accurately. Make sure there is privacy for intimate or distressing consultations and no interruptions. Decide with the patient who else should be present. Start off by opening the topic: 'Mrs X, I would like to talk to you about ... Would that be okay?' Warn the patient: 'Unfortunately I don't have good news for you.'

Step 2: Finding out how much the patient knows Find out how much the patient knows and that you share a common understanding of what has happened to date: 'Please tell me what you know and understand so far.'

Step 3: Finding out how much the patient wants to know if you don't give enough information to the patient, it can have long term consequences in terms of their ability to adjust to the illness. If you give too much information, the patient might not remember it. Try to identify how much detail the patient wants about the diagnosis or incident. These questions might make more sense to the patient after you have shared the bad news. 'Would you like me to tell you more/explain more? Give you more information? How much detail would you like to hear?'

Step 4: Sharing the information – aligning and educating Build on the patient’s starting point that was elicited above (align with what they already know). Give information in small factual chunks. Avoid medical terms or jargon that may not be understood. Avoid euphemisms as they can easily be misunderstood, for example, do not say: ‘Your husband is gone.’ Rather say: ‘Your husband died.’ Check frequently that your patient is following and understanding and clarify where necessary. Give the patient time to take in the news – tolerate silence. Listen and respond to what the patient wants to know next. Do not feel obligated to educate them on every aspect of their condition at this point. Coping with the bad news may be enough and they can set the pace in terms of what and how much they would like to know next. You should have further opportunities to educate them more at follow-up visits.

Step 5: Responding to the patient’s feelings Identify and acknowledge the patient’s reaction: disbelief, shock, denial, displacement, fear, anxiety, anger, blame, guilt, hope, despair, hopelessness, crying, relief, little reaction, threats, humour, bargaining, and awkward questions are all possible. Remember that the reaction is not aimed at you personally. This is their way of responding to the news. Give them time and space to have the reaction. Help them to talk through it by identifying what they are feeling and acknowledge that it is a normal reaction.

Step 6: Planning and follow-through
Organizing and planning:

- Demonstrate that you have an understanding of the patient’s fears and concerns by identifying and acknowledging them. Talk through the impact of that fear and concern and how it can be alleviated. Be honest but look for goals that offer some hope.
- Make a plan or strategy with the patient and talk it through. Start with very practical things like: ‘What will you do when you get home? What will you eat tonight? Who will you phone?’
- Identify coping strategies of the patient and reinforce them: ‘Who will be the support structure for the patient now and later?’
- Identify other sources of support, such as support groups, or yourself.
- Affirm your ongoing support and make a plan to follow up with them again

Elderly Patients

Elderly people may have communication difficulties in terms of impaired hearing, vision and speaking. Do not assume all elderly people can hear properly – speak slowly and clearly. Face the patient directly and make sure there is no distracting background noise. Make sure your voice is clear and not high pitched. Dentures might make speaking difficult in the elderly. Comfort plays a big role. Make sure there

is a clear and easy path for the elderly patient to walk on and a comfortable chair to sit in from which it would be easy to get up. Under-reporting is a problem as older people see ailments as a normal part of life. Some rationalize and some deny their problem(s). The history from the caregiver, if applicable, can be very valuable. Ask about:

- Weakness, weight loss, breathlessness
- Bowel and bladder function
- Hearing and visual loss
- Falls Memory loss and mood
- Living circumstances and support
- Losses – family members, jobs, income, home, physical skills, etc.
- Nutritional history.

Remember that their diseases start to multiply, and they might require longer time during the consultation. Diseases present differently in the elderly as symptoms might be non-specific and mental impairment starts to play a role. They often have a long list of medication with multiple side effects

Children and Babies

The communication between young children, care givers (Mother) and clinicians have 3 ways communications. Child and Clinician, Mother and clinician, and between Mother and Child. Most of the clinicians do not aware between Mother and Child. It is important to aware the relationship between child and Mother.

Children might be scared – avoid fast movements and loud noises. The history from the caregiver is important, but you also have to talk to the child directly. This becomes more important the older the child gets Ask the child before you confirms the facts with the caregiver. Have toys or a play area that the child can use. Make sure the room is not too hot or cold. Remember to always ask for the Road to Health Chart (Growth Charts). The following additional areas are of importance in their history:

- Antenatal, birth history and neonatal period.
- Growth and development
- Nutritional status and history
- Past illnesses
- Immunizations and skin tests done for allergies
- Behavioural history
- The caregiver of the child Safety in the home

The Adolescent

The important aspects are:

- Home – where are they living and with whom? Who is taking care of them?
- Education and employment – where do they go to school? Grades? Do they do work to earn extra money? How often? Where?

- Activities – outside of school activities? Friends? Free time? Internet?
- Drugs – ever experiment with drugs, alcohol or cigarettes?
- Sexuality – sexual relationships? Risk behaviour?

In the Angry or Upset Patient (Mental Health Problem)

<p>Show your willingness to listen</p> <ul style="list-style-type: none">○ Acknowledge their feelings○ Keep a safe distance○ Do not threaten them, interrupt them or caution them○ Do not make promises that you cannot keep○ Ask as many open ended questions as possible○ Face the patient, do not talk to them from behind – it may be seen as threatening○ Do not take what they say personally○ Reflective statements will communicate your attention and willingness to collaborate and listen to them.○ Consider the reason for the anger as part of the thinking process.	<p>When dealing with a complaint:</p> <ul style="list-style-type: none">○ Be sympathetic, even if you feel the complaint is not justified.○ Do not show anger or become defensive○ Apologize when appropriate – do not try to cover up○ Give a full, honest verbal explanation of the situation from your point of view○ If necessary, seek advice from a senior member○ Avoid blaming your colleagues in front of the patient○ Keep good notes and ensure patient confidentiality – do not tamper with the notes○ Do not avoid the issue.
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PRINCIPLES OF CHRONIC DISEASES / NCD

There are seven key principles in the care of patients with chronic illnesses which are fundamental in offering an appropriate service and adequate care for these patients. These are the principles that should underlie the setting up and management of any primary health care service endeavoring to treat patients with chronic illness. They determine how one understands the care of such patients and how to organize a service or practice.

Chronic illnesses have been defined in a number of different ways. Most commonly they have been considered to comprise the non-communicable diseases like heart disease, hypertension, diabetes, asthma and epilepsy. However, increasingly there are communicable diseases that are fitting within the framework of chronic illnesses; the most notable of these is HIV/AIDS. Chronic illnesses can be broadly defined as health problems that require ongoing management over a period of years or decades, or more specifically as illnesses that last longer than three months and are not self-limiting. However one defines them they are characterized in terms of similar demands that they place on patients themselves, on the families of patients, on the health care system and, importantly as well, on the socioeconomic system of a country over time.

It is also true that chronic illnesses are increasing throughout the world, because of changing lifestyles, as well as an ageing global population associated with greater longevity. Of particular significance, the proportion of the global burden of disease represented by chronic illnesses in developing countries is increasing very rapidly. Despite major advances in knowledge of treatment of major chronic

illnesses, many patients – perhaps most – are not receiving optimal care.

There is increasing awareness that similar strategies can be used in the treatment of most chronic illnesses, as recognized by the WHO, with the development of chronic disease management as an important component of health care. Good chronic disease management is an unfolding process, necessitating both patients and doctors to change their roles. Certainly all chronic conditions need a preventative focus in management as well as a maintenance focus.

Key Principles in Chronic Illness Care

There are seven key principles in the care of patients with chronic illnesses which I have identified as fundamental to offering an appropriate service and adequate care for these patients. These are the principles that should underlie the setting up and management of any primary health care service endeavoring to treat patients with chronic illness. They determine how we understand the care of such patients and how to organize our service or practice. In other words, they provide both the right mindset and the right organizational approach for effective chronic illness care.

1. Commitment
2. Continuity
3. Collaboration
4. Comprehension
5. Change
6. Clinical guidelines
7. Capture of information

1. *Commitment*

Commitment is the fundamental principle which underlies all the rest – it is the foundation of care. This commitment to a person enables the doctor and patient to establish a trusting relationship. There is a reciprocity of commitment implied in this – the doctor commits him or herself to the person who is a patient, with the expectation of a commitment in return. Part of that commitment, on the doctor's part, is to empower patients to enter fully and autonomously into the relationship, through providing knowledge and enabling them to be partners in their own care. The remaining 6 C's are practical principles arising from this commitment.

2. *Continuity*

The basis of continuity is commitment to relationship – the relationship between the doctor and the patient that develops over time as they both get to know each other, based on mutual trust and understanding. It is essential for the kind of ongoing care that is required. It may be possible to have some continuity without commitment, but commitment naturally creates continuity. Commitment draws a doctor into continuity, which is the single most important factor in managing care. The basis of continuity is commitment to relationship – the relationship between the doctor and the patient that develops over time as they both get to know each other, based on mutual trust and understanding. It is essential for the kind of ongoing care that is required. It may be possible to have some continuity without commitment, but commitment naturally creates continuity.

There is no doubt that continuity of care can save time and money. When patients are seen constantly by new providers, investigations are often repeated unnecessarily which increases the cost per patient. Also the provider takes much more time talking to a patient and reading through previous notes to understand what is going on, thus taking longer per consultation. On the other hand where there is continuity, there is an ongoing management plan, and the carer can focus on the critical issues that need to be addressed in the particular consultation and make sure that previous matters are followed up. This can only lead to an improvement in efficiency and effectiveness.

3. *Collaboration (Concordance)*

Collaboration is required on a number of different levels. Primarily, and most importantly, collaboration is between the doctor and the patient. This should be an element of every consultation with every patient. One of the major things that distinguishes chronic illness care is the need to involve the patient in their own management and for the patient in fact to be seen as the primary caregiver – this is the major paradigm shift that needs to take place, and for which our medical training equips us

poorly. In order to do this we need to work together with the patient to enable self-care to happen, empowering them to care for themselves. Firstly this involves a process of setting targets together in terms of management so that the doctor and patient jointly come to a decision as to what is being aimed at and what is realistic.

A part of this is setting goals for the patient to work towards in terms of changing life style and other self-care behaviour. There should be a joint planning process around anything that needs to be done. This should be seen as a process of establishing a kind of shared contract between doctor and patient, setting out the roles and responsibilities of each.

Secondly, self-care involves promoting a healthy lifestyle to the patient in order to prevent the progression of the disease and complications.

Thirdly, self-care requires a focus on adherence to treatment which is the responsibility of the patient but requires the support, understanding and ongoing monitoring of the doctor. This is not about compliance, which implies a patient yielding to and obeying a doctor's orders, but rather about a patient understanding and carrying out a management plan that has been mutually agreed upon in collaboration with the doctor. This is embodied in the concept of shared decision-making or concordance.

Patients can also play an important role in the monitoring of key indicators and should be given tools to do so, such as home blood pressure monitors, home glucometers (or at least dipsticks), peak flow meters, etc. so that they can be involved in assessing their own progress in relation to their illness.

Collaboration is about assisting our patients to design personalized self-management plans and creating relationships with them that are free of judgement and blame.

Collaboration goes beyond the individual patient. Every chronic illness will have an impact on the patient's family. The support and involvement of the family are thus critical. The family physician should thus be involved with the family, engaging them too in the process of care and ensuring their collaboration in this important joint venture.

In addition, collaboration with other patients who have the same condition can serve an important function whether this is informally (one on one), or through support groups, be they local or national. Just as the patient is a primary care giver so fellow sufferers become a group of care givers who are supporting each other.

Other members of the health care team are obviously important too in terms of collaboration. It is vital to work in concert and in collaboration with any of the team members that are necessary for the management of a particular condition, be they nurse educators, dieticians, physio and occupational therapists, social workers, etc. Community resource agencies may form an important component of the broader health care team.

4. Comprehension

Probably the single most significant gift that we can give to a patient with chronic illness to enable them to care adequately for themselves and to live positively is the knowledge that will enable them to have a full understanding of the illness, of its possible complications and of its management. It is worthwhile spending time on this because it will save time in the long run as the patient becomes a true collaborator in the process of his or her care.

It is not enough to explain a patient superficially about the disease (For example not to explain diabetes is a “sugar disease”. It needs to explain broadly. Otherwise it will distort the nature of the disease. It should be explain about the metabolism of carbohydrate and fat metabolism and its complication of diabetes and its nature of pathogenesis. (If a patient is not fully aware of the possible complications of the disease, how will he/she understand the management plan and the need to take ongoing medication? For it is true that in most chronic illnesses we treat largely to prevent complications arising from or progression of the disease.) Comprehension, however, goes further than the patient’s understanding. It also requires the clinician’s understanding of his or her patient. In order to manage patients appropriately we need to understand clearly what their aspirations, their needs, their fears and their concerns are.

5. Change

In any chronic illness, change is required. At the very least, patients will have to change in terms of starting to take treatment on a regular basis. More significantly, however, every chronic condition requires lifestyle modification. This should not be seen as an extra, helpful adjunct but actually as basic core to living with a chronic illness. It is the extent to which we are convinced of this and demonstrate this conviction to patients, which makes a difference. A range of behavioural techniques have been described for assisting patients with improving their self-care, such as stepwise goal setting, self-monitoring, social support, individualized care, etc. but all are based on a patient’s readiness for self-care. We need to use all the well-known tools in terms of educating patients and principles of motivation in order to assist in this process. Modification is vital for promoting optimal health in our patients, for preventing complications and for assisting the adaptation to impairment.

Our attitude, however, is important; the process should be based on the collaborative model. We need to free patients to change, based on what matters most to them, rather than pushing them to change to please us. A range of behavioural techniques have been described for assisting patients with improving their self-care, such as stepwise goal setting, self-monitoring, social support, individualized care, etc. but all are based on a patient’s readiness for self-care.

Patients need to understand when they do need to see a clinician but also, as they develop knowledge and responsibility and they are able to control the illness for themselves, when they do not need to see a clinician. There is no reason why a patient needs to see a clinician on a monthly basis when they are well controlled. This could be extended to three or six months, depending on their condition.

6. Clinical Guidelines

For every chronic illness there are stepwise management guidelines which assist in decision making. Obviously there needs to be individualization which is why we are needed as clinicians, responding to the social, emotional and physical context of the patient. It cannot simply be a mechanical process. There needs to be a balance in the patient encounter between evidence and intuition, a dynamic interaction between protocol-driven care and individual patient characteristics. Individualization however should not be an excuse for the accepted guidelines out of the window. Significant improvements in care have occurred in a wide range of chronic illnesses when health care providers follow clinical guidelines.

7. Capture of Information

Lastly record keeping, or clinical information systems⁴, is critically important. The problem orientated medical record (POMR) should be the basis for the notes that we keep on our patients. In the Faculty of Health Sciences of the University of the Witwatersrand, we have expanded the traditional SOAP model for the POMR to SOA3P4. In this record, A3 is a reminder of the 3-stage or biopsychosocial assessment that we should be making for every patient. The P4 reminds us of the four tasks in the consultation which need to be addressed in the management plan. (Details about POMR and SOAP in different folder)

Accountability for the Principles of Chronic Illness
(Accountability for the Seven C’s)

Ultimately the clinicians and the health service need to make sure it happens, but the bulk of the responsibility lies with either the clinician or the patient or both.

The clinician is primarily accountable for following clinical guidelines and for ensuring adequate capture of information. The patient, given the tools by the clinician, is responsible for ensuring s/he fully understands and comprehends the illness and what it comprises and also for modifying behaviour, to live appropriately with and even control the illness. Then there is joint accountability: this is comprised of the collaboration I have discussed, which is about a partnership between both parties, and also continuity, which I believe is a joint responsibility as the clinician must make it possible and the patient value it enough to keep coming back to that clinician.

UNDER THE COMMITMENT OF DOCTOR & PATIENT			
1	Doctor Responsibility	Chronic Patient Responsibility	Both Responsibilities (Doctor as well as Patient)
2	Clinical Guidelines	Comprehensive Change	Continuity
3	Capture Responsibility	Change (mainly patient but doctor also has important role)	Collaboration

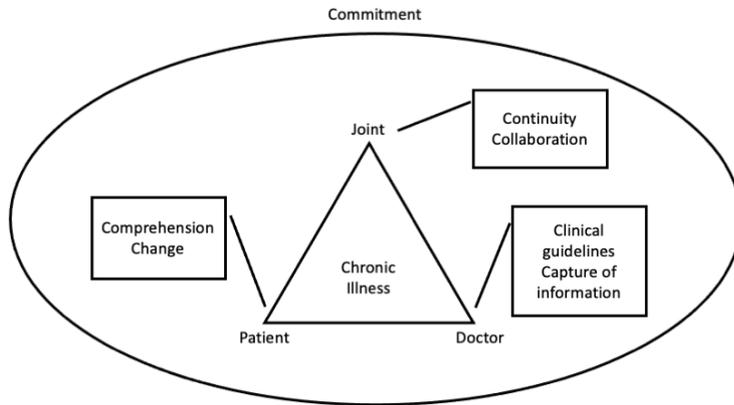


Figure: doctor, patient and both responsibilities

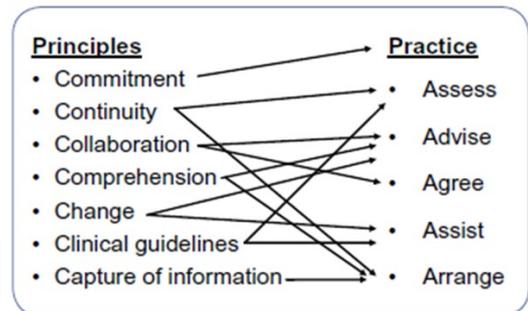
Managing Chronic Illness

How then do we apply these principles in the management of the individual patient in a consultation? Clearly laid out in their module on general principles of good chronic care of the IMAAI programme.

Suggest five A's for every consultation. (Assess, Advice, Agree, Assist, Arrange)

1. Assess
 - a).Complaints & Concerns
 - b).Control
 - c).Compliance
 - d).Complications
2. Advice
3. Agree
4. Assist
5. Arrange

Figure: relating the principles to practice



1. Assess

There are a number of aspects which should be assessed every time a patient visits a health worker. Consider another 4 Cs.

a) Complaints or concerns

These are the issues that the patient brings to the consultation, either new complaints that have arisen since the previous visit, or ongoing problems that the patient is concerned about. They are important to assess, to ensure that we are meeting the patient's needs and addressing the patient's agenda.

b) Control

We need to assess the clinical status of the patient in regard to the illness and the extent to which the illness is under control. This involves monitoring by both patient and doctor as discussed above.

c) Compliance

This is assessing the adherence of the patient to treatment, which should be done in an open and non judgemental way to ensure that the patient is able to express honestly his/her difficulties so that we do not change management unnecessarily. (Please note the term "Compliance" and "Concordance" Collaboration)

d) Complications

In every consultation we should be assessing whether there is progression in the disease, whether there are any complications developing and whether there are risks that should be attended to. These are a measure, to a large extent of the collaboration that exists. The standard used for the assessment is a combination of the patient's self-assessment and objective clinical evaluation, weighed against evidence-based guidelines. All need to be clearly documented.

2. Advise

Family physician task is to give the key information to the patients about their concerns, their control, their complications and their risks and then to present the management options to the patient in order to allow them to be involved in the decision-making process in the collaborative way discussed above. It is also critical we offer the information and advice patients need in order to care for themselves.

3. Agree

Here we jointly agree on the goals and targets that we are aiming for and on the treatment plan we will be implementing in order to reach those. It is dependent on proper comprehension on the part of the patient and of the doctor.

4. Assist

Our primary role in the management of chronic illness is to assist the patient through the provision of the necessary treatment as per our management plan, through linking the patient to health care team members whose support is needed, and through linking the patient to people or groups in the community who can be of assistance. We also assist in terms of facilitating particular problem solving that a patient might require.

5. Arrange

Most importantly we need to arrange follow up and the safety net of ongoing care. We should also arrange referral if it is needed. Finally we must arrange that there is a record of the consultation, ideally retained by the patient in addition to a summary kept by us, to assist with the process of continuity and ongoing care discussed above. This approach to every consultation provides a very useful framework for managing patients with chronic illness. It provides a practical framework within which all the principles of chronic illness care can be applied in the consultation.

