**Community Medicine **

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Child health care

Objectives

- By the end of this lecture you will be able to understand the importance of
- Child health care
- Examination of the newborns
- Growth monitoring
- Educating mothers to prevent malnutrition in their children
- The Expanded Program on immunization (EPI)

Preventive services are needed for children for the following reasons:

- **Many causes of morbidity & mortality are avoidable, such as accidents, Sudden infants death syndrome (SIDS), non accidental injuries (intentional), as well as infectious disease which can be prevented by immunization, hygiene and sanitation.**

Child environmental health

- **Existence of socioeconomic gradient : for e.g. in UK the IMR is 5/1000 live births, but if we classify the UK people by socio-economical classes IMR will be found to be lower in high socioeconomic than low socioeconomic classes.**

- **Lack of adequate stimulation in children's environment such as books, toys play with & communication with the family, and access to computers.**
- **Vulnerability of children and their parents during the earlier years of their life (rapid growth , complex development. Being under pressure as in low social class).**

- **Prevention can be primary, secondary or tertiary through many programs: Growth Monitoring, Control of Diarrhoeal diseases, Breast Feeding, Expanded Program of Immunization, Family Planning, Food Fortification and supplementation , Female Education & Control of Acute Respiratory Infections.**

Salt reduction &Iodine fortification

Tow routine medical examination should be carried for every newborn baby:

- **1.The first is the responsibility of the birth attendant (doctor or midwife) in charge of the birth. It is done to detect abnormalities which need immediate treatment, e.g. disorders of respiration, muscle tone, birth injury and obvious congenital malformations. It also includes the measurement of birth weight and the estimation of Apagar score at the 1^{st} and 5^{th} minute after birth.**

- **2.The second part of this examination should be done within the 1st 48 hours after birth by a Pediatrician.**
- **It is much more detailed than the first and includes examination of all systems. All findings should be recorded.**
- **Some countries have a program to screen newborn infants for inborn errors of metabolism called the heal prick test. (e.g. congenital hypothyroidism & phenyl ketonurea).**

Flow chart of optimum newborn care

- Delivery → Normal →regular nursery→ home
- --------→ high risk infant-→ without complication
- (Temporary observation unit →ICU→ special procedures)
- ---→ High risk with complication →ICU→ > special procedures

- **Apgar score, measures 5 signs , each is given a score of 0, 1 or 2 depending on the state of the new born.taken at 1, again at5 minute after birth**
- **The range is between zero which means a dead infant to 10 which is very rare at the first minute. If the Apgar score is less than or equal to 3 at 5 minute this means that the infant is at a higher risk of neonatal death, or of having respiratory and / or cerebral complications during the neonatal period. This neonate should be referred to the neonatal intensive care unit.**

Apgar Score

- It need immediate and careful observation of the heart rate, respiration, muscle tone, reflex response, and color of the infant. Each sign given a score of 0,1,or 2. It provides an estimate of the physical condition of the baby. A perfect score should be 9, or 10. Score 0-3 indicate baby is severely depressed. Score 4-6 modernly depressed. A score <5 need prompt action. Low Apgar score at 5minute at high risk, may lead to death.

Table Apgar score

Sign	0	1	2
Heart rate	Absent	Slow <100	Over 100
Respiratory effort	Absent	Slow irregular	Good crying
Muscle tone	Flaccid	Some flexion of extremities	Active movement
Reflex response	No response	Grimace	Cry
Color	Blue, pale	Body pink extremities blue	Completely pink
Total score = 10	Sever depression 0-3	Mild depression 4-7	No Depression 7-10

