Training Manual for Participants

Reproductive, Maternal, Neonatal and Child Healthcare (RMNCH)

Khyber Pakhtunkhwa – Human Capital Investment Project (KP-HCIP) Health Department

ADAPTED FROM THE GUIDELINES OF PCPNC & IMNCI

Activity:	Reproductive, Maternal, Neonatal and Child Healthcare (RMNCH)
Project Name:	Khyber Pakhtunkhwa Human Capital Investment Project (KP-HCIP)
Sponsored by:	World Bank
Implemented by:	Department of Health, Khyber Pakhtunkhwa, Pakistan

Map of Pakistan

Source: PDHS 2018 survey

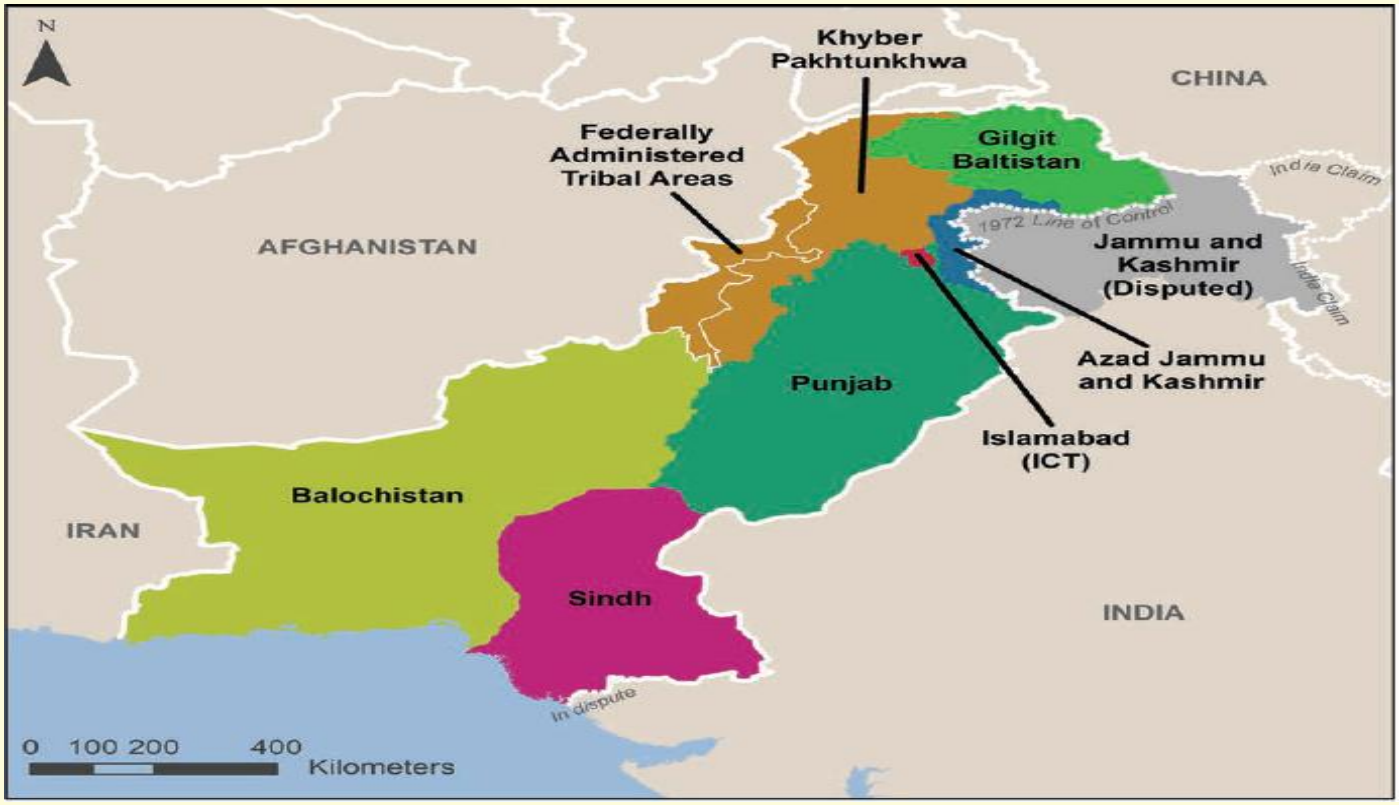
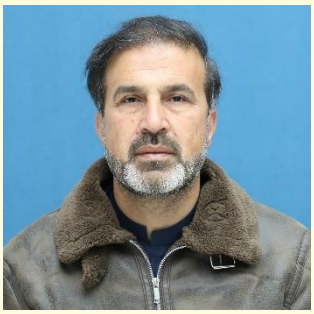


TABLE OF CONTENTS

Acronyms:

ANC	Antenatal care
APH	Ante partum Hemorrhage
BMI	Body mass index
CHW	Community health worker
CMW	Community midwife
HMIS	Health Management Information System
IDA	Iron deficiency anemia
IFA	Iron and folic acid
IMR	Infant Mortality Rate
LBW	Low birth weight
LHV	Lady Health Visitor
LHW	Lady Health Worker
MDGs	Millennium Developmental Goals
MHS	Maternal Nutrition Strategy
MMR	Maternal Mortality Ratio
RMNCH	Reproductive, Maternal, newborn and child health
MoNHSR&C	Ministry of National Health Services, Regulations and Coordination
MUAC	Mid-upper arm circumference
NMR	Neonate Mortality Rate
NNS	National Nutrition Survey
PANS	Pakistan Adolescent Nutrition Strategy
PDHS	Pakistan Demographic Health Survey
PPH	Postpartum Hemorrhage
PSBI	Possible Serious Bacterial Infection
PNC	Postnatal care PPC Preconception care
RMNCAH	Reproductive, maternal, newborn, child and adolescent health
SDGs	Sustainable Development Goals
UNICEF	United Nations Children's Fund WASH
WHO	World Health Organization

MESSAGE FROM HEALTH MINISTER



The Khyber Pakhtunkhwa Department of Health (DoH) is dedicated to achieve Universal Health Coverage (UHC) for the people of province particularly in line with the Sustainable Development Goals (SDGs). Recognizing the importance of maternal and child health (MCH), the department prioritizes improving maternal and newborn health indicators. To support this initiative, the Khyber Pakhtunkhwa Human Capital Investment Project has developed the Reproductive, Maternal, Newborn, and Child Health (RMNCH) module and training package. These resources will be vital for healthcare providers, aligning with the Pregnancy, Childbirth, Postpartum and Newborn Care (PCPNC) and Integrated Management of Neonatal and Childhood Illnesses (IMNCI) guidelines.

The RMNCH guidelines uniquely cover the entire continuum of care, from pregnancy through postpartum care, early neonatal care and care of child till 5 years of age, offering comprehensive guidance for healthcare providers. Accompanying the guidelines is a detailed training package that includes task sheets for facilitators and trainees, ensuring high-quality training and improved care for mothers and newborns. The KP-DoH extends its gratitude to the World Bank Pakistan for its support in developing this training module and appreciates the collaborative efforts made to engage stakeholders.

The Ministry also recognizes the significant contributions of technical consultants and all stakeholders from both public and private sectors who participated in the consultative process. Acknowledgment goes to the dedicated team of KP-HCIP for their hard work in drafting and finalizing the module. The Ministry encourages clinicians, public health professionals, and community workers to utilize these guidelines to enhance the delivery of Pregnancy, Childbirth, Postpartum, and Newborn Care services throughout the country.

MR. IHTISHAM ALI

Health Minister, Khyber Pakhtunkhwa

MESSAGE FROM SECRETARY HEALTH

As we embark on the Human Capital Investment Project in Khyber Pakhtunkhwa, I am excited to emphasize the vital role that health plays in our community's overall development. This initiative is not just about improving healthcare systems; it's about investing in the most valuable resource we have: our people. A healthy population is the cornerstone of a prosperous society, and through this project, we aim to empower individuals and families with the tools they need to thrive.

This training manual is designed to equip you with the knowledge and skills necessary to implement this project effectively. It encompasses the best practices, innovative strategies, and evidence-based approaches to enhance our health services. By utilizing this manual, we can ensure that every citizen in Khyber Pakhtunkhwa receives the quality care they deserve, ultimately leading to improved health outcomes and enhanced economic stability.

I urge each of you to play your valuable role towards people’s health. Together, we can create a healthier, more resilient Khyber Pakhtunkhwa. Your dedication and hard work are essential in transforming our vision into reality. Let us move forward with purpose and determination to make this project a success.

MR. ADIL SHAH

Secretary Health, Khyber Pakhtunkhwa

MESSAGE FROM DIRECTOR GENERAL HEALTH SERVICES

I would like to take a moment to highlight the recent developments in our ongoing efforts to achieve Universal Health Coverage (UHC) in Khyber Pakhtunkhwa, particularly in the realm of maternal and child health (MCH). The Khyber Pakhtunkhwa Department of Health has always prioritized the enhancement of maternal and newborn health indicators and to support this initiative, I had full support to develop the Reproductive, Maternal, Newborn, and Child Health (RMNCH) module and training package. These resources are designed to align with the Pregnancy, Childbirth, Postpartum, and Newborn Care (PCPNC) and Integrated Management of Neonatal and Childhood Illnesses (IMNCI) guidelines, ensuring comprehensive support for healthcare providers.

The RMNCH guidelines encompass the entire continuum of care, offering essential guidance from pregnancy through postpartum and early neonatal care, all the way to the care of children up to five years of age. Accompanying these guidelines is a detailed training package, aimed at delivering high-quality training and improved care for mothers and newborns. We extend our sincere gratitude to the World Bank Pakistan for their invaluable support in this endeavor as well as to the technical consultants and stakeholders from both the public and private sectors who contributed to the consultative process. I encourage you to promote the use of these guidelines among primary healthcare workers, public health professionals and community workers to enhance the delivery of essential services across the region.

DR MOHAMMAD SALEEM

Director General Health Services, Khyber Pakhtunkhwa

MESSAGE FROM PROJECT DIRECTOR

As the Project Director of the Khyber Pakhtunkhwa Human Capital Investment Project (KPHCIP), I am pleased to outline our ambitious goals and objectives, which are fundamental to transforming our healthcare landscape. Our project aims to strengthen primary and secondary health care facilities and establish robust referral systems throughout the continuum of care. By focusing on the utilization of Primary Health Care (PHC) as the first point of entry, we are committed to ensuring that essential health services are accessible to everyone, particularly women and children. Our HCIP team is dedicated to enhance the competencies of PHC service providers through targeted training using standardized clinical protocols. Strengthening governance and regulatory mechanisms will support the provincial government in adopting the necessary policies and guidelines for effective service delivery.

I am pleased to introduce this training module on Reproductive, Maternal, Newborn, and Child Health (RMNCH), developed with the support of the World Bank. This module is designed to equip healthcare providers with the essential knowledge and skills to deliver high-quality care in alignment with the Pregnancy, Childbirth, Postpartum and Newborn Care (PCPNC) and Integrated Management of Neonatal and Childhood Illnesses (IMNCI) guidelines. By enhancing your understanding and capabilities in RMNCH, we aim to significantly improve health outcomes for mothers and children in our communities. Your commitment to implementing these guidelines will be instrumental in fostering a healthier future for all.

DR. IKRAM

Project Director,

Human Capital Investment Project

MESSAGE FROM DEPUTY PROJECT DIRECTOR

The Khyber Pakhtunkhwa Health Capital Investment Project (KP-HCIP) is dedicated to advancing healthcare services throughout the region, ensuring that every community has access to quality care as envisaged in Universal Health Coverage (UHC). This initiative is the result of a remarkable collaboration among the Khyber Pakhtunkhwa Government, the Health Department, development partners, UN agencies, and dedicated delegates from various levels of health facilities. Together with the tireless efforts of the KP HCIP team, we are proud to present a comprehensive training module on Reproductive, Maternal, Neonatal and Child Health Care (RMNCH) tailored to enhance the skills and knowledge of our healthcare professionals.

This meticulously developed training module address the proper management of maternal and child health issues as per PCPNC and IMNCI guidelines respectively. By focusing on key areas identified in the Essential Health Services Package (EHSP) and aligning with the Minimum Service Delivery Standards (MSDS) of the Health Care Commission KP for primary care, this module aims to empower healthcare professionals with the necessary knowledge, skills, and commitment to deliver high-quality maternal and child healthcare services. We believe that this training resource will not only enhance individual competencies but also foster a culture of excellence within the healthcare system.

We extend our deepest gratitude to all stakeholders involved in the development and finalization of this module. Your unwavering commitment, collaborative spirit and expertise have been instrumental in shaping this RMNCH training module, which will play a crucial role for improving maternal and child healthcare in Khyber Pakhtunkhwa. We look forward to continued partnerships that will enhance the quality of care across the region. Thank you for your dedication and support in this vital endeavor.

DR. Qadir Shah
Deputy Project Director,
Human Capital Investment Project

EXECUTIVE SUMMARY

In recent times there has been considerable focus on Maternal and Child Health (MCH) as it remains a critical global priority, reflecting deep disparities between high and low-income countries [1]. While progress has been made in reducing maternal and child mortality rates, over 800 women still die each day due to preventable pregnancy-related complications, and millions of children, especially in low-resource settings, die from diseases such as pneumonia, diarrhea, and malaria [2]. Sub-Saharan Africa and South Asia face the highest burden of maternal and child mortality. Global initiatives like the Sustainable Development Goals (SDGs) and interventions such as improved access to vaccines, antenatal care, and family planning have helped, but significant challenges persist, particularly in fragile healthcare systems [2].

Efforts to improve maternal and child health worldwide emphasize the need for stronger healthcare systems, education, and empowerment of women. Investment in healthcare infrastructure, skilled birth attendants, and access to essential services like immunizations and nutrition programs is crucial. The COVID-19 pandemic further complicated these challenges, disrupting healthcare services and threatening decades of progress. Sustained commitment to improving healthcare access and addressing the social determinants of health is essential to achieving lasting improvements in maternal and child well-being globally [3].

In Pakistan, maternal and child health faces significant challenges, with high maternal and infant mortality rates compared to global averages. Maternal mortality remains a pressing issue, primarily due to inadequate access to skilled birth attendants, insufficient prenatal care and a lack of emergency obstetric services in rural areas [4]. Infant and child mortality rates are also high, driven by malnutrition, diarrhea, pneumonia and infectious diseases [4]. The child morbidity and mortality situation in Khyber Pakhtunkhwa province remains a significant public health challenge. High rates of infectious diseases, malnutrition and limited access to healthcare contribute to the province’s alarming child mortality rates as compared to other regions of the country. Factors such as inadequate vaccination coverage, poor maternal health services and socio-economic disparities exacerbate the vulnerability of children. Additionally, recurrent natural disasters and conflict have disrupted healthcare services, further impacting child health outcomes.

ACKNOWLEDGEMENTS:

This manual is developed under the Human Capital Investment Project (HCIP), a World Bank funded initiative aimed at improving human development outcomes in Khyber Pakhtunkhwa Province of Pakistan. The main focus is to address key challenges in health, education, and social protection.

We acknowledge the support of our partners and organizations that contributed valuable resources, knowledge and training materials to this initiative. Your insights have enriched the RMNCH training module, ensuring it meets the highest standards of quality and relevance. Together, we are making significant efforts toward improving health outcomes, fostering a healthier future for the communities of Khyber Pakhtunkhwa. Thank you for your support to this vital cause.

We would like to extend our heartfelt acknowledgement to the World Bank team for their unwavering support and guidance throughout the development of this manual. Their expertise and commitment have been instrumental in shaping the Khyber Pakhtunkhwa Human Capital Investment Project (KP-HCIP) and ensuring its alignment with global best practices. The collaborative efforts between our teams have not only enhanced the quality of the RMNCH training module but also underscored the importance of partnership in addressing the complex challenges faced by the health sector in Khyber Pakhtunkhwa.

TRAINING MATERIAL:

- This training module along with participant's handouts booklet will be provided to each participant (both hard and soft copies) containing all the necessary information for future reference.

How to Use this manual?

This training manual aims to improve the knowledge and awareness about maternal and child health situation in Pakistan. It is intended to serve as a reference guide for trainees with background experience in Primary Health Care system.

The Objectives of this Training are:

1. *Enhance Quality of Primary Healthcare Services:* Improve the delivery of essential healthcare services at primary healthcare centers by providing necessary health supplies, and technical assistance with a focus on antenatal, delivery and postnatal care and efficient referrals to ensure better mother and child health, as well as immunization, nutrition and family planning.
2. *Strengthening Human Resources for Health:* Build the capacity of healthcare providers in selected districts through training programs, distance learning and refresher courses.

Expected Outcomes

At the end of the training on Reproductive, Maternal, Neonatal and Child Health (RMNCH), participants are expected to demonstrate enhanced knowledge and practical skills required for antenatal care, care during delivery, postpartum and child care. They will be equipped to identify and address common health issues affecting mothers and children, implement evidence-based practices, and effectively communicate with local communities about health promotion and disease prevention. Ultimately, the main aim of this training is to produce a skilled workforce to improve health outcomes and ensuring the well-being of mothers and children in their communities.

CHAPTER ONE

Overview of Maternal and Child Health in Pakistan

Chapter One

Status of Maternal and Child Health in Pakistan

Key Facts:

The provision of health services to the vast population has steadily improved in the last few decades but still faces many challenges in strengthening health systems and providing an equitable service to all especially the most vulnerable groups in community. The health indicators for example maternal and child health parameters are low when compared to other regional countries such as Iran, Sri Lanka and Bangladesh. As per Pakistan's last (2017-18) Demographic Health Survey (PDHS) [5], some of the key facts are:

- In Pakistan, an estimated 66% of the deliveries are occurring in healthcare facilities. PDHS Survey findings show 69% deliveries were attended by skilled birth attendants.
- Only half (51%) of women had 4 or more Antenatal visits.
- Pakistan maternal mortality ratio (MMR) is 186/100,000 live births.
- Pakistan's SDG's target to decrease MMR by 2030 is 70/100,000 live births
- Pakistan's neonatal mortality rate (NMR) is 42/1000 live births.
- Pakistan's infant mortality rate (IMR) is 62/1000 live births
- Pakistan's under 5 years age mortality is 74/1000 live births
- The SDGs target to decrease NMR and under 5 year mortality by 2030 is 12/1000 and 25/1000 live births respectively.
- Diarrhea and pneumonia are major causes of death in children under five. While diarrhea can be effectively treated with ORS, only about 37% of affected children received it.

1.1 Introduction:

The health and well-being of mothers and children serve as crucial indicators of a society's overall development. Maternal mortality and illness not only reveal the effectiveness of the health system but also indicate the level of equity in public service delivery and service utilization [6]. Maternal health is a vital sign of women's social status and their decision-making power. In Pakistan today, many women face serious challenges during pregnancy, with some not surviving it, and others experiencing traumatic miscarriages or losing their newborns due to complications [7].

Alarmingly, 74 out of every 1,000 children do not live to see their fifth birthday, with prematurity, low birth weight, pneumonia, and diarrheal diseases being the leading causes of these fatalities [5]. More than half of these deaths could be prevented through evidence-based, cost-effective interventions such as universal immunization, improved childcare practices, antibiotics, and micronutrient supplementation. In last 2-3 decades, Pakistan reduced under-five mortality; however, challenges remain, including gaps in developmental programs coverage and ongoing health inequities, which contribute to high rates of under-five, infant and neonatal mortality [5].

This unit explores the overall health status of mothers and children in Pakistan, focusing on mortality rates, nutritional status and the utilization of key maternal and child health services particularly immunization coverage. The aim is not to provide specific data but to highlight the existing gaps and unmet needs faced by women and their families.

1.2 Maternal & Child Morbidity and Mortality in Pakistan

With respect to morbidity data, more than half of the disease burden in lower socio-economic and marginalized groups is comprised of poor maternal health, communicable diseases and under nutrition especially in less than 5 years of age group [(14)]. The country is having highest prevalence of under nutrition, micro-nutrient deficiencies, low birth weight babies and stunting (low weight for height) in South Asia. [(15)] Pakistan is one of the 24 developing countries with more than 10% wasting rates for children. [(15)]

The common leading causes of maternal deaths in Pakistan are hemorrhage, sepsis and hypertension. In children, respiratory and diarrheal diseases are the major killers. The situation of routine immunization in Pakistan is very alarming as compared to other neighboring countries and infants are at high risk of life-threatening infectious diseases [16].

Maternal mortality is a significant public health issue in Pakistan, where thousands of women lose their lives annually due to complications related to pregnancy and childbirth. According to the Pakistan Demographic and Health Survey (PDHS) [5], the maternal mortality ratio (MMR) is approximately 186 deaths per 100,000 live births, with rural areas facing a higher burden. A common framework used to understand the factors contributing to maternal mortality is the "Three Delays" model [17], which emphasizes the critical points at which delays in care can lead to negative outcomes.