1. Commitment: (overall, **Both**)
Practice
2. Continuity: **(Both)**
Assess and **Arrange**
3. Collaboration: **(Both)**
Advise and **Agree**
4. Comprehension: **(Patient)**
Advise and **Arrange**
5. Change: **(Patient)**
Advise and **Assist**
6. Clinical Guidelines: **(Doctor)**
Assess and **Assist**
7. Capture of Information: **(Doctor)**
Arrange

FORENSIC MEDICINE

INTRODUCTION

အခြေခံ ကျန်းမာရေး ဝန်ထမ်းများအတွက် မှုခင်းဆိုင်ရာ ဆေးပညာ သင်ကြားမှု အဓိက ရည်ရွယ်ချက်

၁။ မြန်မာနိုင်ငံအတွင်း အဖြစ်များသော ဆေးပညာရပ်ကို အသုံးပြုရသည့် မှုခင်းများအကြောင်း အသိပညာရရှိနိုင်ရေး နှင့် ၎င်းပြဿနာများကို မည်သို့ကိုင်တွယ်ဖြေရှင်းနိုင်သည်ကို သိရှိနိုင်ရန်။

၂။ မသေဆုံးခင် ဆေးပညာသဘောအရ စမ်းသပ်တွေ့ရှိမှုနှင့် သေဆုံးပြီးရင်ခွဲစစ်ဆေးရာ၌ တွေ့ရှိမှုများကို ဆက်စပ် စဉ်းစားနိုင်ရန်။

၃။ တရားရုံးများတွင် ဆေးပညာရှုထောင့်မှ မှုခင်းနှင့် ပတ်သက်၍ ကျွမ်းကျင်စွာ ထွက်ဆိုမှုပြုလုပ်နိုင်ရန်။

၄။ လိုအပ်ပါက မှုခင်းဆိုင်ရာကျွမ်းကျင်သော ဆေးပညာရှင် များအား လွှဲပြောင်းမှုပြုလုပ်နိုင်ရေးတွင် အထောက်အကူ ပြုနိုင်ရန်။

၅။ လူထုအတွင်းဖြစ်ပွားသော မှုခင်းဆိုင်ရာကိစ္စရပ်များတွင် ဆေးပညာနှင့် ဆက်စပ်မှုရှိပါက ပါဝင်ကူညီအကြံပေးနိုင်ရန်။

၆။ ဥပဒေနှင့် မှုခင်းဆိုင်ရာ ကိစ္စများတွင်ကျန်းမာရေး ဝန်ထမ်းများအနေဖြင့် “ဆေးပညာဆိုင်ရာ သမားကျင့်ဝတ်” ကို သိရှိနားလည် ကျင့်သုံးနိုင်ရန်။

ဝေါဟာရအသုံးအနှုန်း

- မှုခင်းဆိုင်ရာဆေးပညာ (Forensic Medicine)
- ဥပဒေရေးရာဆေးပညာ (Legal Medicine)
- Medical Jurisprudence

မှုခင်းဆိုင်ရာဆေးပညာ (Forensic Medicine) ၏ အဓိပ္ပါယ်သတ်မှတ်ချက်

မှုခင်းဆိုင်ရာဆေးပညာဆိုသည်မှာ အထွေထွေဆေးပညာ၏ ကဏ္ဍခွဲ ပညာရပ်တစ်ခု ဖြစ်ပါသည်။ ၎င်းပညာရပ်သည် တရားမမှု ရာဇဝတ်မှုများတွင် ပါဝင်ပတ်သက်သော လူပုဂ္ဂိုလ်နှင့် ပတ်သက်၍ ဆေးပညာ၏ သိရှိနားလည်မှုများ ကို ဥပဒေနှင့်အညီ ဆက်စပ်မှုပြုပြီး ဆုံးဖြတ်ချက်များကို အနီးစပ်ဆုံး မှန်ကန်စေရန် ကူညီ ဆောင်ရွက်ပေးခြင်းပင် ဖြစ်သည်။ ဤသို့ဆောင်ရွက်ရာတွင် ဆေးပညာဆိုင်ရာ သမား၏ကျင့်ဝတ်ကို သိရှိနားလည် ကျင့်သုံးရမည်ဖြစ်သည်။

Forensic Medicine ၏ အရေးပါသောအခန်းကဏ္ဍ

၁။ လူသေဆုံးမှုများတွင် “သေစေလိုသောအကြံနှင့် ပြုလုပ်၍သေဆုံးခြင်း” ဟုတ်/မဟုတ် သိရှိရန်လိုသည်။ သေစေလိုသောအကြံနှင့် ပြုလုပ်ပါက လူသတ်မှုကျူးလွန်ရာ ရောက်သည်။

၂။ မုဒိမ်းမှုအထမြောက်/မမြောက် မှတ်ချက်ပေးရာ တွင် အရေးပါသောမှတ်ချက် ဖြစ်သည်။

၃။ အသက်အပိုင်းအခြား ခန့်မှန်းခြင်း။

၄။ Criminal Abortion (တရားမဝင် ကလေးဖျက်ချမှု)

၅။ ပြင်းထန်စွာနာကျင်စေမှု (Grievous hurt)

၆။ မည်သူမည်ဝါဖြစ်ကြောင်း ခွဲခြားဖော်ထုတ်ခြင်း (Personal Identification)

၇။ To Aid Law Enforcement Forces

CHAPTER (1) FORENSIC THANATOLOGY

(The Pathophysiology of Death)

It is a study of death and of dying and changes after death.

Definition of Death

Death is the irreversible cessation of the following.

1. total cerebral function.
2. spontaneous function of respiration.
3. spontaneous function of circulation.

Cause of Death

- underlying pathological condition
- definite cause of death

Mode of Death

- Refers to an abnormal physiological state that pertained at the time of death. E.g. coma, congestive cardiac failure, cardiac arrest, pulmonary Oedema.

Manner of Death

- Not really a medical decision.
- Refers to the circumstantial events such as "homicide", "suicide", "accident", or "natural" cause.
- Is a legal or administrative categorization.

The Medicolegal Autopsy

- The word "autopsy" is identical to "necropsy" and usually to "post-mortem examination", though the latter is sometimes used to mean only an external examination after death.
- Autopsies are of two main types
- The clinical or academic autopsy, where the cause of death is known or often incorrectly thought to be known and the examination is held to confirm the diagnosis and to discover the extent of the lesions, for academic interest, teaching and research purposes.

- The medico – legal autopsy, whose function is to discover some or all of the following facts.
 - (a) the identity of the body.
 - (b) the cause of death.
 - (c) the nature and number of injuries.
 - (d) the time of death.
 - (e) the presence of poisons.
 - (f) the expectation of duration of life for insurance purposes.
 - (g) the interpretation of injuries, either criminal, suicidal or accidental.
 - (h) the interpretation of any other unnatural conditions, including those associated with surgical or medical procedures

The objectives of an autopsy

- (a) To make a positive identification of the body and to assess the size, physique and nourishment
- (b) To determine the cause of death
- (c) To determine the mode of dying and time of death, where necessary and possible
- (d) To demonstrate all external and internal abnormalities, malformations and diseases
- (e) To detect, describe and measure any external and internal injuries
- (f) To obtain samples for analysis, microbiological and histological examination, and any other necessary investigations
- (g) To retain relevant organs and tissues as evidence
- (h) To obtain photographs and video films for evidential and teaching use
- (i) To provide a full written report of the autopsy findings
- (j) To offer an expert interpretation of those findings
- (k) To restore the body to the best possible cosmetic condition before release to the relatives

Cases which must be reported to forensic pathologist with (PR) ring (types of deaths in which forensic autopsy should be done)

1. When death was due to accident, suicide and homicide.
2. All cases of infanticide.
3. When death was due to criminal abortion.
4. When any female of child -bearing age collapsed and died suddenly.
5. Deaths from all types of poisoning.
6. Sudden and unexpected death.
7. All deaths that occur within 24 hours after admission to hospital.
8. Found dead or brought dead cases.
9. All deaths where no doctor will come forward and certify the cause of death.
10. All deaths due to natural catastrophes.
11. All deaths due to iatrogenic causes; therapeutic mishaps.

12. All deaths occurring in the operation table or before full recovery from anesthesia.
13. Deaths of armed force personnel.
14. Whenever death occurred in such circumstances as to be suspicious. e.g.
 - (a) Death in police custody.
 - (b) Death of adopted children's home.
 - (c) When an inmate of the mental hospital died under suspicious circumstances.
 - (d) Death in home for the aged.
 - (e) Death of servants or maids.
15. When death was due to narcotic drugs.
16. When death occurs due to illegal operations. E.g. Vasectomy; Sterilization without approval of medical board.

Immediate Signs of Death

1. Cessation of Respiration

2. Cessation of Circulation

3. Death like pallor and loss of elasticity of skin

4. Changes in the Eyes

- (a) loss of luster of the eyes which assumed a glazed appearance.
- (b) loss of corneal reflex
- (c) loss of light reflex
- (d) loss of intraocular tension
- (e) segmentation or rail roading of retinal vessel.
- (f) Tache-noir de la sclerotique.

When the person died with eye open, due to air drying, there will appear triangle shape, yellowish brown patches of discoloration of sclera on each side of cornea within 3 hrs after death.

- (g) Color changes in the retina can be seen by direct observation with ophthalmoscope from the time of somatic death up to 15 hrs. Post-mortem.



Tache noir

5. Primary Flaccidity of muscle

Loss of muscle tone as patient dies. The limb become flaccid as muscle tonicity is lost.

6. Contact flattening and pressure whitening

Late Changes after Death

1. Cooling of the body

When measuring body Temperature after death, rectal Temperature should be inserted into the rectum 4 inches deep and left there at least 3 min before first reading.

II. Post - mortem hypostasis (hypostatic staining) (livor mortis)

It is another early change of the body after death. It is the discoloration that occurs due to settling of blood after death.

Definition

It is bluish or reddish-purple discoloration due to capillo-venous distention with blood, at the undersurface of skin of the dependent parts of the body, due to settling of the blood in those areas due to the pull of the gravity, when circulation to keep the blood in motion ceases.

Medicolegal Importance

1. Formation of post-mortem staining is a sign of death as it forms only after the cessation of circulation. But ante-mortem hypostasis may be there during the terminal phase of a living subject whose circulation has become very feeble and who unable to change his position and has stayed in one position for a long period.
2. From the formation, size, extension and fixation of the post-mortem staining, time passed after death can be roughly assessed.
3. Cause of death – From the distribution and the colour of post-mortem staining some idea about the cause of death can be made.

From the distribution of the post-mortem staining – In cases of death due to hanging, if the body remains suspended in the upright position for a few hours, then, post-mortem staining will appear in the lower limbs, lower parts of the upper limbs and at the upper margin of the ligature mark on the neck

From the color of the post-mortem staining – The normal color of the post-mortem staining is either bluish or reddish purple.

- (a) Hydrogen Cyanide(HCN) poisoning - cherry red
- (b) Potassium Cyanide(KCN) or Sodium Cyanide(NaCN) poisoning the colour is brownish
- (c) In Carbon Monoxide (CO) poisoning the staining is pinkish.
- (d) Aniline or Carbon Dioxide(CO₂) poisoning, it is deep blue
- (e) phosphorus poisoning the colour is dark brown
- (f) Hydrogen Sulphide(H₂S) poisoning the colour is greenish blue
- (g) Death due to exposure to cold- bright red
- (h) Death due to burning inside a closed room the staining may be bright red or pinkish

4. From the distribution of the post-mortem staining the position in which the body was left for some hours after death can be known. If the distribution of the staining does not match with the position of the body in which it was discovered, then, it can be deduced that, the body was moved or manipulated after about at least some hours of death.
5. When patchy and small in the early phase of its formation, may be confused with bruises.
6. Haemorrhagic spots on skin of some parts of the body, due to blood dyscrasias, may be mistaken for post-mortem staining
7. Some extraneous colour or stain may be mistaken as post-mortem staining

Differences between bruise and post-mortem staining Features

Features	Post-mortem staining	Bruise
1. Situation	On the dependant parts of the deaed body	Anywhere
2. Tissue level	Undersurface of the skin and the skin level externally	Subcutaneous tissue level externally
3. Surface	(a) Not elevated (b) Cuticles not damaged	(a) May be slightly elevated (b) Cuticles may be damaged in the form of abrasion
4. Margin	Sharp and clearly defined	Diffused margin
5. Colour	Bluish or reddish purple normally. Specific colour in some specific poisoning death cases.	Reddish when fresh which changes in colour with time.
6 Cause	Due to capillo-venous distension with blood	Due to extravasation of blood from capillaries.
7. Nature of the change	Post-mortem	Antemortem
8. Effect of pressure	Pressed spot appears pale	No change on application of pressure.
9. Cut section	Cut surface shows oozing of blood from the smaller vessels which can be cleaned by washing	Cut surface shows evidence of haemorrhage in the tissue which cannot be washed out (in dead bodies).
10. Microscopic study	Engorgement of capillaries	Extravasation of blood cellular infiltration etc.
11. Enzymatic study	No change	Change in the level of certain enzyme, in the effected area.
12. Medico-legal importance	Tells about the time of death and position of the dead body	Tells about the nature of injury, weapon used etc.

1. Changes in muscle after death

- i Primary flaccidity
- ii Rigor mortis – cadaveric rigidity
- iii Cadaveric spasm or instantaneous rigor
- iv Secondary flaccidity.

2. Modified forms of rigidity

- a. Cadaveric spasm
- b. Heat stiffening
- c. Cold stiffening

3. Rigor mortis or cadaveric rigidity

Definition

Rigor mortis is that state of the muscles of dead body when they become stiff or rigid with some degree shortening.

Period of stay of rigor mortis

In summer it takes 1 hour to appear and another 3-4 hours for all round distribution. During this season the average period of stay of rigor mortis is between 12 to 18 hours.

In winter, it takes about 2-3 hours to appear and another 4-6 hours for all round distribution, with an average period of stay for about 24 – 48 hours.

In cold countries the above timings are prolonged according to the temperature of the countries.

Medico-legal importance of rigor mortis

1. It is a sign of death.
2. During the early phase after death, rigor mortis gives good idea about the time of death.
3. From rigid contact flattening, the position in which the dead body was lying for some hours after death can be known.

4. Some conditions occurring in dead bodies may be confused with rigor mortis. These are Cadaveric spasm or instantaneous rigor.

Cadaveric Spasm

Cadaveric spasm is a rare form of virtually instantaneous rigor that develops at the time of death with no period of post-mortem flaccidity.

Cadaveric spasm can be sometime seen in,

1. Suicides
2. Murders
3. Also found in case of drowning (water, grass, seaweed) strong proof that a person has gone into the water living
4. Sometimes seen in poisoning by cyanide, strychnine
5. In battles
6. May also occur in high voltage electric shock.

Differences between Rigor mortis and Cadaveric spasm



Rigor mortis—body is stiff and can be made to remain so on two supports at either ends of the body (heels and head)



Cadaveric spasm of both hands (in a drowning victim)

Points	Rigor Mortis	Cadaveric spasm
1. Onset	Within 1 or 2 hours after death	Instantaneous with death
2. Muscles involved	All muscles of the body are affected gradually	Selected muscles which were in a state of contraction at the time of death.
3. Primary flaccidity	Precedes R. M.	Does not come in the affected muscles
4. Intensity of rigidity/ contraction	Comparatively moderate	Comparatively very strong.
5. Death of the muscles	Molecular death of muscles occur	No molecular death of the muscles.
6. Duration of stay	About 12-18 hours	A few hours, until replaced by rigor mortis.
7. Predisposing factor	Nil	Excitement, fear, fatigue, exhaustion along with contraction of muscles during death
8. Body temperature	Low	Comparatively high.
9. Muscle reaction	Acidic	Alkaline
10. Reaction to stimulus	Does not respond	Responds
11. Mechanism of formation	Break down of A. T. P. below critical level	Not known exactly.
12. Medico-legal	Mostly helps to know the time of death	Speaks sometimes about the cause of death and sometime about the nature of death (whether suicidal, homicidal etc.)

Post-Mortem Decomposition (Putrefaction)

1. From autolysis of individual cells by internal chemical breakdown to tissue autolysis from liberated enzymes, and.
2. From external processes introduced by bacteria and fungi from both the intestine and outer environment.

Medico-legal importance of Decomposition

1. It is an absolute sign of death Skin discoloration may be mistaken for a bruise or contusion.
2. Blister formation may be mistaken for a burn or scald.
3. Skin slip, moist reddish, shiny base left behind may be mistaken for abrasion.
4. Exudation of blood-stained frothy fluid from mouth and nose may be mistaken for death from throttling, strangulation and other asphyxial deaths.
5. Rupture of abdominal wall may be mistaken for trauma.
6. Protrusion of uterus and of fetus may be mistaken for criminal abortion.
7. Haemolysed blood and autolytic changes in internal organs may be mistaken for disease process.
8. Various stages of decomposition changes may be used for rough estimation of time since death.
9. Color changes in intestine - G.E.
10. Flabby myocardium – cardiomyopathies.
11. Decomposition changes in liver - acute liver necrosis, liver failure.
12. Decomposition changes in lung - pneumonia (haemorrhagic pneumonia).

The following summary indicates the usual progress of putrefaction

- Greenish coloration over the right iliac fossa.
- Extension of greenish color over the whole of the abdomen, and other parts of the body.
- Discoloration and swelling of the face.
- Swelling and discoloration of the scrotum, or of the vulva.
- Distension of the abdomen with gases
- Brownish coloration of the surface veins giving an arborescent pattern on the skin.
- Development of bullae, of varying size, on the surfaces.
- Bursting of bullae, and denudation of large irregular surfaces due to the shedding of epidermis.
- Escape of bloodstained fluid from the mouth and nostrils.
- Liquefaction of the eyeballs.
- Increasing discoloration of the body generally, and greater and progressive abdominal distension.
- Presence of maggots.
- Shedding of the nails and loosening of the hair.

- Facial features unrecognizable. (Negroid appearance)
- Conversion of tissues into a semi-fluid mass.
- Bursting open of the abdominal and thoracic cavities.
- Progressive dissolution of the body.

Modified form of decomposition

1. Adipocere

Adipocere change in the dead body is another modification of decomposition.

What is adipocere formation-It is formation of soft, whitish, crumbly, waxy and greasy material occurring in fatty or fat containing tissues of a dead body.

2. Mummification

When due to environmental conditions, there is drying or desiccation of the soft tissues of the body, the process of normal decomposition or putrefaction of the dead body is prevented as the growth of the micro-organisms is retarded.

3. Maceration

This is an aseptic autolytic change which occurs in the body of fetus who died in utero and remains enclosed within the amniotic sac. (There are no bacteria). It takes about one week for maceration to develop. If such a condition is found, fetal death may be 5 days prior to delivery.

Estimation of Time of Death

List of parameters available for estimation of time since death

- | | |
|--------------------------|--|
| (1) Cooling of the body | (9) Changes in the C.S.F |
| (2) Hypostasis | (10) Changes in the ocular fluid (vitreous humour) |
| (3) Rigor mortis | (11) Entomology of maggots |
| (4) Putrefaction | (12) Circumstantial evidence |
| (5) Food in the stomach | |
| (6) Bowel and bladder | |
| (7) Growth of hair | |
| (8) Changes in the blood | |

The following may assist as an approximate guide:

- No hypostatic staining or rigor mortis is apparent within the first 30min.
- Hypostatic staining and postmortem rigidity start at between 30min and 3h after death, during which time the limbs remain flaccid, but rigidity may be apparent in the muscles of the jaw and face.
- The torso of a lightly clothed body in a warm room will feel warm to the touch for the first 8h.
- Hypostatic staining blanches until the time of about 12h.
- Rigidity is established by the time of 6h and remains so until about 36h.

- Hypostatic staining becomes fixed at around 18h.
- From 24h onwards, rigidity diminishes, and the body becomes flaccid again, from about 36h onwards. Seasonal Variation may be present.
- Green discoloration appears on the skin in the right iliac fossa after several days, gradually spreading thereafter.
- Marbling of the venous system occurs at about one week after death.

Putrefactive changes in relation to time since death

Changes observed	Time since death*
Greenish discolouration of	
• Right iliac fossa	12-24 hours
• Whole body	48 hours
Marbling changes	
• Just commenced	24 hours
• Becomes prominent	36-48 hours
Postmortem blister formation	18-48 hours
Foamy liver formation	18-48 hours
Loosening of scalp hairs, nails and teeth	>48 hours
Bloating of facial features	36-48 hours
Putrefactive blister formation	36-48 hours
Postmortem slipping of skin (hand, feet, etc)	48-72 hours
Changes in the external genitalia	48-72 hours
Postmortem delivery in gravid uterus	48-72 hours
Bursting open of the abdomen	48-72 hours

* In India, in summer

Notes: Putrefactive changes may vary according to climate of the countries.

CHAPTER (2) PERSONAL IDENTIFICATION

Definition

It is the establishment of the identity as distinguished from all other person.

Medico-legal importance

1. In criminal cases, as a starting point for investigation in,
 - (a) Unknown dead bodies
 - (d) Decomposed bodies
 - (b) Fragmentary remains
 - (e) Severely burnt bodies
 - (c) Dismembered bodies
2. Victims of mass disasters.
3. In cases of rape and age determination.
4. In civil cases - fraudulent impersonation in insurance claims.
5. In ordinary works of life - NRC, FRC, sports competition.

1. Basic or Primary Characteristic

The establishment of certain broad groupings, such as,

1. Race
2. Sex
3. Age
4. Stature

2. Absolute Characteristic

It is positive proof and will definitely identify a person. There are,

1. Finger prints / Footprints
2. Anthropometry (Bertillon system)
3. Dental data
4. Blood groups
5. Tattoo marks
6. Occupation marks
7. Personal belongings / Jewelry / Clothing
8. Diseases
9. Scars
10. Frontal sinuses
11. Moles and birthmark
12. Photo superimposition techniques
13. Hairs
14. Reconstruction of facial appearance from skull
15. Deformities
16. Extraneous matter, Trace evidence
17. DNA finger printing

Basic or Primary Characteristics

1. Race

Race may be determined by,

- (A) - Facial features
- Hairs & hair style
 - Clothing
 - Color of the eye
 - Complexion
 - Tattoo marks
 - Habit like betel nut chewing resulting in dark brown stains on the teeth
 - Circumcision

2. Sex

In the living the question of determination of sex arises in cases relating to prisoners, inheritance, sports, education, interdepartmental training, marriage, impotency, divorce and rape.