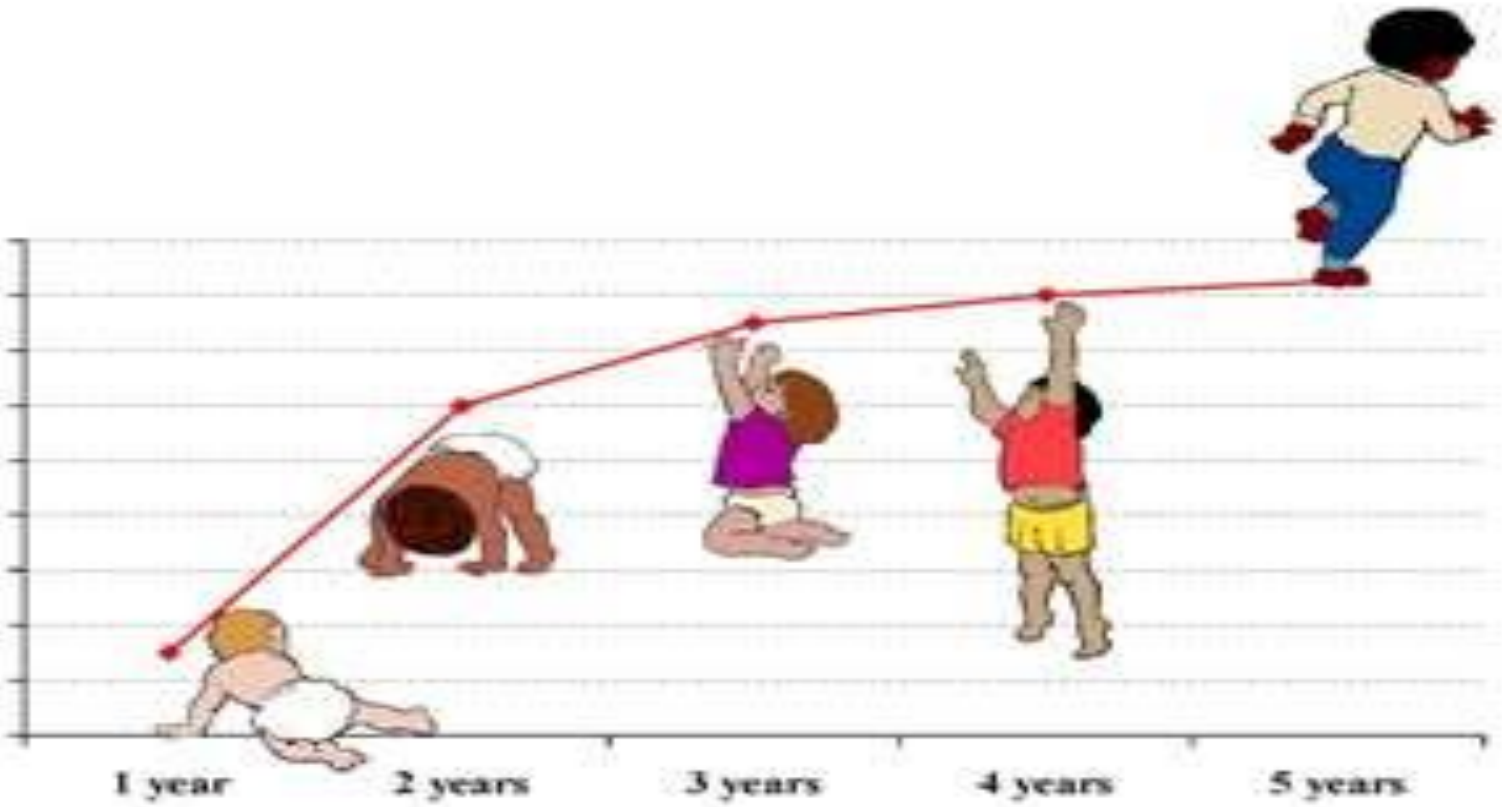

Clinical Trials in
Children

Growth and development

- Growth is increase in physical size of the body and development increase in skills and functions. Both are considered together, in addition to intellectual, emotional and social aspects. Normal growth& development take place only if there is optimal nutrition, absence of infection, freedom of genetic and environmental influences. MCH concerned with process of growth and development which is foundation of human life.

