Maternal and child health

Child Health

Lecture –5/25–26

Prof Dr Najlaa Fawzi

Objectives :

-Explain MNCH(Maternal Neonatal and Child Health (MNCH)

- Identify objectives and elements of MNCH
- Define IMCI
- Identify the elements of IMCI
- Define and discuss preventive measures for 1-4 death rate
- Define under-five mortality, its causes and its indices.
- List the maternal and child health indicators.


MNCH
Mother
Newborn
Child
Health

Maternal, newborn and child health [MNCH] refers to the integrated continuum of care that delivers tools and treatments to mothers and their infants at critical points, and to children in their first five years of life

Maternal, Newborn, and Child Health (MNCH) focuses on improving health services for women during pregnancy, childbirth, and the postnatal period, alongside the health of newborns and children, particularly to reduce mortality.

Basic actions involve :

- Strengthening health systems
- Improving access to quality care
- Concentrate on malnutrition

Why to develop a MNCH

1-To respond to the health and nutrition needs of women, newborns and children under 5 years old.

2-To improve effectiveness, quality and utilization of the MNCH services

Integrated maternal, newborn, and child health packages

Clinical

REPRODUCTIVE
- Post-abortion care, TOP where legal
- STI case management

CHILDBIRTH CARE
– Emergency obstetric care

– Skilled obstetric care and immediate newborn care (hygiene, warmth, breastfeeding) and resuscitation

– PMTCT

EMERGENCY NEWBORN AND CHILD CARE
- Hospital care of newborn and childhood illness including HIV care
- Extra care of preterm babies including kangaroo mother care
- Emergency care of sick newborns

Outreach/outpatient

REPRODUCTIVE HEALTH CARE
- Family planning
- Prevention and management of STIs and HIV
- Peri-conceptual folic acid

ANTENATAL CARE
- 4-visit focused package
- IPTp and bednets for malaria
- PMTCT

POSTNATAL CARE
- Promotion of healthy behaviours
- Early detection of and referral for illness
- Extra care of LBW babies
- PMTCT for HIV

CHILD HEALTH CARE
- Immunizations, nutrition, e.g. Vitamin A and growth monitoring
- IPTi and bednets for malaria
- Care of children with HIV including cotrimoxazole
- First level assessment and care of childhood illness (IMCI)

Family/community

FAMILY AND COMMUNITY
–Adolescent and pre-pregnancy nutrition

– Education

–Prevention of STIs and HIV

- Counseling and preparation for newborn care, breastfeeding, birth and emergency preparedness

- Where skilled care is not available, consider clean delivery and immediate newborn care including hygiene, warmth and early initiation of breastfeeding

Healthy home care including:
- Newborn care (hygiene, warmth)
- Nutrition including exclusive breastfeeding and appropriate complementary feeding
- Seeking appropriate preventive care
- Danger sign recognition and careseeking for illness
- Oral rehydration salts for prevention of diarrhoea
- Where referral is not available, consider case management for pneumonia, malaria, neonatal sepsis

Intersectoral
Improved living and working conditions – Housing, water and sanitation, and nutrition
Education and empowerment

Pre-pregnancy | Pregnancy | Birth | Newborn/postnatal | Childhood

Objectives of MNCH

- ✓ **Reduce Mortality and Morbidity:** Aiming to bring the global maternal mortality ratio to less than 70 per 100,000 live births by 2030 and ending preventable deaths of newborns and children under 5.

- ✓ **Improve Access to Care:** Ensuring universal access to sexual and reproductive health services, including family planning and antenatal care.

- ✓ **Enhance Quality of Services:** Strengthening health systems to provide quality care during pregnancy, childbirth (e.g., skilled birth attendants), and the postnatal period.

- ✓ **Improve Neonatal and Child Health:** Focusing on the first 28 days of life, preventing preterm births, managing birth asphyxia, and addressing infectious diseases like pneumonia and diarrhoea.

- ✓ **Address Inequities:** Targeting vulnerable populations to reduce health disparities across gender, socioeconomic status, and geography.