Determination of sex is easy in normal cases from external inspection only, but it become difficult in cases of –

1. (a) Hermaphroditism
(b) Klinefelter's syndrome

Externally, a normal looking male with sparse beard, high-pitched voice, normal or small penis with small testes.

2. Concealed sex
3. Advanced decomposed bodies
4. Skeletonized bodies

3. Age

Medico-legal importance of age

- Criminal responsibility
- Age of consent (M.P.C Sc. 90)
(ကြောက်ရွံ့၍ဖြစ်စေ၊ ကြောင်းခြင်းရာအမှန်မသိ၍
ဖြစ်စေ သဘောတူခြင်း)
- Marriage (Myanmar Buddhist Law)
- Kidnapping (M. P. C. Sc. 361)
- Rape (M.P.C.Sc.375) (မုဒိမ်းမှု)
- Age of Majority
- Competency as a witness
- Judicial punishment
- Infanticide
- Criminal abortion (M.P.C. Sec. 312)
(ကိုယ်ဝန်ပျက်စေခြင်း။)
- For an employment at the factory a worker must attained the age of 18 years
- To verify statement regarding age (for pension)

CHAPTER (3) MEDICO-LEGAL ASPECTS OF WOUNDS

Purpose of Examination of Wounds

To establish

In live patients

- (a) Whether simple or grievous hurt.
- (b) The nature of the weapon used.
- (c) The amount of force.
- (d) The manner in which it was produced – i.e. the relative position of the victim and assailant.
- (e) Whether self-inflicted or not.

In fatal cases

- (f) The cause of death.
- (g) The volitional power.
- (h) Whether ante-mortem or post-mortem.
- (i) Accident, suicide or homicide.

Wound description

1. Nature of the wound
2. Lie of the wound
3. Number of the wound
4. Direction of the wound
5. Site of the wound
6. Edges and ends
7. Size of the wound
8. Any foreign body
9. Shape of the wound
10. Source of bleeding

Definition of a wound

A "wound" and an "injury" are not distinguishable in law and no strict definition separates them. The word "wound" suggests that the lesion was caused by a deliberate action, whereas an "injury" could arise from any cause, including pure accident.

Hurt

In the minds of makers of the law, the word "wound" or "injury" do not exist. They have only one word, i.e. "Hurt".

M.P.C. section (319)

Whoever causes bodily pain, disease or infirmity to any person is said to cause "hurt".

There are two types of hurt

- Simple hurt
- Grievous hurt

M.P.C section (320) –

The following kinds of hurt only are designated as "grievous hurt".

1. Emasculation.
2. Permanent privation of the sight of either eye.
3. Permanent privation of the hearing of either ear.
4. Privation of any member or joint.
5. Destruction or permanent impairing of the powers of any member or joint.
6. Permanent disfiguration of the head or face.
7. Fracture or dislocation of a bone or tooth.
8. Any hurt which endangers life, or which causes the sufferer to be during the space of twenty days, in severe bodily pain, or unable to follow his ordinary pursuits.

ပြစ်မှုဆိုင်ရာ ဥပဒေပုဒ်မ (၃၂၀) အရ အောက်ပါ နာကျင်စေမှုများသာလျှင် အပြင်းအထန်နာကျင်စေမှု မည်၏။

- ၁။ လူကို သင်းကွပ်ခြင်း။
- ၂။ လူ၏ မျက်စိတဖက်ဖက်ကို အမြဲမမြင်အောင်ပြုခြင်း။
- ၃။ လူ၏ နားတဖက်ဖက်ကို အမြဲမကြားအောင် ပြုခြင်း။
- ၄။ ကိုယ်လက်အင်္ဂါ အဆစ်အမြစ်တစ်ခုခုကို ကျိုးပဲ့ ပျက်စီးအောင်ပြုခြင်း။
- ၅။ ကိုယ်လက်အင်္ဂါ အဆစ်အမြစ်တစ်ခုခု၏ အင်အား ကိုပျက်စီးခြင်း၊ သို့တည်းမဟုတ် အမြဲချို့တဲ့အောင် ပြုခြင်း။
- ၆။ ဦးခေါင်းကို ဖြစ်စေ၊ မျက်နှာကိုဖြစ်စေ၊ အမြဲရုပ်ဆင်း ပျက်အောင် ပြုခြင်း။
- ၇။ အရိုးကို၊ သို့တည်းမဟုတ် သွားကို ကျိုးအက်ကွဲ အောင်ဖြစ်စေ၊ တိမ်းလွဲအောင်ဖြစ်စေပြုခြင်း။
- ၈။ အသက်ကို အန္တရာယ်ဖြစ်စေအောင်၊ သို့တည်းမဟုတ် နာကျင်ခံရသူသည် ရက်ပေါင်း (၂၀)အတွင်း ကိုယ်အင်္ဂါ အပြင်းအထန် ဝေဒနာခံရအောင်၊ သို့တည်းမဟုတ် ရက်ပေါင်း (၂၀) အတွင်း မိမိလုပ်ဆောင်မြဲ အလုပ်အကိုင် တို့ကို မလုပ်ကိုင်နိုင်အောင် နာကျင်စေခြင်း။

M.P.C section 323: Punishment for causing simple hurt is 1-year imprisonment or fine of K. 1000 or both.

M.P.C section 324: Punishment for causing simple hurt by "dangerous weapon" is 3 years imprisonment or with fine or both.

M.P.C section 325: Punishment for causing grievous hurt is 7 years imprisonment and fine.

M.P.C section 326: Punishment for causing grievous hurt by "dangerous weapon" is 10 years imprisonment and fine or life imprisonment

Dangerous Weapons (in Section 324)

Legally the following weapons are classified "dangerous weapons".

Any instrument for shooting, stabbing, or cutting, or any instrument, which, used as a weapon of offence is likely to cause death, or by means of fire or any heated substance, or by means of any poison or any corrosive substance, or by means of any explosive substance, or by means of any substance which it is deleterious to the human body to inhale, to swallow or to receive into the blood or by means of any animal.

ဘေးဖြစ်စေတတ်သော လက်နက် ပစ်ခတ်ရန်၊ သို့တည်းမဟုတ် ထိုးရန် ၊ သို့တည်းမဟုတ် ခုတ်ဖြတ်ရန် ကိရိယာ တခုခုဖြင့် ဖြစ်စေ၊ ရန်မူသော လက်နက်အဖြစ်ဖြင့် သုံးစွဲလျှင် သေစေတန်ရာသော ကိရိယာတစ်ခုခုဖြင့်ဖြစ်စေ၊ မီးဖြင့်သို့တည်း မဟုတ် အပူရှိန်ရှိသော အရာဝတ္ထုတစ်ခုခုဖြင့်ဖြစ်စေ ၊ အဆိပ်ဖြင့် သို့တည်းမဟုတ် စားလောင်စေတတ်သော အရာဝတ္ထု တခုခုဖြင့်ဖြစ်စေ၊ ပေါက်ကွဲစေတတ်သော အရာဝတ္ထု တခုခုဖြင့်ဖြစ်စေ၊ ရှူရှိုက်လျှင် သို့တည်းမဟုတ် မျိုချလျှင် သို့တည်းမဟုတ် သွေးထဲသို့ ရောက်သွားလျှင် လူ့ကိုယ်ခန္ဓာ ကို အန္တရာယ်ဖြစ်စေတတ်သော အရာဝတ္ထုတစ်ခုခုဖြင့်ဖြစ်စေ၊ တိရိစ္ဆာန်တစ်ကောင်ကောင်ဖြင့် ဖြစ်စေ၊ မည်သူမဆို တစ်ဦး တစ်ယောက်သောသူအား မိမိအလိုအလျောက် နာကျင် စေလျှင်၊ ထိုသူကို သုံးနှစ်အထိ ထောင်ဒဏ်တမျိုးမျိုးဖြစ်စေ၊ ငွေဒဏ် ဖြစ်စေ၊ ဒဏ်နှစ်ရပ်လုံးဖြစ်စေ ချမှတ်ရမည်။

Homicide

- is not just murder but comprises several types of non-accidental killing. The definition and names vary from place to place in the world, but the following categories are common.

1. **Murder** occurs when the killer either intends to kill or intends to cause severe injury.
2. **Manslaughter (Culpable homicide)** is a lesser offence than murder and occurs where there was no intent to cause death or severe injury, but where the killing arose out of an unlawful act or where there was gross negligence or where the killer was provoked by the actions of the victim.
3. **Infanticide** is the killing of a newborn infant by the mother.
4. **Justifiable homicide** applies to judicial execution in those countries where capital punishment still exists and to police officers killing to prevent a serious offence or to defend themselves.

5. **Excusable homicide** refers to a person killing an assailant in self-defense, though theoretically only comparable force must be used – for example, a person attacked by someone using his fists are not entitled to shoot him dead.

M.P.C Section 300 - MURDER (လူသတ်မှု)

Whoever, in the absence of any circumstance which makes the act of murder, one of the culpable homicides not amounting to murder, causes death by doing an act with the intention of causing death, or with the intention of causing bodily injury as in fact is sufficient in the ordinary course of nature to cause death, commits the offence of murder.

ပြုလုပ်မှုကို လူသတ်မှုမမြောက်သည့် လူသေမှုဖြစ်အောင် ပြုသော ပတ်ဝန်းကျင်အကြောင်းချင်းရာ မရှိခဲ့သော် မည်သူမဆို၊ သေစေရန်အကြံဖြင့်ဖြစ်စေ၊ ဖြစ်တတ်သော သဘောအရ အမှန်အားဖြင့် သေစေလောက်သော ကိုယ်အင်္ဂါ နာကျင်မှုကို ဖြစ်စေရန် အကြံဖြင့်ဖြစ်စေ ပြုလုပ်မှု တခုခုကိုပြု၍ လူကိုသေစေလျှင်၊ ထိုသူသည် လူသတ်မှု ကျူးလွန်သည်မည်၏။

M.P.C Section 302 - Punishment for murder

- (1) Whoever commits murder,
 - a. being under sentence of transportation for life, or
 - b. with premeditation, or
 - c. in the course of committing any offence punishable under this Code with imprisonment for a term which may extend to seven years, shall be punished with death, and shall also be liable to fine.
- (2) Whoever commits murder in any other case shall be punished with transportation for life, or with rigorous imprisonment for a term which may extend to ten years and shall also be liable to fine.

Explanation - Whether an act is premeditated is a question of fact.

ပြစ်မှုဆိုင်ရာ ဥပဒေပုဒ်မ ၃၀၂ အရ

- (၁) မည်သူမဆို
 - (က) တသက်တကျွန်းဒဏ် စီရင်ခြင်းခံရသည့် အတွင်း၊ သို့တည်းမဟုတ်
 - (ခ) တင်ကူ ကြံရွယ်ချက်ဖြင့် (premeditation) ၊ သို့တည်းမဟုတ်
 - (ဂ) ဤရာဇသတ်ကြီးအရ ခုနစ်နှစ်အထိ ထောင်ဒဏ်ချမှတ်ခြင်းခံထိုက်သော ပြစ်မှုကို ကျူးလွန်နေစဉ် လူသတ်မှုကို ကျူးလွန်လျှင် ထိုသူကို သေဒဏ်ချမှတ်ရမည့် အပြင် ငွေဒဏ်လည်း ချမှတ်နိုင်သည်။

- (၂) မည်သူမဆို အခြားအချက်မျိုး၌ လူသတ်မှု ကျူးလွန်လျှင်ထိုသူကိုတသက်တကျွန်းဒဏ်ဖြစ်စေ ၊ ဆယ်နှစ်ထိ အလုပ်ကြမ်းနှင့် ထောင်ဒဏ်ဖြစ်စေ ချမှတ်ရမည့်အပြင် ငွေဒဏ်လည်း ချမှတ်နိုင်သည်။ ရှင်းလင်းချက်။ ပြုလုပ်မှုတစ်ခုသည် တင်ကူးကြံရွယ်သော ပြုလုပ်မှုဖြစ်သည်၊ မဖြစ်သည်ဟု ဆိုသော အချက်မှာ ကြောင်းခြင်းအရာ ပြဿနာဖြစ်သည်။

M.P.C Section 304. A (Causing death by rash and negligence) (ပေါ့လျော့ခြင်းဖြင့် သေစေမှု)

Whoever causes the death of any person by doing any rash or negligent act not punishable as culpable homicide or murder shall be punished with imprisonment of either description for a term which may extend to seven years, and shall also be liable to fine, provided that, if such act is done with the knowledge that it is likely to cause death, the term of imprisonment may extend to ten years.

မည်သူမဆို ရာဇဝတ်ပြစ်ဒဏ်ထိုက်သော လူသေမှုအဖြစ်ဖြင့် သော်လည်းကောင်း၊ လူသတ်မှုအဖြစ်ဖြင့် သော်လည်းကောင်း၊ ပြစ်ဒဏ်ချမှတ်ခြင်းမခံထိုက်သော အရမ်းပြုလုပ်မှုကို သို့တည်းမဟုတ် ပေါ့လျော့သော ပြုလုပ်မှုကို ပြု၍ လူကိုသေစေလျှင် ထိုသူကို ခုနစ်နှစ်ထိ ထောင်ဒဏ်တမျိုးမျိုး ချမှတ်ရမည့်အပြင် ငွေဒဏ်လည်း ချမှတ်နိုင်သည်။ သို့ရာတွင် အဆိုပါပြုလုပ်မှုကို သေစေတန်ရာသည်ဟု သိလျက်နှင့် ပြုလျှင် ထောင်ဒဏ်ကို တိုး၍ ဆယ်နှစ်ထိ ချမှတ်နိုင်သည်။

- e.g.**
- Driving 80 mph in crowded area.
 - Driving carelessly knowing that the brake is out of order.
 - Driving without lights especially at night.
 - When a patient died of medical negligence in case of penicillin shock without obtaining any history of allergy or giving any test dose.
 - Retention of objects in operation site.
 - When a man died of electrocution as a result of connecting live wire to the fence to protect thieves.

M.P.C Section 306. ABETMENT OF SUICIDE

If any person commits suicide, whoever abets the commission of such suicide shall be punished with imprisonment of either description for a term which may extend to ten years, and shall also be liable to fine.

M.P.C Section 309. ATTEMPT TO COMMIT SUICIDE

Whoever attempts to commit suicide and does any act towards the commission of such offence, shall be punished with simple imprisonment for a term which may extend to one year, or with fine, or with both.

Mens Rea and Actus Reus

It is the principle of the criminal law that "an act does not make a person guilty unless the mind is guilty." In order to have a conviction in all cases of crime, there must be two essential elements: -

- (1) the guilty mind of the accused (**mens rea**)
- (2) the voluntary act (actus reus)

Mens Rea

Guilty mind, Criminal intent, Evil intent, Malice aforethought. "Intent or intention" is an essential ingredient in any definition of a crime. e.g. – in the crime of theft, there may be intention to steal; in the crime of murder there may be intention to kill. "Intent" means "purpose" or "design" desiring the consequences of the act."

Actus Reus

The law does not punish for evil thoughts alone. Therefore, in addition to the mens rea, there must be some overt act, which must clearly show the person's criminal intent. This act is denoted by the Latin phrase "actus reus".

Crimes may be committed by an act (commission) or an omission. Infanticide may be committed by a person who fails to feed her child.

Mens rea alone which is not followed by actus reus does not result in a crime. So also, actus reus which lack mens rea does not amount to crime. Mens rea + Actus reus = Crime

INTENTION TO KILL

The men's rea in the crime of murder is the doing of an act with "intention to kill". The way a trial court tries to assess whether the criminal has intent to kill can be done with the help of medical witness by eliciting from him how severe and serious an injury is. Since a trial court is composed of non-medical persons, they do not understand the severity of an injury when the medical man replies mostly in medical terms. They try to solve this by asking the severity of injury by using cleverly worded phrases.

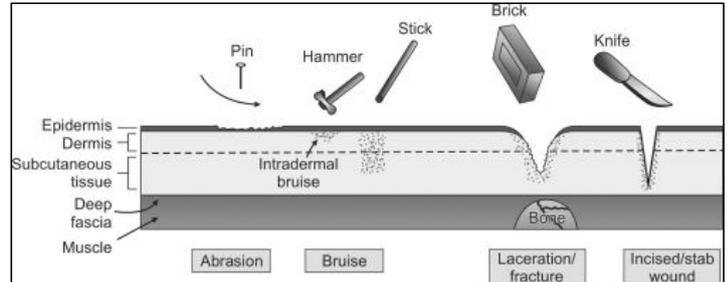
SEVERITY OF THE INJURY

- (1) Was the injury necessarily fatal?
- (2) Was the injury sufficient in the ordinary course of nature to cause death?
- (3) Was the injury likely to cause death?
- (4) Was the injury unlikely to cause death but might possibly cause death?

Any injury that falls within the first 2 categories could generally, be assumed that the accused has intention to kill.

The medical witness can categorize whether the injury falls under the first 2 categories to prove intention to kill, by examination of the wounds.

Classification of Wounds



Types of injury to the skin

Abrasion (ပွန်းအက်ရာ၊ ပွန်းခြစ်အက်ရာ)

Definition

It is an injury resulting in the disruption of the epidermis from the surface of the skin by forcible friction of some hard and, more or less rough substance against the surface of the body.

They are the result of injury to the skin by rubbing, scraping or indenting. It is usually caused as a result of,

- (a) Blow with a hard-blunt weapon.
- (b) Forcible contact with a rough surface such as falling on or dragging against rough ground.

Types of Abrasions

1. Scratches
2. Grazes
3. Friction abrasions
4. Imprint abrasions

I. SCRATCH ABRASION (SCRATCHES)

They may be caused by anything sharp and pointed as fingernails, pin, point of the knife, thorns or barbed wire.

II. GRAZES

They are caused by contact with rough surface resulting in a broad, generalized usually irregular removal of the skin surface.

III. FRICTION ABRASION

They are caused by friction with ropes or cords with a rough texture which will both indent and rub the surface of the skin when applied by tying or pulling. E.g. ligature marks in hanging, strangulation.

IV. IMPRINT (or) CONTACT (or) PATTERNED ABRASION

These result from impact with an object and the shape and pattern of the striking surface is imprinted on the skin. (Crushing of the cuticle).

DIFFERENTIAL DIAGNOSIS

Abrasions must be distinguished from;

- (a) Marks produced by fish or insects after death.
 - these are without vital reaction.
 - seen at the angle of mouth, margins of the nose and eyelids, axillae.
- (b) Excoriation of the skin by excreta.
 - distribution is self-explanatory.
 - may develop in a matter of hours.
- (c) Pressure sores.

Medico-Legal Importance of Abrasions

1. Abrasions are simple injuries and are superficial in nature.
2. Though simple by themselves, there may be dangerous wounds involving vital organs, deeper to the site of the abraded area.
3. These are more commonly accidental, next in sequence homicidal, and comparatively less commonly suicidal. In suicidal fall from a height or suicidal hanging, abrasions may be present.
4. Abrasions may be self-inflicted, the purpose being, to bring a false charge of assault on some person.
5. From abrasion, the type of the weapon used, can be said. From imprint or patterned abrasion, the exact design on the body of the weapon can be known.
6. From linear or graze abrasion, the direction of application of force and the relative position of the victim and the assailant can be known (see scratches and grazes above).
7. From abrasions, time of assault can be roughly assessed.

When fresh, an abrasion is red with evidence of oozing of serum and a little blood. There is no scab.

By 8 – 24 hours, there is a reddish scab formation.

By 2nd and 3rd day, the scab is brownish.

By 4th and 5th day, it is dark brown.

By 6th day, it is blackish and it starts falling off from the margins.

A big scab may take a few days more to fall off.

8. Abrasions sometimes give indication about the specific type of offences committed. Thus, abrasions near the private parts or over the breasts of a woman may be indicative of sex offence, attempted or committed on her. Nail scratches in the neck of a dead body may be indicative of manual strangulation or throttling and scratches around the mouth and nose of a dead body may be indicative of killing by smothering.
9. Abrasion over the cornea may cause corneal opacity and may restrict the vision permanently, amounting to grievous hurt.
10. Abrasions may be produced on the vulnerable sites of the dead body during shifting of the body to the mortuary. These post-mortem abrasions may be mistaken as ante-mortem abrasions. These abrasions are present mostly against the vulnerable bony prominences. These are yellowish, parchmentized and slightly translucent when dried, do not have oozing, scab formation or color change, as are seen ante-mortem abrasions.
11. Multiple depressed small excoriations may be produced by ants or cockroaches on the dead body. These are multiple, small, depressed, dry, yellowish lesions, grouped together and do not show any ante-mortem feature in them. Excoriation during life near the anus or inguinal folds may look like abrasion after death. They also lack in the features of ante-mortem abrasions like oozing, scab formation or color changes.

DIFFERENCES BETWEEN ANTE-MORTEM AND POST-MORTEM ABRASIONS

Points	Ante-mortem abrasions	Post-mortem abrasions
1. Site	Anywhere on the body	Over exposed bony prominences
2. Oozing of lymph	Present	Absent
3. Scab formation	Present	Absent
4. Colour changes	Present	Absent, mostly yellowish without any change
5. Parchmentisation	Absent	Present

Definition

Lacerated wounds are the result of tearing of skin and underlying tissues with or without loss of tissue substance. (Majority-loss of tissue substance). The wound edges are irregular and they are usually caused by blunt weapons.