Growth monitoring

- **In the past , standard growth charts of a certain reference population were used to assess the growth of children. Weight and height for boys and girls are available from age 0-18 years. Tow standard populations were used :**
- **1.Tanner population; which is based on data from a Caucasian population from European countries.**


1 year
2 years
3 years
4 years
5 years

- **2.NCHS (National Center for Health Statistics/CDC) population; which is based on data from the USA.**
- **These charts are based on percentile and we can detect if the weight for age of the child is above or below a certain percentile.**

- **They rely on one reading and not sequential reading, so there is no regular follow-up of weight gain.**
- **The reference population is mainly population. With genetic, environmental and nutritional differences.**
- **In developing countries, the age of the child is not precisely known by the mother.**

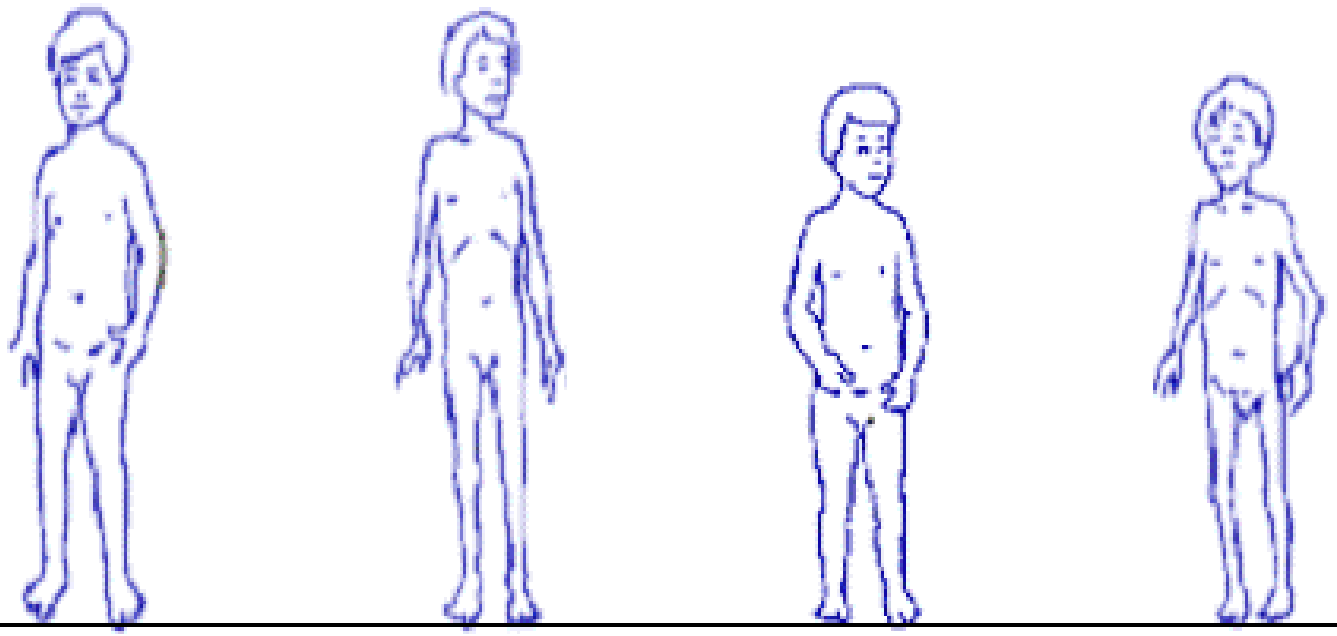
- **So the better alternative way is to use the growth charts for every individual child.**
- **It is a process of sequential measurement of the weight of children under the age of 5 years, in order to detect signs of malnutrition, (growth failure) as early as possible and to correct this failure.**
- **Ideally this process should start soon after birth with the measurement of birth weight and the recording of weight on the growth chart , then this should be done every month.**
- **In Iraq, weight is measured when the child is brought to the center for routine immunization.**