- ✓ **Strengthen Health Systems:** Building capacity in health institutions, improving data collection for tracking progress, and ensuring access to essential medicines and vaccines.

What are the elements of the MNCH?

- **Maternal Health:** Care for women during pregnancy, childbirth, and the postnatal period.
- **Newborn Health:** Care for infants within the first 28 days of life.
- **Child Health:** Overall well-being and disease prevention for children from infancy through adolescence through

IMCI(Integrated Management of Childhood Illness),which include:

- ❑ Prevention and management of childhood illness
- ❑ Immunization
- ❑ Nutrition interventions

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Integrated Management of CHILDHOOD ILLNESSES

(IMCI) is a WHO and UNICEF strategy to reduce under-five mortality and morbidity by focusing on the whole child's health.

It improves care for major illnesses (pneumonia, diarrhea, malaria, malnutrition) through better health worker skills, stronger health systems, and improved community practices.

What is IMCI (Integrated Management of Childhood Illness)?

Children brought for medical treatment, especially in the low and middle-income countries, are often suffering from more than one condition.
At the first level of primary health care services, diagnostic supports such as laboratory and radiology services are commonly limited or non-existent.

Health care providers therefore benefit when they can use evidence-based algorithms using history, signs and symptoms to determine the course of management.

This enables them to provide quality care and make the best use of the available resources.

IMCI is an integrated approach to child health that focuses on the well being of the whole child.

Is the best globally adopted child health

plan for management of all children under 5 years of age.

Aims to reduce preventable mortality, minimize illness and disability, and promote healthy growth and development of children under five years of age.

IMCI includes both preventive and curative elements that are implemented by families, communities, and health facilities

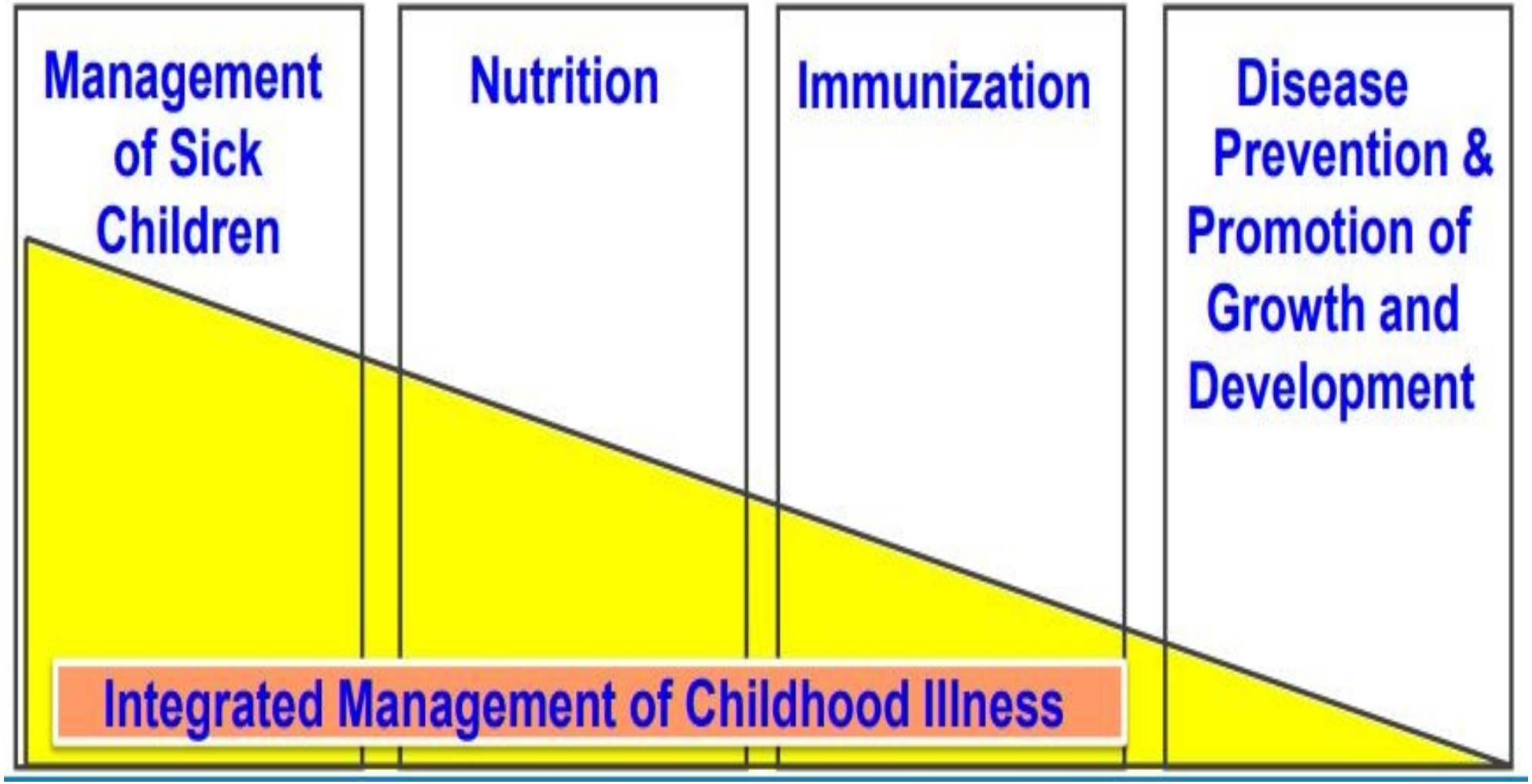
WHY IS IMCI BETTER THAN SINGLE-CONDITION APPROACHES?