Types of lacerated wounds

1. Skin split (or) split skin.
2. Lacerated wound caused by over-stretching of skin.
3. Lacerated wound caused by grinding compression.
4. Lacerated wound caused by tearing of skin.

I. Split skin

Splitting of the skin and underlying tissues occur in some areas of the body where the skin is tightly stretched over the bony eminences. e.g., over the scalp, face, eyebrow, iliac crest. The skin and underlying tissue is compressed between the underlying bone and the blunt weapon.

If it is due to an incised wound caused by a sharp cutting instrument:

- (1) No bridging of tissues.
- (2) Edges are regular (clean cut)
- (3) No bruising at the edges.
- (4) Hairs – clean cut.
- (5) Underlying bone – clean cut fracture.
- (6) Bleeding – more profuse because vessels are cleanly cut.

II. Lacerated wound caused by over-stretching of skin

This type is caused by over-stretching of skin due to a localized pressure with a pull which increases until tearing occur and produces the "flap" seen in the type of wound caused by running over by a vehicle.

III. Lacerated wound caused by grinding compression

(Crushed injury/ crush syndrome)

It can be seen when a limb is caught in a machinery which tears the skin from the underlying tissues and crushed the muscle underneath.

IV. Lacerated wound caused by tearing of the skin

This can occur from impact by or against irregular sharp or protruding objects e.g. a wing mirror, radio antenna, or a door handle may get caught with a human victim during the car accident, or it may occur as tearing of hymen in rape cases.

Characteristics of a Lacerated Wound

- They are ragged wounds with an irregular division of tissues.
- The skin and sometimes the underlying tissue is torn exposing the underlying muscle.
- Blood vessels and nerves may be partly torn or completely severed in an irregular fashion producing tissue bridges.
- The torn end of the vessels are crushed and incompletely sealed, so bleeding is relatively slight when compared with that due to an incised wound.
- Inflammation is a common complication of lacerations as the agent used is often heavily infected and also because the tissue is devitalized by injury.
- The margins of a lacerated wound are bruised (an important feature).
- On hairy parts- the hair bulbs are exposed, uncut in the margin of the wound.

The floor of the wound may contain foreign material. e.g., soil or particles of grass.

Medico-legal Importance of the lacerated wounds

1. Lacerations are usually accidental or homicidal and only rarely suicidal, as in case of suicidal fall from a height or suicidal jumping in front of a running train.
2. From a laceration some idea about the causative agent may be formed. Sometimes the shape and the design of the weapon may be known from the wound. If the circular or spherical surface of a weapon strikes the body perpendicularly then a circular wound will be produced. If the margin of a circular surface strikes, a crescent laceration will be there. If the length of a cylindrical weapon strikes the body then a - linear laceration will be produced. If the end part of such a cylindrical weapon is used then a 'Y' shaped wound will be caused. The design of a tyre may get imprinted on the avulsion laceration when a person is run over by a vehicle.
3. Foreign substance like dust, sand, gravel etc. present on the wound will speak about the site or place where the injury was sustained.
4. Lacerations leave permanent scar which may link the person with an old injury of long time back.
5. Extensive scar resulting from a laceration on the mouth or around a joint, restricting its function, will amount to grievous hurt.
6. Cross postmortem lacerations may be caused by placing the dead body in front of a running vehicle or a train to obliterate ante-mortem homicidal injuries.

7. Postmortem lacerations may also be caused by land or aquatic animals like dog, jackal and fish etc.
8. As lacerations do not have uniform healing pattern and timing, time of infliction of the wound cannot be satisfactorily estimated from the healing process of lacerations.
9. Lacerations produced by the broken margins of glass may be mistaken for incisions. But their irregular margins can be appreciated if closely examined.
10. Split laceration also may be confused with incised wound, both of which can of course be differentiated easily.

Contusion or Bruise (ဖူးငော့ဒဏ်ရာ)

Definition

A bruise is an escape of blood into the surrounding tissue beneath the skin, due to rupture of small vessels by application of blunt force.

Medico-legal importance

- (1) Bruises are usually caused by blunt weapons.
- (2) They are not always due to trauma. Some bruises may be spontaneous in blood disorders like hemophilia, leukemia, Vit. C. deficiency, I.T.P.
- (3) Usually found in homicide or accident; it is unusual for a suicide to bruise himself since these cause pain.
- (4) A bruise may be superficial or deep.
In a superficial bruise, there will be reddish black discoloration especially at the site of impact.
In a deep bruise, it may not appear immediately. It may appear only 2-3 days after injury.
- (5) In case of deep bruise, whether it appear early or late, it may appear at the site of impact or may appear at an area away from the site of impact, usually at dependent areas.
- (6) Blows on the abdomen, although they may rupture internal organs, may not produce an external bruise.
- (7) Bruises found on a dead body must be distinguished from hypostatic staining.
- (8) Bruises may have special significance when found in certain sites.
- (9) The shape and extent of a bruise is not indicative of the shape and size of weapon used.
Exception – parallel 'tram-line' bruises on the trunk, arms or legs.
- (10) Even the size of bruise is not indicative of the amount of force used.

Color changes in bruising (Age of bruise)

When describing a bruise, the color should be mentioned, so that a rough estimate of the age of bruise could be made.

- Fresh bruise – reddish, black discoloration
- 2-3 days – purplish, bluish
- One week – greenish tinge

- 2 weeks – yellowish

Post-mortem bruising

It is sometimes asked whether bruises can be caused after death and the answer can be in no doubt, for so long as fluid blood lies in vessels, any injury that crushes the vessels may cause the blood to escape into surrounding tissues. After death, as there is no pumping action of blood, the resulting bruise would be small.

Bruising of Special Significance

Certain types of bruise and bruises at particular sites have a specific significance. Clusters of small discoid bruises of about a centimeter in diameter are characteristic of fingertip pressure from either gripping or prodding. These groups are often seen in child abuse, when an adult hand grips the infant by a convenient 'handle'. Once called 'sixpenny bruises' from their size, the lesions are commonly seen on the forearms or upper arms of the child, or sometimes around the wrist or ankle, though they can occur on the abdomen. Similar bruises from fingertips may be seen on the neck of children or adults in manual strangulation, though there is often additional diffuse bruising caused by a sliding grip on the neck. When the skin surface is struck by a rod or rectangular sectioned object such as a cane or lath, the consequent bruising, may be of the 'tram-line' or 'railway line' type. This appears as two parallel lines of bruising with an undamaged zone in the center. The common 'black eye' is dealt with under 'Head injuries', but again it is worth repeating that not all black eyes are true bruising from a blow in the orbit. Some are from fractured orbital roofs and other are the result of gravitational movement of a forehead injury.

Incised Wounds (ပြတ်ရှဒဏ်ရာ) Synonyms – cuts, slices, slashes

Definition

It is an opened wound with clean-cut margins caused by a weapon with sharp edge. The length of the wound is usually greater than the depth and the wound is linear in shape. The edges or margins of the wound are usually regular or clean cut, but if the skin is loosely applied to the body such as skin over the eyelids, labia majora, axilla or scrotum, an incised wound over these areas will result in the loose skin being pushed (racked up) in front of the blade before it is divided resulting in irregular saw-tooth like edges.

Two types of incised wounds

1. Chopper wound
2. Slices or slashes

Remembrance of these two types is of particular importance. If underlying hard bone is cut, it can only be the chopper cut and definitely exclude self-infliction except in areas like fingers and toes.

A hard bone can never be deeply hacked by slicing cut. The most a slicing cut can inflict the soft tissues and cartilage.

Features of incised wounds –

1. Length of the wound - Length of an incised wound is greater than breadth and depth. Length of the wound does not correspond with the length of the blade of the weapon when the incised wound is caused by drawing or sawing.

2. Breadth - Breadth of an incised wound primarily depends on the thickness of the effective part of the blade i.e., the thickness of the blade at that level up to which the edge of the weapon has gone in the tissue. But the breadth depends much on the elasticity of the skin of the area and direction of the fibers of the muscle underneath the skin in relation with the length of the wound.

3. Depth - Depth of an incised wound is less than the length, and may be less, equal or more than the breadth. The depth of the wound corresponds with the extent of the breadth of the blade entered inside the wound.

4. Shape - The shape of an incised wound is elliptical, or it is spindle shaped. It may be oval if the wound gaps much. The angles at both ends of the incised wound are sharply defined.

5. Margin - Margins of an incised wound are well defined, cleanly cut and sharp.

6. Floor - Floor of the wound is also sharply cut and divided.

7. Haemorrhage - As the vessels are also sharply cut, there is excessive external haemorrhage.

8. Direction of the wound - Direction of the incised wound or the relative position of the victim and the assailant can be known from the tailing or beveling of the wound.

9. Tailing of the wound - When the incised wound is caused by way of drawing the edge of the weapon, the wound is thickest and deepest at the mid-part, thinner and comparatively less deep at the two ends.

10. Beveling - When a sharp cutting heavy or moderately heavy weapon is used (striking) tangentially or at an angle to the body, then there is flapping at one margin of the wound at the cost of the other margin. This is beveling.

11. Hesitation cuts - These are also termed "tentative cuts". These are multiple superficial cuts placed around the beginning part of the main wound, in cases of suicide.

Medico-legal aspects of incised wounds

1. Incised wounds are usually suicidal, then homicidal and only occasionally accidental.

Features of self-inflicted or suicidal incised wounds -

Self-inflicted incised wounds are superficial, multiple, grouped together, parallel to each other, placed over the approachable parts of the body.

Suicidal incised wounds are usually placed in front and sides of the neck or sometimes in front of the wrists, to cut the radial artery to bleed to die.

Homicidal incised wounds may be on any part of the body, including the unapproachable parts. More than one severe wound at more than one site is common. Beveling may be there, hesitation cuts are absent and tailing is present only occasionally.

Accidental incised wounds may be caused when somebody falls upon the sharp edge of a cutting weapon. Accidental wounds may be present anywhere on the body and may be of any severity. The weapon or object is present at the place of occurrence. There is no mark of resistance on the body or no sign of struggle at the place.

2. Weapon - Presence of incised wound means use of sharp cutting weapon. Beveled cuts and chop wounds suggest use of heavy or moderately heavy sharp cutting weapon.

3. Manner of use of the weapon can be said from the wound. Deep chop wounds and beveling suggest striking by the weapon.

4. Direction of application of force - From the tailing and beveling, the direction of application of force can be known.

5. When direction of application of force is known, the relative position of the victim and the assailant also be known.

6. Age of the wound or time of assault; When fresh - Bleeding is still present or fresh soft clot is adhered; margins are red, slightly swollen and tender. By 12 hours - The margins are swollen and red; Blood clot and lymph dry up. By 6th day - Scar formation is complete. The scab over the wound falls off or can be taken out easily, leaving a soft, tender, reddish scar which in course of weeks and months becomes tender less, whitish and firm.

7. Cause of death - In case of incised wound there is excessive external bleeding. Death therefore in many cases occur due to haemorrhage and shock. In case of cut-throat injury, death, in addition, may occur due to asphyxia due to choking of the respiratory passage by blood.

8. Defense cuts may be present on the palmar and dorsal aspects of hands or on the postero-medial aspect of the forearm.

9. Fabricated incised wounds may be produced on the approachable parts of the body.

10. Incised wound produced by saw like movement of the weapon over those parts of the body covered

with loose tissue may appear irregular and ragged and give the impression of lacerated wound.

11. Postmortem incised wound - Postmortem incised wounds may be produced on the dead body, which though rare, may be related with sexual perversion.

Cut-Throat Wound or Throat Cut

Table: Differences between suicidal and homicidal cut throat

No.	Features or points	Suicidal cut throat	Homicidal cut throat
1.	Site	a. Mostly on the Lt side and front and partly on Rt side of neck, in case of Rt. handed person. b. High up on the neck.	(a) Mostly in front and partly on either or both sides of the neck. (b) At a lower level
2	Slope of the cut in depth	Slope of the cut in depth	No slope or downward sloping
3.	Direction	From left to right and above down-ward in a right-handed person	Transverse and from right to left when the assailant's position is below the level of the neck of the victim. Transverse and left to right when assailant's position is at the head end of the lying victim. if the assailant was on the right side of the victim, then direction of the wound would be from left to right.
4.	Tailing	Present at the right end of the wound in a right-handed person	May be present on either side depending on the position of the assailant
5.	Hesitation cuts	Present	Absent
6.	Severity of the wound	One or two are severe, others are superficial hesitation cuts	All are of equal severity
7	Defense cuts	Absent	Present
8.	Marks of resistance	Absent	Present
9.	Secondary wounds	Self-inflicted incised wounds may be present on other approachable parts of the body	Other homicidal wounds, defense cuts, marks of resistance present on other parts of the body.
10.	Weapon	Held in cadaveric spasm of the hand or present nearby	Usually absent. Sometimes after killing, the weapon is placed in the hand of the victim
11.	Vessels	Carotid arteries are usually spared because, before injuring himself, the suicide stretches his neck up-ward, when these arteries shift behind the sternomastoid muscles.	The vessels remain vulnerable due to lack of this maneuver
12.	Bleeding	As because a suicide cuts his neck in standing or sitting position, a good amount of blood trickles down in front of the chest and the abdomen.	As because in most cases the assailant cuts the neck of the victim, being in lying position, blood trickles down by the sides of the neck
13.	Foreign materials like hair, etc.	Substances like foreign hair, shirt button etc., will not be present in the hand of the victim	May be present in the hand of the victim, gripped in a state of cadaveric spasm.
14.	Corresponding cuts on clothing	Absent as the person cautiously removes the clothes to get a clear field to cut the neck	Cuts may be present on clothes as the assailant being in haste is unmindful about the clothes.

15.	Circumstance	Closed room bolted from inside or secluded place, which appears undisturbed; the body may be found in front of a mirror.	Place of occurrence remains approachable to others which appears disturbed due to struggle with the assailant, latent fingerprint, belongings of assailant may be available from the spot.
16.	Suicidal note	May be present	Absent

The Cause of Death in Cut-Throat Wound

A cutthroat wound may cause death in several ways.

1. Haemorrhage – when the carotid artery is cut.
2. Choking – when the trachea is opened blood may be inhaled into the respiratory tract.
3. Air embolism – (rare) this is a possibility when the external jugular vein is incompletely divided.
4. Mechanical asphyxia – when the trachea is completely divided it is likely to be drawn down and the soft parts of the neck may pull in and close the airway.
5. Secondary bronchopneumonia A minor wound could become infected especially infection of the larynx and cause death by bronchopneumonia several days after the wounding. \

Stab Wounds or Punctured Wounds (ဆိုးသွင်းဒဏ်ရာ)

Definition

A stab wound is an open wound caused by sharp pointed or blunt pointed weapon with penetration of skin and underlying tissues. The depth of the wound is the greatest dimension.

They are dangerous because of the possibility of grave injury to internal organs or major blood vessels. Stab wounds may be:

- (1) Non-penetrating
- (2) Penetrating
- (3) Perforating

If the point of knife only enters the external skin, it is said to be non-penetrating. If it enters through one external skin and corresponding internal skin (mucosa, serosa) it is said to be penetrating. e.g. stab wound entering the abdominal cavity. If stab wound through part of a body, i.e. from one external skin and penetrating the body and other side of the skin, it is called perforating wound.

Theory of 2-way stretch

- (1) Lengthening length-wise will result in shortening breadth-wise.
 - (2) Lengthening breadth-wise will result in shortening length-wise. e.g. - nylon stocking
- The length of stab wound corresponds to breadth of dagger. The breadth of stab wound corresponds to thickness of dagger. The depth of stab wound may or may not correspond to the length of dagger.

- (a) If the stab wound is over a part of the body such as rigid thoracic cage and if you find hilt impression mark (which appears as abraded bruise around the margin of stab wound), the depth of the wound is the actual length of the dagger.
- (b) If the stab wound is over the soft and yielding anterior abdominal wall, even though you find hilt-impression mark externally, a dagger of 4 inches in length may result in a stab wound of about 6 inches.
- (c) Over areas like the arms or thighs, without hilt-impression mark, you can only say that the depth of the wound is the minimal length of the dagger. \

Direction of stab wound

Direction can be determined by:-

- (a) Undercutting of the external wound and
- (b) Track of the wound

The use of a probe to determine the direction should be done with caution.

Number of stabs wound

As to the number of wounds there may be one or many; the single stab wound, in many ways the easier to describe, is often the more difficult to interpret. The *position* of every stab wound must be recorded in the doctor's notes, with photographs and drawings.

The length of stab wound

The *length* of each entry wound in the skin must be measured with the sides approximated.

The depth of stab wound

The *depth* of penetration can be difficult to assess. If there is bruising around a clean-cut wound in the skin, it suggests that the weapon has been driven in up to the hilt.

The depth of penetration and *direction of thrust* are best established together by dissection.

A probe can be passed under direct vision through the skin to the deepest point of penetration and the total length of the wound thus measured.

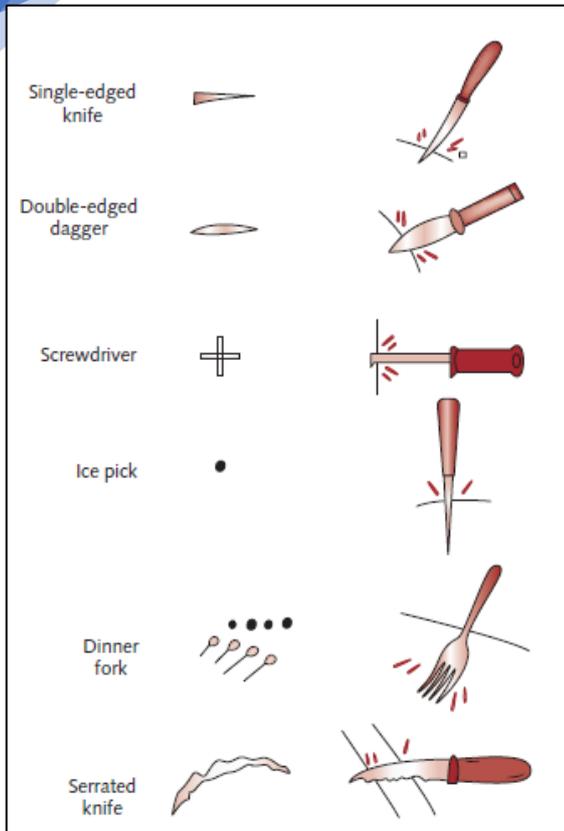


Figure: Appearances of stab wounds

The force of stab wound

The *force* required to cause injury is often less than one imagines. Once the skin is penetrated the weapon slips easily through all the underlying tissues and viscera. Even the sternum and ribs do not require great force for their penetration or severance. The force required will be influenced by the victim's clothing, if he be wearing any. Multiple layers of tough cloth may render penetration much more difficult than a single layer of fabric such as a shirt. The words 'moderate force' are sufficiently non-committal and are true of the majority of cases.

Suicidal and Homicidal Stab Wounds

The inexperienced doctor may assume that multiple stab wounds in the front of the chest must be homicidal but this is not necessarily so. It is suggestive of suicide if there are one or more stab wounds in this position and the clothing is drawn up. The surrounding circumstances, such as a room locked on the inside, a weapon in the hand of the deceased or beside him and a suicide note, may make the conclusion of suicide inescapable, particularly if the stab wounds are associated with slashing injuries elsewhere at sites of election such as the wrists or throat. Suicide by stabbing is not common but cases do occur from time to time.

Multiple stab wounds are a feature of many homicides. Homicidal stab wounds are frequently associated with defense wounds. He should always ask to see the alleged weapon if it is available and

should have it photographed with a ruler beside it as well as describing it with measurements in his own notes.

Defence Wounds

These result from the victim's instinctive reaction of self-protection either by:-

- (a) Grasping the weapon to prevent it injuring a vital part
- (b) Raising the hand
- (c) Warding off the attack

(a) Wounds caused by grasping the weapon

If it is a knife the injury will depend upon whether it is a single or double edge.

A single edged knife will produce a cut corresponding to the edge of the weapon on the palm.

A double edge knife will produce a cut on the palm with another cut on the fingers, and the cuts are usually irregular and ragged.

(b) Raising the hand

A sharp weapon will produce cuts in between the fingers.

A blunt weapon – abrasions, bruises and fracture of the fingers and hand.

(c) Warding off the attack

A sharp weapon – will produce stabs or cuts on the hand or forearm.

A blunt weapon – abrasions and bruises may result on the hand and forearm.

The presence of defense wound indicate homicide, but the absence of these wounds does not exclude a homicide attack as the victim may be incapable of defense because of surprise, unconsciousness due to alcohol, concussion or being held down by another person.

Feigned Wounds; Fictitious Wounds; Fabricated Wounds



Artificial/fabricated bruise, by applying crushed twigs of *Plumbago rosea* plant.

These are self-inflicted wounds and they are done for a variety of reasons;

1. To establish a false charge of attempted murder or right of private defense or unlawful wounding. (usually occurs in cross cases)
2. The murderer may inflict wounds upon himself and then may that he and his victim had been attacked by another.
3. In soldiers, the wounds are inflicted to get release from the service or transfer from the frontier service to home service.
4. To get injury compensation in factory workers.