The growth chart

- **The growth or “road –to-health” chart. First designed by David Morley and later modified by WHO. It display of the child’s physical growth & development. It is designed primarily for the longitudinal follow up (growth monitoring of a child). Weight-for-age chart, not take height, because weight most sensitive to growth, and deviation from normal can be detected in comparison with reference population. This chart is easy & inexpensive way of monitoring child weight.**

- The WHO prototype (home-based) growth chart, it has 2 reference curve represents the median (50^{th} percentile) for boys (higher than that of girls). & lower reference curve the 3^{rd} percentile for girls, so the curve used for both sexes. the space between the two (weight channel) called road –to-health. This will include zone of normality for most population, i.e. the weight of 95% of normal healthy children used as reference fall with in this area. If child growing normally, its growth line will be above the 3^{rd} percentile and will run parallel to the road-to-health curve.

- The direction of the growth more important than the position of the dots on the line. Flattening or falling of the child's weight curve signals growth failure, which is the earliest sign of protein-energy malnutrition and may precede clinical sign by weeks or even months. Such a child needs special care. The objective in child care is to keep the child above the 3rd percentile.
- **Uses of growth chart:**
- **Growth monitoring, diagnostic tool, planning & policy making, educational tool, tool of action, evaluation, tool for teaching.**



Normal
Normal weight and height

Wasted
Thinner than normal

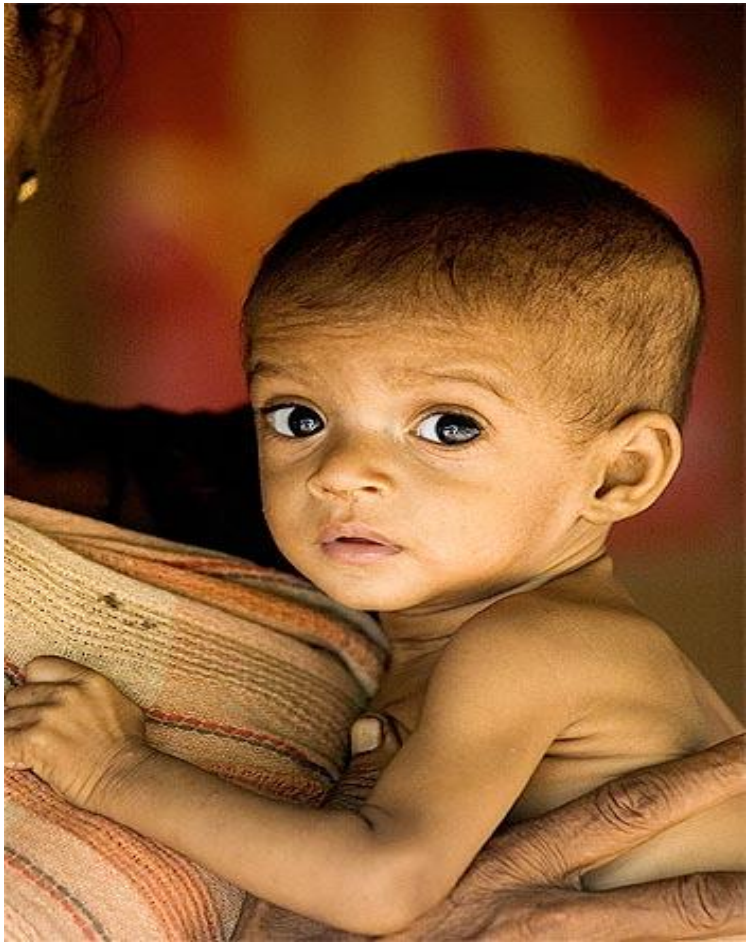
Stunted
Shorter than normal

Wasted and stunted
Thinner and shorter than normal

- **Where weight is best indicator, as it is affected with anything that affects nutrition, appetite, income, psychological, infection.**
- **Birth weight is used as the 1st reading and weight is measured monthly, plotted on the chart and joined by a curve which is called the growth curve.**
- **In normal situation and if the child is gaining weight the curve is up going. A flat curve means no weight gain. A down –going means weight loss. In both of the last situations, this is abnormal and action should be taken.**
- **Malnutrition is a very prevalent problem among under 5 children especially in the developing world. It is estimated that about 190,000,000 U5 children are malnourished all over the world.**