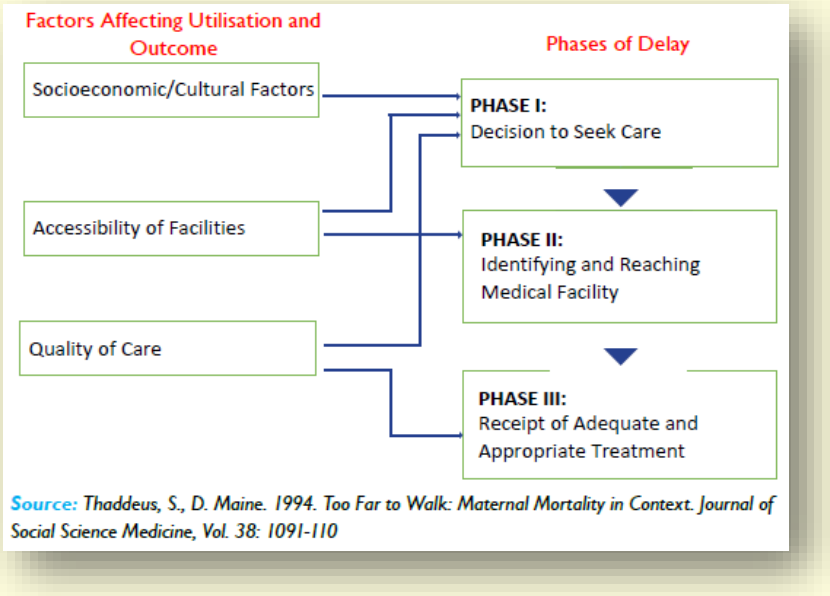


Figure 1.1: 3-Delays Model:

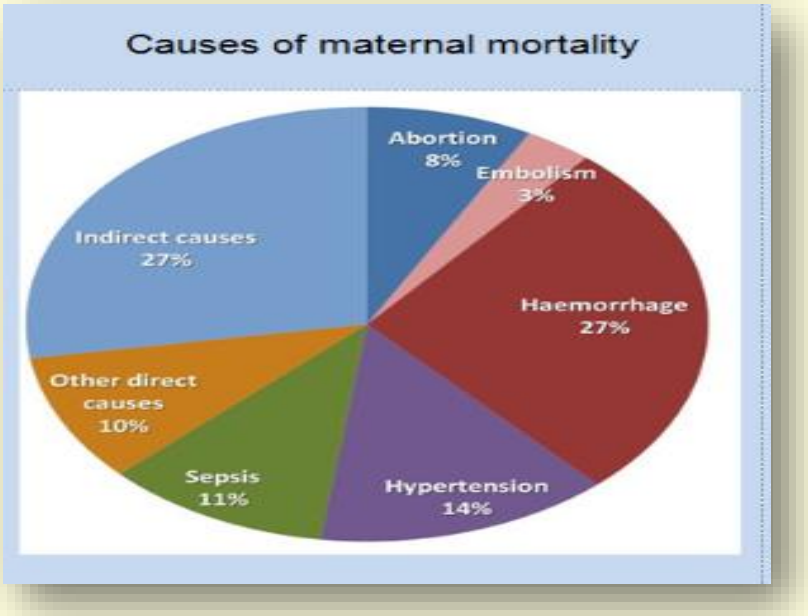


Figure 1.2: Global Causes of Maternal Mortality

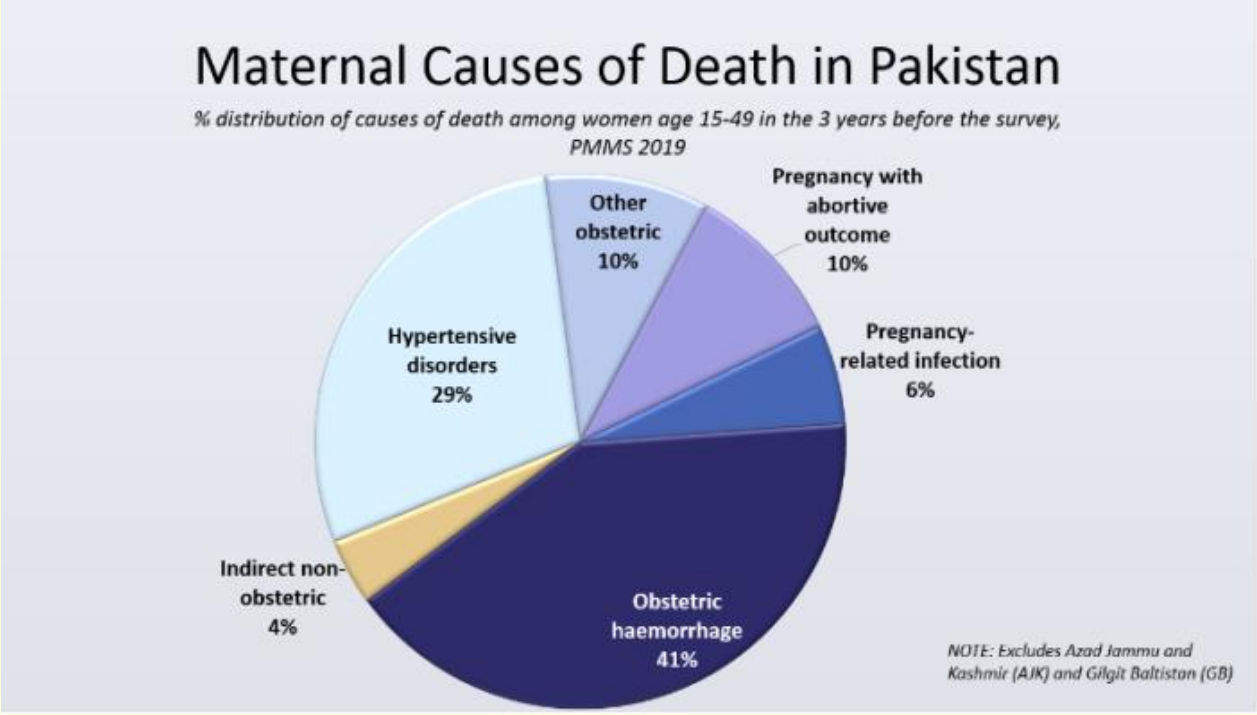


Figure 1.3: Causes of Maternal Deaths in Pakistan

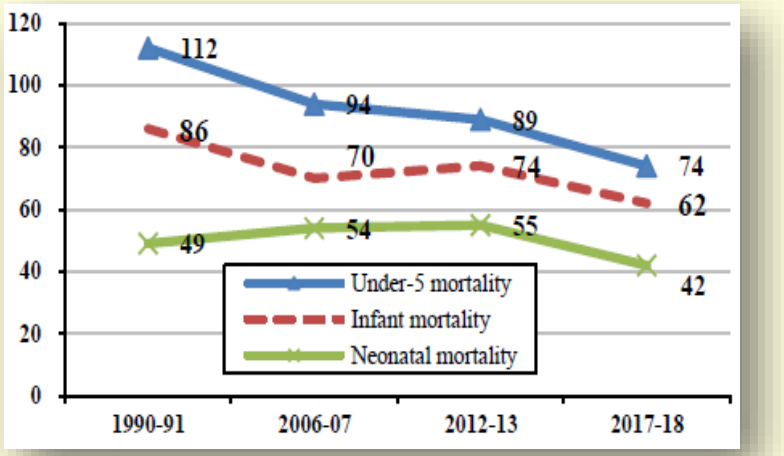


Figure 1.4: Trends in Child Mortality Rates in Pakistan (per 1000 live births) [5]

1.3 International Commitments:

Millennium and Sustainable Development Goals (MDGs & SDGs)

The Millennium Declaration was adopted by the UN General Assembly in September 2000 when the UN member states and the development partners set developmental goals in 8 priority areas, to be achieved by 2015 [8,9]. These goals were called Millennium Development Goals (MDGs) and included: Extreme poverty & hunger eradication, achievement of universal primary education, promotion of gender equality & women empowerment, reduction of child mortality, improving maternal health, combat malaria, HIV/AIDS & other diseases, ensuring environmental sustainability and developing global partnership for development. Out of eight, three MDGs (MDG 3,4,5) were directly linked to health while the remaining MDGs (water, sanitation and nutrition) were indirectly linked to health sector [10].

Although MDGs progress towards education improvement, poverty reduction and access to safe drinking water was remarkable at global level, fair progress was reported to achieve the targets of health-related goals particularly of Mother and Child Health. Several limitations including lack of attention for health systems strengthening, limited focus, starting disease vertical programs in many countries (including Pakistan) and more focus on aggregated targets rather than equity became apparent [10]. Overall, Pakistan failed to achieve MDGs targets [11] as shown in (Table 1.1)

Table 1.1: Pakistan Status about MDGs Targets Achievement for Goal 4 & 5

MDGs Indicators	National Value (2018)	MDGs Target	Status
Goal 4: Reduce Child Mortality			
Under 5 Mortality Rate (Deaths per 1000 Live Births)	74	52	Failed
Infant Mortality Rate (Deaths per 1000 Live Births)	62	40	Failed
Proportion of Children Under 5 Who Suffered from diarrhea in the Last 30 Days (%)	8	<10	**Achieved**
Goal 5: Improve Maternal Health			
Maternal Mortality Ratio	178	140	Failed
Proportion of births attended by skilled person	52.1	>90	Failed
Contraceptive Prevalence Rate	35.4	55	Failed
Proportion of women 15-49 who had given birth during last 3 years and made at least one antenatal consultation	68	100	Failed

In September 2015, the new development agenda termed as **"2030 agenda for Sustainable Development Goals"** was adopted by the United Nations (UN) General Assembly [12]. In the new development agenda, with 17 goals and 169 targets were set to integrate all three sustainable development dimensions (social, economic and environmental) surrounding themes of planet, people, prosperity, peace and partnership [12]. One of the 17 goals (Goal 3: "Ensure healthy lives and promote well-being for all at all ages") has been specifically devoted to the health sector and is associated with 13 targets [10,12].

The Pakistan Demographic and Health Survey of 2017-18 [5] indicated notable improvements in several health indicators, including immunization coverage, antenatal care, skilled birth attendance, and reductions in under-five and neonatal mortality rates. While the maternal mortality ratio has also shown some improvement but still remains one of the highest in the region [13]. Although Pakistan is positioned to achieve the Sustainable Development Goals (SDGs), significant efforts across all levels of the health system are still needed.

The COVID-19 pandemic has exacerbated existing challenges, particularly in maternal, newborn, and child health, as outpatient services were suspended by provincial governments, highlighting critical accessibility issues [14]. Data from the District Health Information System revealed declining trends in antenatal care, institutional deliveries, family planning and consultations for newborn care, as well as a drop in routine immunization for children under five [15].

The KP-MICS 2019 provided valuable insights into health status among children under five in Khyber Pakhtunkhwa. Key findings include high vaccination rates for essential immunizations and significant occurrences of childhood illnesses.

Table 1.2: KP-MICS 2019 Maternal and Child Health Findings

Indicator	Percentage (%)
Child Vaccination	
BCG vaccination by age 1	78
First dose of PENTA vaccine by age 1	74
Polio 1 vaccination by age 1	68
Measles vaccination by age 1	60
High-dose Vitamin A supplementation (ages 6-59 months)	43
Childhood Diseases	
Children under five with diarrhea (last 2 weeks)	30
Diarrhoea cases seeking treatment	57
Diarrhoea cases treated with ORT/home fluids	53
Children with symptoms of ARI (last 2 weeks)	10
ARI cases seeking health facility care	70
ARI cases treated with antibiotics	53
Children with fever (last 2 weeks)	31

These findings highlight the importance of continuing health education, improving access to healthcare, and addressing environmental health risks in Khyber Pakhtunkhwa.

CHAPTER TWO

Maternal Care during Pregnancy

2.1: Comprehensive Antenatal Care

Comprehensive Antenatal Care

Key Facts:

- *Antenatal Care:* According to Pakistan Demographic Health Survey 2018[5] (PDHS-2018), 86% of women who gave birth received at least one antenatal care (ANC) from a skilled provider, marking a 13-percentage-point increase since 2012-13. Additionally, only 51% of women had at least four ANC visits.

- *Components of Antenatal Care:* Among those receiving ANC, 89% reported having their blood pressure monitored, and 70% had urine and blood samples collected.

- *Counseling during Antenatal Care:* During ANC, 52% of women received counseling on the early initiation of breastfeeding, 54% were informed about exclusive breastfeeding, and 70% received advice on maintaining a balanced diet.

- *Protection against Neonatal Tetanus:* TT immunization coverage is 69%

- *Recognizing Potential Complications during Antenatal Assessments:* Complications could be Ante Partum Hemorrhage, Pre-eclampsia, eclampsia, Infections

2.1 Introduction:

Antenatal visits are a crucial aspect of maternal and child health, particularly in Pakistan, where the healthcare system faces numerous challenges [18]. These visits provide essential opportunities for healthcare workers to monitor the health of expectant mothers and their developing babies, ensuring that any potential complications are identified and addressed early. Regular antenatal care not only improves maternal health outcomes but also significantly reduces the risk of neonatal mortality. By equipping healthcare workers with the necessary training and knowledge, we can enhance the quality of care provided during these visits, fostering a healthier future generation.

Furthermore, antenatal visits serve as a vital platform for health education and counseling, empowering women with information about nutrition, breastfeeding, and the importance of vaccinations [5]. In a country where access to healthcare can be limited, training healthcare workers to effectively communicate and provide this information is essential for promoting informed decision-making among pregnant women. Strengthening the skills of healthcare providers through targeted training programs will ultimately lead to better health outcomes, increased community awareness, and a reduction in maternal and infant mortality rates in Pakistan.

Antenatal check-ups, or prenatal visits, are crucial for several reasons:

1. *Monitoring Health:* Regular check-ups help monitor the mother's health and the development of the fetus. Healthcare providers can detect complicated pregnancy in early stages.

2. *Preventing Complications:* Early identification of complications such as gestational diabetes or pre-eclampsia can lead to timely interventions, reducing risks for both mother and baby.

3. *Vaccinations and Supplements:* These visits provide opportunities for TT immunization to prevent neonatal tetanus and to discuss supplements, such as folic acid or multiple micronutrient supplementations (MMS) that are important for fetal development.

4. *Birth Planning and Counseling:* Antenatal visits offer valuable education on nutrition, exercise, labor delivery options and counseling on Post Partum Family Planning, helping mothers-to-be feel more prepared.

2.2 Antenatal Visits Consultations:

It is advised to have at least four antenatal visits for uncomplicated pregnancies. If a woman starts attending check-ups in the sixth month or later, aim to have at least two appointments before the baby is born.

Table 2.1.1: WHO Recommended Antenatal Visits Schedule for Normal Pregnancies

Routine antenatal care visits/contacts

WHO FANC model (OLD)	2016 WHO ANC model (NEW)
First trimester	
Visit: 8-12 weeks	Contact 1: up to 12 weeks
Second trimester	
Visit: 24-26 weeks	Contact 2: 20 weeks
	Contact 3: 26 weeks
Third trimester	
Visit: 32 weeks	Contact 4: 30 weeks
	Contact 5: 34 weeks
Visit: 36-38 weeks	Contact 6: 36 weeks
	Contact 7: 38 weeks
	Contact 8: 40 weeks
Return for delivery at 41 weeks if not given birth.	

2.3 Refer to WHO guidelines on Antenatal Care (Participant Handout 2)

Routine Work in 1st Antenatal Consultation:

a. **History Taking:**

Important points in history taking include:

i. Personal Information (Name, age, area etc)
ii. What are the current problems/concerns?
iii. Date of LMP (Last Menstrual Period)
iv. Obstetric History
    a. No. of pregnancies
    b. Abortions (Induced/Spontaneous)
    c. Alive & deceased children
    d. Previous Delivery (Place and in presence of SBA or not)
    e. Any complications in previous pregnancies (hemorrhage, hypertension, premature or IUGR babies, infection etc.)
v. Surgical History (C-section or any other surgery)
vi. Medical History (acute or chronic illness, Diabetes or Hypertension)
vii. TT Immunization History
viii. Current complaints if any (Pelvic pain, fever, burning micturition, blurring of vision, headache etc.)

b. **Calculating the Expected Date of Delivery:**

Gestational age is calculated by counting the weeks since the last menstrual period (LMP) using a calendar or pregnancy wheel. The Estimated Due Date (EDD) is typically calculated using the first day of the woman's last menstrual period (LMP). A common method is to add 280 days (or 40 weeks) to the LMP, which aligns with the average length of a full-term pregnancy. Alternatively, healthcare providers may use an ultrasound to assess fetal development, which can provide a more accurate EDD, especially if the menstrual cycle is irregular or if there are uncertainties about the LMP.

For instance, if the last menstrual period was on December 15, 2023 and the woman is seen on February 24, 2024, the estimated gestational age would be 10 weeks LMP. It's important to confirm this estimate with clinical examination findings (such as uterine size) or ultrasound results.

To calculate the Estimated Due Date (EDD) using a pregnancy wheel **(Participant Handout 3)**, first locate the date of the woman's last menstrual period (LMP) on the inner circle of the wheel. Next, align this date with the corresponding 40-week mark on the outer ring of the wheel. The date indicated on the outer ring directly opposite the LMP date represents the estimated due date. Pregnancy wheels simplify the process by providing a visual representation of gestational age and due date, making it easy for healthcare providers to quickly determine EDD based on the LMP.

c. **Clinical Examination:**

Following clinical examination is required in all cases:

d. Measure: (Height, Weight and Blood Pressure)
e. Look: (Anemia, Oedema, Abdominal Scar and Fetal Heart Sounds)
f. Estimate (size of uterus) via bimanual examination
    i. 7 weeks -----→ Chicken Egg size
    ii. 10 weeks ----→ Orange size
    iii. 12 weeks ----→ Fundus extension beyond symphysis pubis

d. Measuring Fundal Height:

Starting from the second trimester, the uterus can be felt through abdominal palpation. Fundal height, which is the distance from the upper edge of the symphysis pubis to the fundus, can be measured at this stage as shown in following figure.

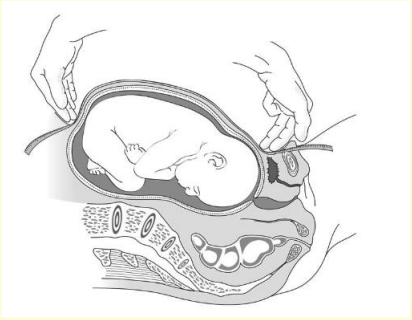


Figure 2.1.1:
Measuring Fundal Height

a. Gestational Age Estimation

Estimation of gestational age becomes increasingly approximate as pregnancy progresses. As a rough guide:

Table 2.1.2: Fundal Height and LMP

Fundal height	Weeks since last menstrual period
20 cm	18 - 22 weeks LMP
24 cm	22 - 26 weeks LMP
28 cm	26 - 30 weeks LMP
32 cm	30 - 34 weeks LMP
34 cm	33 weeks LMP to term

Table 2.1.3: Routine Tests Required

Malaria	In endemic areas, perform a rapid test even if there are no symptoms.
HIV infection	Offer a test to all women who do not know their HIV status. Perform rapid tests according to the standard algorithm. Testing cannot be peformed without the patient's consent. If it was not performed during an antenatal consultation, it should be performed at delivery. If possible, evaluate the immunological status (CD4 count) if seropositivity is detected, or at the first antenatal consultation for women who already know that they are HIV positive.
Anaemia	Measure haemoglobin (HemoCue). Hb levels defining anaemia are < 11 g/dl (first and third trimester) and < 10.5 g/dl (second trimester). If it was not measured during an antenatal consultation, it should be measured at delivery.
Urinary tract infection	Test for asymptomatic bacteriuria, even if there are no symptoms (urinalysis with reagent test strips).

Table 2.1.4: Dietary Supplementation [19]:

WHO antenatal care recommendations for nutrition

Dietary intake interventions	Micronutrient supplementation interventions[a]
▪ Counselling on healthy eating and keeping physically active ▪ Nutrition education on increasing daily energy and protein intake in undernourished populations (context-specific) ▪ Balanced energy and protein dietary supplementation in undernourished populations (context-specific) ▪ Lowering daily caffeine intake during pregnancy (context-specific)	▪ Daily oral iron and folic acid supplementation ▪ Intermittent oral iron and folic acid supplementation (context-specific) ▪ Daily calcium supplementation (context-specific) ▪ Vitamin A supplementation (context-specific) ▪ Zinc supplementation (context-specific) ▪ Multiple micronutrient supplementation (context-specific)[b]

Notes: (a) Vitamin B6 (pyridoxine), vitamins E and C, and vitamin D supplementation are currently not recommended.

(b) Antenatal multiple micronutrient supplementation that includes iron and folic acid is recommended in the context of rigorous research (implementation research and controlled clinical trials).

.

f. Immunization History:

Pregnant women who did not receive the tetanus vaccine during childhood or adolescence should get at least two doses of the vaccine before giving birth. The first dose should be given during the initial prenatal visit, and the second dose should be administered at least four weeks later, ideally two weeks before the due date, to enhance the maternal antibody response and ensure effective transfer of antibodies to the baby. After delivery, they should complete a total of five doses following the outlined schedule. Once completed, these five doses provide lifelong immunity.

Table 2.1.5: TT Vaccination Schedule

Dose	Vaccination Schedule	Level of Protection
TT1	At the first visit to healthcare services or as soon as possible during pregnancy.	0%
TT2	At least four weeks after the first dose of the vaccine and at least two weeks before the expected delivery date.	80%
TT3	At least six months after the second dose of the vaccine or during the subsequent pregnancy	95%
TT4	At least one year after the third dose of the vaccine or during a future pregnancy.	99%
TT5	At least one year after the fourth dose of the vaccine or during a subsequent pregnancy.	99%

Chapter 2: Antenatal Care

Session 2.2: Recognizing Danger Signs

Introduction:

As healthcare professionals, we play a crucial role in ensuring the health and safety of both mothers and their children. Antenatal checkups are essential opportunities to monitor the well-being of patients and identify potential complications early. This session will equip you with the knowledge and skills necessary to recognize critical danger signs, empowering you to provide timely interventions that can significantly improve maternal and fetal outcomes.

Throughout this training, we will explore the key danger signs that should be monitored during antenatal visits, look for associated risk factors and discuss effective communication strategies for educating patients. By enhancing your ability to identify these warning signs, you will not only contribute to better healthcare practices but also foster a supportive environment where expectant mothers feel informed and confident in seeking help.