How would you recognize a Feigned wound?

The characters are;

- (a) They are superficial and relatively harmless.
- (b) Situated in a readily accessible area.
- (c) Cuts in the skin may be parallel, crisscrossed or superimposed.
- (d) The wounds will all be in the same direction.
- (e) In firearm injuries – these are fired at near contact or contact range.
- (f) The clothing over the wound are not damaged.
- (g) Caused mostly by sharp and pointed weapons.
- (h) Extremely rare to be caused by blunt weapons.
- (i) Firearms are rarely used (except in soldiers).

Close examination of the wounds and the history given the person will usually indicate their true nature.

Opinions and Inferences Regarding Wounds – Causing Death

What Are The Possible Causes Of Death?

(1) Death from haemorrhage

A rapid loss of over 2 liters of blood (1/3 of the total circulating volume) is dangerous to life. A small amount of bleeding into a vital area like the brain stem, or the pericardial sac is also fatal. A sudden loss of blood from an artery has a more serious effect than from a vein.

(2) Death from gross injury to a vital organ

Gross injury to the brain or the heart is sufficient in itself to cause death although there is very little associated bleeding.

(3) Death from reflex (vagal) inhibition

Total inhibition of the cardiac and respiratory centers may occur after slight traumatic stimuli to certain parts of the body such as;

- A slight blow to the throat, or testicles or solar plexus
- Sudden constriction to the neck over the carotid body
- Passing an instrument into the cervix or urethra without anesthesia

(4) Death at remote period

- (a) Consequences of operation or enforced bed rest.
- (b) Complications of the wound itself
 1. Infection of the wounds – bacterial infection, tetanus
 2. Pulmonary embolism
 3. Fat embolism
 4. Air embolism
- (c) Pre-existing disease accelerated by injury
Death may occur during a struggle with another person from
 - bursting of an aneurysm
 - cerebral haemorrhage
 - ruptured myocardial infarct
- (d) Disease following an injury
Ulceration of the stomach and esophagus may follow head injuries. Curling ulcer may occur after burns. Acute pancreatitis may develop from a severe blow to the abdomen after a few days.

Is The Wound Responsible For Death?

An obvious stab wounds of the heart, for example, would create no difficulty in stating the cause of death.

But the difficulty may arise when-

- (a) Several causes of death
- (b) Other circumstances contribute to death. e.g., medical treatment.
- (c) A person recovers from the initial effect of the wound and then dies.
- (d) There is pre-existing bodily disease.

Categories of severity of bodily injury resulting in death

- (1) A wound which is "**necessarily fatal**".
(ဧကန်မုချသေရမည့်ဒဏ်ရာ)

It is a type of injury, which is severe that it will surely cause death. No amount of treatment could save the person's life.

E.g.: Gross injury to vital organs such as gunshot wound through the heart; crush injury of the brain, incised wounds of the neck totally decapitating the head.

(2) A wound which is "**sufficient in the ordinary course of nature to cause death**". (ဖြစ်တတ်သော သဘောအရ သေတန်ရာသောဒဏ်ရာ)

This type of injury will cause immediate danger to life, but is amenable to surgical treatment. Death is certain without treatment; but the person may survive (or die) with treatment.

E.g.: An epidural haemorrhage resulting from a blow to the head will endanger life by causing cerebral compression. A timely craniotomy with removal of the blood clot may save the life of the patient. Similarly – stab wound of the stomach, intestine or liver; stab wound of the chest penetrating into the lungs fall into this category.

(3) A wound which is '**likely to cause death**'. (သေစေခြင်းဖြစ်တန်ရာသော ဒဏ်ရာ)

It is a relatively less severe type of injury where death may occur without treatment. If the patient receives treatment there may be complete recovery or may die. It is a type of injury where the vital organs or major structure of the body are not damaged.

E.g.: - A stab wound of the abdomen just penetrating into the peritoneal cavity with no damage to the internal organs.

(4) A wound which is '**not likely to cause death but might possibly cause death**'. (ပုံမှန်အားဖြင့် မသေနိုင်၊ အခန့်မသင့်လျှင် သေနိုင်သည့်ဒဏ်ရာ)

It is a minor type of injury, which usually would not cause death but death may result from a remote complication.

E.g.: - A small lacerated wound of the finger would not commonly lead to death, but fatal complication may occur if tetanus sets in.

What Type of Weapon Was Used

The use of a particular weapon in an assault may affect the amount of punishment given. A medical witness could seldomly say that a particular weapon has been used, he could only say that the wound was consistent with the use of a particular weapon.

What Was the Amount of Force Used

Force is expressed in terms of mild, moderate, considerable, or severe.

The degree of force used would be of some indication of:

- (a) The intention of the person to cause hurt.
- (b) Whether the blow was accidental or not.
- (c) Whether he exceeds the Right of private defense.

The following factors must be considered:

1. Severity of the wound
2. Nature of the part struck

3. Sharpness of the weapon
4. Weight of the weapon
5. Amount of clothing
6. Area of striking surface of the weapon
7. Contact time
8. Force at the point of impact

The Position of the Victim and the Assailant

To determine the relative positions of the victim and the assailant the following points should be considered.

1. Exact position of the wound.
2. Lie of the wound.
3. Direction of the wound.

Volitional Power after Injury

(Volition = the power to act)

The medical opinion on volitional power – i.e. the ability of the injured person to perform voluntary acts such as movements, speech, resistance, and period of survival, may be helpful to the court in determining the correctness of a witness's statement, or whether it is consistent with suicide.

CHAPTER (4) REGIONAL INJURIES

Head Injury

In criminal and accidental injuries, the head is especially vulnerable and an understanding of the mechanism of head injuries is essential in forensic medicine.

Scalp Injuries

The scalp consists of hairy skin over subcutaneous tissue. The scalp is very vascular and bleeds profusely on damage.

The scalp is often lacerated by impact. Due to the dense covering of hair, scalp injuries can be missed unless palpated. Where an injury is found in a dead body, the hair must be shaved away to get a good view and photograph of the lesion.

Skull Fractures

Definition of a fracture – Any breach or break in the surface continuity of a bone is a fracture.

Types of Fracture Skull

1. Linear fracture
2. Sutural separation
3. Comminuted fracture
4. Depressed fracture
5. Fractures due to incised wounds
6. Elevated fractures
7. Punctured fractures
8. Hammer wounds
9. Fracture caused by axe wounds
10. Pond fracture
11. Ring fracture
 - around the foramen magnum
12. Bursting fracture skull
13. Basal fractures
 - fractures occurring at the base of the skull

Intracranial Haemorrhage

This is a most important topic, which causes many fatalities and disabilities following head injury.

Extradural Haemorrhage

Most extradural hemorrhages are associated with fractures of the skull, but about 15 % occur in intact skulls. Bilateral epidural hemorrhages are rare but have been recorded.

Extradural hemorrhage is never a 'contrecoup' injury, this being purely a cerebral tissue lesion.

Subdural Haemorrhage

Bleeding beneath the dura is much more common than extradural haemorrhage. It is also proportionately less often associated with a fracture skull.

Subarachnoid Haemorrhage

The third type of the brain membrane bleeding is even more common than subdural haemorrhage but has a mixed etiology. Whenever there is damage to the cortex, there will be some degree of subarachnoid bleeding, so all penetrating injuries of the brain, as well as many blunt injuries that give rise to extradural or subdural haemorrhage will be associated with traumatic subarachnoid bleeding.

Coup and Contrecoup Damage

When a mobile head is struck with an object, the site of maximal cortical contusion is most likely to be beneath or at least on the same site as the blow. This is the so-called coup lesion.

When a moving head is suddenly decelerated, as in a fall, though there might still be a coup lesion at the site of impact, there is often cortical damage on the opposite side of the brain – the contrecoup injury.

Injury to Neck and Throat

1. Abrasion - May result from hanging, strangulation, and throttling. Nail scratch marks in throttling.
2. Bruise - May result from hanging, strangulation and throttling.
3. Incised wound - Due to blow with sharp edge object.
4. Punctured wound - Due to thrusting with sharp edged object.
5. Lacerated wound - Very rare. Laceration of the soft tissues may however be caused as a result of hanging with a big drop.

Injury to the Spine and Spinal Cord

(I) Fracture of the spine

- Due to direct violence, e.g. blow with a heavy object; fall from height on the back; road traffic accident where a car runs over the back.

- Due to indirect violence, e.g. forcible bending of the body; fall on buttocks or feet.

- (a) Injury to the upper part of the spine above the third cervical vertebra is followed by immediate death from paralysis of respiratory muscles.
- (b) Injury to the lower part of the spine – though not primarily fatal by itself, give rise to secondary complication such as bed sores, cystitis, hypostatic pneumonia, etc.

(II) Concussion of cord

- Due to severe blow on the back, fall from height, railway and motor car collision accident.

(III) Hacking of the spine

- Especially at the neck with a heavy sharp cutting weapon. Such as dah, chopper or axe resulting in decapitation.

(IV) Whip Lash Injury

It is the injury of the cervical spine in road traffic accident and the type of injury is fracture of one of the cervical vertebrae from the under surface of the skull. This injury is due to the whip lash movement of the neck with violent extension and flexion. This injury occurs when there is a forceful impact from the rear by another car and the un-restraint head is suddenly forced into acute hyperextension followed by flexion

Injury to the Thorax

1. Abrasion - Due to blow with blunt object or road traffic accident.
2. Bruise - Due to blow with blunt object or kick, or road traffic accident.
3. Incised wound - Due to blow with sharp edge object.
4. Penetrating wound - Due to thrusting with sharp pointed object.

In case of penetrating wound of the thorax or closed thoracic injury, one or more of the following intra-thoracic organs and structures are injured.

- (a) Heart
- (b) Lungs
- (c) Large blood vessels e.g. aorta and its branches, superior vena cava, inferior vena cava, pulmonary artery.

Cause of Death in Heart Injuries

- (1) Shock and haemorrhage
- (2) Cardiac tamponade
- (3) Progressive circulatory failure in cardiac contusion

Volitional power

When stabbed through the heart a person may die instantaneously or may have sufficient power to run for a very short distance. Though it may be impossible for him to make a long statement, he may call for help or loudly give out the name of his assailant.

Cause of Death in Lung Injuries

- (1) Shock and haemorrhage due to profuse haemothorax
- (2) Pneumothorax
- (3) Hemorrhage into the bronchi or trachea, which prevents inhalation of air into the alveoli and death, may result from anoxia, choking by inhaled blood
- (4) Infection – Delayed death from empyema or pneumonia

Volitional Power

It depends upon amount of bleeding i.e. haemothorax. When bleeding is profuse as in penetrating wounds of hilar region, there is a very short period of survival time. When bleeding is not so much profuse such as in a penetrating wound of periphery of lung, a person may have sufficient power to run or do some other volitional act.

Cause of Death in Large Blood Vessels Injuries

Shock and haemorrhage

Injury to Abdomen

I. Abdominal Wall Injury

- (a) Abrasion – Due to road traffic accident, blow with blunt object or kick, fall from height etc.
- (b) Bruise – Rare in this region because of the abdominal wall transmitting the force of violence to the subjacent organs and structures. But it may see in road traffic accident, blow with blunt object or kick, fall from height, etc.
- (c) Incised wound – Due to blow with sharp edge object.
- (d) Punctured wound – Due to thrusting with sharp pointed object.

Danger to life

Unless complicated by injuries to the subjacent internal organs and structures, or infected by pathogenic microorganisms, wounds of abdominal wall are usually not dangerous to life.

Cause of death

- (a) Shock
- (b) Haemorrhage
- (c) Complications such as peritonitis

II. Intra-abdominal organ and structure injury

In case of penetrating wound of the abdomen or closed abdominal injury, one or more of the following intra-abdominal organs and structures are injured.

- | | |
|-----------------|------------------|
| (a) Stomach | (f) Kidney |
| (b) Intestine | (g) Bladder |
| (c) Liver | (h) Uterus |
| (d) Spleen | (i) Diaphragm |
| (e) Pancreas | (j) Blood vessel |
| (k) Pelvic bone | |

Injury to External Genital Organs

I. Male External Genital

- (1) Urethra – Ruptured urethra due to kick in the perineum, fall astride over projecting substance, fracture piece of pubic bone e.g., road traffic accident, fall from height, etc.
- (2) Penis – Laceration of penis as in road traffic accident.

(3) Scrotum – Contusion due to blunt object or kick. Laceration of scrotum seen in road traffic accident. Squeezing or crushing of testicles may give rise to fatal shock because of severe pain.

II. Female External Genital

(1) Vulva – Abrasion, bruise and laceration due to blow with blunt object or kick, road traffic accident etc.

Penetrating wound when accidentally fall on sharp pointed projecting object.

(2) Vagina – Abrasion, bruise and laceration due to blow with blunt object or kick, introduction of instrument, e.g. rod, stick, etc., as in criminal abortion, violent sexual intercourse, rape etc.

Danger to Life

Owing to the vascularity of the tissue lacerated wound and penetrating wound of vulva and vagina may bleed profusely and fatal.

Injury to the Extremities

(1) Defense wound – Abrasion, bruise, lacerated wound, incised wound, fracture of bone especially in upper limb.

(2) Fracture of bone – Seen in both upper limb and lower limb due to road traffic accident, blow with blunt object usually in upper limb, fall from height, etc.

(3) Dislocation of joint – Due to forcible twisting of limb as in assault case, road traffic accident, fall from height, etc.

(4) Abrasion, bruise and lacerated wound – Seen in both upper limb and lower limb due to road traffic accident, fall from height, blow with blunt object, etc.

Cause of death

1. Direct cause of death

(a) Haemorrhage from injury to large blood vessels.

(b) Shock resulting from one severe or multiple slight injuries.

2. Indirect cause of death

(a) Complication such as cellulitis, septicemia, tetanus.

(b) Fat embolism as in crushed injury.

CHAPTER (5) ACCIDENT, SUICIDE, HOMICIDE

Suicide may be important because of:

(a) In any kind of society, suicide is regarded as a stigma and the relatives would try to make death as natural or accidental.

(b) A policy of life insurance in some case is not recognized if death is from suicide and a person may, for the sake of his family, conceal the manner of death.

A. Examination of the Wound

1. Situation of the wound

Suicidal wounds are generally in "easily" accessible parts of the body such as:

- throat and wrist for incised wound.

- abdomen or heart region for stab wounds.

- center brow, temple, mouth for firearm wounds.

2. Nature and extent of wound

Contused wounds are rarely seen in suicide because it causes great pain, and there is uncertainty of causing death.

Incised wound – suicidal cut throat and homicidal cut throats has different features. (Please refer to notes on incised wounds).

3. Multiplicity of wounds

The presence of defense wounds on the hand, palm, and forearm indicates murder.

Multiplicity of wound is presumptive of murder, but this is not true in every case because multiple tentative wounds may be present in suicide. So the number of fatal wounds is of more importance.

If there is more than one fatal wound it is indicative of murder, as a suicide would not be able to inflict another fatal wound after the first fatal wound.

B. Examination of the Scene of Crime

Position and lie of the body in relation to the surrounding objects such as weapon, furniture will be of importance. E.g., a female with a ligature around her neck with her clothing disarranged and in a lying position with feet apart indicate rape with strangulation.

Marks of blood on the floor or furniture may indicate the movement of a wounded person or his assailant. The hand and feet of the victim should be examined for bloodstains.

A dead body found in a room locked from inside would be a very strong evidence of suicide.

Presence of a genuine farewell letter also points to suicide.

C. Evidence from the Weapon

When a person dies from self-inflicted or accidental wound, which is likely to cause death within a few minutes the weapon is usually found close to the body.

If the weapon is firmly grasped in hand in a state of cadaveric spasm it is strongly confirmative of suicide.

D. Cause of Death

Simultaneous use of more than one method to end life is in favor of suicide. E.g. the ingestion of kerosene together with cut throat wound is a strong indication of suicide.

Hanging is a common form of committing suicide. The possibility of homicidal hanging is quite rare while accidental hanging occurs occasionally.

A suicide generally chooses the quickest and least painless way to die.

E. Age and Sex

Death of young children from wounds or drugs precludes suicide.

Females usually choose sleeping pills, insecticides or drowning to commit suicide.

Rarely do they choose firearm or knives or by hanging.

F. Evidence from Examination of Assailant

A person committing murder may have blood of the victim on his clothing's and injuries on his body produced in the struggle.

He may attempt to explain that the stains are animal origin like chicken or pig, but the species precipitin test and blood grouping will identify the source.

Common Methods of Suicide in Myanmar

- | | |
|---------------|--------------------------------|
| 1. Poisoning | 6. Firearm injuries |
| 2. Hanging | 7. Run-over by train |
| 3. Drowning | 8. Jump from height |
| 4. Stabbing | 9. Burns |
| 5. Cut throat | 10. Blunt force injury to head |

CHAPTER (6) SCENE OF CRIME

Examination of the Body at the Scene of Death

The role of a doctor at the scene of crime is to: -

1. Pronounce the person dead.
2. Help identification if not known.
3. Determine the cause of death.
4. Assist in determining the manner of death.
5. If unnatural – determine the agent causing death.
6. Help establish approximate time since death.
7. If homicide, assist in identifying the person responsible for death.

CHAPTER (7) FIREARM WOUNDS

A doctor must be able to (a) recognize firearm injuries; (b) differentiate entrance and exit wounds; (c) express some preliminary view as to the range and direction; and (d) know the characteristics of a suicidal wound.

Types of Firearms

There are mainly 3 different types; -

- (a) Smooth-bore firearm
- (b) Rifled firearm
- (c) Air gun

Rifled Firearm (Single Missile Firearm)

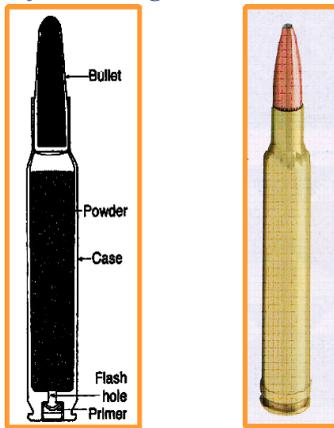
These weapons are of 2 types.

- (1) Short-barreled pistols – low velocity
- (2) Long-barreled rifles – high velocity

Another classification: -

- (1) Non-automatics e.g., revolver
- (2) Semi-automatics (auto-loading) e.g., pistols
- (3) Automatics – modern rifles

Rifle cartridge



Gunpowder

- 2 types (1) black powder
(2) smokeless powder

Characters of Entrance Wound (Single Missile Firearm)

1. Contact ring

Will be always present.

Contact ring is a circumferential abraded bruise of the skin sometimes contaminated with grease, found around the margins of entrance wound caused by the entry of bullet through the skin.

The position of the contact ring may roughly indicate the direction of entry of bullet. If the entrance wound is on dark colored skin or if the bullet has passed through the clothing, contact ring will not be so obvious to the naked eye. In such cases, inspection under infra-red light will show the contact ring.

To estimate the bore of a particular firearm, we have to measure the outer margins of the contact ring, not the hole, which is smaller than the bullet.

2. Size and Shape

When the bullet enters the body perpendicularly, the entrance wound will be circular; if the bullet enters the skin at an angle, it will be oval. If the bullet is deformed (as after hitting an object first) the wound will be irregular in shape.

Due to the elasticity of the skin, the entrance wound is usually smaller than the size of the bullet. The wound may be larger than the bullet under the following conditions:

- (1) when a web bling bullet enters the body
- (2) when a spent bullet enters sideways
- (3) when a deformed bullet enters the body

3. Number

Generally, a single shot will result in a single entrance wound. But in case of a ricocheting bullet, it may break into fragments and many pieces may enter the body - resulting in multiple entrance wounds.

4. Gunpowder fouling

Depending upon the range of gun-fire, there will be gunpowder fouling, smudging, tattooing, burning, singeing of hair and deposition of burnt and unburnt gunpowder.

5. Edges

Usually the edges are inverted. But the edges may be everted in cases where the subcutaneous fat or momentum protrude through the wound, or in cases of decomposed bodies.

Characters of Exit Wound

1. Contact ring

There will be no contact ring. But there may be a pseudo-contact ring when the skin is pressed against a hard surface such as in leaning against a wall.

2. Size and Shape

The size of the exit wound is usually larger than the corresponding entrance wound.

The shape of exit wound is usually irregular.

3. Number

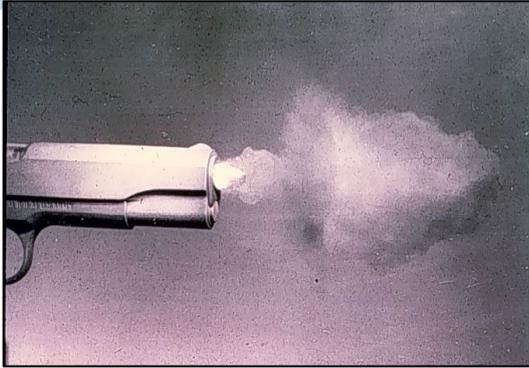
A single shot usually produces a single exit wound. But if the bullet passes through a hard bone - there will be fragmentation of the bullet as well as the bone, and the fragmented pieces will exit from the body producing many openings.