IMCI considers each child that is brought to a health service in an all-inclusive way.

The clinical algorithms take into account the variety of conditions that may affect a newborn or child and put them at risk of preventable mortality or impaired growth and development.

By facilitating an integrated assessment and combined treatment of conditions, IMCI focuses on effective case management and prevention of disease, and contributes to healthy growth and development, including through immunization and nutritional and developmental counselling.

childhood development, prevention of illness, and correct implementation and adherence to treatment.


Management of Sick Children
Nutrition
Immunization
Disease Prevention & Promotion of Growth and Development
Integrated Management of Childhood Illness

The IMCI strategy includes three main components:

- **Improving case management skills of healthcare providers**

- **Improving health systems to provide quality care**

- **Improving family and community health practices for health, growth and development.**

Family and community component

Health worker component

IMCI

Health systems component

In health facilities, the IMCI objectives are :

1-Supports the accurate identification of childhood illnesses in outpatient settings

2-Ensures appropriate combined treatment of all major illnesses

3-Strengthens the counselling of caretakers

4-speeds up the referral of severely ill children.

In the home setting, IMCI objectives are:

- ✓**It promotes appropriate care seeking behaviour of parents**
- ✓**Improved nutrition and support for early childhood development**
- ✓**prevention of illness**
- ✓**Correct implementation and adherence to treatment**

IMCI identifies general danger signs that may call for hospitalization of the child and then bases its assessment on the presence of

1-Cough and difficulty breathing

2-Diarrhea

3-Fever

4-Measles

5-Ear infection

6-MaInutrition

The Clinical Process

Health workers follow a systematic Chart Booklet to manage the child:

1-Assess: Check for "General Danger Signs" and main symptoms like cough, diarrhea, fever, and ear problems.

2-Classify: Use a color-coded system (Red: Urgent Referral; Yellow: Specific Treatment; Green: Home Care).

3-Identify Treatment: Determine the appropriate medications or actions.

4-Treat & Counsel: Administer the first dose of drugs and teach the mother how to continue care at home.

5-Follow-up: Schedule return visits to monitor progress.