Learning Objectives:

At the end of the session the participants will be able to;

- ***Identify Key Danger Signs****:* Participants will be able to list and describe critical danger signs during antenatal checkups, including symptoms related to maternal and fetal health.
- ***Assess Risk Factors****:* Participants will learn to assess and identify risk factors that may indicate complications during pregnancy, enabling them to make informed decisions regarding patient referrals and care.

The term "complicated pregnancy" describes a pregnancy where either the mother or infant faces increased risks due to specific obstetric or medical conditions or histories. Such pregnancies often necessitate enhanced monitoring and may require special preparations for delivery in a medical or surgical environment. This approach ensures that both the mother and baby receive the appropriate care and interventions needed to manage potential complications effectively.

Identifying risky pregnancies during antenatal checkups is crucial for ensuring the health and safety of both the mother and the fetus. This proactive approach can significantly reduce the likelihood of adverse outcomes, such as preterm birth, fetal distress, or maternal morbidity. Furthermore, recognizing at-risk pregnancies enables healthcare teams to educate expectant mothers about warning signs and empower them to seek timely medical assistance. During history taking, the following considerations must be kept in mind;

- Breech presentation, especially in primiparous women
- A history of intra-partum intrauterine fetal death or death within the first day of life increases the risk of recurrence.
- Previous hemorrhage during delivery raises the risk of recurrence and maternal mortality.
- A history of forceps or vacuum-assisted delivery contributes to the risk of recurrence.
- Women with a height of less than 1.50 m are at risk for cephalopelvic disproportion.
- Primiparous women face a higher risk of obstructed labor.
- Conditions such as limb deformities, hip dislocation, or polio sequelae leading to significant pelvic asymmetry increase the risk of obstructed labor.
- Grand multiparity, defined as five or more previous deliveries, elevates the risk of uterine atony, related hemorrhage, and uterine rupture.
- A history of vesicovaginal fistula.
- A history of symphysiotomy.
- A history of third or fourth degree perineal tears.

Note: Refer to Participant’s handout no 5 (a, b) Antenatal Checkup Checklist.

Table 2.2.2: Assessment of female with danger signs:

A person responsible for initial reception of women of childbearing age and newborns seeking care should:

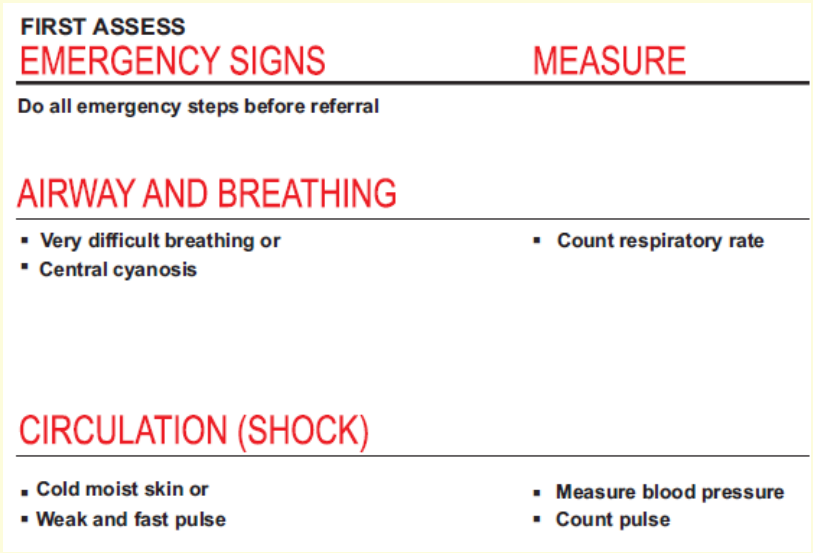
- Assess the general condition of the care seeker(s) immediately on arrival
- Periodically repeat this procedure if the line is long.
- Assess for general mental health

If a woman is very sick, talk to her companion.

ASK, CHECK, RECORD	LOOK, LISTEN, FEEL
▪ **Why did you come?** → for yourself? → for the baby? ▪ How old is the baby? ▪ What is the concern?	▪ **Is the woman being wheeled or carried in or:** ▪ bleeding vaginally ▪ convulsing ▪ looking very ill ▪ unconscious ▪ in severe pain ▪ in labour ▪ delivery is imminent

SIGNS	CLASSIFY	TREAT
If the woman is or has: ▪ unconscious does not answer ▪ convulsing ▪ bleeding ▪ severe abdominal pain or looks very ill ▪ headache and visual disturbance ▪ severe difficulty breathing ▪ fever ▪ severe vomiting.	**EMERGENCY FOR WOMAN**	▪ Transfer woman to a treatment room for Rapid ▪ Assessment and Management ▪ Call for help if needed. ▪ Reassure the woman that she will be taken care of immediately. ▪ Ask her companion to stay.
▪ imminent delivery or ▪ labour	**LABOUR**	▪ **Transfer the woman to the labour ward.** ▪ **Call for immediate assessment.**

Table 2.2.3: Rapid Assessment and Emergency Management:



FIRST ASSESS

EMERGENCY SIGNS	MEASURE
Do all emergency steps before referral	
AIRWAY AND BREATHING	
▪ Very difficult breathing or ▪ Central cyanosis	▪ Count respiratory rate
CIRCULATION (SHOCK)	
▪ Cold moist skin or ▪ Weak and fast pulse	▪ Measure blood pressure ▪ Count pulse

▪ Manage airway and breathing ▪ **Refer woman urgently to hospital**	*This may be pneumonia, severe anaemia with heart failure, obstructed breathing, asthma.*
If systolic BP less than 90 mmHg or pulse more than 110 per minute: ▪ **Position the woman on her left side with legs higher than chest.** ▪ **Insert an IV line** ▪ **Give fluids rapidly** **Use anti-shock garments if available and woman is delivered.** ▪ **If not able to insert peripheral IV, use alternative** ▪ **Keep her warm (cover her).** ▪ **Refer her urgently to hospital**	*This may be haemorrhagic shock, septic shock.*

Table 2.2.4: Assess and Classify Pre-Eclampsia and Eclampsia

ASK, CHECK, RECORD	LOOK, LISTEN, FEEL
▪ Blood pressure at the last visit ▪ Headaches ▪ Blurring of vision ▪ Epigastric pain	▪ Measure blood pressure in sitting position. ▪ If diastolic blood pressure is more than 90 mmHg, repeat after 1 hour rest. ▪ If diastolic blood pressure is still more than or equal to 110mmHg. Ask the woman if she has: → severe headache → blurred vision → epigastric pain → check protein in urine.

SIGNS	CLASSIFY	TREAT AND ADVISE
▪ Diastolic blood pressure more than or equal to 110 mmHg and 3+ proteinuria. OR ▪ Diastolic blood pressure more than or equal to 110 mmHg on two readings and 2+ proteinuria, and any of: → headache → blurred vision → epigastric pain	**SEVERE PRE-ECLAMPSIA**	▪ Give magnesium sulphate ▪ Give appropriate anti-hypertensives ▪ Revise the birth plan ▪ Refer urgently to hospital
▪ Diastolic blood pressure 90-110-mmhHg on two readings and 2+proteinuria.	**PRE-ECLAMPSIA**	▪ Revise the birth plan Refer to hospital.
▪ Diastolic blood pressure more than 90 mmHg on 2 Readings.	**HYPERTENSION**	▪ Advise to reduce workload and to rest. ▪ Advise on danger signs ▪ Reassess at the next antenatal visit / contact or in 1 week if more than 8 months pregnant. ▪ If hypertension persists after 1 week or at next visit, refer to hospital or discuss case with the doctor or midwife, if available. ▪ Advise on no added salt intake
▪ None of the above.	**NO HYPERTENSION**	▪ No treatment required. ▪ Routine antenatal care ▪ Advice to stop cola drinks and reduce intake of tea and coffee to reduce intake of caffeine

Table 2.2.5: Assessment and Management of Bleeding during Antenatal Period

ASK, CHECK, RECORD	LOOK, LISTEN, FEEL
▪ When did bleeding start? ▪ How much blood have you lost? ▪ Are you still bleeding? ▪ Is the bleeding increasing or decreasing? ▪ Could you be pregnant? ▪ When was your last period? ▪ Have you had a recent abortion? ▪ Did you or anyone else do anything to induce an abortion? ▪ Have you fainted recently? ▪ Do you have abdominal pain? ▪ Do you have any other concerns to discuss? ▪ Did you have a fall or injury?	▪ Look at amount of bleeding. ▪ Note if there is foul-smelling vaginal discharge. ▪ Feel for lower abdominal pain. ▪ Feel for fever. If hot, measure temperature. ▪ Look for pallor.

SIGNS	CLASSIFY	TREAT AND ADVISE
▪ Vaginal bleeding and any of: → Foul-smelling vaginal discharge → Abortion with uterine manipulation → Abdominal pain/tenderness → Temperature >38°C.	**COMPLICATED ABORTION**	▪ Insert an IV line and give fluids ▪ Give paracetamol for pain ▪ Give appropriate IM/IV antibiotics ▪ Refer urgently to hospital
▪ **Light vaginal bleeding**	**THREATENED ABORTION**	▪ Observe bleeding for 4-6 hours: → If no decrease, **refer to hospital.** → If decrease, let the woman go home. → Advise the woman to return immediately if bleeding increases. ▪ Follow up in 2 days
▪ History of heavy bleeding but: → now decreasing, or → no bleeding at present.	**COMPLETE ABORTION**	▪ Check preventive measures ▪ Advise on self-care ▪ Advise and counsel on family planning ▪ Advise to return if bleeding dose not stop within 2 days
▪ Two or more of the following signs: → abdominal pain → fainting → pale → very weak	**ECTOPIC PREGNANCY**	▪ Insert an IV line and give fluids ▪ **Refer urgently to hospital**

Table 2.2.6: Assessment & Management of Anemia

ASK, CHECK, RECORD	LOOK, LISTEN, FEEL
▪ Do you tire easily? ▪ Are you breathless (short of breath) during routine household work?	**On first visit:** ▪ Measure hemoglobin **On subsequent visits:** ▪ Look for conjunctival pallor. ▪ Look for palmar pallor. If pallor: → Is it severe pallor? → Some pallor? → Count number of breaths in 1 minute.

SIGNS	CLASSIFY	TREAT AND ADVISE
▪ Hemoglobin less than 7-g/dl. AND/OR ▪ Severe palmar and conjunctival pallor or ▪ Any pallor with any of → more than 30 breaths per minute → tires easily → breathlessness at rest	**SEVERE ANAEMIA**	▪ Revise birth plan so as to deliver in a facility with blood transfusion services ▪ Give double dose of iron (1 tablet twice daily) for 3 months ▪ Counsel on compliance with treatment ▪ Follow up in 2 weeks to check clinical progress, test results, and compliance with treatment. ▪ **Refer urgently to hospital**
▪ Hemoglobin 7-11-g/dl. OR ▪ Palmar or conjunctival pallor.	**MODERATE ANAEMIA**	▪ Give double dose of iron (1 tablet twice daily) for 3 months ▪ Counsel on compliance with treatment ▪ Give appropriate oral antimalarial if not given in the past month ▪ Reassess at next antenatal visit (4-6 weeks). If **anaemia persists, refer to hospital.**
▪ Haemoglobin more than 11-g/dl. ▪ No pallor.	**NO CLINICAL ANAEMIA**	▪ Give iron 1 tablet once daily for 3 months ▪ Counsel on compliance with treatment

Table 2.2.7 (a): Post-Abortion Care

Advise on self-care

- Rest for a few days, especially if feeling tired.
- Advise on hygiene
  - → change pads every 4 to 6 hours
  - → wash the perineum daily
  - → avoid sexual relations until bleeding stops
- Advise woman to return immediately if she has any of the following danger signs:
  - → increased bleeding
  - → continued bleeding for 2 days
  - → foul-smelling vaginal discharge
  - → abdominal pain
  - → fever, feeling ill, weakness
  - → dizziness or fainting,
- Advise woman to return if delay (6 weeks or more) in resuming menstrual periods.

Advise and counsel on family planning

- Explain to the women that she can become pregnant soon after the abortion - as soon as she has sexual intercourse - if she does not use a contraceptive:
  - → Any family planning method can be used immediately after an uncomplicated first trimester abortion.
  - → If the woman has an infection or injury: delay IUD insertion or female sterilization until healed. information on options, see Methods for non-breastfeeding women on
- Make arrangements for her to see a family planning counsellor as soon as possible, or counsel h directly. (The decision-making tool for family planning clients and providers for information on methods and on the counselling process)
- Counsel on safer sex including the use of condoms if she or her husband are at risk of sexually transmitted infection (STI), Hepatitis B, Hepatitis C or HIV

Table 2.2.7 (b): Post-Abortion Care

Provide information and support after abortion

A woman may experience different emotions after an abortion and may benefit from support:

- Allow the woman to talk about her worries, feelings, health and personal situation, ask if she has any questions or concerns.
- Facilitate family and community support, if she is interested (depending on the circumstances, she may not wish to involve others).
  - → Speak to them about how they can best support her, by sharing or reducing her workload, helping out with children or simply being available to listen.
  - → Inform them that post-abortion complications can have grave consequences for the woman's health, inform them of the danger signs and the importance of the woman returning to the health worker, if she experiences any.
  - → Inform them about importance of family planning and advise on Healthy Timing and Spacing of Pregnancy (HTSP) and to avoid pregnancy for the next 6 months.
- If the woman is interested, link her to a peer support group or other women's groups or community services which can provide her with additional support.
- If the woman discloses violence or you see unexplained bruises and other injuries which make you suspect she may be suffering abuse refer to
- Counsel on safer sex including use of condoms if she or her husband are at risk for STI, Hepatitis B Hepatitis C or HIV

Advise and counsel during follow-up visits

If threatened abortion and bleeding stops:

- Reassure the woman that it is safe to continue pregnancy.
- Provide antenatal care

If bleeding continues:

Assess and manage as in Bleeding in early pregnancy/post-abortion care

- If fever, foul-smelling vaginal discharge or abdominal pain, give first dose of appropriate IV/IM antibiotics
  - → **Refer woman to hospital.**

Table 2.2.8: Check for Diabetes, Blood Group and Rh Factor

ASK, CHECK, RECORD	LOOK, LISTEN, FEEL
AT FIRST VISIT ▪ Have you ever been tested for diabetes mellitus? → Does anyone in your family have diabetes? → Have you ever been diagnosed with diabetes in pregnancy? → Have you ever had an unexplained still birth? → Have you ever delivered a baby weighing more than 4kg? → Have you ever had excessive liquor in any pregnancy? → Have you ever had baby with congenital abnormality?	If not, perform strip test on glucometer If facility not available, refer to hospital for testing
▪ Do you know your blood group? → If the answer is No → If YES: check results	check blood group/Rh status
AT 6 TO 7 MONTHS → Repeat test for diabetes	

SIGNS	CLASSIFY	TREAT AND ADVISE
▪ RBS more than 200mg/dl	**DIABETES**	→ Refer to hospital
▪ RBS 150-200mg/dl	**POSSIBLE DIABETES**	→ Refer to Hospital
▪ RBS less than 150mg/dl	**NO DIABETES**	→ Reassure
▪ If mother Rh-negative ▪ Check husband blood group ▪ If husband Rh-postive	**RH-INCOMPATIBILITY**	→ Refer to hospital → Give information & explain reason for referral
▪ If mother Rh-postive	**NO RH-INCOMPATIBILITY**	→ Reassure
▪ If mother Rh-negetive ▪ If husband Rh-negetive	**NO RH-INCOMPATIBILITY**	→ Reassure

CHAPTER 3

Session 3

Care during Delivery

3.1 Introduction:

Every year, an estimated 300,000 mothers die during pregnancy or labor.[1] Most of these deaths could be prevented by administering correct treatment and accessible quality medical care. Safe delivery is a fundamental aspect of reproductive health that ensures both maternal and infant well-being during childbirth. The period surrounding delivery is critical, as it presents unique risks and challenges that require careful management and support. Safe delivery encompasses not only the presence of skilled healthcare providers but also the availability of appropriate medical facilities, necessary interventions, and a supportive environment for the mother. Education on the principles of safe delivery can empower expectant parents, equipping them with knowledge about what to expect during labor and the importance of timely access to care.

Incorporating safe delivery practices into reproductive health training is essential for reducing maternal and neonatal morbidity and mortality rates. This module aims to highlight key aspects of safe delivery, including the identification of potential complications, the importance of prenatal care, and the roles of healthcare providers. By fostering an understanding of safe delivery protocols and practices, we can contribute to healthier outcomes for mothers and their newborns, ultimately promoting a culture of safety and care within the community.

3.2 Learning Objectives:

At the end of this session, the participants would be able to:

- **U**nderstand key safe delivery practices, including the importance of skilled birth attendant role during childbirth, emergency preparedness, and the management of common complications.
- Recognize risk factors associated with safe delivery and identify warning signs during labor that require immediate medical attention.
- Understand and apply the principles of active management of the third stage of labor

Table 3.1: WHO Recommended Guidelines for Care in Delivery

Routine Care (offered to all normal cases)	Additional Care (with moderately severe disease)	Specialized Obstetric Care (with severe disease)
○ Care during labour and delivery ✓ Diagnosis of labour ✓ Monitoring progress of labour, maternal and fetal well-being with partograph ✓ Providing supportive care and pain relief ✓ Detection of problems and complications (e.g. malpresentations, prolonged and/or obstructed labour, hypertension, bleeding, and infection) ✓ Delivery and immediate care of the newborn baby, initiation of breastfeeding - Newborn resuscitation ✓ Active management of third stage of labour ○ Immediate postnatal care of mother ✓ Monitoring and assessment of maternal wellbeing, prevention and detection of complications (e.g. hypertension, infections, bleeding, anemia) ✓ Treatment of moderate post haemorrhagic anaemia ✓ Information and counselling on home self-care, nutrition, safe sex, breast care and family planning ✓ Postnatal care planning, advice on danger signs and emergency preparedness ○ Recording and reporting	○ Treatment of abnormalities and complications (e.g. prolonged labour, vacuum extraction; breech presentation, episiotomy, repair of genital tears, manual removal of placenta) ○ Pre-referral management of serious complications (e.g. obstructed labour, fetal distress, preterm labour, severe peri- and postpartum haemorrhage) ○ Emergency management of complications if birth is imminent ○ Support for the family if maternal death	○ Treatment of severe complications in childbirth and in the immediate postpartum period, including caesarean section, blood transfusion and hysterectomy): *Obstructed labour *malpresentations *eclampsia *Severe infection *Bleeding ○ Induction and augmentation of labour

3.3. Normal Vaginal Delivery:

Stages of Labour

a. First Stage: Dilation and Fetal Descent

This stage is divided into two phases:

i. **Latent Phase**:
   - From the onset of labour until approximately 5 cm of dilation.
   - Duration varies based on previous deliveries.

ii. **Active Phase**:
   - From approximately 5 cm to complete dilation.
   - The cervix dilates more rapidly during this phase, typically completing in no more than 10 hours for multiparas and 12 hours for primiparas.

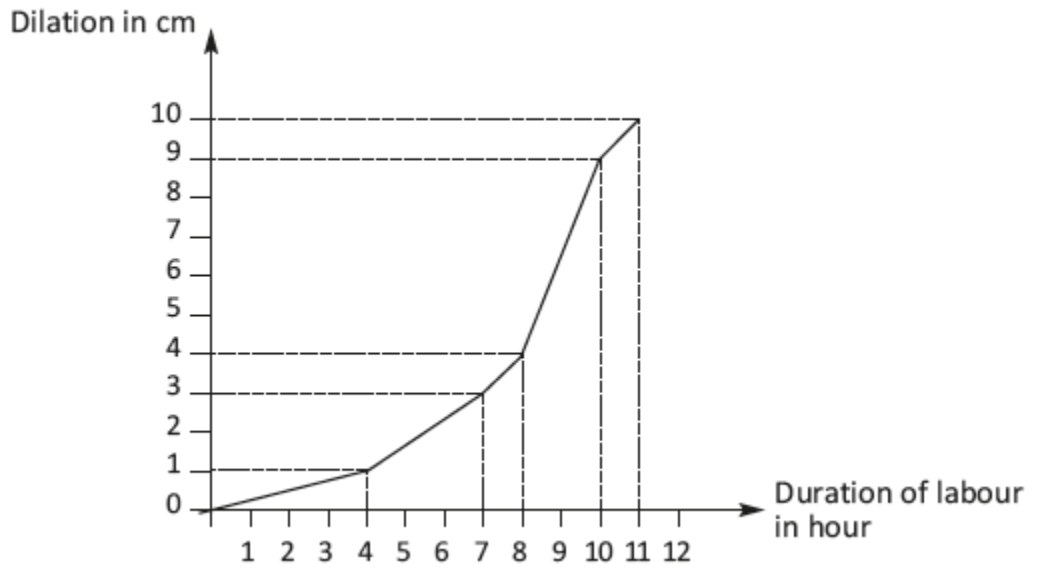


Figure 3.1: Dilatation Curve in a Primipara woman (Curve shifts to the left in Multipara)

Monitoring Indicators

During the first stage, several indicators should be monitored using a partograph and/or WHO Labor Care Guide **(Participant Handout No 7 a,b,c,d and 8)**

- **Uterine Contractions**:
    - Increase in strength and frequency (initially 30 minutes apart, becoming every 2-3 minutes).
    - Each contraction can last up to a minute, with relaxation in between.
    - Watch for signs of Bandl's ring (Signs of obstructed labor) as shown in following figures.