4. Gunpowder fouling

There will be no gunpowder fouling, smudging, tattooing, singeing of hair nor deposition of burnt and unburnt gunpowder.

5. Edges

The edges of the wound are everted.



When a shot is fired, the following are seen.

1. Naked flame reaches (6")
2. Burnt and unburnt gunpowder, hot gases, metallic and carbon particles - 2 to 3 feet. (18")
3. Gases of expansion and superheated air.

1. Contact range

Depending upon 2 areas of the body, there can be different appearances.

Contact range entrance wound at an area where the skin is lightly stretched on bony prominence, e.g., temple area or Centre brow.

When the muzzle is pressed against the skin and as the bullet is fired, the bullet, naked flame, burnt and unburnt gunpowder, metallic and carbon particles and gases of expansion will all insinuate between the skin and underlying bone producing a stellate shaped lacerated entrance wound.

(A) Contact range entrance wound on soft tissues or abdomen

Depending on pressure exerted by the muzzle, the bullet, naked flame, carbon particles, metallic particles and gases of expansion will all go into the soft tissues. The entrance wound will be circular, with an abrasion collar. If in a hairy part, the hairs may be singed. Some fouling and tattooing by unburnt gunpowder may also be seen in an area about one inch around the entrance wound.

(B) Entrance wound into the mouth

A suicide will place the muzzle of gun into the mouth and he will also close the mouth before pulling the trigger. When the shot was fired, all the above mentioned components will go into the mouth. As the oral cavity is small, gases of expansion will cause both cheeks to bulge out, resulting in a series of lacerated wounds at both ends of the mouth.

2. Near contact range

Depending on type of powder used, near contact range may vary anything from 1\8" to 5". If smokeless powder is used, flame reached only up to 3". If black powder is used, it may extend up to 6" to 9". In case of shotgun where black powder is used it may extend up to 12".

There may be circular entrance wound with great degree of burning, singeing, powder fouling, tattooing, deposition of burnt and unburnt gunpowder, carbon particles and metallic particles around the entrance wound.

3. Close range (1 yard or arm's reach)

Entrance wound would be a circular hole with no more burning and singeing, but there will be powder fouling, tattooing, and deposition of carbon and metallic particles.

4. Beyond close range

- a circular hole with contact ring and nothing more.

Shotguns

A shotgun is a smooth-bore firearm – i.e., the inside wall of the barrel is smooth.

The different sizes of shot guns are named according to the size of the barrel (bore). It is determined by the number of solid balls of lead, each with the diameter of the barrel that can be prepared from 1 lb of lead.

A 12-bore shot gun means that if 12 balls are made from one pound of lead, each ball will fit exactly into the barrel.

Contact Range

When the muzzle is pressed against the body.

- The imprint of the muzzle may be left in the form of a circular abrasion, next to the gunshot wound.
- The entrance wound is usually a stellate wound (ragged tear).
- The margins of the wound show contusion of the tissue.
- There is blackening of the tissue by gunpowder.
- Because shots and gases are blasted within the wound, the subcutaneous and deeper tissues show severe disruption.
- Contact wounds on the head show greater disruption of the margins and linear tears in the skin extending from the margin.
- With the gases entering the body, the blood and tissue along the tract of the shot show the presence of carbon monoxide. (tissues will be pink or bright red).
- The wads will be present in the wound.

Close Range

When the muzzle is in loose contact with the skin or with the muzzle up to 6 inches from the body; - The pellets will enter as a single mass.

- The wound is usually round or oval.
- The margins are slightly ragged.
- There is burning effect from the flame.
- There is blackening of the skin by smoke and unburnt powder.
- Tattooing by carbon particles will be present up to 36". The zone of blackening increases with the distance and it may be seen up to 15".
- Wads will be present in the wound.
- Carbon monoxide may still be detected in the tissues.

1-3 yards range and over

- There is a single large wound.
- Crenation of the margins caused by scattering pellets. Blackening, tattooing, singeing of the hair will not be seen.
- The cardboard and the wad can be found in the wound up to 2 – 3 yards.
- At 2 yards, there will be irregular main wound with satellite pellet holes.
- Longer distance will produce a greater degree of scattering of pellets, which causes small wounds around the main wound.
- At 6 yards, there will be group & single pellets over 6 to 7 inches in diameter.
- At 12 yards, there is uniform spread of pellets.
- At 12 yards over, 12-14 inches diameter dispersion.

Other points to note

- The rapid entry of shots and gases causes a momentary vacuum immediately below the skin that may result in extrusion of fat through the wound.
- Other injuries caused by wadding may be present.
- Heavy clothing may alter the appearance of skin wounds.
- Heavy clothing may cause absence of burning effect, blackening and singeing although fired at close range.

Exit Wounds

If it is present it usually shows eversion of skin margin, disruption of the tissue, subsidiary tears in the skin. Burning, tattooing, blackening will be absent.

Suicidal Gunshot Wounds

Two facts must be kept in mind: -

1. Suicide selects classical sites.
2. The wound is either a contact wound or close range wound.

Sites chosen in order of frequency are; -

- (a) Temple area
- (b) Heart area
- (c) Mouth
- (d) Center of forehead
- (e) Epigastrium & under the chin

Homicidal Gunshot Wounds

These could be seen on any part of the body, and they are fired from a variety of ranges.

Accidental Gunshot Wounds

Usually occur from careless handling of guns. Children, hunters and intoxicated persons are common victims.

General points to note

General wounds may not always be obvious, and they may not have distinctive characteristics.

- Blood and blood clots may obscure the injury.
- Thick growth of hair in the head may obscure the injury.
- Concealed sites like – the mouth, nostril, ear, eye, body orifices should be kept in mind.
- The wound may have an unusual appearance if it passes through an object or ricochet from another object before it strikes the body.
- Bullet grazes caused by glancing missiles sometimes resemble abrasions or lacerations.

Identification of firearm from bullet and cartridge case

- The size of the bullet recovered from the body will indicate the caliber of the firearm used.
- Firearm identification can be made from: -
 1. Bullet
 2. Empty cartridge case

Back of primer cap

- **Secondary markings**
- When a bullet strikes a hard surface, e.g., bone, lamp-post, brick wall, the bullet will be deformed and these are called secondary markings. They are of no use in firearms identification.

CHAPTER (8) HANGING

Definition

Hanging is a form of asphyxial death where the body is wholly or partially suspended by a ligature around the neck," the constriction force" being the weight of the body or that of the head or upper trunk.

Causes of Death

1. **Cerebral congestion**
2. **Cerebral anoxia**
3. **True asphyxia**
4. **Comato-asphyxia**
5. **Vagal inhibition**
6. **Fracture or dislocation of the cervical vertebra**

This is a rare cause of death and found mostly in judicial hanging.

Post-mortem Features

External findings

The appearance of ligature mark around the neck is the only specific sign of death from hanging. The appearance of ligature mark depends on:

1. **Nature of the ligature used**

Telephone wire

Rough texture

Woven cloth

2. **Types of knot**

Fixed knot

Running noose

3. **Point of suspensions**

If the knot lies on the median line at the nape of the neck or underneath the chin, the ligature mark will be symmetrical. If the point of suspension lies anywhere in between these 2 points, the mark will be asymmetrical.

4. **Duration of suspension**

If prolonged, ligature mark will be prominent, if the body is cut down immediately, the mark will be improminent.

5. **The constriction force**

If the whole body was completely suspended, the mark will be prominent. If the body is suspended in reclining posture or kneeling position, the ligature mark will be improminent. Whenever the whole body is not completely suspended, it is called partial hanging (partial hanging is always suggestive of suicide).

6. **Texture of the ligature used**

Rough texture - prominent ligature mark with surface abrasion and parchmentation
Soft texture - shallow, wide, and improminent.

7. **Diameter of the ligature used**

The larger the diameter, the broader the ligature mark.

Description of the Ligature Mark

1. Single or double strands or multiple strands
2. Breadth of ligature (i.e. diameter)
3. Site - in relation to Adam's apple, highest or low down
4. Shape and pattern
 - complete / incomplete
 - symmetrical / asymmetrical
 - circular / V shaped
 - Knot impression mark +/-
5. Colour - especially the base of the ligature mark.
6. Edges
 - Upper margin - shows hypostasis
 - Lower margin - no hypostasis
 - Both margins - vital reaction
7. Whether ligature mark is continuous or interrupted?
8. consistency - parchmented or not
9. Other associated injuries e.g. finger nail scratches (the presence of fingernail scratches does not exclude suicide because the victim during delirium may haphazardly tries to release the constriction band).
10. Site of most prominent part of ligature mark - Usually opposite the point of suspension.

Other Features of Hanging

Head - is inclined to side contralateral to point of suspension
Face - pale or congested

Tip of tongue - protruded between incisor teeth; may be bitten by these. May be parchmented due to air drying

Dribbling of saliva from angle of mouth towards which head inclined. This finding is vital reaction because as the ligature presses on the submandibular salivary gland, it stimulates saliva secretion.

Eyes - closed or partially open / serene looking

Penis - turgid, congested (due to hypostasis).

- may be erect.

- may have trickling of seminal fluid from urethral orifice down the inner surface of one thigh and hence to the floor. This finding is not due to vital reaction and is of no diagnostic value.

Nail - cyanosis. Post-mortem staining

On dependent part of suspended body i.e., hands and forearms below elbow, lower part or trunk, upper margin of ligature mark. If body is suspended, the upper and lower extremities are found dangling. The hands may be tightly clenched.

Medico-Legal Importance

1. Was death due to hanging? Or was the body hanged after death from other causes to simulate hanging?

Specific Signs

Ligature mark around the neck
Saliva trickling from the angle of mouth.

Other non-specific (supportive) signs

- non-specific signs of asphyxia
- fluid at tip of penis
- Absence of other injury or other causes of death

2. Whether hanging was due to accident, suicide or homicide? In order of merit

- Suicidal (almost cent %)
- Accidental
- Homicidal (rarest) – may be done by group activity.

Almost cent % of deaths by hanging is suicidal in nature especially if it is partial hanging.

Examination of the Scene of Death of Hanging

A. Place of hanging

- ❖ Outdoors/ indoor – whether room was closed from inside
- ❖ Furniture – are they in proper order? Any chairs or stools near the suspended body?
- ❖ Farewell letters
- ❖ Beams – disturbance of dust, cobwebs

B. Body

- ❖ Clothed / naked / female attire
- ❖ Position of suspended body (complete or partial hanging)
- ❖ Hypostasis
- ❖ Rigor mortis
- ❖ Position of limbs
- ❖ Saliva trickling
- ❖ Fluid at the tip of penis
- ❖ Any dust on finger pads
- ❖ Any material detached from ligature or other sources underneath the finger nails
- ❖ Any injuries, defence wounds

C. The ligature

- ❖ Type of ligature, point of suspension, type of knot etc.

Differences between Hanging and Strangulation

NO.	HANGING		STRANGULATION
1.	Mostly suicidal	1.	Mostly homicidal
2.	Ligature mark is at a higher level, usually above the thyroid cartilage, asymmetrical, oblique, V shape, and opening at the back. The base of the groove being hard yellow or brown parchment like and being deepest opposite the point of suspension.	2.	Ligature mark is at a lower level, at or below the Adam's apple. It is continuous, complete and transversely encircling around the neck. Base of the groove is soft and reddish. The depth is uniform.
3.	Usually single stranded.	3.	Multiple stranded.
4.	Amount of force used is not as great as in strangulation. Internal injuries are not so severe.	4.	Greater amount of force is used. Internal injuries are much more severe.
5.	Hyoid bone and injury to muscles of the neck is rare.	5.	Hyoid bone, thyroid cartilage and injury to muscles common.
6.	Fracture and dislocation of cervical vertebrae is common in judicial hanging.	6.	Fracture and dislocation of cervical vertebrae is rare.
7.	Scratches, abrasions and bruises on the face and around the ligature mark and other parts of the body, usually not present.	7.	Scratches, abrasions, nail marks and bruises on the face and around the ligature mark are usually present.
8.	Facial appearance was not significant, eyes - serene looking.	8.	Anxious look with protruding eyes.
9.	Petechial haemorrhages on face -rare	9.	Usually present
10.	No evidence of sexual assault	10.	Sometimes, evidence of sexual assault - positive
11.	External signs of asphyxia is usually not well marked.	11.	External signs of asphyxia are usually very well marked.
12.	Signs of struggle absent.	12.	Present.

CHAPTER (9) DROWNING (SUBMERSION)

Bodies retrieved from water may have:

- a. Died from natural disease before falling into the water.
- b. Died from natural disease while already in the water.
- c. Died from injury before being thrown into the water.
- d. Died from injury while in the water.
- e. Died from effects of immersion other than drowning.
- f. Died from drowning.

Death from Drowning

Definition

It is a form of asphyxial death where the entry of air is prevented from entering the lungs by water or any fluid or any pulstaceous matter into which the head has fallen and remained so.

Possible causes of death

1. Asphyxia

It occurs due to exclusion of air from the lungs by the water-inhaled mechanism.

2. Laryngeal spasm

When a person falls onto the water, sudden rush of cold water entering the larynx may cause sudden laryngeal spasm with closure of airways resulting in asphyxial death without entry of water into the lungs.

3. Cardiac inhibition (Reflex death / Immersion syndrome / Hydrocution)

General skin of whole body and the mucosa of air passages abundantly supplied by parasympathetic nerve endings. Sudden contact of cold water in these areas may cause stimulation of parasympathetic nerve endings and this vagal inhibition causes depressant action of heart muscles causing sudden cardiac arrest and, in these cases, alcohol or over-eating may be predisposing factors.

4. Electrolyte imbalance

Occurs in fresh water or soft water drowning. The water inhaled is quickly absorbed into the blood vessels resulting in hemodilution (up to 30 or 40 %). As the water is soft, due to osmosis, RBCs become swollen, globular and later burst (hemolysis) leaving ghost cells. Potassium from RBCs are released causing hyperkalemia leading to V.F. and cardiac arrest.

5. Other causes: Exhaustion, fright, fear, and injuries.

6. Secondary drowning

Sometimes, the victim shows an initial recovery from drowning but then dies hours or days, after accident, due to complications such as pneumonia, lung abscesses.

Wet Lung Drowning

Hard water (sea water) in alveoli has higher osmotic pressure than blood in interalveolar capillaries.

1. Water moves from lower to higher osmotic pressure.
2. Therefore in hard water drowning, hard water that has entered into alveoli draws water from blood in the interalveolar capillaries resulting in further swelling of each alveoli, producing great ballooning and water-logging of lungs.
3. As water moves out blood--- hemoconcentration.
4. Water in RBC goes out --- crenation of RBCs.
5. No electrolyte imbalance and no circulatory overload, therefore death is not rapid. (5 to 7 mins).
6. Recovery is possible from timely resuscitation.
7. Fatality rate is lower.

Dry Lung Drowning

Fresh water in alveoli has lower osmotic pressure than blood in inter-alveolar capillaries.

1. Water moves from lower to higher osmotic pressure.
2. Soft water that has entered into alveoli is quickly absorbed into blood in inter-alveolar capillaries.
3. Soft water that has entered into capillaries again entered into RBCs which swell, become globular, spherical and finally bursts, leaving ghost cells.
4. Intra-vascular hemolysis and hemodilution occurs.
5. Release of K⁺ ions with electrolyte imbalance and V.F, heart failure and circulatory overload. Death is rapid (3 to 4 mins).
6. Recovery - difficult to resuscitate.
7. Fatality rate - higher

Post-mortem Features of Drowning

External signs

- (i) presumptive signs
- (ii) specific signs

Presumptive signs

1. Whole body including clothing are wet.
2. Mud, sand, seaweeds found on the body, in between layers of clothing, ears, nostrils.
3. Cyanosis - not very marked.
4. Eyes - serene looking, congested, half-open.
5. Washerwoman's hands - Blanching and sodden appearance of the skin of the palms and soles. This only shows that the person has been submerged for a sufficient length of time. It does not indicate that the cause of death is drowning.

6. Cutis anserina (goose-skin) due to contraction of erectors pilorum muscles which are connected to hair follicles. It only indicates that molecular life of erectors pilorum muscle is still present during the time of submersion. It is not a conclusive sign of drowning.

7. Retraction of scrotum and penis due to contraction of dartos muscle which brought the testes closer to the trunk.

Specific signs

1. Fine white, tenacious, lathery froth or foam like soap-suds, sometimes tinged with blood, mushrooming from the mouth and nostrils. If such a froth is removed by undertaker during transit, it can be reproduced by exerting pressure on the chest. Amount of froth and degree of ballooning of the lungs will depend on the amount and duration of struggle to breathe before death.
2. Cadaveric spasm
Firm claspings or grasping in the hands of objects found in water such as grass, weeds, prawns, fish, and cybals. Sometimes mother and child may be found clasping each other in cadaveric spasm.

Medico-Legal Problems

1. Was death due to drowning?

To diagnose death from drowning can sometimes be the most difficult problem, especially if the body is decomposed. The post-mortem diagnosis of drowning has to be made by the method of exclusion.

2. Was drowning due to accident, suicide or homicide?

The following factors are to be considered:

- (a) Age - infants and young children - never suicidal, mostly accidental.
- (b) Sex - females - preponderance in drowning and mostly suicidal in nature. (less incidence of death by hanging in female)
- (c) Motives
 - interpersonal conflicts - unrequited love affairs, unwanted pregnancy
 - examination failures - physical illness - chronic debilitation diseases
 - psychiatric illnesses - depression - high responsibilities
 - unknown - genetic?
- (d) Ligatures on the body- method of ligature? - very important
- (e) Weighted body
- (f) Clothing-naked, fully clothed, swim suits?

(g) Injuries

- defense wounds
- signs of struggle
- ante-mortem or post mortem injuries?

(h) Farewell letters

CHAPTER (10) RAPE

Definition of Rape

(M.P.C Section 375)

A man is said to commit "rape" who, except in the case herein after excepted, has sexual intercourse with a woman under circumstances falling under any of the five following descriptions: -

- Firstly = Against her will.
- Secondly = Without her consent.
- Thirdly = With her consent, when her consent has been given by fear of death, or of hurt.
- Fourthly = With her consent, when the man knows that he is not her husband, and that her consent is given because she believes that he is the man to whom she is, or believes herself to be, lawfully married.
- Fifthly = With or without her consent, when she is under 16 years of age.

Explanation - Penetration is sufficient to constitute the sexual intercourse necessary to the offence of rape.

Exception - Sexual intercourse by a man with his own wife, the wife not being under 13 years of age, is not rape.

ပုဒ်မ ၃၇၅။ ။ ဤမှနောက်တွင် ကင်းလွတ်ခွင့် ပြုထားသည်မှတစ်ပါး၊ အောက်ဖော်ပြပါအကြောင်း ငါးရပ်တွင် သက်ဝင်သော အကြောင်း တရပ်ရပ်ဖြင့် ယောက်ျားသည် မိန်းမနှင့် ကာမစပ်ယှက်လျှင် ထိုသူသည် မုဒိမ်းမှုကို ကျူးလွန်သည် မည်၏။

ပထမ။ ။ မိန်းမက အလိုမတူ ငြင်းဆန်ခြင်း။

ဒုတိယ။ ။ မိန်းမက ခွင့်မပြုခြင်း။

တတိယ။ ။ မိန်းမက ခွင့်ပြုသော်လည်း၊ ထိုသို့ခွင့်ပြုရခြင်းမှာ ထိုမိန်းမအား သေစေမည်ဟုသော်လည်းကောင်း၊ နာကျင်စေမည်ဟုသော်လည်းကောင်း၊ ကြောက်ရွံ့အောင်ပြုသဖြင့် ခွင့်ပြုရခြင်း။

စတုတ္ထ။ ။ မိန်းမက ခွင့်ပြုသော်လည်း ယောက်ျားက မိမိသည် ထိုမိန်းမ၏ လင်မဟုတ်ကြောင်း သိသည့်အပြင် ထိုမိန်းမက ခွင့်ပြုခြင်းမှာလည်း မိမိကိုဥပဒေနှင့်အညီ လက်ထပ်ထားသော၊ (သို့တည်းမဟုတ်) ထိုသို့လက်ထပ်ထားသည်ဟု ယုံကြည်သော အခြား ယောက်ျားဖြစ်သည်ဟု ယုံကြည်၍သာ ခွင့်ပြုကြောင်းကို ထိုယောက်ျားက သိခြင်း။

ပဉ္စမ။ ။ မိန်းမက ခွင့်ပြုသည်ဖြစ်စေ၊ ခွင့်မပြုသည်ဖြစ်စေ၊ ထိုမိန်းမသည် အသက် ဆယ်ခြောက်နှစ်အောက် အရွယ်ရှိသူ ဖြစ်ခြင်း။

ရှင်းလင်းချက်။ ။ ယောက်ျား၏ အင်္ဂါဇာတ်သည် မိန်းမ၏အင်္ဂါဇာတ်အတွင်း သွင်းဝင်မိလျှင် မုဒိမ်းမှုကျူးလွန်ခြင်း အတွက် လိုအပ်သော ကာမစပ်ယှက်မှုမြောက်ရန် လုံလောက်သည်။

ကင်းလွတ်ချက်။ ။ ယောက်ျားသည် အသက်ဆယ်သုံးနှစ် အောက် မဟုတ်သော မိမိ၏ မယားနှင့် ကာမစပ်ယှက်ခြင်းမှာ မုဒိမ်းမှုမဟုတ်။

ပုဒ်မ ၃၇၆ ။ ။ မုဒိမ်းမှုကျူးလွန်သူကို တသက်တကျွန်း ဒဏ်ဖြစ်စေ၊ ဆယ်နှစ်ထိ ထောင်ဒဏ် တမျိုးမျိုး ဖြစ်စေ၊ ချမှတ်ရမည့်အပြင် ငွေဒဏ်လည်းချမှတ်နိုင်သည်။ မုဒိမ်းကျင့်ခံရသော မိန်းမသည် မိမိ၏ မယားဖြစ်၍၊ အသက်တဆယ်နှစ်နှစ်အောက် မဟုတ်လျှင်မူကား၊ မုဒိမ်းကျင့်သော ထိုလင်ကို နှစ်နှစ်ထိ ထောင်ဒဏ်တမျိုးမျိုးဖြစ်စေ၊ ငွေဒဏ်ဖြစ်စေ၊ ဒဏ်နှစ်ရပ်လုံးဖြစ်စေ ချမှတ်ရမည်။

Sexual Intercourse

The sexual intercourse must be between a man and a woman. The term "man" is defined as a male human being of any age. Sexual intercourse (penetration or intromission) can be of any degree ranging from the slightest penetration by the male organ into the vulva without the signs of virginity being erased, to complete sexual intercourse with emission of seminal fluid.