The Integrated Case Management Process

Check for danger signs

1. Convulsions
2. Lethargy/ unconsciousness
3. Inability to drink/breastfeed
4. Vomiting

Assess main symptoms

1. Cough/difficulty in breathing
2. Diarrhoea
3. Fever
4. Ear problems

Assess

- Nutrition
- Immunization status and
- Potential feeding problems

Check for other problems

Classify the condition of the child and assign to one of the three color codes and Identify the treatment actions as per the actions listed in that color band

Urgent referral

1. Pre – referral treatments
2. Advise parents
3. REFER the child

At the referral facility

1. ETAT
2. Diagnosis, treatment and
3. Monitoring and follow up

Treat at the OPD

1. Treat local infection
2. Give oral drugs
3. Advise and teach mother
4. Follow – up

Home Management

Counsel care taker on how to:

1. Give oral drugs
2. Treat local infections at home
3. Continue feeding
4. Danger signs
5. Follow – up

1. Asses the child for general danger signs and all presenting health problems
2. Classify the child's illness using the colour coded triage system
3. Identify specific treatment needed for the child's classification
4. Treat the child
5. Council the caretaker to resolve any feeding problems found
6. Provide follow-up care

Steps of IMCI

Assess

Assess

- Check for danger signs
- Assess children about other health problem

Classify

Classify

- **Pink :-** pre-referral treatment & referral
- **Yellow:-** specific medical treatment & advice
- **Green :-** simple advice on home management

Identify

Identify

- Specific treatment needs for the child :-
- If home based :- develop integrated treatment plan

IMCI COLOUR CODING

Classification based on a colour-coded triage system

Red – urgent pre-referral treatments and referral

Or pink

Yellow – specific medical treatment and advice

Green – simple advice on home management

Cough or Difficulty of Breathing

SIGNS	CLASSIFY AS	IDENTIFY TREATMENT
•Any general danger sign or •Chest indrawing or Stridor in a clam child	SEVERE PNEUMONIA OR VERY SEVERE DISEASE	•Give first dose of an appropriate antibiotic •Refer URGENTLY to a hospital
Fast breathing	PNEUMONIA	•Give an appropriate oral antibiotic for 5days •Soothe the throat and relieve the cough with a safe remedy •Advise mother when to return immediately •Follow-up in 2days
No signs of pneumonia or very severe disease	NO PNEUMONIA, COUGH OR COLD	If coughing >30days refer for assessment •Soothe the throat and relieve the cough with a safe remedy •Advise mother when to return immediately •Follow-up in 6days if not improving

DIARRHEA

SIGNS	CLASSIFY AS	IDENTIFY TREATMENT (Urgent pre-referral treatments are in bold print)
Two of the following signs: • Lethargic or unconscious • Sunken eyes • Not able to drink or drinking poorly • Skin pinch goes back very slowly	**SEVERE DEHYDRATION**	► If child has no other severe classification - Give fluid for severe dehydration (Plan C). OR If child also has another severe classification: Refer URGENTLY to hospital with mother giving frequent sips of ORS on the way. Advise the mother to continue breastfeeding. ► If child is 2 years or older, and there is cholera in your area, give antibiotic for cholera.
Two of the following signs: • Restless, irritable • Sunken eyes • Drinks eagerly, thirsty • Skin pinch goes back slowly.	**SOME DEHYDRATION**	► Give fluid, Zinc supplements and food for some dehydration (Plan B) ► ***If Child also has a severe classification:*** ***Refer URGENTLY to hospital with mother giving frequent sips of ORS on the way. Advise the mother to continue breastfeeding.*** ► Advise mother when to return immediately. ► Follow-up in 5 days if not improving. ► If confirmed/symptomatic HIV, follow-up in 2 days if not improving.
• Not enough signs to classify as some or severe dehydration	**NO DEHYDRATION**	► Give fluid, Zinc supplements and food to treat diarrhoea at home (Plan A) ► Advise mother when to return immediately. ► *Follow-up in 5 days if not improving.* ► If confirmed/symptomatic HIV, follow-up in 2 days if not improving.