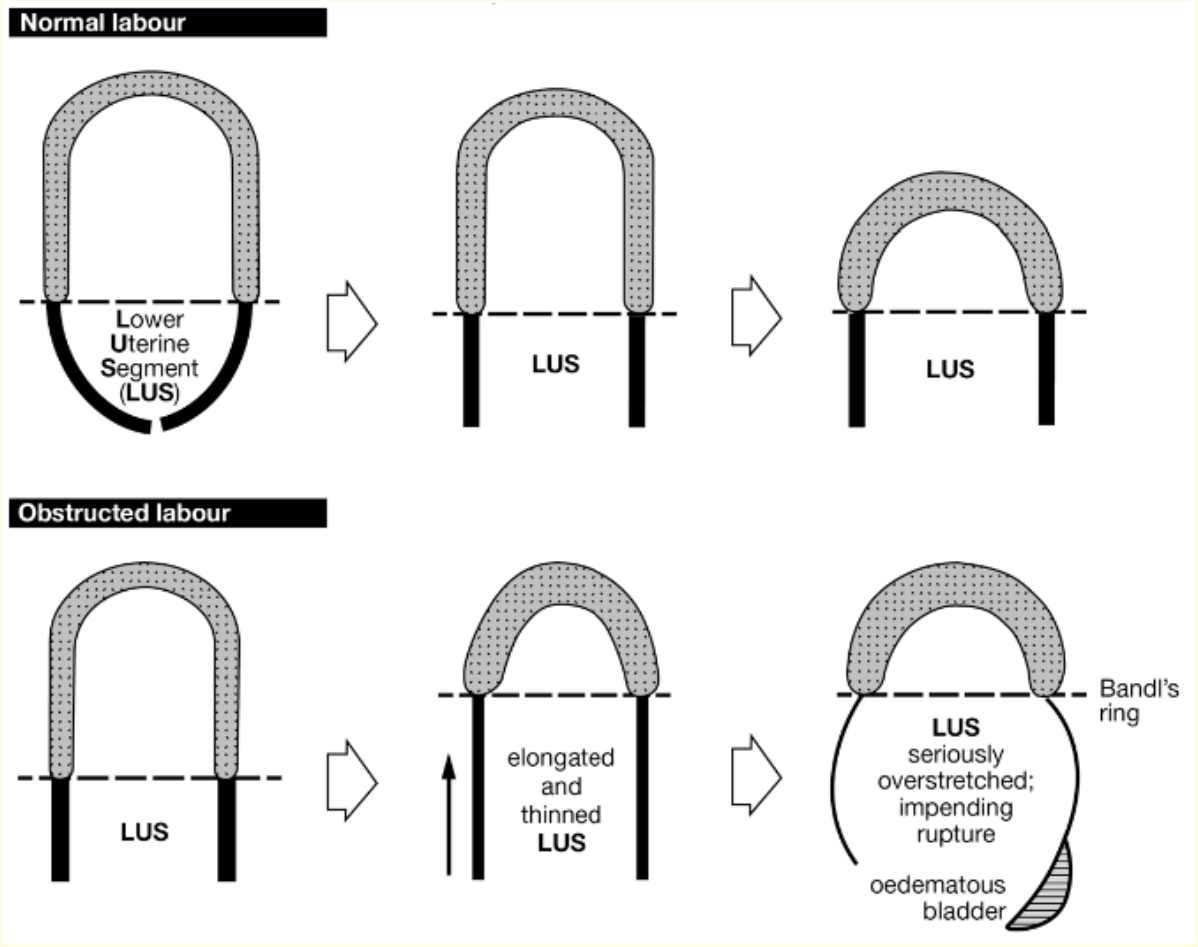


Figure 3.2: Mechanism of Bandl's ring formation

Figure 3.3: Impending rupture: hourglass uterus “Bandl's ring”

- **Patient's General Condition**:
    - Monitor heart rate, blood pressure, and temperature every 4 hours or more frequently if abnormalities are noted.
    - Encourage regular bladder emptying (every 2 hours).
    - Maintain hydration (offer fluids).
    - Encourage movement and position changes for pain relief and labor progression.
- **Fetal Heart Rate**:
    - Monitor using a Pinard stethoscope or Doppler every 30 minutes during the active phase, and every 5 minutes during the second stage.
    - Normal fetal heart rate is 110-160 beats per minute.
    - Abnormalities should prompt further monitoring and management.

Management of Abnormal Fetal Heart Rate

1. **If Fetal Heart Rate < 100 bpm**:
    - Stop any oxytocin infusion.
    - Check for vaginal bleeding, assess maternal position, and consider fluid replacement to correct hypotension.

- Perform a vaginal examination to rule out cord prolapse.

2. **If Fetal Heart Rate > 180 bpm**:
    - Investigate for potential maternal infections and treat accordingly.
    - Administer antipyretics if fever is present.
3. **Persistent Abnormalities**:
    - If fetal heart rate abnormalities persist, or if amniotic fluid is meconium-stained,

Dilation during the Active Phase

Cervical Dilation Monitoring

- **Progressive Dilation**: The cervix should remain soft and dilate progressively during the active phase.
- **Vaginal Examinations**: Check dilation every 4 hours if there are no complications.
- **Warning Signs**: If there is no progress in dilation between two examinations, it is a warning sign. Action must be taken if there's no progress for 4 hours, which may include:
    - Artificial rupture of membranes (ARM)
    - Administration of oxytocin
    - Caesarean section, depending on the situation

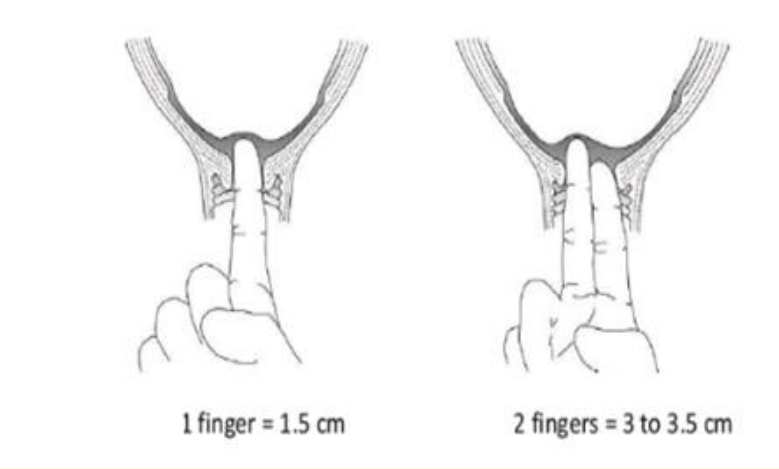


Figure 3.4: Cervical Dilatation Estimation:

Amniotic Sac

- **Rupture**: The amniotic sac typically bulges during contractions and usually breaks spontaneously after 5 cm of dilation or at full dilation during delivery.
- **Post-Rupture Protocol**:
    - Immediately check the fetal heart rate.
    - Perform a vaginal examination to check for potential umbilical cord prolapse.
    - Use sterile gloves for vaginal exams after membranes rupture.
- **Amniotic Fluid Color**: Observe the color of the amniotic fluid:
    - Clear
    - Blood-stained
    - Meconium-stained
- **Meconium Monitoring**: Meconium staining alone, without an abnormal fetal heart rate, does not indicate fetal distress but requires closer monitoring, with vaginal examinations every 2 hours. If dilation fails to progress after 2 hours, further action is needed.

Fetal Progress Assessment

- **Fetal Descent**: Assess fetal descent by palpating the abdomen, noting the portion of the fetal head above the symphysis pubis before a vaginal examination.
- **Vaginal Examination Checks**: In each examination, assess:
    - Dilation
    - Presentation
    - Position
    - Degree of fetal descent

Signs of Fetal Head Engagement

- **Engagement Indicators**:

The presenting part prevents the examiner's fingers from reaching the sacral concavity (Figures 3.1.5a and 3.1.5b). The presence of caput (swelling of the fetal head) may mislead engagement

assessment. Measure the distance from the fetal shoulder to the upper edge of the symphysis pubis:

Not Engaged: More than 2 finger widths above the symphysis (Figure 3.5c).

Engaged: Less than 2 finger widths above the symphysis (Figure 3.5d).

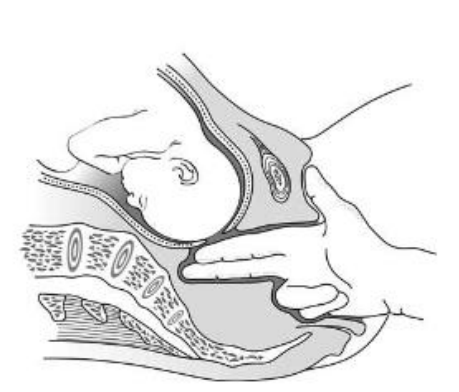


Figure 3.5 (a): No engagement of presenting part (Fingers can reach the sacral concavity)

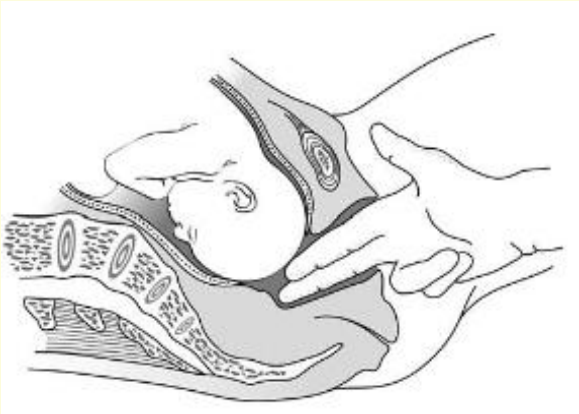
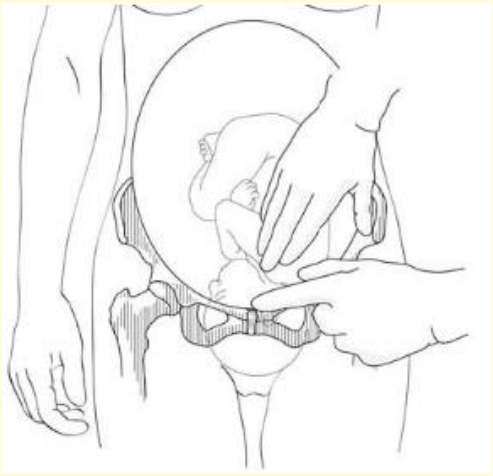


Figure 3.5 (b): Engagement of presenting part (Fingers cannot reach sacral concavity)

Figure 3.5 (c): Head not engaged (Shoulder is more than 2 fingers above the symphysis



Head Engaged 3.5 (d): (Shoulder is less than 2 fingers above symphysis)

Fetal Head Position

- Use reference points on the fetal skull to determine the position in the mother's pelvis, which becomes clearer after membrane rupture and when dilation exceeds 5 cm.
- **Palpation Findings**:
    - When the head is well-flexed, the anterior fontanelle is not palpable; only the sagittal and posterior fontanelles can be felt.
    - The posterior fontanelle serves as a landmark for determining the fetal occiput, helping assess fetal position.

- **Head Engagement**: Typically, once engaged, the head rotates within the pelvis, bringing the fetal occiput under the mother's symphysis, aligning the posterior fontanelle along the anterior midline.

b. Second Stage: Delivery of the Baby

Duration

- **Multipara**: The second stage of labor is typically rapid, not exceeding 2 hours.
- **Primipara**: It is generally slower, with a maximum duration of 3 hours.

Delivery Positions

If there are no specific risks for the mother or child, the delivery can be assisted in various positions, including:

- On her back
- On her left side
- Squatting

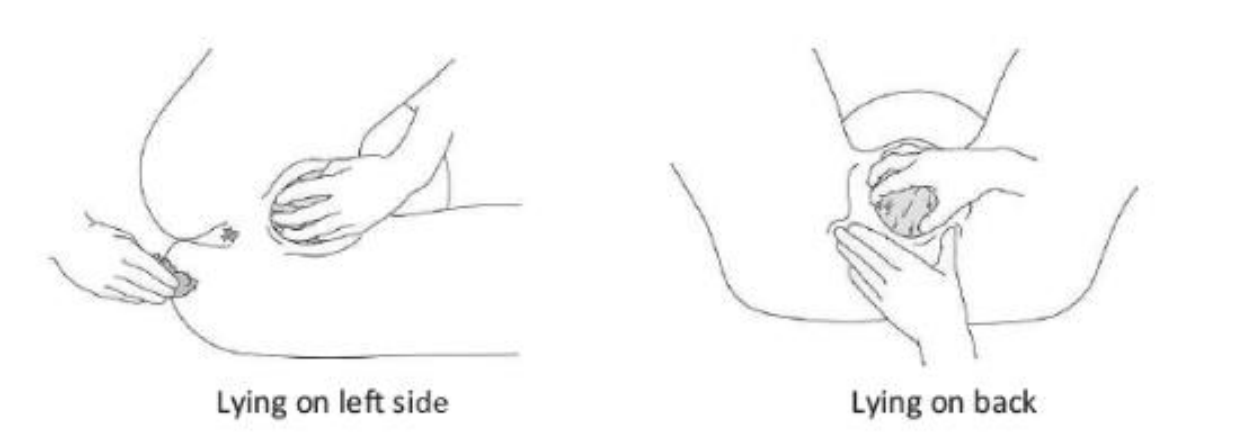


Figure 3.6: Delivery Position

Preparations for Delivery

1. **Cleanliness**: Rinse the vulva and perineum with clean water.
2. **Bladder Management**: Encourage natural emptying of the bladder. If urinary retention is present, insert a urinary catheter using a sterile technique (sterile gloves and single-use catheter).

Pushing Techniques

- **Natural Pushing**: If labor is progressing well without fetal heart rate abnormalities, allow the woman to follow her urge to push.
- **Directed Pushing**: In cases where guidance is needed, direct the woman to push during uterine contractions:
    - **Breath-Holding Technique**: After a deep inhalation, close the glottis and contract abdominal muscles toward the perineum.
    - **Exhalation Technique**: Push while exhaling.
- **Push Duration**: Maintain expulsive effort for as long as possible, typically 2 to 3 pushes per contraction.

Between Contractions

- Encourage the woman to rest and breathe deeply.
- The birth attendant should monitor the fetal heart rate after each contraction.

Delivery Process

As the head descends:

- The perineum stretches, becoming thinner.
- The vaginal opening distends, and the labia spread apart, revealing the occiput.

Cephalic Presentation

- In a normal cephalic presentation, the head typically emerges with the occiput anterior, looking down, pivoting against the symphysis pubis.
- The head moves into slight extension during delivery.

Support during Delivery

- The birth attendant should guide the head's motion to prevent abrupt movements:
    - **Support the Occiput**: Use one hand to support the occiput.
    - **Support the Chin**: Use the other hand to support the chin through the perineum.
- **Anal Area Protection**: Cover the anal area with a compress to protect against tearing.

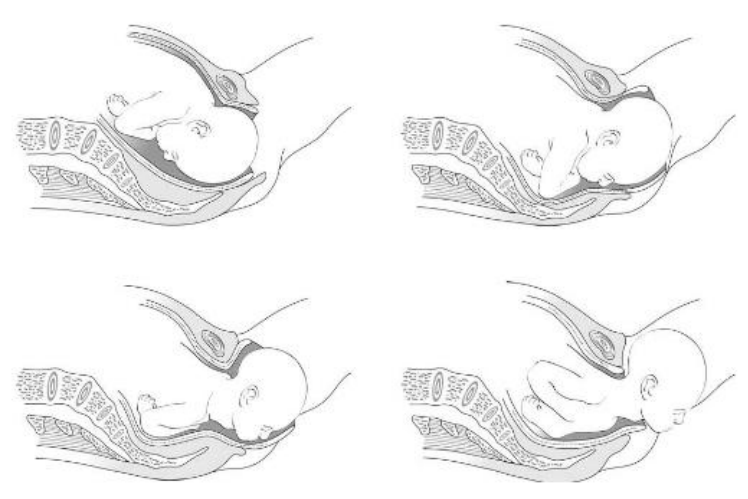


Figure 3.7: Stages of Occiput Anterior Delivery

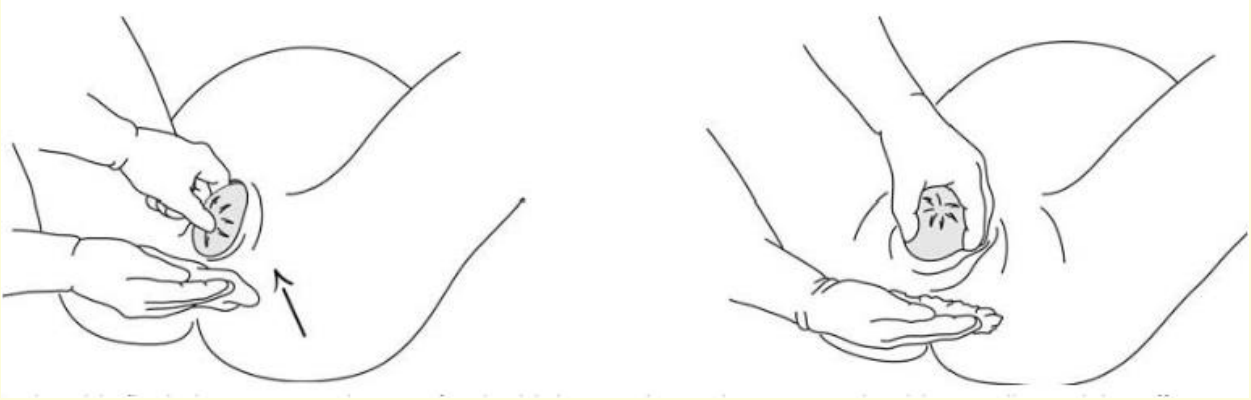


Figure 3.8: Progressive Delivery of the Head

Final Phase of Delivery

During the final phase of delivery, the following steps should be taken to ensure a safe and effective birth:

1. **Encourage Deep Breathing**: The woman should stop all expulsive efforts and focus on taking deep breaths. This helps with managing the pressure and preparing for the final delivery.
2. **Control the Head's Extension**:
    - The birth attendant uses one hand to control the extension of the baby's head, moving it slightly side-to-side. This technique helps to gradually free the parietal protuberances, allowing for smoother delivery.
3. **Chin Support**:
    - If necessary (though not routinely), the birth attendant can lift the chin with the other hand to facilitate the delivery.
4. **Monitor Perineal Stretching**:
    - As the head emerges, pay close attention to the perineum to minimize the risk of tearing. Controlling the delivery speed can help protect this area.
5. **Maintain Support**:
    - Continuously provide support and reassurance to the mother, ensuring she feels safe and informed throughout the process.

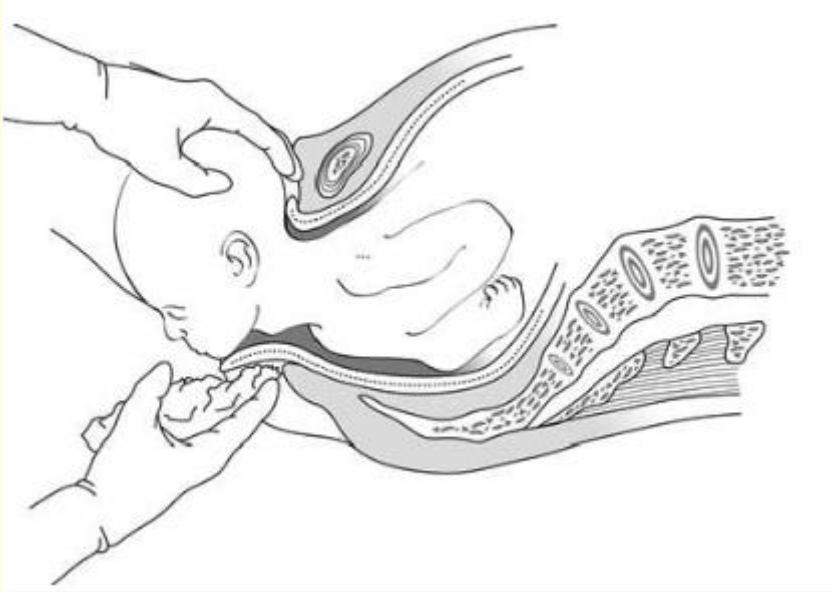


Figure 3.9: Bringing the perineum under the chin

At the moment of delivery, the perineum is often significantly stretched. Here are some key considerations for managing this stage:

1. **Control of Expulsion**:
    - It is crucial to control the expulsion of the baby's head to minimize the risk of perineal tearing. Gentle, steady traction can help in guiding the baby out without causing excessive strain on the perineum.
2. **Monitoring Perineal Distension**:
    - The birth attendant should closely observe the perineum as it stretches. This allows for timely interventions to reduce the risk of tears.
3. **Episiotomy Consideration**:
    - While episiotomy is not routinely indicated, it may be beneficial in specific circumstances, such as in an occiput-posterior delivery where perineal distension is at its peak as shown in following figure.

Figure 3.10: Occiput Posterior Delivery

Once the head is delivered, the baby's head typically rotates spontaneously by at least 90°. This movement is crucial for the safe delivery of the shoulders. The birth attendant should grasp the baby's head with both hands to support and guide its movement. Apply gentle downward traction to help bring the anterior shoulder under the mother’s symphysis pubis. Once the anterior shoulder is positioned correctly, smooth upward traction should be applied to deliver the posterior shoulder. It is essential to control the delivery of the posterior shoulder to reduce the risk of perineal tears. Maintain a gentle and steady approach to prevent any abrupt movements that could cause injury.