The explanation says that penetration is sufficient to constitute sexual intercourse necessary for the crime of rape. To constitute penetration, it must be proved that some part of the penis of the accused was within the labia of the female, no matter how little. The only thing to be proved is whether the penis of the accused did enter the vagina of the woman. It is not necessary to decide how far it has entered. The hymen need not be ruptured and there need not be ejaculation of semen.

Against Her Will (use of force)

The woman must have resisted and struggled to the uttermost to show that the act was done against her will. A woman even has the right to kill the person who attempts to rape her.

To prove that the sexual act was done against her will, it must be shown that.

1. The woman had resisted to the uttermost (giving up only when overcome by unconsciousness or complete exhaustion).
2. There was inequality of strength between the man and the woman.
3. The woman had raised cries.
4. There were some marks of violence on the man or the woman.
5. The woman had reported the incident to the authorities as reasonably soon after the act as possible.
6. The accused had used brute force to accomplish the act. In forcible rape, the actual brute force can be transmitted to the mind. No hands may be laid upon the woman, yet she can be so intimidated by 'an array of physical force' that she dare not resist and in fact offers no resistance at all.

Without Her Consent

Consent means an active will in the mind of the person to permit the doing of the act complained of, and knowledge of what is being done, or of the nature of the act that is being done. Consent is a willing mind on the part of the woman to allow the act to be done. With regards to rape, this act means sexual intercourse.

In rape, if the woman is above 14 years, consent is the complete defense. It must be a real consent.

1. Consent should be given voluntarily by the woman.
2. Consent of the woman must have been obtained prior to the act. Consent given after the act is no consent. It must be a real consent, not vitiated by immaturity, misconception of facts, misunderstanding, fear or fraud.
3. If out of immaturity, not knowing what was being done, she merely submits to what has been done without the exercise of any will by her, it will not amount to consent.
4. Consent given by fraud is no consent at all. It is fraud where there is an intention to deceive and means of the deceit to obtain an advantage. In rape, there are 2 types of fraud, involved.
 - Fraud as to the nature of the act itself Where a medical man, to whom a girl of 14 years of age was sent for professional advice, had criminal connection with her, she making no resistance from a false belief that he was treating her medically, it was held that he could be convicted of rape.

- Fraud as to the identity of the person who does the act.

5. Consent given by a woman of unsound mind is not a valid consent (M.P.C Section 90). If a woman is in such a state of idiocy as to be incapable of expressing either consent or dissent, and the accused had connection with her it would amount to rape.

6. A sleeping woman can never consent. Therefore, if a man had connection with a woman while she was asleep, he was held to have committed rape.

7. Consent given by an intoxicated woman is not a valid consent.

Where the accused made a woman quite drunk, and while she was insensible violated her person, he was held to have committed rape.

8. Consent given by a woman who is under the threat of death or severe bodily pain is not a valid consent.

False allegations of rape and of indecent assault are not uncommon and may arise from many causes. The young girl out late at night and consenting to intercourse who later becomes fearful of parental wrath; the married woman involved in an extramarital affair who finds on her return home that her clothing is soiled or damaged; the fear of pregnancy; mental illness; spite or blackmail.

Medical Examination of Victim of Rape

Consent

Consent must be obtained by the examining doctor for his examination and for his subsequent report. This consent, in the case of an adult, should be obtained directly from the patient and need not be in writing. In the case of a minor, or of a female suffering from severe mental sub normality or abnormality, consent in writing should be obtained from a parent or guardian.

History Taking

If the examining doctor is a male, it is very important to keep a female nurse or a female attendant. When you are examining such cases, the exact date and time of examination must be noted. Let the woman tell her own way. Avoid as much as possible leading questions. When the woman appears to be shy, you may have to ask a few leading questions. If possible all relatives and friends should be excluded from the room.

General History

Any recent medical attention, and details of any medication or alcoholic drink consumed during the preceding 24 hours.

Menstrual and Obstetric History

Past menstrual history- the date of the last menstrual period.

The past obstetric history- the dates of birth of any children.

Past sexual experience.

Specific History

1. Date and time of happening	13. Position adopted during sexual intercourse.	22. Has the victim changed clothes, or washed any of the clothes since the alleged act?
2. Place of origin	14. Violence of penetration	23. Has the victim changed or washed any part of her body since the alleged act?
3. Place of crime	15. Experience of any local sensation or pain at the time of penetration or emission or subsequently.	24. Whether she had recent sexual intercourse previously with her lover/husband before or after the alleged crime?
4. Date and time of crime	16. Any injury to the victim; general and local injury to private parts	25. The time of first complaint; and an explanation for any delay in this complaint
5. Distance between place of origin and place of crime	17. Duration of sexual intercourse	26. Did anybody see the alleged crime? (? Peeping Tom).
6. Whether the victim and assailant were known to each other or whether they were complete strangers	18. Number of assailants; number of connections the victim had with each assailant	27. If the victim was a child, was it the first time?
7. Any weapons used? Or any threats?	19. Any form of contraception used	28. How do they part?
8. How do they meet each other?	20. Any subsequent pain, bleeding or urinary symptoms	
9. Any struggle or did she struggle to the uttermost?	21. Did ejaculation take place during the act, either within the vagina or outside?	
10. Any cry for help; if not, why?		
11. Whether the clothing were taken off or not?		
12. Any foreplay; duration of foreplay?		

Physical Examination

A complete and thorough examination should be made by one examination only.

Clothing

Let the woman strip herself or let your female attendant help in stripping her. Note any areas of soiling or damage. Should pay particular attention to the crotch areas of panties for it is here that blood and seminal soiling will frequently be found.

General Clinical Examination

- Patient's height, weight and build
- A routine examination of all the bodily systems
- Signs of pre-existing disease, injury or intoxication by alcohol or other drugs
- The skin must be carefully examined from the top of the head to the feet
- All injuries must be noted

Examination of the Genital Area

This must be carried out in good light with the patient in a lithotomy position that allows full exposure of the genital area. Firstly, the pubic hair should be carefully inspected and any matted areas (by dried crusts of seminal deposits) should be noted.

Injury to Labia

(1) The tops of the thighs, the labia and the perineum should next be inspected, and all areas of injury noted.

(2) Swabs must be taken at this stage of the examination from the area of the introitus, the perineum and the anal margin, before any digital contact has been made by the examining doctor.

(3) The hymen should next be inspected, and the presence of any fresh hymenal injury must be noted. The anatomy of the hymen varies enormously from individual to individual. The membrane may be thin, very elastic, thick, rigid or a combination. Rupture of the hymen on first penetration is of course very common but it is not inevitable. Where there is hymenal tearing, the extent and position of the tear must be noted. Tears due to penile penetration are complete in that they extend to the margin.

(4) Frequently, even in the absence of frank hymenal tearing, there is circumferential abrasion and bruising of the hymen and the vaginal orifice. It can be found in woman who is not a virgin but not used to frequent sexual intercourse.

Once the hymen has been torn it is rather unusual to find a 2nd.recent tear by subsequent intercourse. When you are examining the hymen, the labia majora should be grasped in your hands and instead of separating the labia apart, pull the labia towards you, keeping your hands parallel without separating the labia. You will find that the hymen is deployed and beautifully seen.

(5) After the hymen has been carefully inspected and before any digital examination of the vagina is attempted, two further swabs at least must be taken. Firstly, a low vaginal swab should be

taken by gently separating the inner labia and passing a swab just into the vaginal canal. A high vaginal swab should be taken under direct vision through the speculum from a point well above the beak of the speculum.

(6) The interior of the vagina should be inspected for signs of bruising, abrasion and laceration of the vaginal vault or walls.

(7) Bruising of the vagina is seen in its early stages as areas of darker red.

(8) Frank laceration of the vagina is rare following penile penetration in women of childbearing age, but it can occur in very young children and in the atrophic post-menopausal vagina.

Table: Differences between normal fimbriated hymen and torn hymen due to sexual intercourse

<i>Fimbriated hymen</i>	<i>Torn hymen</i>
-Notches are symmetrical and placed anteriorly -Notches do not extend to the vaginal -Mucosa overlying the notches is intact without any signs of inflammation around the notches.	-Notches (tear) may be single or multiple (rarely), situated in the midline posteriorly or on either side. Notches may be tears that extend to the vaginal wall -Mucosa overlying the notches is torn with signs of inflammation in and around the tear, if fresh

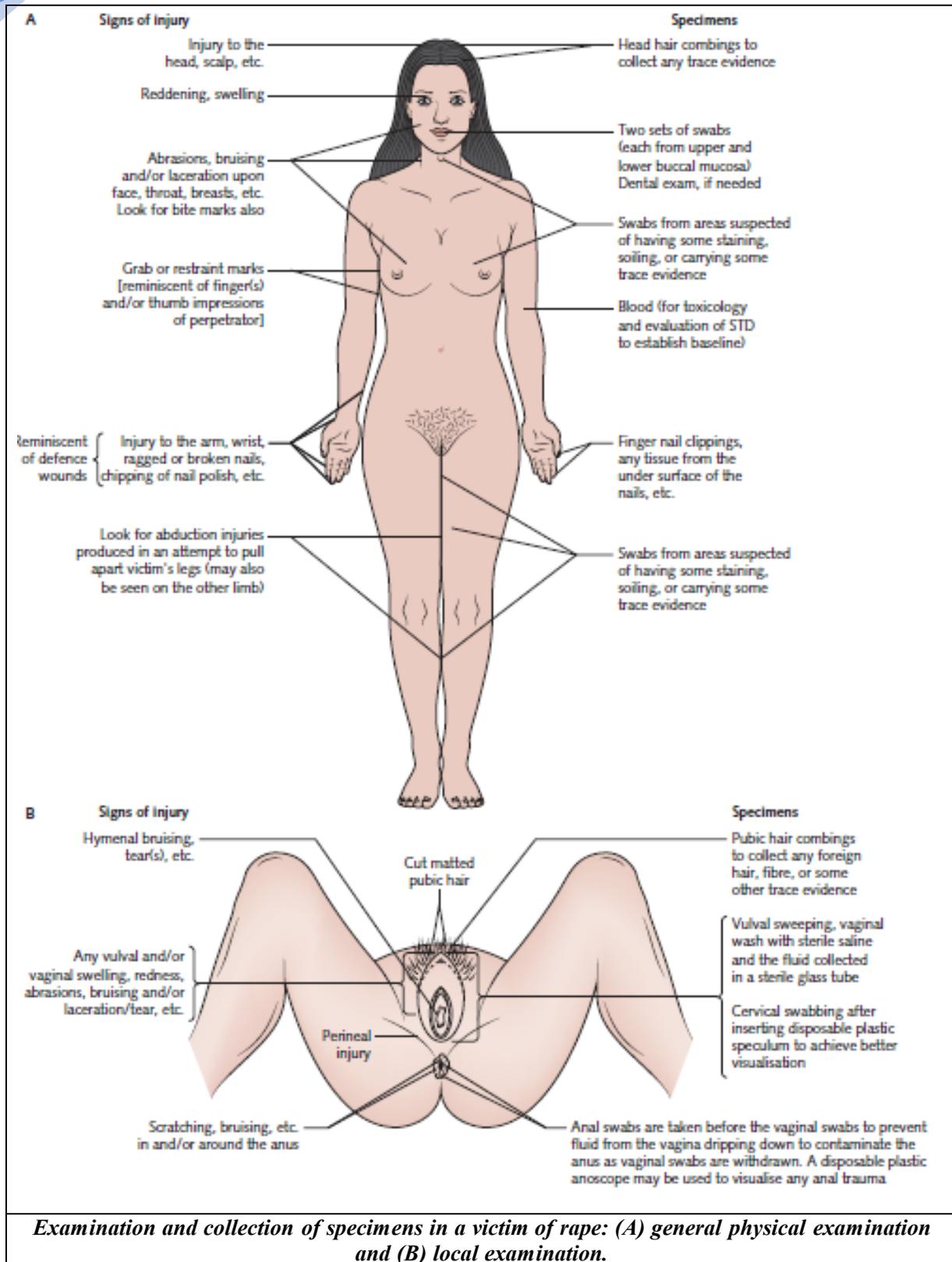
In the case of young person, the best sign of penetration is in the form of a recently ruptured hymen.

Recent hymen tear

Within 4 hours, there will still be oozing of blood from torn edges.

Between 4 – 8 hours torn edges may be covered with clotted blood. On separating the clotted blood there may still be some oozing.

There will be pain and tenderness, redness and swelling of the torn edges and these may persist up to 5 days. Depending on the cleanliness of the female, this condition may persist up to 7-8 days.



Medical Examination of a Man Suspected Of Rape
Consent - Consent to the examination should be obtained before examining the accused.
The clothing - worn at the time of the alleged offence should be carefully examined for tears, mud, blood stains or seminal stains.

General Examination
 This must include a record of the person's height, weight and build. Special attention must be given to all visible injuries. The presence of the marks of struggle, such as bruise, scratches and bite marks on the body especially on the face, hands and genitals.

Detailed Examination of the Genital Area

Pubic hairs should be examined for matted areas due to emission of semen. The penis should be carefully examined for injury to the fore skin, frenulum or glans penis. Note the presence of gonorrhoeal discharge or syphilitic chancre. The penis should be examined for any abnormality that could interfere with erection or ejaculation.

Medico-Legal Opinion

It should be understood that rape is not a medical diagnosis, it is legal definition. No doctor can be expected to say whether it was rape or not. All that can be expected from the examining doctor are the results of his medical findings as to the general injuries and genital findings as sexual penetration. The interpretation of these findings is for the law court. The following opinions are commonly used-

1. Sign of recent sexual intercourse present. လတ်တလော ကာမစပ်ယှက်ထားသော လက္ခဏာရှိသည်။

Detection of seminal fluid or spermatozoa in the vagina or in between the labia.

2. Sign of recent physical penetration present. လတ်တလော ထိုးသွင်းထားသော လက္ခဏာရှိသည်။

- (a) Recent hymen tear
- (b) Circumferential bruising and abrasion all around the orifice at the root of hymen
- (c) Bruising of the vagina
- (d) Abrasion of the vaginal mucosa
- (e) Frank laceration of the vagina
- (f) Detection of foreign bodies such as pubic hairs of the accused in between the labia or vagina of a young girl
- (g) In the case of young girl (about 5 years age), if the child shows signs of gonococcal vulvo vaginitis

3. No definite medical opinion can be given regarding recent sexual intercourse. (လတ်တလော ကာမစပ်ယှက်ထားခြင်း ရှိမရှိကို ဆေးပညာအနေဖြင့် တိကျသောထင်မြင်ချက် မပေးနိုင်ပါ။)

The majority of cases do not show any positive findings.

- (a) Spermatozoa was not detected from vagina.
- (b) There was no recent injury to the vagina or the hymen. There may or may not be old tear in the hymen. Opinion – Simply say that there is an old tear in the hymen. (ယခင် အပျိုမှေးပါး စုတ်ပြဲထားသော ဒဏ်ရာဟောင်း ရှိပါသည်။)
- (c) There was no sign of transmission of venereal disease.
- (d) There was no foreign body in the vagina.

Even though there was ejaculation, spermatozoa may not be detected because of the following reasons-

- 1. Ejaculation was done outside the vagina.
- 2. The man had worn a rubber condom.
- 3. Aspermia.
- 4. Faulty technique of collection of vaginal smear and staining method.
- 5. The woman had washed herself internally after the act.
- 6. Prolonged interval between the act and the collection of the vaginal smear.
- 7. The vaginal smear slides may get broken due to improper method of packing.

Unnatural Sexual Offences

M.P.C. Section 377

Whoever voluntarily has carnal intercourse against the order of nature with any man, woman or animal shall be punished with transportation for life or imprisonment extending to ten years and also fined.

Explanation

If any part of the visiting organ is within the visited organ, it constitutes sexual intercourse necessary for the crime of unnatural sexual offences.

Anal Intercourse (sodomy – buggery)

All these terms are used in the same sense.

Buggery – It indicates unnatural intercourse with animals or man.

Sodomy or Sin of Sodom – indicates copulation between male persons.

Anal intercourse between a male and female is unlawful (even with consent). It also provides the wife for grounds for divorce. In Myanmar, both the active and passive parties are guilty.

(ပြစ်မှုတစ်ခုတရားရုံးသို့ရောက်ရှိလာပုံ)

- 1. Direct complaint
- 2. First information Report (F.I.R)
- 3. Police Inquest
- 4. Inquest by Magistrate (Coroner's Inquest)

• **Cognizable Offence**

(ရဲအရေးယူပိုင်သောပြစ်မှု)

They are criminal cases where a police officer can arrest a person without warrant.
e.g., rape, voluntarily causing grievous hurt.

• **Non-cognizable offences**

(ရဲအရေးမယူပိုင်သောပြစ်မှု)

They are criminal offences where a police officer cannot arrest a person without a warrant.

ဥပမာ - အလေးခိုးမှု၊ သာမန်နာကျင်စေမှု၊ နိုင်ငံတော် ပုန်ကန်မှု
ရဲအရေးပိုင်ခြင်း၊ မပိုင်ခြင်းသည် အမှုအကြီးအသေးနှင့် မဆိုင်။

ဥပမာ - နိုင်ငံတော်ပုန်ကန်မှု - အမှုကြီးသော်လည်း ရဲအရေးမပိုင်”

ရဲအရေးမပိုင်သောအမှုများကို တရားရုံးတွင် ဦးတိုက် လျှောက်ထားနိုင်သည်။

Summons (သမ္မာန်စာ) (ရုံးခေါ်စာ)

တရားခံကိုဖြစ်စေ၊ သက်သေကိုဖြစ်စေ တရားရုံးသို့ လာရောက်အစစ်ခံစေရန် ထုတ်ဆင့်သောစာကို ခေါ်သည်။ တစ်စုံတယောက်သောသူ၏ လက်တွင်ရှိသော အမှုနှင့် ပတ်သက်သည့် စာချုပ်စာတန်းများကို တရားရုံးသို့ လာရောက်တင်ပြစေရန် ဆင့်ခေါ်သောစာလည်း ဖြစ်သည်။

- သက်သေခံရန် (သို့) အစစ်ခံရန် ရုံးသို့လာရောက်ရန် နေ့ရက်အချိန်သတ်မှတ်ထားသည်။
- မည်သည့်တရားရုံး၊ မည်သည့်အမှု၊ မည်သည့် တရားခံ၊ မည်သည့်ပုဒ်မနှင့် ပတ်သက်သည်ကို ဖော်ပြထားသည်။
- ရုံးခေါ်စာကို ထုတ်ဆင့်ရာ၌ မိတ္တူ (၂) စောင်ပြုလုပ်၍ ရုံးတံဆိပ်ခတ်နှိပ်ခါ ရဲမှတစ်ဆင့် ခေါ်သူထံ ချမှတ် သည်။
- တစ်စောင်ကို ပေးအပ်၍ ကျန်တစ်စောင်ကို နောက်ကျောဘက်တွင် လက်မှတ်ရေးထိုးရမည်။
- အစိုးရဝန်ထမ်းဆိုလျှင် ဌာနအကြီးအကဲကို ပေးအပ် သည်။

Subpoena

A subpoena is a document compelling the attendance of a witness in a court of law at a specific place and time and for a specified purpose under a penalty. When it is served on a witness to give evidence and produce documents before a court, he must do so punctually. Non-compliance in a civil case may render him liable to an action for damages, and in a criminal case, to fine or imprisonment, unless some reasonable excuse is forthcoming.