Two of the following signs: • Lethargic or unconscious • Sunken eyes • Not able to drink or drinking poorly • Skin pinch goes back very slowly	**SEVERE DEHYDRATION**
Two of the following signs: • Restless, irritable • Sunken eyes • Drinks eagerly, thirsty • Skin pinch goes back slowly.	**SOME DEHYDRATION**
• Not enough signs to classify as some or severe dehydration	**NO DEHYDRATION**

THEN CHECK FOR ACUTE MALNUTRITION

CHECK FOR ACUTE MALNUTRITION LOOK AND FEEL:

Look for signs of acute malnutrition

- Look for oedema of both feet
- Determine WFH/L*___ z-score.
- Measure MUAC**____ mm in a child 6 months or older

If WFH/L less than -3 z-scores or MUAC less than 115 mm, then:

- Check for any medical complication present:
  - Any general danger signs
  - Any severe classification
  - Pneumonia with chest indrawing
- If no medical complications present:
  - Child is 6 months or older, offer RUTF*** to eat. Is the child:
    Not able to finish RUTF portion?
    Able to finish RUTRF portion?
  - Child is less than 6 months, assess breastfeeding:
    Does the child have a breastfeeding problem?

CLASSIFY NUTRITIONAL STATUS

• Oedema of both feet OR • WFH-L less than -3 z-scores or MUAC less than 115 mm AND any one of the following: ○ Medical complication present or ○ Not able to finish RUTF or ○ Breastfeeding problem	***Pink :*** **COMPLICATED SEVERE ACUTE MALNUTRITION**	➢ ***Give first dose appropriate antibiotic*** ➢ ***Treat the child to prevent low blood sugar*** ➢ ***Keep the child warm*** ➢ ***Refer URGENTLY to a hospital***
• WFH/L less than -3 z-score **OR** • MUAC less than 115 mm **AND** • Able to finish RUTF	***Yellow:*** **UNCOMPLICATED SEVERE ACUTE MALNUTRITION**	➢ Give oral antibiotics for 5 days ➢ Give ready-to-use therapeutic food for a child aged 6 months or more ➢ Counsel the mother on how to feed the child ➢ Assess for possible TB infection ➢ Advise mother when to return immediately ➢ Follow up in 7 days
• WFH/L between -3 and -2 z-scores **OR** • MUAC 115 up to 125 mm	***Yellow:*** **MODERATE ACUTE MALNUTRITION**	➢ Assess the child's feeding and counsel the mother on the feeding recommendations ➢ If feeding problem, follow up in 7 days ➢ Assess for possible TB infection ➢ Advise mother when to return immediately ➢ Follow up in 30 days
• WFH/L -2 z-scores or more **OR** • MUAC 125 mm or more	***Green :*** **NO ACUTE MALNUTRITION**	➢ If child is less than 2 years old, assess the child's feeding and counsel the mother on feeding according to the feeding recommendations ➢ If feeding problem, follow up in 7 days.

**WFH/L is Weight-for-Height or Weight-for-Length determined by using the WHO growth standards charts.*
*** MUAC is Mid-Upper Arm Circumference measured using MUAC tape in all children 6 months or older.*
****RUTF is Ready-to-Use Therapeutic Food for conducting the appetite test and feeding children with severe acute malnutrition.*

CLASSIFY CHILD EAR PROBLEM

SIGNS	CLASSIFY AS
• Tender swelling behind the ear	**MASTOIDITIS**
• Pus seen draining from the ear or • discharge is reported for less than 14 days or • Ear pain	**ACUTE EAR INFECTION**
• Pus is seen draining from the ear or • discharge is reported for more than 14 days	**CHRONIC EAR INFECTION**
• No ear pain and • No pus seen or reported draining from the ear	**NO EAR INFECTION**

1 – 4-year Mortality

Definition: The probability of a child who has survived to age one dying before reaching age five.

In global health and statistics, one to four mortality typically refers to the probability or rate of children dying between their first and fifth birthdays.

It is a critical component of the "under-five mortality" indicator, specifically isolating the survival risks faced by toddlers and preschool-aged children after they have survived the high-risk infancy period

While often grouped with infant mortality (under 1 year), the 1–4 age group is measured separately to assess the impact of different environmental and health factors.

1 - 4-year Mortality Rate

$$\text{1- 4 MR} = \frac{\text{No. of deaths of children aged 1-4 years during a year}}{\text{Total no. of children aged 1-4Y at the middle of the year}} \times 1000$$

- Mid-year estimated population means population counted on the 1st of July

- **This rate reflects the main environmental factors affecting the child health, such as nutrition, sanitation, communicable diseases and accidents around the home.**

- **It is more advanced indicator of social situation of country than IMR .**

- **25 times higher in developing countries compared to developed countries.**

Leading Causes of Death

The causes of death for this age group vary significantly by region and economic status.