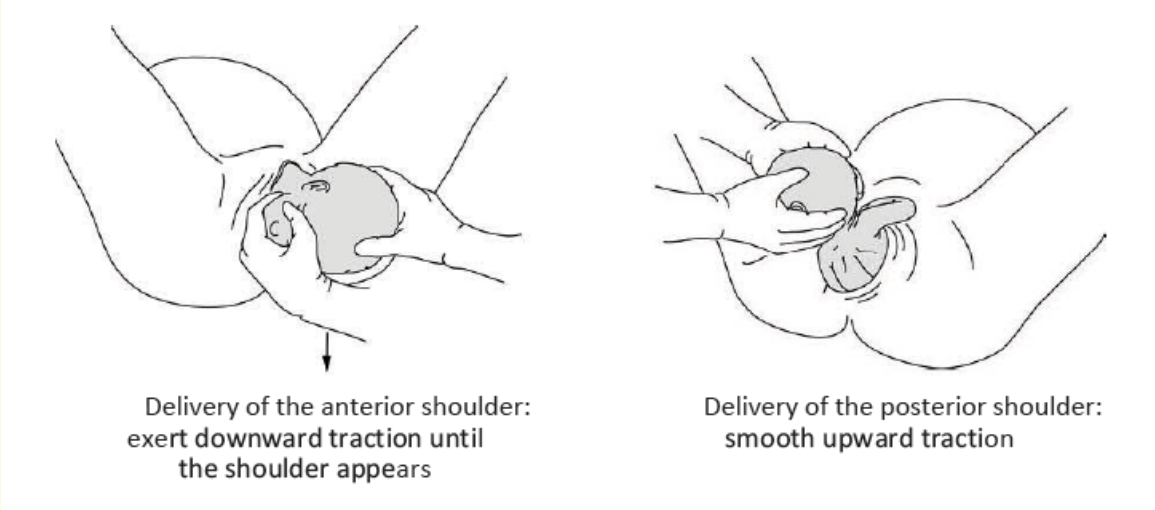


Figure 3.11: Delivery of Shoulders

c. Active Management of 3rd Stage of Labor:

Definition: The third stage of labor refers to the period from the birth of the baby until the expulsion of the placenta and membranes.

Active Management: Recommended for all women in medium to high-risk categories, with a Consultant as the Lead Professional.

Definition: Active management of the third stage includes three key components:

1. **Routine use of uterotonic drugs:** After the birth, palpate the mother's abdomen to confirm she is not carrying twins. Administer 5 or 10 IU of oxytocin slowly via IV or IM immediately after birth (after the last infant in a multiple pregnancy) and before the placenta is delivered. This helps accelerate placenta separation, facilitates delivery, and reduces the risk of postpartum hemorrhage (PPH).
2. **Cutting and clamping of the cord:** Current evidence suggests that for healthy term infants, delaying cord clamping for at least one minute or until the cord stops pulsating can improve iron status in early infancy. For preterm infants in good condition, delaying clamping for up to three minutes can enhance blood pressure during stabilization, reduce the incidence of intraventricular hemorrhage, and decrease the need for blood transfusions, although there may be an increased likelihood of requiring phototherapy. There is insufficient evidence to determine an appropriate clamping time for infants needing resuscitation.
3. **Controlled cord traction:** This technique, along with active management, can reduce the risk of maternal hemorrhage and shorten the duration of the third stage. However, it may also increase the risk of vomiting after birth.

Overall, women should be made aware that active management of the third stage can lead to better outcomes while also considering the associated risks.

Note: Refer to participant handout no 7 (a,b,c,d) WHO safe childbirth checklist

Table 3.2: Management of 3rd Stage of Labour:

THIRD STAGE OF LABOUR: DELIVER THE PLACENTA

Use this chart for care of the woman between birth of the baby and delivery of placenta.

MONITOR MOTHER EVERY 5 MINUTES:

- For emergency signs, using Rapid Assessment (RAM)
- Feel if uterus is well contracted.
- Mood and behaviour (distressed, anxious)
- Time since third stage began (time since birth).

MONITOR BABY EVERY 15 MINUTES:

- Breathing: listen for grunting, look for chest in-drawing and fast breathing
- Warmth: check to see if feet are cold to touch

- Record findings, treatments and procedures in Labour record and Partograph (pp.N4-N6).
- Give Supportive care
- **Never leave the woman alone.**

DELIVER THE PLACENTA

- Ensure 10-IU oxytocin IM is given, If not available give 3 tablets of misoprostol (200ug each) orally or sublingually
- Await strong uterine contraction(2-3 minutes) and deliver placenta by controlled cord traction:
  - → Place side of one hand (usually left) above symphysis pubis with plam facing towards the mother's umbilicus. This applies counter traction to the uterus during controlled cord traction. At the same time, apply steady, sustained controlled cord traction.
  - → If placenta does not descend during 30-40 seconds of controlled cord traction, release both cord traction and counter traction on the abdomen and wait until the uterus is well contracted again. Then repeat controlled cord traction with counter traction.
  - → As the placenta is coming out, catch in both hands to prevent tearing of the membranes.
  - → If the membranes do not slip out spontaneously, gently twist them into a rope and move them up and down to assist separation without tearing them.

TREAT AND ADVISE IF REQUIRED

- If, after 30 miuntes of giving oxytocin or misoprostol, the placenta in not delivered and the woman is NOT bleeding:
  - → Empty bladder
  - → Encourage breastfeeding
  - → Repeat controlled cord traction.
- If woman is bleeding, manage as on
- If placenta is not delivered in another 30 minutes (1 hour after delivery):
  - → Remove placenta manually
  - → Give appropriate IM/IV antibiotic
- If in 1 hour unable to remove placenta:
  - → Refer the woman to hospital
  - → Insert IV line and give fluids with 20 IU of oxytocin at 30 drops per minute during transfer

DO NOT exert excessive traction on the cord.
DO NOT Squeeze or push the uterus to deliver the placenta.

Table 3.3: Urgent Referral required if female presents with following signs and symptoms:

SIGNS	CLASSIFY	TREAT AND ADVISE
▪ Transverse lie ▪ Continuous contractions ▪ Constant pain between contractions. ▪ Sudden and severe abdominal pain ▪ Horizontal ridge across lower abdomen ▪ Labour more than.12 hours	**OBSTRUCTED LABOUR**	▪ If distressed, insert an IV line and give fluids ▪ If in labour more than 12 hours, give appropriate IM/IV antibiotics ▪ **Refer urgently to hospital**
▪ Rupture of membranes and any of: Fever more than 38°C Foul-smelling vaginal discharge	**UTERINE AND FETAL INFECTION**	▪ Give appropriate IM/IV antibiotics ▪ If late labour, deliver and refer to hospital after delivery ▪ Plan to treat newborn
▪ Rupture of membranes at less than 8-months of pregnancy.	**RISK OF UTERINE AND FETAL INFECTION**	▪ Give appropriate IM/IV antibiotics ▪ If late labour, deliver ▪ Discontinue antibiotic for mother after delivery if no signs of infection.
▪ Diastolic blood pressure more than 90 mmHg.	**PREECLAMPSIA**	▪ Plan to treat newborn ▪ Assess further and manage as on
▪ Severe palmar and conjunctival pallor and/or hemoglobin less than 7g/dl.	**SEVERE AMAEMIA**	▪ Manage as on

Table 3.4: Management of Problems during Labour & Delivery

RESPOND TO PROBLEMS DURING LABOUR AND DELIVERY

ASK, CHECK RECORD	LOOK, LISTEN, FEEL	SIGNS	CLASSIFY	TREAT AND ADVISE
IF FETAL HEART RATE (FHR) less than110 or more than150 BEATS PER MINUTE				
	▪ Position the woman on her left side, ▪ If membranes have ruptured, look at vulva for prolapsed cord. ▪ See if liquor was meconium stained. ▪ Repeat FHR count after 15 minutes.	▪ Cord seen at vulva.	**PROLAPSED CORD**	▪ Manage urgently as on
		▪ FHR remains more than150 or less than 110 beats/min after 30 minutes observation.	**BABY NOT WELL**	▪ If early labour: → Refer the woman urgently to hospital → Keep her lying on her left side. ▪ If late labour: → Call for help during delivery → Monitor after every contraction. If FHR does not return to normal in 15 minutes explain to the woman (and her companion) that the baby may not be well. → Prepare for newborn resuscitation
		▪ FHR returns to normal.	**BABY WELL**	▪ Monitor FHR every 15 minutes.

Table 3.5: If Prolapsed Cord: The cord is visible outside the vagina or felt in the vagina below the presenting part

ASK, CHECK RECORD	LOOK, LISTEN, FEEL
	▪ Look at or feel the cord gently for pulsations. ▪ Feel for transverse lie. ▪ Do vaginal examination to determine status of labour.

SIGNS	CLASSIFY	TREAT
▪ Transverse lie	**OBSTRUCTED LABOUR**	▪ Refer urgently to hospital
▪ Cord is pulsating	**FETUS ALIVE**	If early labour: ▪ Push the head or presenting part out of the pelvis and hold it above the brim/pelvis with your hand on the abdomen until caesarean section is performed. ▪ Instruct assistant (family, staff) to position the woman's buttocks higher than the shoulder ▪ Or pass a Foley's catheter and fill the urinary bladder with 300-500ml sterile saline. Clamp the catheter. This lifts the baby's head out of the pelvis. ▪ **Refer urgently to hospital** ▪ If transfer not possible, allow labour to continue. **If late labour:** ▪ Call for additional help if possible (for mother and baby). ▪ Prepare for Newborn resuscitation Ask the woman to assume an upright or squatting. position to help progress. ▪ Expedite delivery by encouraging woman to push with contraction.
▪ Cord is not pulsating	**FETUS PROBABLY DEAD**	▪ Explain to the parents that baby may not be well. ▪ Manage as for alive baby.

Table 3.6: If Breech Presentation

SIGN	TREAT
▪ If early labour	▪ **Refer urgently to hospital**
▪ If late labour	▪ Call for additional help. ▪ Confirm full dilatation of the cervix by vaginal examination ▪ Ensure bladder is empty. If unable to empty bladder see Empty bladder ▪ Prepare for newborn resuscitation ▪ Deliver the baby: → Assist the woman into a position that will allow the baby to hang down during delivery, for example, propped up with buttocks at edge of bed or onto her hands and knees (all fours position). → When baby's buttocks are distending the perineum make an episiotomy. → Allow buttocks, trunk and shoulders to deliver spontaneously during contractions. → After delivery of the shoulders allow the baby to hang until next contraction.
▪ If the head does not deliver after several contractions	▪ Place the baby astride your left forearm with limbs hanging on each side. ▪ Place the middle and index fingers of the left hand over the malar cheek bones on either side to apply gentle downwards pressure to aid flexion of head. ▪ Keeping the left hand as described, place the index and ring fingers of the right hand over the baby's shoulders and the middle finger on the baby's head to gently aid flexion until the hairline is visible. ▪ When the hairline is visible, raise the baby in upward and forward direction towards the mother's abdomen until the nose and mouth are free. The assistant gives supra pubic pressure during the period to maintain flexion.
▪ If trapped arms or shoulders	▪ Feel the baby's chest for arms, if not felt: ▪ Hold the baby gently with hands around each thigh and thumbs on sacrum ▪ Gently guiding the baby down, turn the baby, keeping the back uppermost until the shoulder which was posterior (below) is now anterior (at the top) and the arm is released. ▪ Then turn the baby back, again keeping the back uppermost to deliver the other arm. ▪ Then proceed with delivery of head as described above.
▪ If trapped head (and baby is dead)	▪ Tie a 1 kg weight to the baby's feet and await full dilatation. ▪ Then proceed with delivery of head as described above. **NEVER** pull on the breech **DO NOT** allow the woman to push until the cervix is fully dilated. Pushing too soon may cause the head to be trapped.

CHAPTER 4

Postpartum Care

CHAPTER 4

Postpartum Care

Introduction:

Postnatal care is a critical phase in the continuum of maternal health, encompassing the period immediately after childbirth and extending through the first six weeks of life. This period is essential for monitoring the mother's recovery, supporting her physical and emotional well-being, and ensuring the health of the newborn. Effective postnatal care can significantly reduce the risk of complications and promote a positive transition for both mother and child.

During this chapter, we will explore the fundamental aspects of postnatal care, including the recommended practices for monitoring and supporting mothers in the days and weeks following delivery. We will discuss the common physical and psychological challenges that new mothers may face, such as postpartum hemorrhage, infection, and mental health issues like postpartum depression. Understanding these complications is vital for healthcare providers, as early identification and intervention can lead to better health outcomes for mothers and their infants.

Additionally, we will outline the key components of postnatal care, including essential assessments, education on self-care practices, and the promotion of breastfeeding. This chapter aims to equip healthcare providers with the knowledge and tools necessary to provide comprehensive and compassionate postnatal care, fostering a supportive environment for new families. By addressing the complexities of postnatal health and recognizing the potential complications, we can enhance the quality of care delivered to mothers during this transformative period.

4.1: Normal Events during Postpartum period:

The postpartum period lasts from delivery to six weeks. During this period the uterus shrinks back to its normal size and hormonal changes settle down. Right after the placenta is delivered, the uterus contracts. By day five or six, it's positioned halfway between the navel and the pubic area and by day ten, it reaches the pubic symphysis, returning to its normal size by six weeks. The internal opening of the cervix usually closes between days eight and twelve. Vaginal discharge, called lochia, is bloody for the first three days then turns blood-tinged. It is usually odorless and typically stops within 15 to 21 days. In terms of breastfeeding, the first two days produce yellowish colostrum, and by day three, mothers may experience breast tenderness and sometimes a mild fever. At this point, the milk changes to mature milk, which is whiter and more abundant.

Over 60% of maternal deaths happen during the postpartum period, with 45% occurring within the first 24 hours. For this reason, women should stay in a healthcare facility for at least 24 hours after delivery to ensure proper monitoring and care. Two postnatal consultations should be scheduled within the first six weeks after delivery: the first should occur within the first week, particularly for women who delivered at home. For those who gave birth in a healthcare facility and remained for more than 24 hours, the discharge consultation for both mother and neonate count as the first postnatal visit. The second consultation should take place between four to six weeks after delivery for a routine clinical examination and to identify any potential complications.

Note: Refer to participant handout No 9 "*Sample Postpartum Record*"

Table 4.1: WHO Recommended Protocols for Postpartum Period

Routine care (offered to all women and babies)	Additional care (for women and babies with moderately severe diseases and complications)	Specialized - obstetrical and neonatal care (for women and babies with severe diseases and complications)
• Assessment of maternal wellbeing • Prevention and detection of complications (e.g. infections, bleeding, anaemia) • Anaemia prevention and control (iron and folic acid supplementation) • Information and counselling on nutrition, safe sex, family planning and provision of some contraceptive methods • Postnatal care planning, advice on danger signs and emergency preparedness • Provision of contraceptive methods	• Treatment of some problems (e.g. mild to moderate anaemia, mild puerperal depression) • Pre-referral treatment of some problems (e.g. severe postpartum bleeding, puerperal sepsis)	• Treatment of all complications - severe anaemia - severe postpartum bleeding - severe postpartum infections - severe postpartum depression • Female sterilization

4.2: Common Complications during Postpartum Period:

Following are the common complications of postpartum period.

1. Postpartum Hemorrhage (PPH)
2. Infections
3. Cracked nipples or mastitis, abscess
4. Postpartum Depression

Postpartum Recommended Checkups:

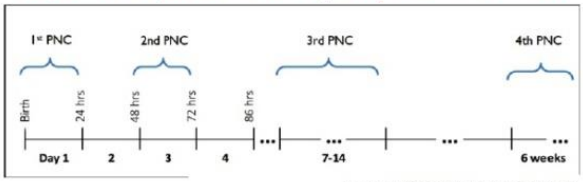
POSTPARTUM EXAMINATION OF THE MOTHER (UP TO 6 WEEKS)

Use this chart for examining the mother after discharge from a facility or after home delivery.
If she delivered less than a week ago without a skilled attendant, use the chart Assess the mother after delivery

Schedule for 4 recommended postnatal care (PNC) visits/contacts

PNC 1:	Within first 24 hours
PNC 2:	Day 3 (48-72 hours)
PNC 3:	Day 7-14
PNC 4:	Until day 42 (6 weeks postpartum)

Sequence of postnatal Care (PNC) Visits / Contacts



Source: WHO 2013, Spector et al. 2012

ASK, CHECK RECORD	LOOK, LISTEN, FEEL	SIGNS	CLASSIFY	TREAT AND ADVISE
▪ When and where did you deliver? ▪ How are you feeling? ▪ Have you had any pain or fever or bleeding since delivery? ▪ Do you have any problem with passing urine? ▪ Have you decided on any contraception? ▪ How do your breasts feel? ▪ Do you have any other concerns? ▪ Check records: → Any complications during delivery? → Receiving any treatments? → HIV status. ▪ Any chronic disease ▪ Any swelling in leg	▪ Measure blood pressure and temperature. ▪ Feel uterus. Is it hard and round? ▪ Look at vulva and perineum for: → tear → swelling → pus. ▪ Look at pad for bleeding and lochia. → Does it smell? → Is it profuse? ▪ Look for pallor. ▪ Look for swelling in leg.	▪ Mother feeling well. ▪ Did not bleed more than 250 ml. ▪ Uterus well contracted and hard. ▪ No perineal swelling. ▪ Blood pressure, pulse and temperature normal. ▪ No pallor. ▪ No breast problem. ▪ Is breast feeding well. ▪ No fever or pain or concern. ▪ No problem with urination. ▪ No swelling in leg.	**NORMAL POSTPARTUM**	▪ Make sure woman and family know what to watch for and when to seek care ▪ Advise on Postpartum care and hygiene and counsel on nutrition ▪ Counsel on the importance of birth spacing and family planning ▪ Refer for family planning counselling. ▪ Dispense 3 months iron supply and counsel on compliance ▪ Give any treatment or prophylaxis due: → **tetanus immunization if she has not had** full course ▪ Promote use of impregnated bednet for the mother and baby. ▪ Record on the mother's home-based maternal record. ▪ Advise to return to health centre within 4-6 weeks.

4.2.1 Post Partum Hemorrhage:

Post-partum hemorrhage (PPH) is defined as "*excessive bleeding (≥ 500ml) following childbirth*." It is typically categorized as;

- Primary PPH: Occurring within the first 24 hours after delivery
- Secondary PPH: Occurring between 24 hours and six weeks post-delivery

Minor PPH: 500-1000 ml

Moderate PPH: 1000-2000 ml

Severe PPH: 2000 ml or more

Risk Factors of PPH

- ✓ Anemia
- ✓ Over distended uterus
  - Twins
  - large baby
  - poly-hydramnios
- ✓ Prolonged labor,
- ✓ Ante partum hemorrhage (APH)
- ✓ Severe pre-eclampsia or eclampsia
- ✓ Prolonged intrauterine death
- ✓ Cesarean section, previous cesarean delivery

Causes of PPH:

- ✓ Uterine Atony (most common cause)
- ✓ Retained placenta or tissue
- ✓ Tears in the uterus, cervix, vagina, or perineum,
- ✓ Coagulation disorders,
- ✓ Uterine inversion, and
- ✓ Infection (which can lead to delayed PPH).