Warrant (ဝရမ်း)

တရားခံကိုဖြစ်စေ၊ သက်သေကိုဖြစ်စေ တရားရုံးသို့ လာရောက်အစစ်ဆေးခံရန် ဆင့်ဆိုထားပါလျက် တရားခံ (သို့) သက်သေသည် တရားရုံးသို့ ချိန်းဆိုထားသော နေ့ရက်အတိုင်း မလာလျှင်၊ လာလိမ့်မည်ဟု ယုံကြည်ရန် အကြောင်းမရှိလျှင် အဆိုပါသူအားဖမ်းဆီး၍ တရားရုံးသို့ ပို့ဆောင်ရန် ထုတ်ဆင့်သောအမိန့်စာ ဖြစ်သည်။ ဝရမ်းစာကို တရားရုံးက ရဲအရာရှိထံ ထုတ်ပေးသည်။ ပါရှိသော အချက်များကို အဖမ်းခံရသူအား ရှင်းလင်းပြောဆို၍ လိုအပ်ပါက ဝရမ်းစာကို ပြသရမည်။ ရဲအရာရှိက ဖမ်းဆီးပြီး တရားရုံးသို့ အမြန်ဆုံး ခေါ်ဆောင်လာရမည်။ မြို့နယ် ဆရာဝန်/ လက်ထောက်ဆရာဝန်သည် ခိုင်လုံသော အကြောင်းပြချက်မရှိဘဲ အမှုတစ်ခုတွင် သက်သေခံရန် ဆက်ခံခံခါ ပျက်ကွက်လာပါက၊ သက်ဆိုင်ရာ တရားရုံးမှ သက်သေကို ဖမ်းဆီးဝရမ်းကို ရာဇဝတ်ကျင့်ထုံး ဥပဒေပုဒ်မ(၉၀)အရ ထုတ်ပြန်လာလျှင် ဌာနဆိုင်ရာ အာဏာပိုင်များအနေနှင့် ဥပဒေအရ အရေးယူခြင်းကို ဝင်ရောက်စွက်ဖက် ကာကွယ်နိုင်လိမ့်မည်မဟုတ်ကြောင်း သိထားစေလိုပါသည်။

Witness (သက်သေ)

- ၁။ ရိုးရိုးသက်သေ - Ordinary witness.
- ၂။ အရည်အချင်းပြည့်သောသက်သေ - Competent witness.
- ၃။ ပါရဂူသက်သေ - Expert witness
- ၄။ မယုံထိုက်သော သက်သေ - Hostile witness

Conduct of a Medical Witness in A Court

The aim of giving evidence in a court of law by a medical witness is to assist the court to arrive at a correct decision in a particular case. His consistent aim is to tell the truth, the whole truth and nothing but the truth.

1. Dress and manners
2. Impartiality
3. Records
4. Preparations
5. Professional privilege
6. Doubt or ignorance
7. Explanations
8. Authorities cited by counsel
9. Speak clearly & loudly
10. Use simple non-technical words
11. Give categorical answers
12. Confine yourself to the field of your own competence
13. Avoid sitting on the fence
14. Keep yourself calm, cool & never get angry. Keep yourself well composed.

Examination in Courts

- 1, Examination in chief (အဓိကစစ်မေးခြင်း)
2. Cross examination (ပြန်လှန်စစ်မေးခြင်း)
3. Re-examination (ပြန်လည်စစ်မေးခြင်း)
4. Examination by the court (တရားရုံးကစစ်မေးခြင်း)

Evidence (သက်သေခံချက်)

သက်သေခံချက်ဆိုသည်မှာ စုံစမ်းစစ်ဆေးနေသော အကြောင်းချင်းရာများနှင့် စပ်လျဉ်း၍ တရားစီရင်ရေး အဖွဲ့ရှေ့တွင် တရားစီရင်ရေးအဖွဲ့၏ ခွင့်ပြုမိန့်အရဖြစ်စေ၊ ဆင့်ဆိုချက်အရဖြစ်စေ၊ သက်သေတို့၏ ထွက်ဆိုချက်ကို ခေါ်သည်။

- (1) Oral Evidence (နှုတ်သက်သေခံချက်)
- (2) Documentary Evidence (စာတမ်း အမှတ်အသား သက်သေခံချက်)

တရားစီရင်ရေးအဖွဲ့မှ ကြည့်ရှုစစ်ဆေးရန် တင်ပြသော စာရွက်စာတမ်းများကို ခေါ်သည်။

- documents produced for the inspection of the judge.

- e.g.:
- (a) Medical certificate –Birth certificate, Death certificate, Sickness certificate.
 - (b) Medical notes –Clinical charts.
 - (c) Dying declaration.
 - (d) Dying deposition
 - (e) Medico-legal reports.
 - (f) Scientific report
 - (g) Chemical examiner report.

(3) Conclusive Evidence

Evidence of a fact which the court must take as full proof of it and which excludes all evidence to disprove it.

(4) Direct Evidence (တိုက်ရိုက်သက်သေခံချက်)

Evidence of a fact actually in issue, e.g., a photograph, a prescription form.

(5) Circumstantial Evidence

(6) Real Evidence

Evidence supplied by material objects produced for the inspection of the court.

(7) Extrinsic Evidence

Oral evidence given in connection with written documents.

(8) Hear - Say Evidence (တဆင့်ကြား သက်သေခံချက်)

(9) Indirect evidence circumstantial evidence.

(10) Original evidence

Evidence which has an independent probative force of its own.

(11) Derivative evidence

Evidence which derives its force from some other source.

(12) Parol

Oral, extrinsic evidence

(13) Prima facie

Evidence of a fact which the court must take as proof of such fact unless disprove by further evidence.

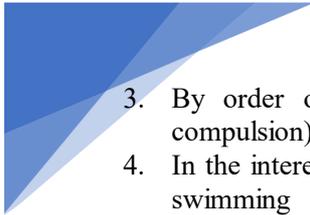
(14) Exhibitive evidence (သက်သေခံပစ္စည်း)

Professional Secrecy

A doctor should not divulge his knowledge gained during doctor patient relationship or during his professional work.

Professional confidences may be broken only under one of the following conditions: -

1. Consent of the patient to disclosure of relevant information. It is wise to obtain a written consent.
2. As a statutory duty laid down by law. Examples are - notification of infectious diseases
 - certification of birth and death
 - industrial diseases
 - narcotic addiction

- 
3. By order of a Court of law (under legal compulsion)
 4. In the interest of the community - Example – swimming pool attendants with infective venereal disease.
 5. To protect doctor's own interest. e.g. – in divorce suit or in departmental enquiries.

Medico-Legal Report

Guidelines in writing a medico-legal report

1. A medico-legal report must be written so that it could be acceptable as evidence in a court of law.
2. The medical officer who had examined the case must write the report.
3. It should be written as soon as possible after the examination of the case.
4. The report should be in simple and clear terms for the information of the law court. It should be brief and concise. Avoid terms such as "about", "nearly" as they indicate inaccuracy.

5. Try to avoid the use of highly medical or technical terms. It would confuse the judges and the lawyers.
6. It is important to record the negative findings as well as the positive ones.
7. Any correction made on the report must be initialed or signed fully and dated by the medical officer who did the correction. Care must be taken to avoid mistakes in the report.
8. The medical opinion given must be based on the facts observed by himself.
It should also be based on the aggregate of findings.
It should not be based on hearsay evidence.

A medico-legal report consists of-

1. Preamble
2. Body / Findings
3. Opinions, Inferences, Conclusion

Crime 38

MYANMAR POLICE

Police 75

APPLICATION FOR MEDICAL REPORT

To

----- surgeon ,

Reference - F.I.R.No. Under Section of Police Station.

Please examine -----sent herewith and record with opinion overleaf as to the
nature and cause of death.
 injury.

Constables -----sent with this report, will identify the corpse
 person

All that is at present known of this case is given below

Name, age, sex, and residence of deceased
or person injured.

Corpse where and when discovered

Supposed date of death or injury

Supposed cause of death or injury and
Nature of weapon.

Marks of identification with location and
description of injuries, if any,

If post-mortem examination considered
necessary and , if so why.

Any other particulars bearing
on the case.

Signature.....

Date200..... Designation and Police station.....

Medico-legal Report of Police Surgeon

No. of Report

Date and Time of Examination

Brought By Police Constable/ Corporal/ Sergeant/ Inspector of Police, La, No. () Police Station

Name of person
 killed
 Injured

.....
Nature and extent of injury.....

.....

Remarks and opinion as to cause of death or injury and nature of weapon used. If patient is alive, whether injury amounts to "grievous" or "simple" hurt and whether inflicted with sharp or blunt weapon.

.....
Date.....200.....
Signature.....
..... Surgeon
.....

Certification of Death and Disposal Procedure

The legal procedure following a death may be summarized as follows:

1. The cause of death must be ascertained and certified by death certificate.
2. Details of the death and of the deceased are recorded by the Registrar of Births and Deaths.
3. The body must be disposed of, by any lawful means, normally burial or cremation.

Death Certificate (Medical Certificate of Cause of Death)

The object of the death certificate is to prevent concealment of crime and to obtain information, for statistical purposes of causes of death in the population.

When may a doctor issue a death certificate?

1. The doctor issuing the death certificate must be a registered medical practitioner.
2. He must have been in attendance during the patient's last illness (usually 14 days).
3. In some cases, when the doctor was attending the deceased regularly and has seen the body after death the certificate may be accepted even though the last attendance was more than 14 days. A doctor who sees the deceased for the first time after death should not issue a certificate.
4. He must know the cause of death.
5. He must be satisfied that the cause of death is a natural one, otherwise if it is a suspicious or unnatural death he must refer it to a hospital for medico-legal post-mortem examination.

Medical Certificate of Cause of Death

(Form – P.H.205-S)

1. For use only by a registered medical practitioner
2. Must have been in attendance during deceased's last illness.
3. Attestation by the doctor that the above-mentioned particulars and cause of death are true to the best of his knowledge and belief.
4. Doctor's signature, qualification etc.
5. The cause of death must be recorded in the correct sequence as described below.
 - I. (a) Immediate cause,
(b) Antecedent cause
(c) Underlying cause
 - II. Contributory cause
e.g. – I. (a) Cerebral haemorrhage,
(b) Hypertension,
(c) Chronic nephritis
II. Chronic bronchitis
6. When stating the cause of death, precise term e.g. cerebral haemorrhage, coronary thrombosis, should be used. Vague terms such

as heart failure, respiratory failure, asphyxia are not acceptable. (mode of dying)

7. "Interval between onset and death" should be mentioned if known,
e.g. I. (a) Shock and haemorrhage x 30 mins
(b) Hematemesis x 5 days
(c) Peptic ulcer x 5 years
8. Underlying cause of death is important and used for statistical compilation.
9. The counterfoil is to be retained by the doctor.

Examples of certain causes of death

1. I. (a) Pneumonia, (b) Urinary tract infection, (c) Criminal abortion
2. I. (a) Pneumonia, (b) Enforced bed rest, (c) Fracture femur
3. I. (a) Pneumonia, (b) Aspiration of vomitus, (c) Surgical operation / Alcoholism
4. I. (a) Pneumonia, (b) Stab wound lung, (c) Stab wound chest
5. I. (a) Pneumonia, (b) Measles
6. I. (a) Cerebral compression, (b) Subdural & Subarachnoid haemorrhage, (c) Fracture skull
7. I. (a) Shock & haemorrhage, (b) Haemothorax, (c) Stab wounds lung
8. I. (a) Shock & haemorrhage, (b) Hemoperitoneum, (c) Stab wound liver
9. I. (a) Shock & haemorrhage, (b) Hematemesis & Malena, (c) Peptic ulcer
10. I. (a) Shock & haemorrhage, (b) Bleeding esophageal varices, (c) Cirrhosis of liver
11. I. (a) Shock & haemorrhage, (b) Hemoptysis, (c) Ca lung \ T.B lung

သေဆုံးမှုပုံစံ
(ဗဟိုစာရင်းအင်းအဖွဲ့သို့ ပို့ရန်)

ပြည်နယ်/တိုင်း ----- ခရိုင် ----- မြို့နယ် ----- ရပ်ကွက်/ ကျေးရွာအုပ်စု ----- မြို့မ <input type="checkbox"/> ကျေးလက် <input type="checkbox"/> မှတ်ပုံတင်စာအုပ်တွင် ထည့်သွင်းသည့်အမှတ်စဉ် ----- မှတ်ပုံတင်သည့် ရက်စွဲ (ဂဏန်းပြင်) -----	ဗဟိုစာရင်းအင်းအဖွဲ့မှစရင်းရန် [] [] [] [] [] [] [] [] [] [] [] [] [] [] [] []
သေဆုံးမှုမှတ်ပုံတင်စာအုပ်၏ သက်ဆိုင်ရာကော်လံတွင် ပြန်လည်ရေးသွင်းရမည့်အကြောင်းအရာ <input type="checkbox"/>	
၁။ သေဆုံးသည့်ရက်စွဲနှင့် နေရာ	
၂။ အမည်	
၃။ ကျား / မ ကျား <input type="checkbox"/> မ <input type="checkbox"/>	
၄။ အသက်	
၅။ အလုပ်အကိုင်	
၆။ လူမျိုး	
၇။ နိုင်ငံသားနှင့်အမှတ်	
၈။ ကိုးကွယ်သည့်ဘာသာ	
၉။ နေရပ်လိပ်စာ (အပြည်အဝှမ်း)	
၁၀။ ပခင်၏အမည်	
၁၁။ မိခင်၏အမည်	
၁၂။ မည်သည့်အကြောင်းကြောင့်သေဆုံးသည် (မှတ်ပုံတင်သရာဝန်နှင့်ကုသ၍ သေဆုံးခဲ့လျှင် နောက်ကျောရှိပုံစံကိုရေးသွင်းပါ)	
၁၃။ တိုင်ကြားသူ၏အမည် (လိပ်စာနှင့် တော်စပ်ပုံ)	
အထက်ပါ အကြောင်းအရာများကို မှန်ကန်စွာဖြည့်စွက်ပြီးလျှင် ဖွားသေမှတ်ပုံတင်စာရင်းကိုင် သည် အောက်ပါအကြောင်းအရာများကို သက်လက်ပေးပြန်ပြီး ထည့်သွင်းရမည်။	
၁။ သေဆုံးသူ၏ အိမ်ထောင်ရေးအခြေအနေ အပျို/လူပျို <input type="checkbox"/> အိမ်ထောင်ရှိ <input type="checkbox"/> အိမ်ထောင်ကွဲ မှုသုံးဖို/မ <input type="checkbox"/> အခြား (ဖော်ပြပါ) <input type="checkbox"/>	
၂။ သေဆုံးသူ မိန်းမဖြစ်လျှင် ကိုယ်ဝန်နှင့် ပတ်သက်သလား မီးဖွားပြီးမှလား (ဟုတ်သည်၊ မဟုတ်၊ မသိ စသည်ဖြင့် ပြောပါ----- (ဟုတ်သည်၊မဟုတ်)---	
၃။ မည်သည့်အကြောင်းကြောင့် သေဆုံးကြောင်း (က) အမည် ထောက်ခံသူ (ခ) အရည်အချင်း သရာဝန် (ကိုယ်တိုင်ကုသ) <input type="checkbox"/> သရာဝန် (ကိုယ်တိုင်မကုသ) <input type="checkbox"/> အခြား (ဖော်ပြပါ) <input type="checkbox"/>	
၄။ အကယ်၍ အသက်တစ်နှစ်အောက်ကလေးသေဆုံးပါက ဖွားစာရင်းအကြောင်းအရာများထည့်သွင်းရန်(သေစာရင်းမှတ်ပုံတင်ကော်လံ ၁၆၊၁၇နှင့်၁၈ထဲ သို့ အောက်ပါအပိုဒ် (က)(ခ)နှင့် (ဂ)ထည့်သွင်းပါ)	
(က) မှတ်ပုံတင်ခဲ့သောနေရာ ----- မြို့နယ် ----- ရပ်ကွက် / ကျေးရွာအုပ်စု ----- (ခ) ဖွားစာရင်းအမှတ်စဉ် ----- (ဂ) မွေးဖွားခြင်းမှတ်ပုံတင်သည့်ရက်စွဲ -----	
လက်မှတ် ----- ဖွားသေမှတ်ပုံတင်စာရင်းကိုင်၏ အမည် ----- ရက်စွဲ / / ရာထူး -----	

MEDICAL CERTIFICATE OF CAUSE OF DEATH

(For office use only)

[To be completed only by a Registered Practitioner WHO HAS BEEN IN ATTENDANCE during the deceased's last illness]

Name of deceased ----- NRC. No.-----

Sex -----Age----- Date of death ----- day of -----20-----

Place of death -----

Last seen alive by me ----- day of -----20-----

IF DECEASED WAS A WOMAN; Death was * associated with pregnancy? Was there a delivery? Yes*

No*

CAUSE OF DEATH		Interval between onset and death
<p style="text-align: center;">I</p> <p>Immediate cause State the disease, injury or complication which caused death, not the mode of dying such as heart failure, asthenia, etc.</p>	<p>(a) ----- due to (or as a consequence of)</p>	<p>-----</p>
<p>Antecedent causes Morbid conditions, if any giving rise to the above cause, stating the underlying condition last.</p>	<p>(b) ----- due to (or as a consequence of)</p>	<p>-----</p>
<p style="text-align: center;">II</p> <p>Other significant conditions Contributing to the death, but not related to the disease or condition causing it.</p>	<p>(c) -----</p> <p>-----</p>	<p>-----</p> <p>-----</p>

I hereby certify that I was in medical attendance during the above-named deceased's last illness, and that the particulars and cause of death written above are true to the best of my knowledge and belief.

Signature -----

Qualification -----

Office Address-----

Date -----

*Strike out

မွေးပုံစံ

(ဗဟိုစာရင်းအင်းအဖွဲ့သို့ပို့ရန်)

ပြည်နယ်/တိုင်း ----- ခရိုင် ----- မြို့နယ် ----- ရပ်ကွက်/ ကျေးရွာအုပ်စု ----- မြို့မ ကျေးလက်	ဗဟိုစာရင်းအင်းအဖွဲ့မှ ရေးသွင်းရန်
မှတ်ပုံတင်စာအုပ်တွင် ထည့်သွင်းသည့်အမှတ်စဉ် မှတ်ပုံတင်သည့် ရက်စွဲ (ဂဏန်းဖြင့်)	
မွေးမှတ်ပုံတင်စာအုပ်၏ သက်ဆိုင်ရာကော်လံတွင် ပြန်လည်ရေးသွင်းရမည့်အကြောင်းအရာ	
၁။ မွေးဖွားမှု အရှင်မွေး အသေမွေး	
၂။ မွေးဖွားသည့်ရက်စွဲနှင့်နေရာ	
၃။ ကလေးအမည်ရှိလျှင်	
၄။ ကျား / မ	
၅။ မခင်အမည်	
၆။ မခင်၏လူမျိုး	
၇။ မခင်၏ နိုင်ငံ့အားနှင့်အမှတ်	
၈။ မခင်၏ ကိုးကွယ်သည့်ဘာသာ	
၉။ မခင်၏ အလုပ်အကိုင်	
၁၀။ မိခင်၏အမည်	
၁၁။ မိခင်၏လူမျိုး	
၁၂။ မိခင်၏ နိုင်ငံ့အားနှင့် အမှတ်	
၁၃။ မိခင်၏ ကိုးကွယ်သည့်ဘာသာ	
၁၄။ မိခင်၏ အလုပ်အကိုင်	
၁၅။ မိခင်၏ နေရပ်လိပ်စာ (အပြည်အဝှံ)	
၁၆။ တိုင်ကြားသူ၏အမည် (လိပ်စာနှင့် ဖော်စပ်ပုံ)	
အထက်ပါ အကြောင်းအရာများကို မှန်ကန်စွာဖြည့်စွက်ပြီးလျှင် ပွားသေမှတ်ပုံတင်စာရင်းကိုင်သည် အောက်ပါအကြောင်းအရာများကို သက်လက်မေးမြန်း ထည့်သွင်းရမည်။	
၁။ မွေးဖွားပုံ အမျိုးအစ ၁ ယောက် ၊ ၂ ဖြာ ၊ ၃ ဖြာ ၊ ၄ ဖြာ အထက်ဖြစ်ပါကဖော်ပြရန်	
၂။ အကယ်၍ ၂ ဖြာ၊ သို့မဟုတ် ၃ ဖြာဖြစ်လျှင် ပ ဖြာ ၊ ၃ ဖြာ ၊ တ ဖြာ (အခြားအခြား အသေမွေးလျှင် အသေမွေးဟုရေးပါ)	
၃။ မွေးဖွားပေးသူ ဆရာဝန် ၊ ဆေးပွားဆရာမ ၊ အရန်ဆေးပွား ၊ ဆင်ဆန်၊ထက်ပြီးလက်သည် ၊ အခြား	
၄။ မိခင်အသက်	
၅။ မွေးစက ကလေး၏ကိုယ်အလေးချိန်၊ ဂရမ်	
၆။ ကိုယ်ဝန်ဆောင်ကာလ ရက်သတ္တပတ်	
၇။ ယခုကလေးမပါဘဲ အရှင်မွေးခဲ့သောကလေးဦးရေ (က) ယခုကလေးမပါဘဲအရှင်မွေးပြီး ယခုတိုင် အသက်ရှင်နေသည့်ဦးရေ (ခ) ယခုကလေးမပါဘဲ အရှင်မွေးပြီးနောက် သေဆုံးသွားသည့် ဦးရေ	
ပွားသေမှတ်ပုံတင်စာရင်းကိုင်၏ လက်မှတ် ----- အမည် ----- ရက်စွဲ / / ရာထူး -----	