The causes of death for children aged 1–4 differ significantly from those in the neonatal period (first 28 days), shifting from birth-related complications to infectious diseases and external injuries.

- **Infectious Diseases:** **Major killers include pneumonia, diarrhea, and malaria**

  WHO data indicates pneumonia alone kills about 700,000 young children annually.

- **Malnutrition:** **Underlying undernutrition is a factor in nearly 45% of all child deaths**
- **External Causes:** **In many regions, injuries such as drowning, transport accidents, and accidental poisonings become more prominent as children become more mobile.**
- **Non-Communicable Diseases:** **In higher-income countries, causes like childhood cancer, congenital anomalies, and heart defects represent a larger proportion of total deaths.**

Preventive Measures

The vast majority of deaths in the 1–4 age group are preventable through low-cost, high-impact interventions.

- **Immunization:** Vaccinations against diseases like measles, pneumonia, and meningitis are critical for survival.

- **Environmental Health:** Access to clean drinking water, improved sanitation, and reducing indoor air pollution from fuels can significantly lower the risk of respiratory and diarrheal diseases.

- **Nutrition:** Sustained breastfeeding, vitamin A supplementation, and adequate complementary feeding strengthen a child's ability to survive illness.

Under-five mortality (child Death)

Child mortality, also known as under-5 mortality or child death, refers to the death of infants and children under the age of five years.

Definition: The probability of a child born in a specific year dying before reaching age five, expressed as a rate per 1,000 live births.

- **In 2023, 4.8 million children under 5 years of age died. This translates to 13,100 children under the age of 5 dying every day in 2023.**

Over 80% of the under-five deaths are due to neonatal conditions and infectious diseases like pneumonia, diarrhea, malaria, measles and meningitis, often compounded by malnutrition.

PROTECTING CHILDREN FROM THE ENVIRONMENT

Each year 1.7 million deaths of children under 5 are linked to the environment.

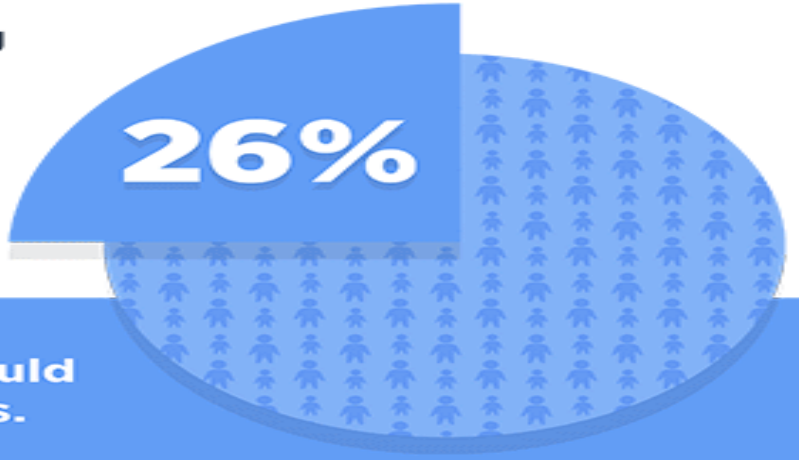
570,000 deaths — Respiratory infections, including pneumonia

360,000 deaths — Diarrhoea

270,000 deaths — Neonatal conditions, including prematurity

200,000 deaths — Unintentional injuries, such as burns, drowning

200,000 deaths — Malaria



World Health Organization

Reducing environmental risks could prevent a quarter of these deaths.

Under 5 Mortality Rate

$$U5MR = \frac{\text{Number of deaths of < 5 years of age in a given year}}{\text{Total number of live births in the same year}} \times 1000$$

The leading causes of death among children under five are :

1-Preterm birth complications
2-Pneumonia
3-Intrapartum-related complications
4-Diarrhea
5-Congenital abnormalities.
6-Nutritional deficiency Problems include

- ✓**Malnutrition**
- ✓ **Vitamin A Deficiency**
- ✓**Iron Deficiency**
- ✓**Low Birth Weight**

Why use the U5MR as the single most important indicator of the state of the world's children?