- **Most malnutrition is invisible, and most parents of malnourished children do not know that there is anything wrong. Even health workers can't detect early malnutrition using the reference population weight for age charts.**
- **Only 1-2% of all malnourished children will show signs of clinical malnutrition in the form of marasmus and kwashiorkor which is sever (third degree) malnutrition. This is what is called the Iceberg phenomenon.**
- **Type of malnutrition results from the deficiency of protein and energy, which is called the Iceberg phenomenon.**

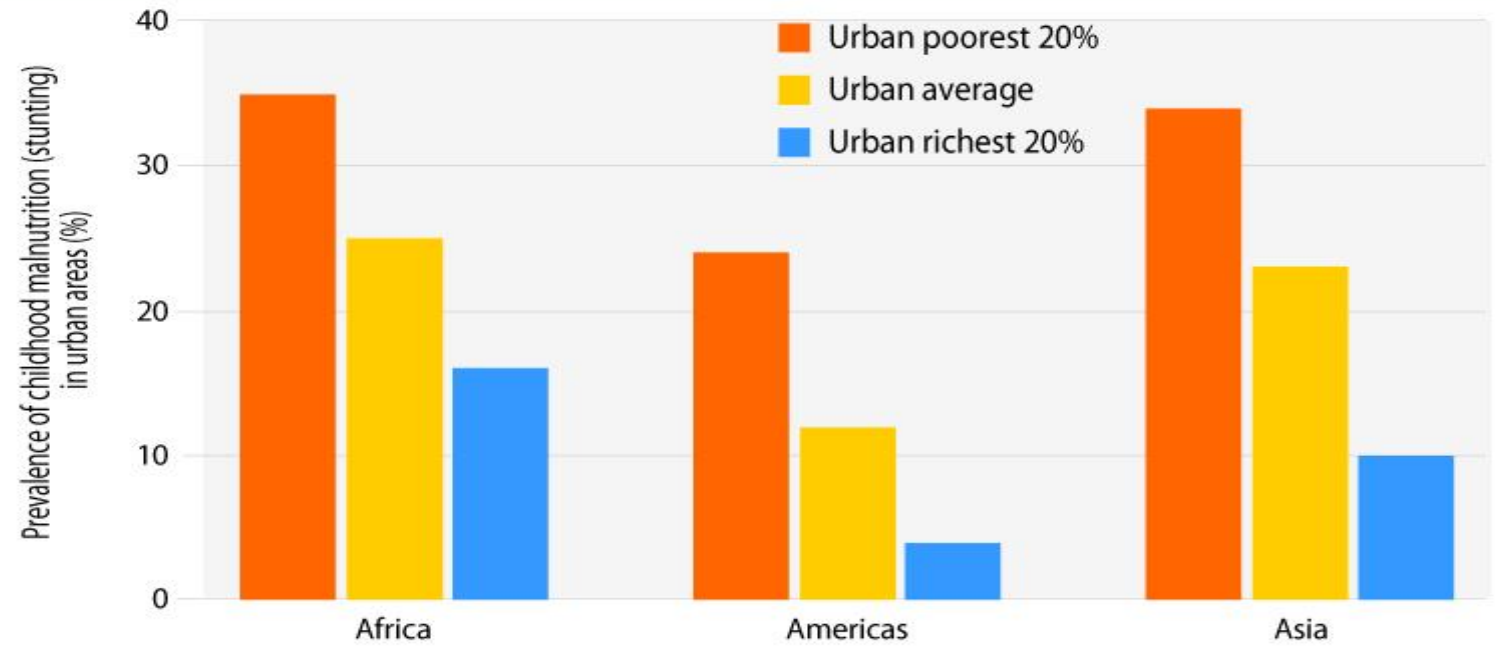
- **Type of malnutrition results from the deficiency of protein and energy, which is called protein energy malnutrition (PEM). Many malnourished children live in homes where there is no absolute shortage of sufficient food or adequate diet.**
- **Repeated infections such as diarrhea where there is loss of appetite and vomiting.**
- **Poor knowledge of mothers of the type of feeding needed by infants and children & incorrect feeding practices.**