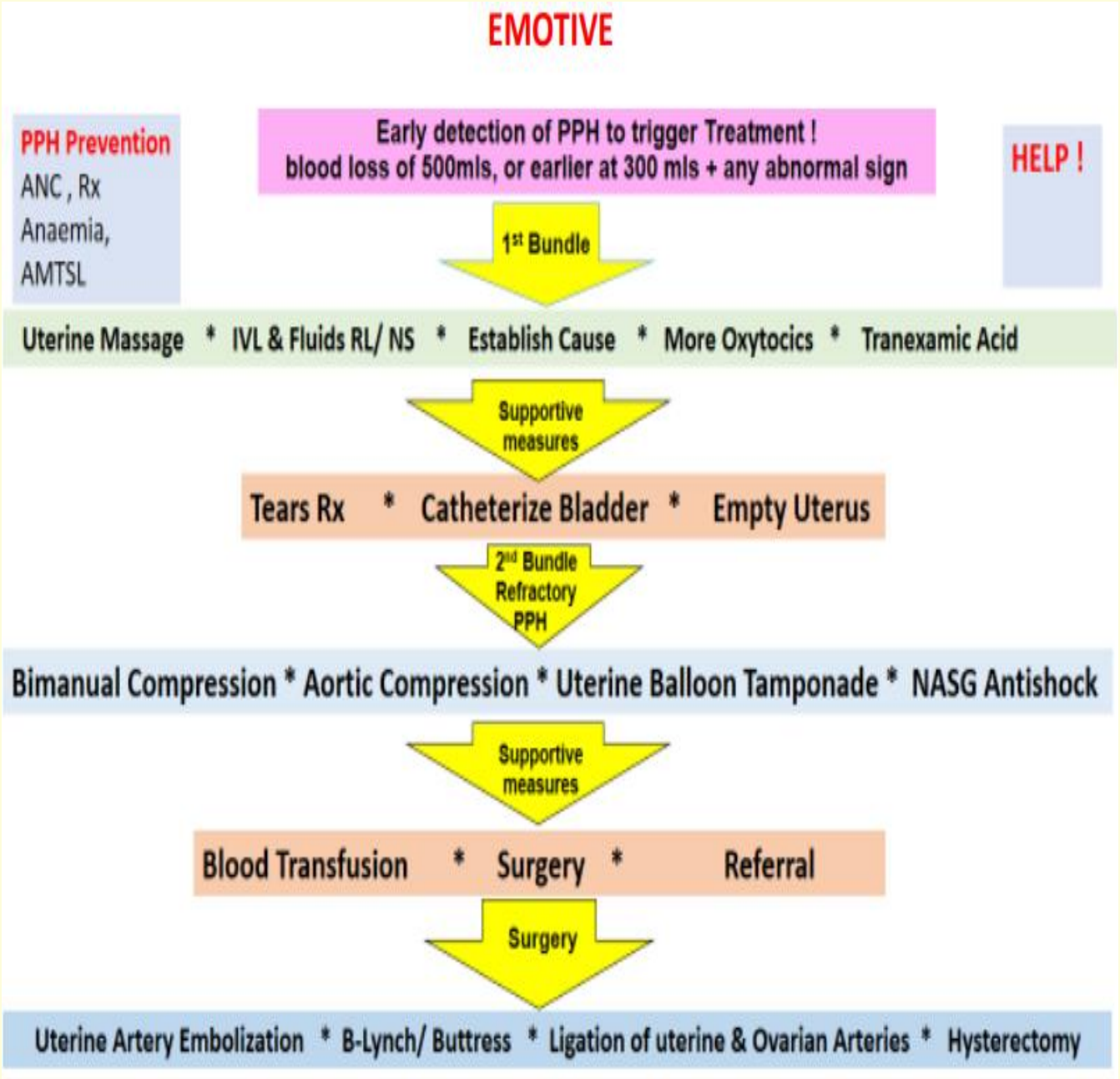
Prevention of PPH:

- ✓ Antenatal Care
- ✓ Treat Anemia
- ✓ AMTSL (Active management of third stage of labour)
- ✓ Uterotonics: Oxytocin (10 IU IV/IM)
    - If Oxytocin not available:
        - (Administer Ergometrine/Methylergometrine 200 µg IM/IV after excluding hypertension)
- ✓ Controlled Cord Traction
- ✓ Sustained Uterine Massage
- ✓ Postpartum per-abdominal uterine tone/ contraction assessment
- ✓ Check
    - Vaginal Bleeding (Calculate blood loss)
    - Uterine atony
    - BP & pulse
- ✓ Close Monitoring (Every 15 minutes in 1st hour)

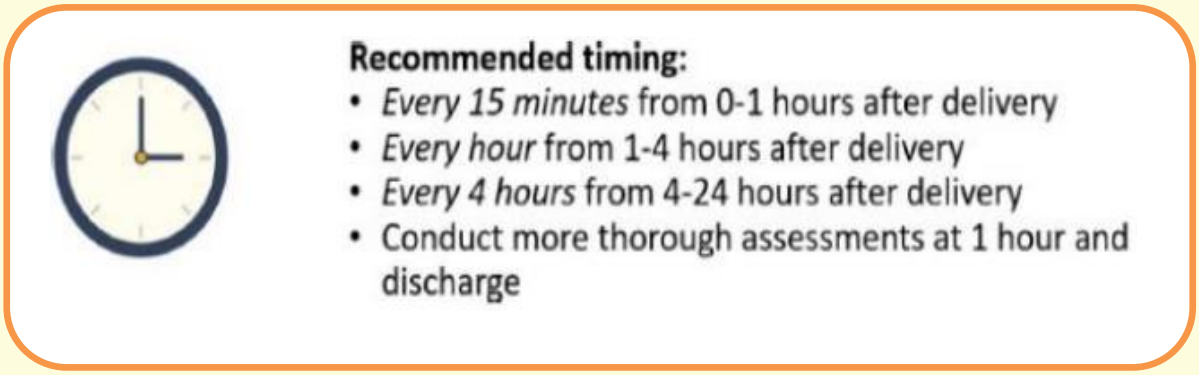
Note: When SBA not available

- Controlled Cord Traction (CCT) is not recommended

PPH Management using Prevention, AMTSL, Early Detection & Bundle Approach



Recommended Protocols:



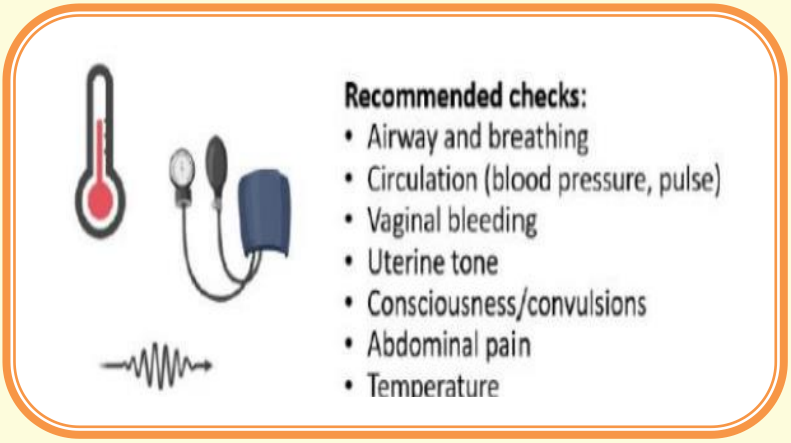


Table 4.2.2: Postpartum Infections:

ASK, CHECK RECORD	LOOK, LISTEN, FEEL
IF HEAVY VAGINAL BLEEDING	
IF FEVER OR FOUL-SMELLING LOCHIA	
▪ Have you had: → heavy bleeding? → foul-smelling lochia/ puerperal sepsis → burning on urination?	▪ Feel lower abdomen and flanks for tenderness. ▪ Look for abnormal lochia. ▪ Measure temperature. ▪ Look or feel for stiff neck. ▪ Look for lethargy/altered mental status. ▪ Assess for sign of organ dysfunction/shock e.g. → Heart rate > 90/min → Resp rate > 22/min → Systolic BP < 100 mmHg → Urinary output < 30 ml

SIGNS	CLASSIFY	TREAT AND ADVISE
▪ More than 1 pad soaked in 5 minutes.	**POSTPARTUM BLEEDING**	▪ Give syntocinon/misoprostol/0.2 mg ergometrine IM ▪ Give appropriate IM/IV antibiotics ▪ Manage as in Rapid assessment and management ▪ **Refer urgently to hospital**
▪ Temperature more than 38°C and any of: → very weak → abdominal tenderness → foul-smelling lochia → profuse lochia → uterus not well contracted → lower abdominal pain → history of heavy vaginal bleeding.	**UTERINE INFECTION**	▪ Insert an IV line and give fluids rapidly ▪ Give appropriate IM/IV antibiotics ▪ Refer urgently to hospital
▪ Fever more than 38°C and any of: → burning on urination → flank pain.	**UPPER URINARY TRACT INFECTION**	▪ Give appropriate IM/IV antibiotics ▪ **Refer urgently to hospital**
▪ Burning on urination.	**LOWER URINARY TRACT INFECTION**	▪ Give appropriate oral antibiotic ▪ Encourage her to drink more fluids. ▪ Follow up in 2 days. If no improvement, refer to hospital.

Table 4.2.3 Postpartum Problems:

ASK, CHECK RECORD	LOOK, LISTEN, FEEL	SIGNS	CLASSIFY	TREAT
IF DRIBBLING URINE				
		▪ Dribbling or leaking urine.	**URINARY INCONTINENCE**	▪ Check perineal trauma. ▪ Give appropriate oral antibiotics for lower urinary tract infection ▪ If conditions persists more than 1 week, refer the woman to hospital-
IF PUS OR PERINEAL PAIN				
		▪ Excessive swelling of vulva or perineum.	**PERINEAL TRAUMA**	▪ Refer the woman to hospital.
		▪ Pus in perineum. ▪ Pain in perineum.	**PERINEAL INFECTION OR PAIN**	▪ Remove sutures, if present. ▪ Clean wound. Counsel on care and hygiene ▪ Give paracetamol for pain ▪ Follow up in 2 days. If inprovement, refer to hßpital.
IF FEELING UNHAPPY OR CRYING EASILY				
▪ How have you been feeling recently? ▪ Have you been in low spirits? ▪ Have you been able to enjoy the things you usually enjoy? ▪ Have you had your usual level of energy, or have you been feeling tired? ▪ How has your sleep been? ▪ Have you been able to concentrate (for example on newspaper articles or your favorite radio programers)?		Two or more of the following symptoms during the same 2 week period representing a change from normal: ▪ Inappropriate guilt or negative feeling towards self. ▪ Cries easily. ▪ Decreased interest or pleasure. ▪ Feels tired, agitated all the time. ▪ Disturbed sleep (sleeping too much or too little, waking early). ▪ Diminished ability to think or concentrate. ▪ Marked loss of appetite.	**POSTPARTUM DEPRESSION (USUALLY AFTER FIRST WEEK)**	▪ Provide emotional support. ▪ Refer urgently the woman to hospital
		▪ Any of the above, for less than 2 weeks.	**POSTPARTUM BLUES (USUALLY IN FIRST WEEK)**	▪ Assure the woman that this is very common. ▪ Listen to her concerns. Give emotional encouragement and support.

4.2.3: Postpartum Depression and Postpartum Psychosis

Postpartum Depression:

It typically develops within the first few weeks after childbirth and can be quite severe, often going unrecognized. Symptoms include persistent sadness, frequent crying, loss of self-confidence, excessive worry about the child or indifference toward them, feelings of inadequacy as a mother, guilt, insomnia, and loss of appetite. These symptoms last longer than two weeks and can worsen, leading to exhaustion. It is crucial to assess for suicidal thoughts and evaluate the mother's capacity and willingness to care for her child, as depression can impact the child's development. Support from family and friends, along with a compassionate attitude, is vital. In some cases, antidepressant medication may be necessary, ensuring that it is compatible with breastfeeding. Note that postpartum depression is more common following stillbirth or intrauterine fetal death.

Postpartum Psychosis:

It is less frequent, manifests as psychotic symptoms following childbirth. Symptoms include irritability, significant mood swings, delusions, hallucinations, and disorganized or violent behavior. This condition requires immediate medical attention, and the patient should be referred to a doctor promptly. Antipsychotic treatment and often hospitalization are necessary to ensure the safety and well-being of the mother and child.

Screening for Postnatal Depression:
Edinburgh Postnatal Depression Scale (EPDS) (Questionnaire Annexed)

The Edinburgh Postnatal Depression Scale (EPDS) is a screening tool designed to identify perinatal and postpartum depression in women during outpatient visits, home visits, or at the 6- to 8-week postpartum check-up. It has been validated for use in Pakistan and tested in various settings. The EPDS consists of ten questions, which can be completed in under five minutes. Responses are scored from 0 to 3 based on the severity of symptoms, with the total score obtained by summing the individual item scores. (*Refer to participant handout no 11: EPDS scale*)

A score of 9 or more, or any indication of suicidal thoughts (a score of 1 or higher on question 10), necessitates immediate referral for follow-up. Clinicians should also refer women scoring below 9 if they suspect depression. Importantly, the EPDS is a screening tool and does not provide a formal diagnosis of depression.

Instructions for Use:

1. Screening should be conducted during the postnatal clinic visit (4-6 weeks after delivery).
2. The mother should circle the response that best reflects her feelings over the past week.
3. All ten items must be completed.
4. Ensure confidentiality by preventing the mother from discussing her answers with others.
5. The mother should ideally complete the scale independently, unless she has difficulty reading or understanding.

Table 4.2.4: Advise Mothers When to Return

Use this chart for advising on postpartum care on or For newborn babies see the schedule on
Encourage woman to bring her husband or family member to at least one visit.

Routine postpartum care visits

FIRST VISIT	within the first week, preferable within 2-3 days
SECOND VISIT	4-6 weeks

Follow-up visits for problems

If the problem was:	**Return in:**
Fever	2 days
Lower urinary tract infection	2 days
Perineal infection or pain	2 days
Hypertension	1 week
Urine incontinence	1 week
Severe anaemia	2 weeks
Postpartum blues	2 weeks
HIV-positive	Refer to PPTCT
Moderate anaemia	4 weeks
If treated in hospital for any complication	According to hospital instructions or according to national guidelines, but no later than in 2 weeks.
If mother Hepatitis B positive	Refer to hospital for baby's vaccination / Immunization
If mother Hepatitis B negative	Refer her & her baby to hospital for vaccination
If mother tuberculosis positive	Refer to relevant centre

Advise on danger signs

Advise to go to a hospital or health centre immediately, day or night, WITHOUT WAITING, if any of the following signs:

- vaginal bleeding:
  - → more than 2 or 3 pads soaked in 20-30 minutes after delivery OR
  - → bleeding increases rather than decreases after delivery.
- convulsions.
- fast or difficult breathing.
- fever and too weak to get out of bed.
- severe abdominal pain.

Go to health centre as soon as possible if any Of the following Signs:

- fever
- abdominal pain
- feels ill
- breasts swollen, red or tender breasts, or sore nipple
- urine dribbling or pain on micturition
- pain in the perineum or draining pus
- foul-smelling lochia

Discuss how to prepare for an emergency in postpartum

- Advise to always have someone near for at least 24 hours after delivery to respond to any change in condition.
- Discuss with woman and her husband and family about emergency issues:
  - → where to go if danger signs
  - → how to reach the hospital
  - → costs involved
  - → family and community support.
- Advise the woman to ask for help from the community, if needed
- Advise the woman to bring her home-based maternal record to the health centre, even for an emergency visit.

CHAPTER 5

Postnatal Newborn Care

Session 5.1: Immediate Newborn Care

Introduction:

The first twenty-eight days of life, known as the neonatal period, are crucial for child survival. In 2019, of the estimated 5.2 million deaths of children under five, 2.4 million occurred during this neonatal period. Children in low- and middle-income countries (LMIC) are nine times more likely to die within the first month of life compared to those in high-income countries (HIC).

Pakistan has a neonatal mortality rate (NMR) of 41 deaths per 1,000 live births, which is among the highest in the world, alongside an under-five child mortality rate (U5MR) of 67 deaths per 1,000 live births. Research indicates significant socioeconomic disparities and a notable urban-rural divide, with low maternal education levels linked to higher neonatal mortality rates. In 2015, United Nations member states adopted the Sustainable Development Goals, aiming to reduce the NMR to below 12 deaths per 1,000 live births and the U5MR to below 25 deaths per 1,000 live births by 2030 (SDG 3.2).

Postnatal immediate newborn care is crucial for ensuring the health and well-being of newborns. This period involves essential practices such as initiation of breastfeeding, thermal protection and immediate assessment of the newborn's health status. Proper care helps prevent hypothermia, facilitates bonding between the mother and baby, and ensures early detection and management of any potential complications. By addressing these critical needs, healthcare providers can significantly reduce neonatal morbidity and mortality.

Learning Objectives:

At the end of the session the participants will be able to;

- Identify and explain the essential components of immediate newborn care, including thermal protection, early breastfeeding initiation and newborn assessment.
- Demonstrate proficiency in performing immediate care procedures, such as assessing vital signs, conducting a thorough physical examination
- Develop appropriate skills of newborn resuscitation
- How to apply chlorhexidine on umbilical stump to prevent sepsis and neonatal tetanus.

Note: Refer to participant handout no 14: Newborn Birth Record Form

Table 5.1: Recommended Steps in Newborn Examination:

EXAMINE THE NEWBORN

Use this chart to assess the newborn after birth, classify and treat, possibly within an hour after birth; for discharge (not before 12 hours); and during the first week of life at routine, follow-up, or sick newborn visit. record the findings on the postpartum record N6.
Always examine the baby in the presence of the mother.

ASK, CHECK RECORD	LOOK, LISTEN, FEEL	SIGNS	CLASSIFY	TREAT AND ADVISE
Check maternal and newborn record or ask the mother: ▪ How old is the baby? ▪ Preterm (less than 37 weeks or 1 month or more early)? ▪ Breech birth? ▪ Difficult birth? ▪ Resuscitated at birth? ▪ Has baby had convulsions? **Ask the mother:** ▪ Do you have any concerns? ▪ How is the baby feeding? **Is the mother very ill or transferred?**	▪ Assess breathing (baby must be calm) → listen for grunting → count breaths: are they 30-60 per minute? Repeat the count if elevated → look at the chest for in-drawing- ▪ Look at the movements: are they normal and symmetrical? ▪ Look at the presenting part — is there swelling and bruises? ▪ Look at abdomen for pallor. ▪ Look for malformations. ▪ Feel the tone: is it normal? ▪ Feel for warmth. If cold, or very warm, measure temperature. ▪ Weigh the baby.	▪ Normal weight baby (2500-g or more). ▪ Feeling well - suckling effectively 8 times in 24 hours, day and night. ▪ No danger signs. ▪ No special treatment needs or treatment completed. ▪ Small baby feeding well and gaining weight adequately	**WELL BABY**	If first examination: ▪ Ensure care for the newborn ▪ Examine again for discharge. If pre-discharge examination: ▪ Immunize if due ▪ Advise on baby care ▪ Advise on routine visit at age 3-7 days ▪ Advise on when to return if danger signs ▪ Record in home-based record. ▪ If further visits, repeat advices.
		▪ Body temperature 35-36.4°C.	**MILD HYPOTHERMIA**	▪ Re-warm the baby skin-to-skin ▪ If temperature not rising after 2 hours, reassess the baby.
		▪ Mother not able to breastfeed due to receiving special treatment. ▪ Mother transferred.	**MOTHER NOT ABLE TO TAKE CARE FOR BABY**	▪ Help the mother express breast milk ▪ Consider alternative feeding methods until mother is well ▪ Provde care for the baby ensure warmth ▪ Ensure mother can see the baby regularly. ▪ Transfer the baby with the mother if possible. ▪ Ensure care for the baby at home.

Table 5.2: Assess Pre-Term, LBW or Twins:

EXAMINE THE NEWBORN

Use this chart to assess the newborn after birth, classify and treat, possibly within an hour after birth; for discharge (not before 12 hours); and during the first week of life at routine, follow-up, or sick newborn visit. record the findings on the postpartum record N6.
Always examine the baby in the presence of the mother.

ASK, CHECK RECORD	LOOK, LISTEN, FEEL	SIGNS	CLASSIFY	TREAT AND ADVISE
Check maternal and newborn record or ask the mother: ▪ How old is the baby? ▪ Preterm (less than 37 weeks or 1 month or more early)? ▪ Breech birth? ▪ Difficult birth? ▪ Resuscitated at birth? ▪ Has baby had convulsions? **Ask the mother:** ▪ Do you have any concerns? ▪ How is the baby feeding? **Is the mother very ill or transferred?**	▪ Assess breathing (baby must be calm) → listen for grunting → count breaths: are they 30-60 per minute? Repeat the count if elevated → look at the chest for in-drawing- ▪ Look at the movements: are they normal and symmetrical? ▪ Look at the presenting part — is there swelling and bruises? ▪ Look at abdomen for pallor. ▪ Look for malformations. ▪ Feel the tone: is it normal? ▪ Feel for warmth. If cold, or very warm, measure temperature. ▪ Weigh the baby.	▪ Normal weight baby (2500-g or more). ▪ Feeling well - suckling effectively 8 times in 24 hours, day and night. ▪ No danger signs. ▪ No special treatment needs or treatment completed. ▪ Small baby feeding well and gaining weight adequately	**WELL BABY**	If first examination: ▪ Ensure care for the newborn ▪ Examine again for discharge. If pre-discharge examination: ▪ Immunize if due ▪ Advise on baby care ▪ Advise on routine visit at age 3-7 days ▪ Advise on when to return if danger signs ▪ Record in home-based record. ▪ If further visits, repeat advices.
		▪ Body temperature 35-36.4°C.	**MILD HYPOTHERMIA**	▪ Re-warm the baby skin-to-skin ▪ If temperature not rising after 2 hours, reassess the baby.
		▪ Mother not able to breastfeed due to receiving special treatment. ▪ Mother transferred.	**MOTHER NOT ABLE TO TAKE CARE FOR BABY**	▪ Help the mother express breast milk ▪ Consider alternative feeding methods until mother is well ▪ Provde care for the baby ensure warmth ▪ Ensure mother can see the baby regularly. ▪ Transfer the baby with the mother if possible. ▪ Ensure care for the baby at home.

IF PRETERM, BIRTH WEIGHT less than2500 gms OR TWINs

ASK, CHECK RECORD	LOOK, LISTEN, FEEL	SIGNS	CLASSIFY	TREAT AND ADVISE
▪ Baby just born. ▪ Birth weight → less than1500 g →1500 g to less than 2500 g. ▪ Preterm → less than 32 weeks →33-36 weeks. ▪ Twin.	▪ If this is repeated visit assess weight gain	▪ Birth weight less than 1500g. ▪ Very preterm less than 32 weeks or more than 2 months early).	**VERY SMALL BABY**	▪ Refer baby urgently to hospital ▪ Ensure extra warmth during referral.
		▪ Birth weight 1500g less than 2500g ▪ Preterm baby (32-36 weeks or 1-2 months early). ▪ Several days old and weight gain inadequate. ▪ Feeding difficulty.	**SMALL BABY**	▪ Give special support to breastfeed the small baby ▪ Assisted Breast,milk feeding ▪ Ensure additional care for a small baby provide Kangaroo mother care ▪ Reassess daily ▪ Do not discharge before feeding well. Gaining weight and body temperature stable.
		▪ Twin	**TWIN**	▪ Give special support to the mother to breastfeed twins ▪ Do not discharge until both twins can go home.

Check for Special Treatment Needs:

ASK, CHECK RECORD	LOOK, LISTEN, FEEL	SIGNS	CLASSIFY	TREAT AND ADVISE
Check record for special treatment needs ▪ Has the mother had within 2 days of delivery →fever more than 38°C? →infection treated with antibiotics? ▪ Membranes ruptured more than 18 hours before delivery? ▪ Mother tested RPR-positive? ▪ Mother tested HIV-positive? →is or has been on ARV →has she received infant feeding counselling? ▪ Is the mother receiving TB treatment which began less than 2 months ago?		▪ Baby less than 1 day old and membranes ruptured more than 18 hours before delivery, **or** ▪ Mother being treated with antibiotics for infection, **or** ▪ Mother has fever: more than 38°C.	**RISK OF BACTERIAL INFECTION**	▪ Give baby 2 IM antibiotics for 5 days ▪ Assess baby daily
		▪ Mother tested RPR-positive.	**RISK OF CONGENITAL SYPHILIS**	▪ Give baby single dose of benzathine penicillin ▪ Ensure mother and husband are treated ▪ Follow up in 2 weeks.
		▪ Mother known to be HIV positive	**RISK OF HIV TRANSMISSION**	▪ Refer to PPTCT
		▪ Mother started TB treatment less than 2 months before delivery.	**RISK OF TUBERCULOSIS**	▪ Give baby isoniazid propylaxis for 6 months ▪ Give BCG vaccination to the baby only when baby's treatment completed. ▪ Follow up in 2 weeks.