For the following reasons

1-Comprehensive Health Reflection: **It reflects nutritional health, immunization levels, mother's health knowledge, and access to critical services like ORT, antenatal care, and safe sanitation.**

2-Sensitive to Development: It serves as a, if not the, primary indicator of a country's overall socioeconomic progress, poverty levels, and environmental factors.

3-Reflects Inequality: U5MR is a strong indicator of disparities in health access and social welfare within and between countries.

4-Global Standard: It is a key measured for monitoring progress toward international goals, such as the Sustainable Development Goals (SDG 3.2.1), which aim to end preventable child deaths.

Child Survival Index

Refers to a metric used to measure the probability of a child surviving to a certain age, most commonly 5 years. It is typically calculated as the inverse or complement of the Child Mortality Rate

$$CSR = \frac{1000 - \text{under 5 mortality rate}}{10}$$

This figure shows the percentage of those who survive to the age of 5 years.

U5MR of Iraq in 2006 = 39/1000 live births

CSR = 1000 –39/10 = 96.1%

- **Child Survival Index points towards the need for preventive services through:**

1. Breast feeding
2. Adequate nutrition
3. Clean water
4. Immunization
5. Oral Rehydration Therapy
6. Birth spacing

What are health indicators?

- **A health indicator is a measure designed to summarize information about a given priority topic in population health or health system performance.**

- **They provide comparable and actionable information across different geographic, organizational or administrative boundaries and/or can track progress over time.**

- **Maternal and Child Health (MCH) indicators are essential metrics used to monitor and evaluate the well-being of mothers and children. They are typically categorized into mortality, morbidity, and service coverage.**

1. Maternal Health Indicators

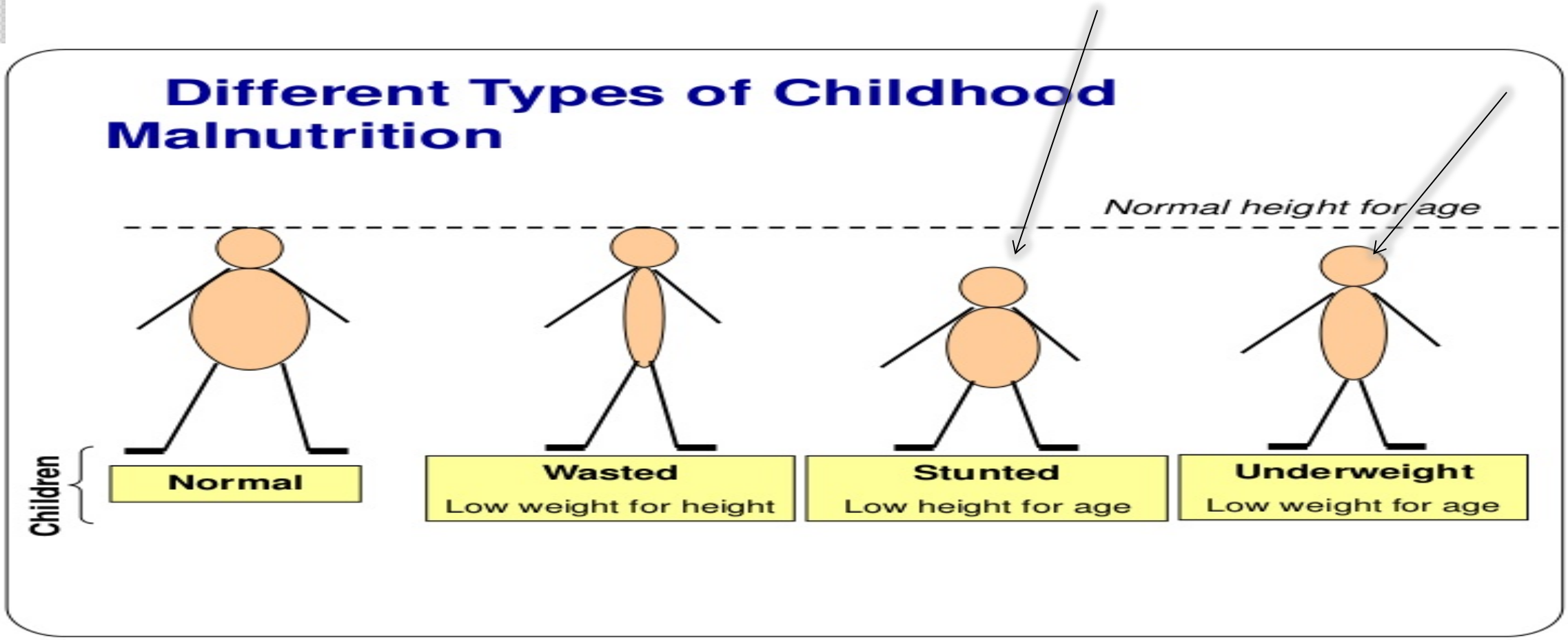
These measures focus on the health of women during pregnancy, childbirth, and the postpartum period