- **If the early signs of flattering growth can be made visible to the mother, and if at the same time, she can be made aware of the special nutritional needs of infant and young child, then it would be possible to prevent more than 50% of all child malnutrition in the developing world, even within existing family resources .**

World Health Organization

Prevalence of childhood malnutrition (stunting) by region, in 40 low- and middle-income countries, 2000–2007



Note: These results represent averages of those countries for which urban DHS data were available in 2000–2007 (Africa = 26 countries, Americas = 7 countries, Asia = 7 countries). As such they are not representative of the region as a whole.
Source: WHO calculations based on data from Demographic and Health Surveys (DHS), 1990–2007.

- *Inadequate dietary intake ---→ weight loss, growth faltering , lower immunity and mucosal damage ---→ disease incidence, severity, duration) ---→ appetite loss, malabsorption and altered metabolism -→ *

Message given to the mother to prevent malnutrition in their children:

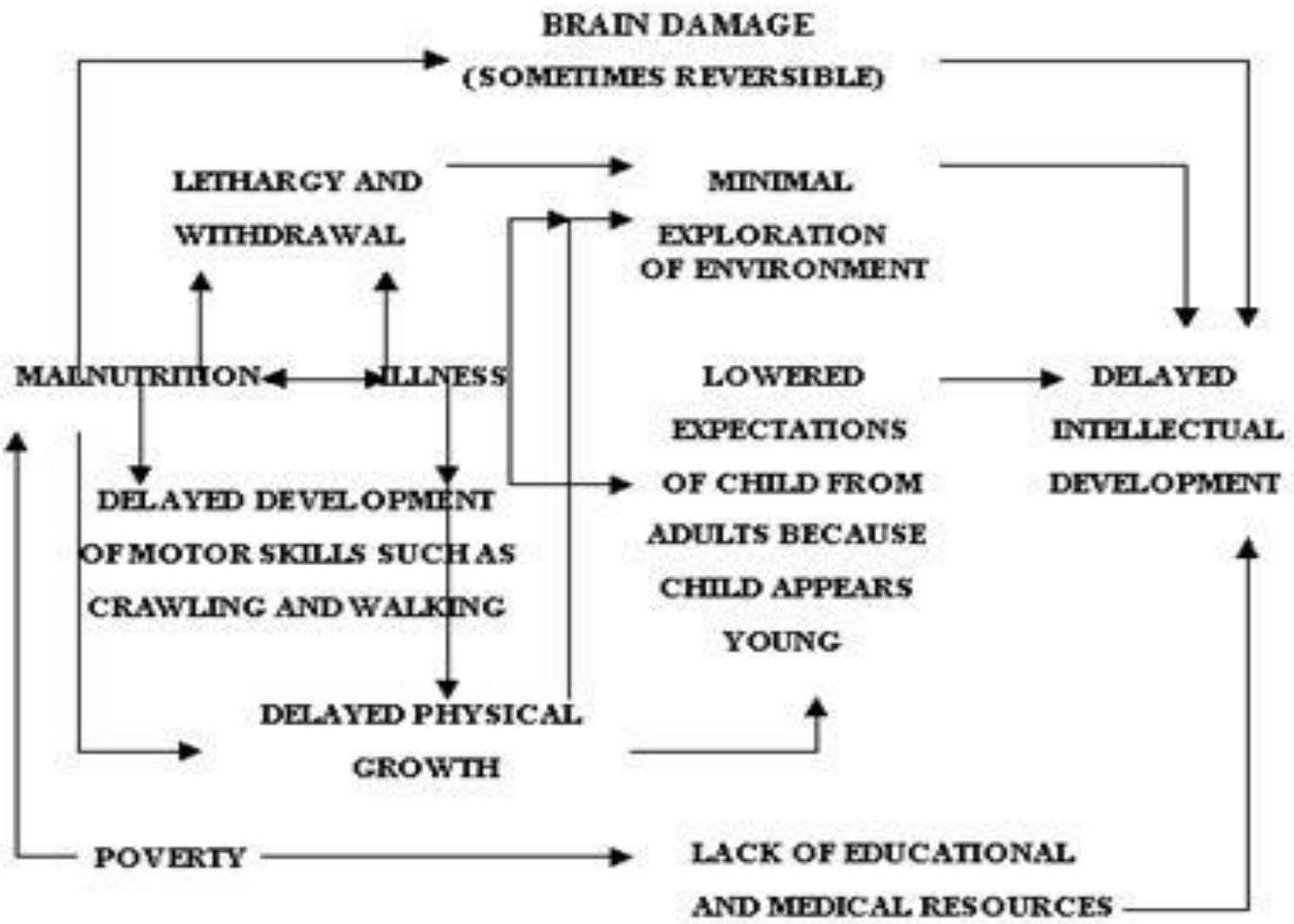
- **Breast feeding : should be exclusive during the first 4-6 months of life. It should also be scheduled according to the demand of the infant and not on a time table at least 8 times during the day , 2-3 of which should be given at night.**
- **When the infant is between 4-6 months old, continue breast feeding and give complementary food such as fruit juice , cereals and vegetable soup 1-2 times / day and until the end of the 6^{th} month of life.**