Assess Breast Feeding

Assess breastfeeding in every baby as part of the examination.
If mother is complaining of nipple or breast pain, also assess the mother's breasts

ASK, CHECK RECORD	LOOK, LISTEN, FEEL	SIGNS	CLASSIFY	TREAT AND ADVISE
Ask the mother ▪ How is the breastfeeding going? ▪ Has your baby fed in the previous hour? ▪ Is there any difficulty? ▪ Is your baby satisfied with the feed? ▪ Have you fed your baby any other foods or drinks? ▪ How do your breasts feel? ▪ Do you have any concerns? **If baby more than one day old:** ▪ How many times has your baby fed in 24 hours?	▪ **Observe a breastfeed.** If the baby has not fed in the previous hour, ask the mother to put the baby on her breasts and observe breastfeeding for about 5 minutes. **Look** ▪ Is the baby able to attach correctly? ▪ Is the baby well-positioned? ▪ Is the baby suckling effectively? If mother has fed in the last hour, ask her to tell you when her baby is willing to feed again.	▪ Suckling effectively ▪ Breastfeeding 8 times in 24 hours on demand day and night	**FEEDING WELL**	▪ Encourage the mother to continue breast feeding on demand
		▪ Not yet breastfed (first hours of life). ▪ Not well attached. ▪ Not suckling effectively. ▪ Breastfeeding less than 8 times per 24 hours. ▪ Receiving other foods or drinks. ▪ Several days old and inadequate weight gain.	**FEEDING DIFFICULTY**	▪ Support exclusive breastfeeding ▪ Help the mother to initiate breastfeeding ▪ Teach correct positioning and attachment ▪ Advise to feed more frequently, day and night. ▪ Reassure her that she has enough milk. ▪ Advise the mother to stop feeding the baby other foods or drinks. ▪ Reassess at the next feed or follow-up visit in 2 days.
		▪ Not suckling (after 6 hours of age). ▪ Stopped feeding.	**NOT ABLE TO FEED**	▪ Refer baby urgently to hospital

- Is breathing or crying spontaneously
- Has good muscle tone and responds when stimulated
- Has a heart rate above 100 beats/minute
- Becomes pink rapidly

↓

Proceed to routine care

- Is not breathing spontaneously or has difficulty breathing
- Has poor muscle tone
- Has a heart rate less than or equal to 100 beats/minute
- Has persistent central cyanosis at 1 minute

↓

Commence resuscitation

A. Thermoregulation:

- Gently dry the neonate using a clean, dry cloth
- Wrap the neonate in a separate clean, dry cloth
- Position the neonate against the mother's body and cover with a dry cloth
- Conduct a complete clinical examination in warm conditions
- Use a cap to cover the head to minimize heat loss

- Maintain the axillary temperature between 36 and 37 °C, ensuring the neonate's feet are pink and warm.
- Keep the neonate in a warm room
- Postpone bathing the neonate for 24 hours after birth; if cultural practices necessitate an earlier bath, delay it for at least 6 hours.

B. Cord Clamping

- Wait at least 1 to 3 minutes before clamping the umbilical cord, particularly for neonates weighing less than 2500 g.
- Use two Kocher forceps to clamp the cord 10 cm from the umbilicus, and then cut between the two clamps with a sterile blade or scissors, ensuring they are different from those used for the episiotomy.
- Tie off the cord with a Barr clamp or sterile thread using a double ligature, leaving a stump of 2 to 3 cm.
- Disinfect the umbilical area by applying 7.1% chlorhexidine digluconate (which delivers 4% chlorhexidine) to the tip, stump, and base of the cord. If chlorhexidine is unavailable, use a single application of 10% povidone iodine at birth for disinfection.

C. APGAR Score:

The Apgar score is evaluated at 1 and 5 minutes after birth and recorded in the neonate's medical chart and health record. The score is a tool for monitoring the neonate’s adaptation to extra-uterine life.

Items evaluated/score	0	1	2
Skin colour[(a)]	Extreme pallor or central cyanosis	Cyanotic extremities No central cyanosis	Totally pink
Respiration	None	Abnormal (slow, irregular, etc.)	Normal
Heart rate	0	≤ 100/minute	> 100/minute
Muscle tone	Absent	Hypotonia Incomplete flexion of limbs	Good Complete flexion of limbs
Responsiveness (after stimulation)	Nil	Grimace	Good, vigorous cry

(a) A healthy neonate is usually born cyanotic but turns pink within 30 seconds after breathing starts. In neonates with dark skin, it may be more difficult to assess skin colour change. If so, look at the soles of the feet, palms of the hands and mucous membranes to assess for the change from blueish to pink.

Significance of Apgar score:

1-minute score	
0 - 4	Asphyxia
5 - 7	Difficulty adapting
8 - 10	Good adaptation

5-minute score	
0 - 6	Asphyxia
7 - 8	Difficulty adapting
9 - 10	Good adaptation

D. Helping Baby Breathe (Golden One Minute Concept)

Activity: Video how to resuscitate the newborn baby (30 minutes)

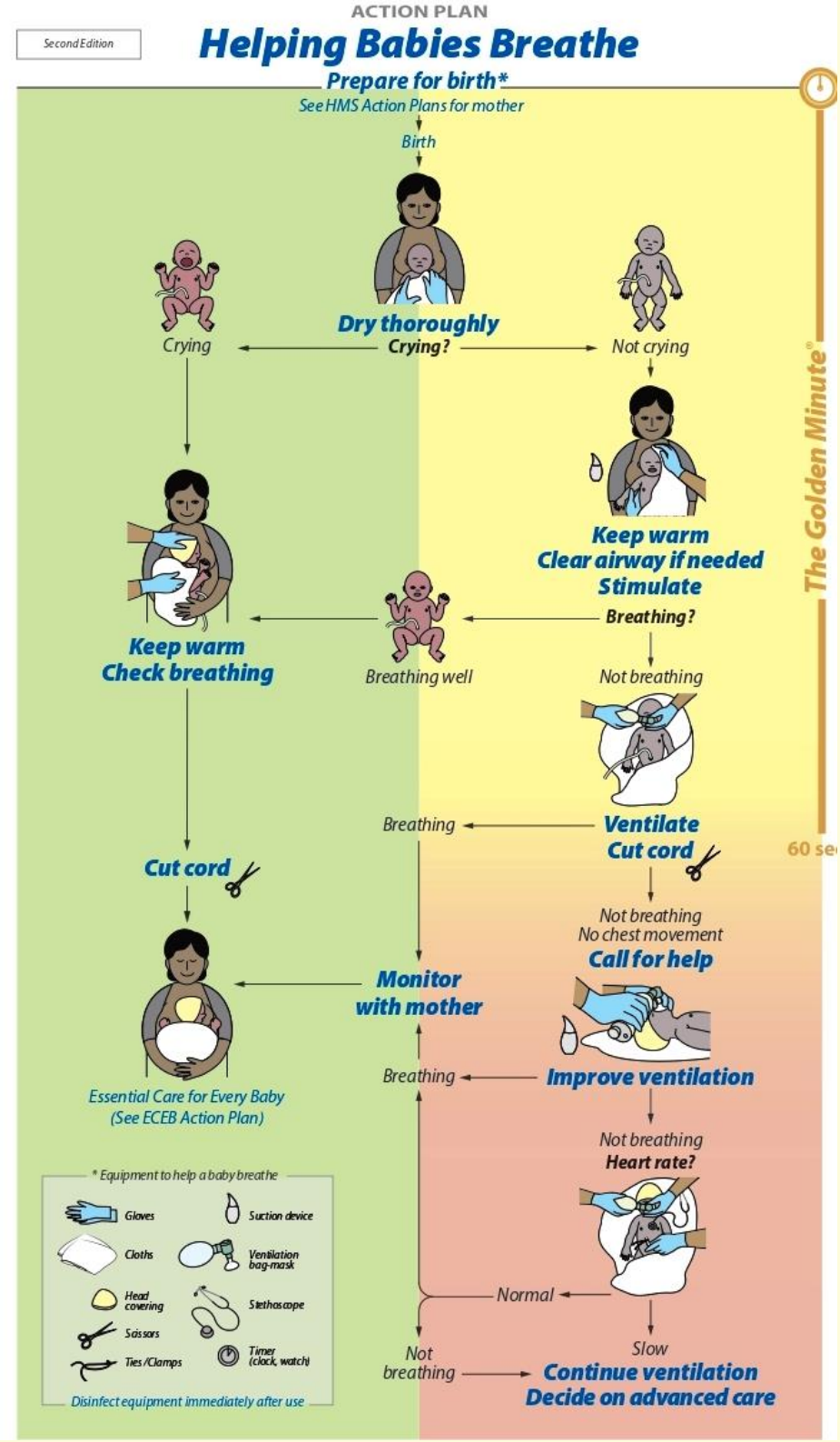
In this session, facilitator will guide training participants through the critical steps of neonatal resuscitation, equipping them with the knowledge and skills necessary to respond effectively in emergency situations. After watching the video, participants will practically perform the resuscitation on baby mannequin.

Link: https://youtu.be/NFKBWMkNDRA?si=lifMbsVr0XToDaso

E. Feeding:

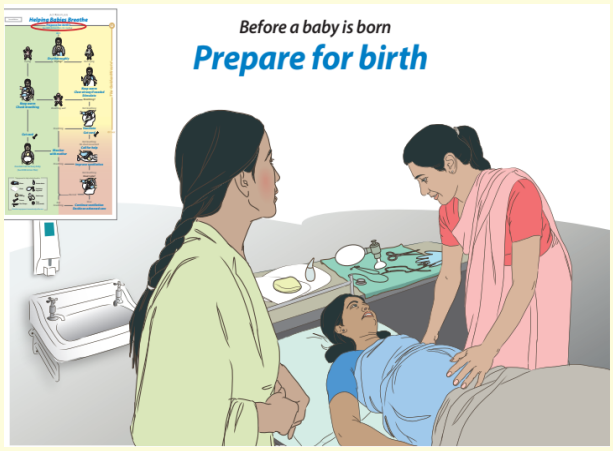
- Put the neonate to the breast as soon as possible within an hour of birth
- Breastfeeding on demand day and night (at least 8 times per 24 hours, i.e. every 3 hours)

Action Plan: Helping Baby Breathe: *(Refer to participant handout no 13 for Activity)*

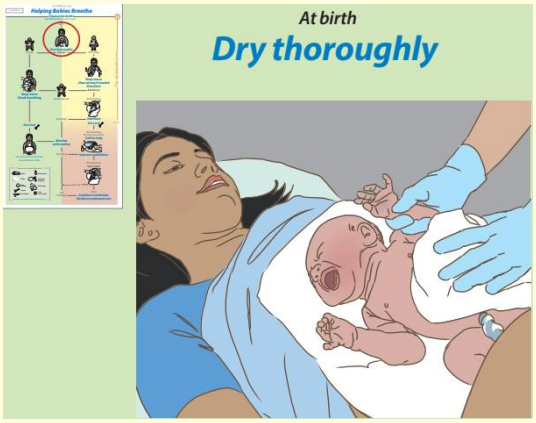


Helping Baby Breathe (Steps Involved)

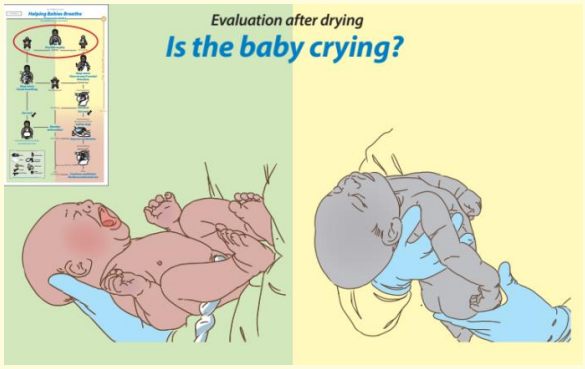
1



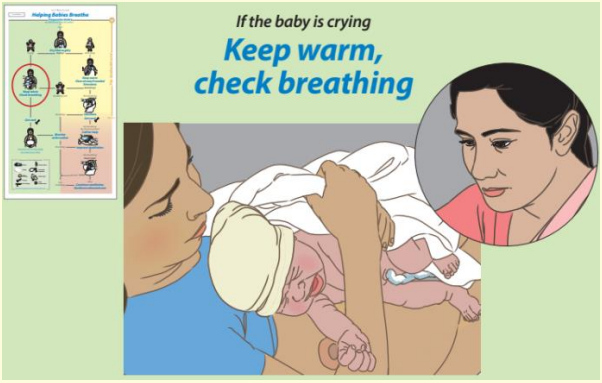
2



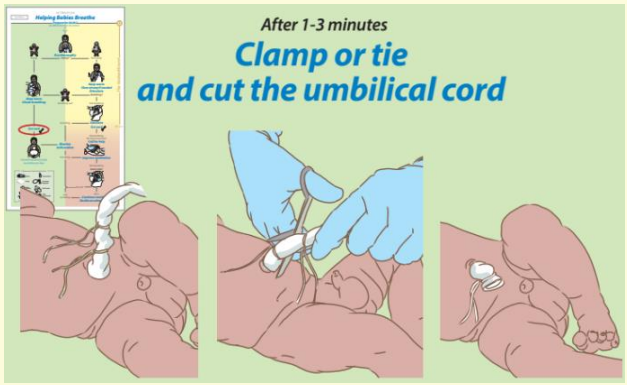
3



4

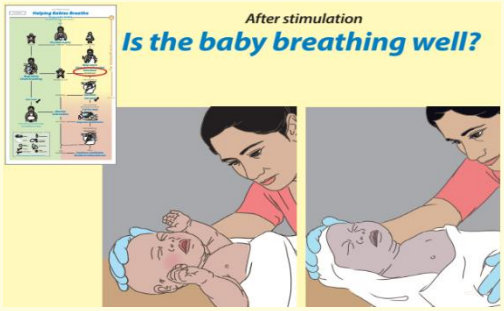


5



6

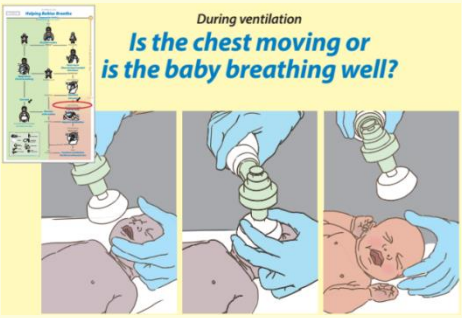
7



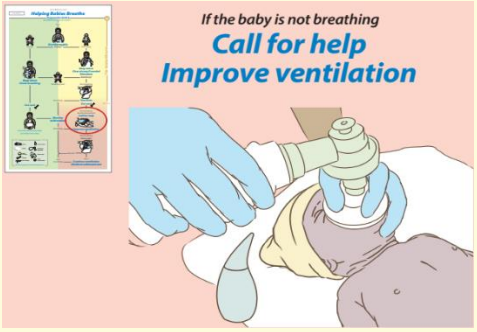
8

9

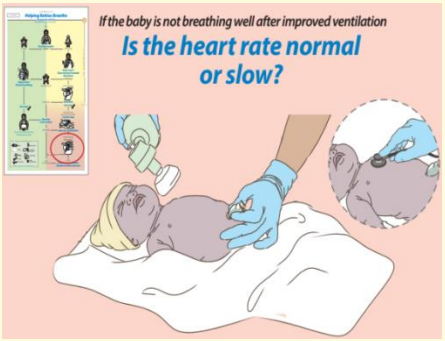
10



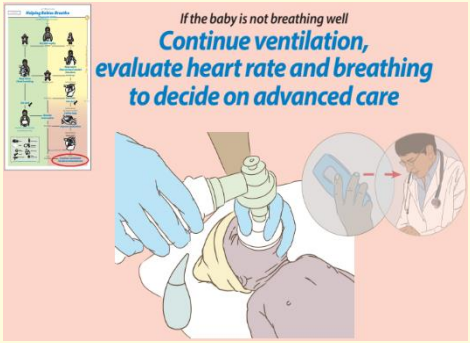
11

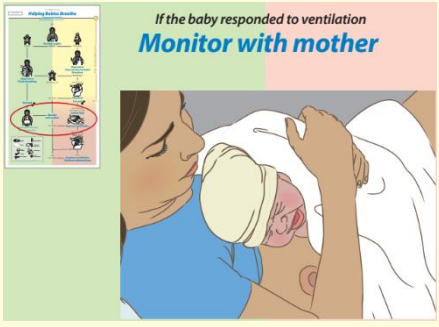


12



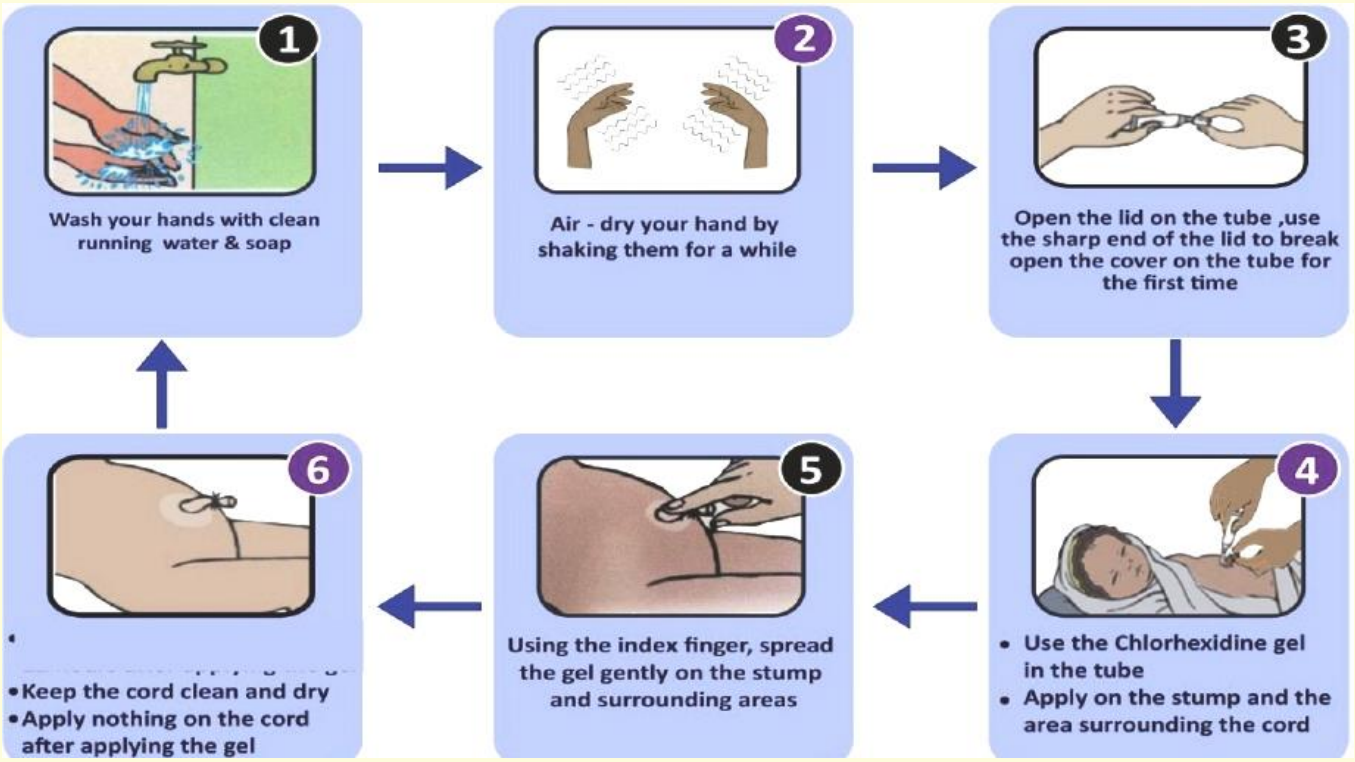
13





F. Cord Care:

Chlorhexidine is a critical antiseptic agent used in cord care due to its broad-spectrum antimicrobial properties, which help prevent infection in the umbilical stump of newborns. The application of chlorhexidine 7.1% digluconate gel significantly reduces the risk of neonatal infections, including sepsis, by inhibiting bacterial growth and promoting healing. To apply chlorhexidine effectively, begin by washing your hands thoroughly with soap and water to ensure a clean environment. If desired, wear sterile gloves for added protection. Gently clean the umbilical cord stump and the surrounding area with a small amount of chlorhexidine gel, ensuring complete coverage. It is essential to allow the gel to air dry completely, as this maximizes its antimicrobial action. This process should be repeated daily until the cord stump naturally falls off, which usually occurs within one to three weeks, while consistently monitoring the area for any signs of infection.



CHAPTER 6

Management of Sick Young Infants

IMNCI Guidelines

Introduction to IMNCI Guidelines:

The Integrated Management of Neonatal and Childhood Illness (IMNCI) guidelines are a comprehensive framework aimed at improving the health and survival of newborns and young children. Developed by the World Health Organization (WHO) and UNICEF, IMNCI integrates preventive and curative health strategies to address common childhood illnesses. The guidelines emphasize systematic approaches to assess and classify illnesses, providing appropriate treatment and educating caregivers about essential home care practices.