- **Maternal Mortality Ratio (MMR)**
- **Maternal Mortality Rate**
- **Antenatal Care (ANC) Coverage: Percentage of pregnant women who attended at least four (or eight) WHO recommended prenatal visits.**
- **Skilled Attendance at Birth: Percentage of births attended by trained health personnel.**
- **Severe Maternal Morbidity: Rates of life-threatening complications during labor and delivery.**
- **Postpartum Hemorrhage: Incidence of heavy bleeding after birth, a leading cause of maternal death.**

2. Child Health Indicators

These indicators track the survival and physical development of children from birth through age five.

- **Infant Mortality Rate (IMR)**
- **Neonatal Mortality Rate (NMR)**
- **Under-Five Mortality Rate (U5MR)**
- **Low Birthweight: Percentage of live births weighing less than 2,500 grams.**
- **Nutritional Status: Includes rates of stunting (low height-for-age) and underweight (low weight-for-age).**
- **Immunization Coverage: Percentage of children receiving essential vaccines (e.g., DTP3, Measles, BCG).**


Different Types of Childhood Malnutrition
Normal height for age
Children
Normal
Wasted
Low weight for height
Stunted
Low height for age
Underweight
Low weight for age

3. System & Reproductive Health Indicators

These measure access to care and family health.

- **Modern Contraceptive Prevalence:** Percentage of women using modern family planning methods.
- **Adolescent Birth Rate:** Number of births per 1,000 women aged 15–19.
- **Exclusive Breastfeeding Rate:** Percentage of infants under six months old who are exclusively breastfed.
- **C-sections as a percentage of all births in the population**

CESAREAN SECTION DELIVERY RATE is the total number of cesarean deliveries among woman divided by the total number of deliveries for a specified geographical area during a specified time period per 100 live births.

Purpose:

1-The proportion of CS conducted at the population level is proposed to reflect the accessibility and utilization of services and the functionality of the health system

2-It can serve as a proxy for policy-makers and governments in assessing progress in maternal and infant health and in monitoring emergency obstetric care and resource utilization

3-The appropriate use of a CS leads to a decrease in maternal mortality and morbidity, as well as a decrease in perinatal morbidity and mortality

While WHO has in the past proposed an "ideal rate" for CS of between 10% and 15% ,more recent recommendations propose that the preferred level set needs to be locally informed by the epidemiological/ demographic pattern in respective countries.

Rates above 15% suggest overuse of the procedure for non-emergency reasons.

(WHO),state that caesarean section use continues to rise globally, now accounting for more than 1 in 5 (21%) of all childbirths.

This number is set to continue increasing over the coming decade, with nearly a third (29%) of all births likely to take place by caesarean section by 2030

CS rate in Iraq is high and rising, with reports indicating it reached between 35% and 38.6% by 2018-2019.

This rate is far exceeding the WHO recommended 10%–15% optimal rate. Some studies in specific medical centers have reported rates as high as 56.95%.

Any Question ?

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