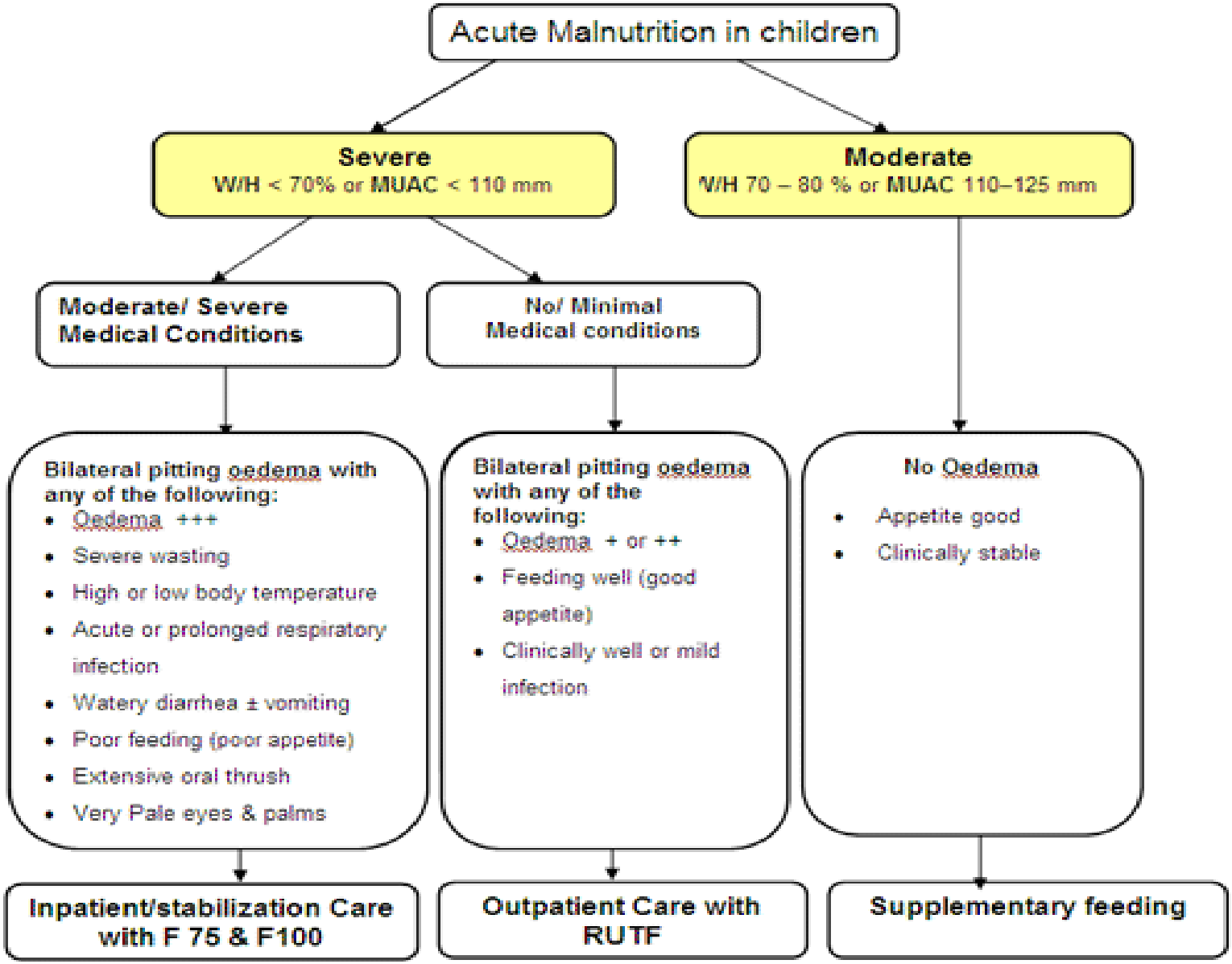
- **Between 6-12 months , continue breast feeding and give complementary food as 5-6 small meals, give more variety and include white and red meat.**
- **Between 12-24 months , continue breast feeding and give complementary food 5-6 small meals including family food.**
- **Between 3-5 years of age , give three main meals from the family food and add 3 small meals.**


Malnutrition
Morbidity ↑
Wound healing ↓
Infections ↑
Complications ↑
Convalescence ↓
Mortality ↑
Treatment ↑
Length of stay in hospital ↑
↑COST
↓QUALITY OF LIFE


100 Piece

- **Add fate and oils to the child's meal to increase energy intake.**
- **Continue feeding during an illness.**
- **Add one extra meal daily after the illness, until growth curves returns to normal up going state.**
- **Active feeding by an adult, from a separate dish not the family dish .**


BRAIN DAMAGE
(SOMETIMES REVERSIBLE)
LETHARGY AND
WITHDRAWAL
MINIMAL
EXPLORATION
OF ENVIRONMENT
MALNUTRITION
ILLNESS
LOWERED
EXPECTATIONS
OF CHILD FROM
ADULTS BECAUSE
CHILD APPEARS
YOUNG
DELAYED
INTELLECTUAL
DEVELOPMENT
DELAYED DEVELOPMENT
OF MOTOR SKILLS SUCH AS
CRAWLING AND WALKING
DELAYED PHYSICAL
GROWTH
POVERTY
LACK OF EDUCATIONAL
AND MEDICAL RESOURCES


Acute Malnutrition in children
Severe
W/H < 70% or MUAC < 110 mm
Moderate
W/H 70 – 80 % or MUAC 110–125 mm
Moderate/ Severe Medical Conditions
No/ Minimal Medical conditions
Bilateral pitting oedema with any of the following:
Oedema +++
Severe wasting
High or low body temperature
Acute or prolonged respiratory infection
Watery diarrhea ± vomiting
Poor feeding (poor appetite)
Extensive oral thrush
Very Pale eyes & palms
Bilateral pitting oedema with any of the following:
Oedema + or ++
Feeding well (good appetite)
Clinically well or mild infection
No Oedema
Appetite good
Clinically stable
Inpatient/stabilization Care with F 75 & F100
Outpatient Care with RUTF
Supplementary feeding

Thank you