The IMNCI implementation in Pakistan began in 2000. Despite these efforts, training coverage across the country remains uneven, with rates varying between 25% and 45%. This initiative has played a significant role in enhancing the capacity of healthcare providers to deliver integrated management of neonatal and childhood illnesses, ultimately aiming to improve child health outcomes in the country. By equipping healthcare providers with knowledge and tools to deliver quality care, IMNCI aims to reduce morbidity and mortality among children under five years of age, particularly in low-resource settings.

Instructions to use IMNCI guidelines:

The ASSESS & CLASSIFY tables of IMNCI guidelines is designed to quickly identify the urgency of a child's health condition based on a color-coded system.

- ✓ **Pink Row:** Indicates a severe classification, meaning the child requires urgent attention and should be referred for inpatient care or admission.
- ✓ **Yellow Row:** Signifies that the child needs specific medical treatment. In this case, the health worker will also educate the mother on administering these treatments and provide guidance on home care, including when to return for further evaluation.
- ✓ **Green Row:** Reflects a situation where the child does not need specific medical treatment. Instead, the health worker focuses on teaching the mother how to care for her child at home, providing advice on supportive measures like proper feeding.

This structured approach helps ensure that children receive the appropriate level of care based on their needs.

Chapter 6

Session 6.1:

Management of PSBI (Possible Serious Bacterial Infection), Pneumonia & Local Infection (IMNCI Guidelines)

Introduction:

This session focuses on how to care for infants aged 0 to 2 months. During this session the facilitator will refer to the relevant classification tables which include:

- Assess and classify the disease of young infants
- Providing treatment for the young infant and counseling the mother for follow-up care

Learning Objectives:

At the end of the session the participants will be able to;

- ✓ Assess and classify the signs and symptoms of Possible Serious Bacterial Infection
- ✓ Provide emergency care to the infants with PSBI before referral to the hospital.

Normal and Fast Breathing in Children of Different Age Groups:

- **Young infants (age 0 to 59 days):** Fast breathing is defined as 60 breaths per minute or more.
- **Infants (2 months up to 12 months):** Fast breathing is defined as 50 breaths per minute or more.
- **Children (12 months up to 5 years):** Fast breathing is defined as 40 breaths per minute or more.

This understanding is crucial for accurate assessment and management of respiratory conditions in young patients. Now ask the participants to answer which child is having normal breathing and which one should be declared with fast breathing.

Table 6.1.1: Practice Exercise:

Age of child	Breathing	Does the infant or Child fast breathing
4 Weeks	60+	Yes
6 Weeks	50+	No
2 Months	50+	Yes
6 Months	40+	No
12 Months	50+	No
11 ½ Months	50+	Yes
1 Month	60+	Yes
4 Months	50+	No
3Weeks	60+	Yes
3Years	40+	Yes
3 Months	50+	No
5 Weeks	60+	Yes
10 Months	50+	Yes

Steps: How to assess a young infant from 0-2 months of age:

Rapid Appraisal of All Waiting Infants

1. **Ask Mother:**
    - Ask the mother to describe any problems or concerns she has regarding her young infant.
2. **Determine Visit Type:**
    - Establish whether this is an initial visit or a follow-up for the identified problem:
        - **If Follow-Up Visit:** Refer to the follow-up instructions (chapter 7, session 7.5) to assess progress and any ongoing concerns.
        - **If Initial Visit:** Proceed with a comprehensive assessment of the young infant.
3. **Initial Assessment Steps:**
    - Conduct a thorough evaluation, including:
        - General appearance and behavior
        - Vital signs (including respiratory rate and temperature)
        - Feeding patterns and hydration status
        - Any signs of distress or illness
        - Detailed physical examination as needed

By gathering this information, the healthcare provider can better understand the infant's condition and determine the appropriate care and management plan.

Classification of Sick Young Infants (Table 6.1.2)

1. Possible Serious Bacterial Infection or Very Severe Disease

If a young infant exhibits any signs listed in the pink row of the classification chart, they are categorized as having Possible Serious Bacterial Infection or Very Severe Disease. This classification indicates a high risk of serious conditions such as pneumonia, sepsis, or meningitis, which can quickly lead to mortality. Infants in this category require urgent hospital referral. Prior to referral, administer an intramuscular antibiotic (gentamicin) and, if the infant can swallow, provide an oral antibiotic (amoxicillin). It is essential to prevent hypoglycemia by offering breastmilk or sugar water, and if feeding is not possible, use a nasogastric tube. Additionally, ensure the infant is kept warm to prevent hypothermia.

2. Pneumonia

Young infants presenting with fast breathing as the sole sign of illness may be classified as having Pneumonia, with treatment varying by age. Infants aged 7 to 59 days with fast breathing can be treated at home with oral antibiotics. Conversely, infants less than 7 days old displaying only fast breathing should be treated as having Very Severe Disease, necessitating pre-referral treatment and urgent hospital transfer. Follow-up on day 4 is critical for all treated infants to ensure improvement; if not, they must be referred for further care.

3. Local Infection

Infants diagnosed with Local Infection typically have an umbilical or skin infection. They can be treated at home with an appropriate oral antibiotic for 5 days, and caregivers should provide necessary home care. A follow-up visit in 2 days is crucial to assess the infection's progress, as local infections can escalate rapidly in young infants.

4. Severe Disease or Local Infection Unlikely

Infants with none of the signs associated with serious bacterial infection, very severe disease, pneumonia, or local infection fall under the classification of Severe Disease or Local Infection Unlikely. In this case, advise caregivers to provide home care while monitoring the infant's condition.

Table 6.1.2: Assess, Classify & Treat the Sick Young Infant: Age Up To 2 Months

DO A RAPID APRAISAL OF ALL WAITING INFANTS

ASK THE MOTHER WHAT THE YOUNG INFANT'S PROBLEMS ARE

- Determine if this is an initial or follow-up visit for this problem.
  - If follow-up visit, use the follow-up instructions.
  - If initial visit, assess the young infant as follows:

USE ALL BOXES THAT MATCH INFANT'S SYMPTOMS AND PROBLEMS TO CLASSIFY THE ILLNESS.

CHECK FOR POSSIBLE SERIOUS BACTERIAL INFECTION OR VERY SEVERE DISEASE, PNEUMONIA AND LOCAL INFECTION

ASK:

- Is the infant having difficulty in feeding?
- Has the infant had convulsions (fits)?

LOOK AND FEEL:

- Count the breaths in one minute. Repeat the count if 60 or more breaths per minute.
- Look for severe chest indrawing
- Measure axillary temperature.
- Look at the young infant's movements. *If infant is sleeping, ask the mother to wake him/her.*
  - Does the infant move on his/her own? *If the infant is not moving, gently stimulate him/her.*
  - Does the infant move only when stimulated but then stops?
  - Does the infant not move at all?
- Look at the umbilicus. Is it red or draining pus?
- Look for skin pustules.

YOUNG INFANT MUST BE CALM

Classify ALL YOUNG INFANTS

SIGNS	CLASSIFY	IDENTIFY TREATMENT (Urgent pre-referral treatments are in bold print)
Any one or more of the following signs: • Not able to feed since birth, stopped feeding well or not feeding at all or • Convulsions or • Severe chest indrawing or • Fever (38°C* or above) or • Low body temperature (less than 35.5°C*) or • Movement only when stimulated or no movement at all, or • Fast breathing (60 breaths per minute or more) in infants less than 7 days old	**POSSIBLE SERIOUS BACTERIAL INFECTION OR VERY SEVERE DISEASE**	➢ ***Give first dose of intramuscular antibiotic.*** ➢ ***Treat to prevent low blood sugar.*** ➢ ***Refer URGENTLY to hospital.***** ➢ ***Teach the mother how to keep the infant warm on the way to the hospital.*** ➢ ***If referral is refused or not possible, further assess and classify the young infant (as on page 39) and treat accordingly.***
• Fast breathing (60 breaths per minute or more) in infants 7 to 59 days old	**PNEUMONIA**	➢ Give amoxicillin for 7 days. ➢ Advise mother to give home care for the young infant. ➢ Follow up on day 4 of treatment. ➢ Also treat per any other
• Umbilicus red or draining pus • Skin pustules	**LOCAL INFECTION**	➢ Give amoxicillin for 5 days. ➢ Teach mother to treat local infections at home. ➢ Advise mother to give home care for the young infant. ➢ Follow up on day 3.
• No signs of bacterial infection or very severe disease	**SEVERE DISEASE OR INFECTION UNLIKELY**	➢ Advise mother to give home care for the young infant.

* *These thresholds are based on axillary temperature.*

** *If referral is refused or not possible, see page 12.*

Table 6.1.3: Management of PSBI & and Low Blood Sugar before Referral

IF THE YOUNG INFANT IS CLASSIFIED AS POSSIBLE SERIOUS BACTERIAL INFECTION OR VERY SEVERE DISEASE, GIVE PRE-REFERRAL TREATMENTS AND REFER URGENTLY

1. Give First Doses of Intramuscular Gentamicin and Oral Amoxicillin

Gentamicin: Desired range is 5–7.5 mg/kg/day in once daily injection. In low birth weight infants, give 3–4 mg/kg/day in once daily injection. To prepare the injection**:** From a 2 ml vial containing 40 mg/ml, remove 1 ml gentamicin from the vial and add 1 ml distilled water to make the required strength of 20 mg/ml.

Amoxicillin: Desired range is 75 to 100 mg/kg/day divided into 2 oral doses. Give first dose pre-referral if young infant can swallow.

WEIGHT	**Gentamicin** (strength 20 mg/ml) Per dose	**Amoxicillin** Dispersible tablet (250 mg) Per dose	**Amoxicillin** Dispersible tablet (125 mg) per dose	**Amoxicillin** Syrup (125 mg in 5 ml) Per dose
1.5 to 2.4 kg	**0.4 ml**	**1/2 tablet**	**1 tablet**	**5 ml**
2.5 to 3.9 kg	**0.8ml**	**1/2 tablet**	**1 tablet**	**5 ml**
4.0 to 5.9 kg	**1.2 ml**	**1 tablet**	**2 tablets**	**10 ml**

2. Treat the Young Infant to Prevent Low Blood Sugar

- ***If the young infant is able to breastfeed:***
  Ask the mother to breastfeed the young infant.
- ***If the young infant is not able to breastfeed but is able to swallow:***
  Give 20–50 ml (10 ml/kg) expressed breastmilk before departure. If not possible to give expressed breastmilk, give 20–50 ml (10 ml/kg) sugar water. ***(To make sugar water: Dissolve 4 level teaspoons of sugar (20 grams) in a 200-ml cup of clean water.)***
- ***If the young infant is not able to swallow:***
  Give 20–50 ml (10 ml/kg) of expressed breastmilk or sugar water by nasogastric tube.

Table 6.1.4: Oral Treatment of Young Infant (Pneumonia & Local Infection)

TREAT THE YOUNG INFANT

➢ *Teach the Mother to Give Oral Medicines at Home*

Follow the instructions below to teach the mother about each oral medicine to be given at home. Also follow the instructions listed with each medicine's dosage table.

- Determine the appropriate medicines and dosage for the infant's age or weight.
- Tell the mother the reason for giving the medicine to the infant.
- Demonstrate how to measure a dose.
- Watch the mother practice measuring a dose by herself.
- Ask the mother to give the first dose to her infant.
- Explain carefully how to give the medicine, then label and package the medicine.
- If more than one medicine will be given, collect, count and package each medicine separately.
- Explain that all the tablets or syrups must be used to finish the course of treatment, even if the infant gets better.
- Check the mother's understanding before she leaves the clinic.

➢ *Give Oral Amoxicillin*

- **Local Infection:** Give oral amoxicillin twice daily for 5 days
- **Pneumonia (fast breathing alone) in infant 7–59 days old:** Give oral amoxicillin twice daily for 7 days

	AMOXICILLIN Desired range is 75 to 100 mg/kg/day divided into 2 daily oral doses **Give twice daily**		
WEIGHT	**Dispersible Tablet (250 mg) Per dose**	**Dispersible Tablet (125 mg) Per dose**	**Syrup (125 mg in 5 ml) Per dose**
1.5 to 2.4 kg	**1/2 tablet**	**1 tablet**	**5 ml**
2.5 to 3.9 kg	**1/2 tablet**	**1 tablet**	**5 ml**
4.0 to 5.9 kg	**1 tablet**	**2 tablets**	**10 ml**

Table 6.1.5: Treat the young infant for Local Infection

TREAT THE YOUNG INFANT AND COUNSEL THE MOTHER

➢ *Teach the Mother How to Treat Local Infections at Home*

- Explain how the treatment is given.
- Watch her as she does the first treatment in the clinic.
- Tell her to return to the clinic if the infection worsens.

To Treat Skin Pustules or Umbilical Infection

The mother should do the treatment twice daily for 5 days:

- Wash hands
- Gently wash off pus and crusts with soap and water
- Dry the area
- Paint the skin or umbilicus/cord with full strength gentian violet (0.5%)
- Wash hands again

To Treat Thrush (ulcers or white patches in mouth)

The mother should do the treatment 4 times daily for 7 days:

- Wash hands
- Paint the mouth with half-strength gentian violet (0.25%) using a clean soft cloth wrapped around the finger
- Wash hands again

➢ *Immunize Every Sick Young Infant, as needed.*

Chapter 6

Session 6.2

Management of Jaundice & Diarrhea in Young Infants

(IMNCI Guidelines)

Assess and Classify Jaundice in Young Infants

Jaundice is characterized by a yellow discoloration of the skin and mucous membranes, often seen in newborns, especially those who are small for their gestational age (less than 2.5 kg at birth or born before 37 weeks). Typically, jaundice appears around the third or fourth day of life as the infant's liver is still maturing and unable to adequately process bilirubin. This physiological jaundice is usually mild, resolves by two weeks in full-term infants, and by three weeks in preterm infants, requiring no treatment. However, jaundice appearing within the first 24 hours after birth is always a sign of an underlying condition, and deep jaundice that affects the palms or soles is severe and demands urgent intervention to prevent potential brain damage.

Assessing Jaundice

To assess jaundice, examine the infant in natural light. Press the skin over the forehead to blanch it, then observe for any yellow discoloration. If yellow is observed, the infant is jaundiced. For severity assessment, repeat this process on the palms and soles.

Classification of Jaundice

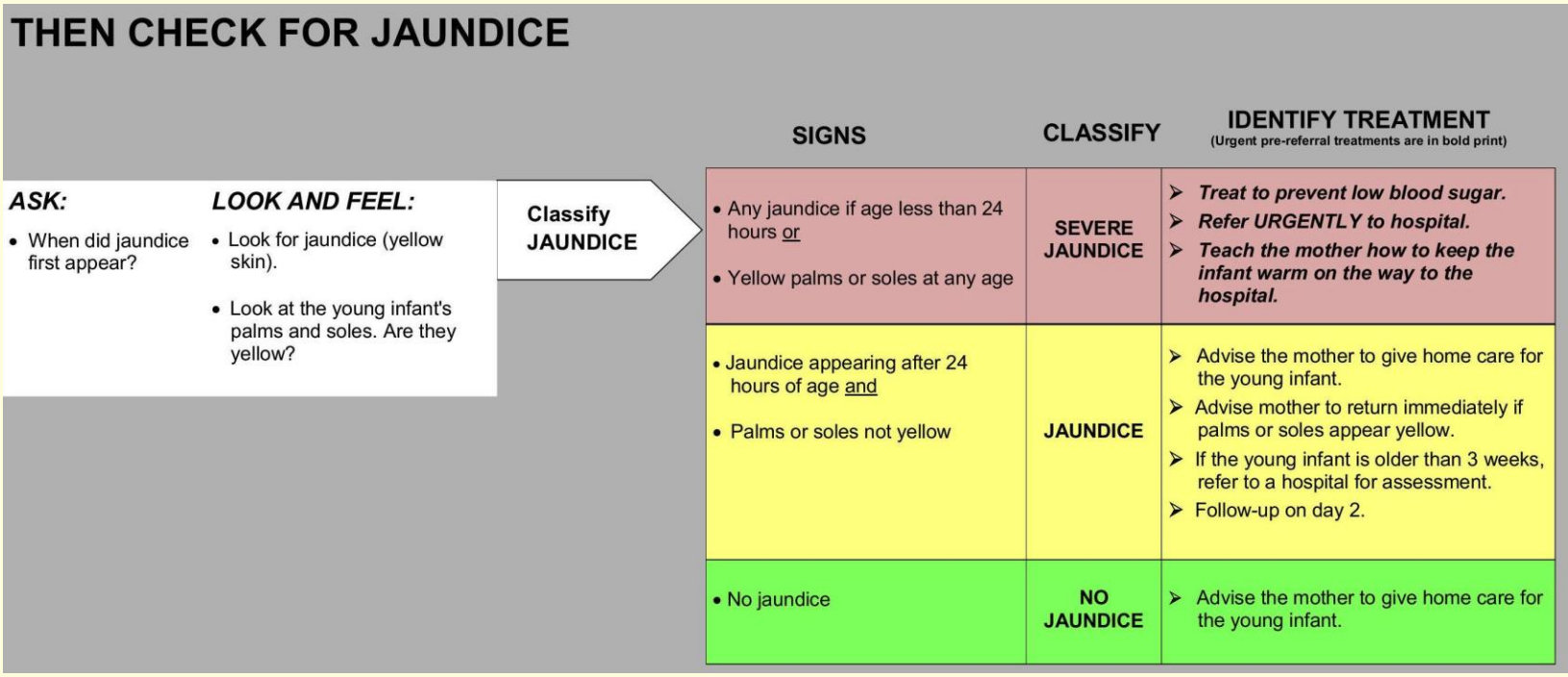
1. Severe Jaundice:

   Infants less than 24 hours old with jaundice or any infant with yellow palms or soles requires urgent referral to the hospital.
2. Jaundice:

   Infants older than 24 hours without yellow palms or soles can be managed at home. Infants older than 3 weeks with jaundice should be referred for further assessment.
3. No Jaundice:

   Infants exhibiting no signs of jaundice

Table 6.2.1: Assess and Classify Jaundice



i. Assessing for Dehydration in young infants (up to 2 months age)

When a mother reports diarrhea, a systematic assessment for dehydration is essential. Unlike older infants or young children, the assessment for young infants checks fewer signs as they cannot express thirst. Instead, focus on the following steps:

1. **Check for Signs of Dehydration:**

   Look for signs such as:

   - Reduced skin turgor (the skin may not goes back quickly when pinched).
   - Dry mouth or tongue.
   - Sunken eyes.
   - Sunken fontanelle (the soft spot on the head).
   - Decreased urine output (fewer wet diapers).

Classifying Diarrhea for Dehydration

Classify the young infant's diarrhea according to the severity of dehydration:

1. Severe Dehydration:
   - Signs of severe dehydration are present, and the infant needs urgent medical care.
2. Some Dehydration:
   - Signs of some dehydration are evident; the infant requires treatment and close monitoring.
3. No Dehydration:
   - No signs of dehydration are observed, and the infant can be managed at home.

Recording Form up-to 2 Months Age Group (Participant handout No: 15)

Utilize the Young Infant IMNCI Recording Form to document all relevant information during assessments. This form is crucial for tracking the infant's health status and the management of diarrhea-related issues during healthcare visits. For comprehensive management, refer to the assessment criteria and follow the appropriate treatment guidelines based on the classification of dehydration.

Table 6.2.2: Ask about Diarrhea in Young Infant

THEN ASK: Does the young infant have diarrhoea*?

IF YES, LOOK AND FEEL:

- Look at the young infant's general condition:

  Infant's movements
  - Does the infant move on his/her own?
  - Does the infant move only when stimulated but then stops?
  - Does the infant not move at all?

  - Is the infant restless and irritable?

- Look for sunken eyes.

- Pinch the skin of the abdomen.
  Does it go back:
  - Very slowly (longer than 2 seconds)?
  - or slowly?

Classify DIARRHOEA FOR DEHYDRATION

SIGNS	CLASSIFY	IDENTIFY TREATMENT (Urgent pre-referral treatments are in bold print)
Two of the following signs: • Movement only when stimulated or no movement at all • Sunken eyes • Skin pinch goes back very slowly.	**SEVERE DEHYDRATION**	➢ ***If infant has no other severe classification:*** ***- Follow Plan C to treat severe dehydration quickly. Start IV fluid immediately, or refer urgently for IV fluid. If that is not possible, start rehydration by NG tube.*** OR ➢ ***If infant also has another severe classification:*** ***- Refer URGENTLY to hospital with mother giving frequent sips of ORS on the way.*** ***- Advise mother to continue breastfeeding.*** ➢ ***Teach the mother how to keep the infant warm on the way to the hospital.***
Two of the following signs: • Restless and irritable • Sunken eyes • Skin pinch goes back slowly.	**SOME DEHYDRATION**	➢ Give fluid and breast milk for some dehydration (Plan B). OR ➢ ***If infant also has another severe classification:*** ***- Refer URGENTLY to hospital with mother giving frequent sips of ORS on the way.*** ***- Advise mother to continue breastfeeding.*** ➢ Advise mother when to return immediately ➢ Follow-up on day 3 if not improving
• Not enough signs to classify as some or severe dehydration.	**NO DEHYDRATION**	➢ Give fluids and breastmilk to treat for diarrhoea at home (Plan A) ➢ Advise mother when to return immediately

**** What is diarrhoea in a young infant?***

A young infant has diarrhoea if the stools have changed from usual pattern and are many and watery (more water than fecal matter).

The normally frequent or semi-solid stools of a breastfed baby are not diarrhoea.

Table 6.2.3: Treatment of Diarrhea in Young Infant (Plan A & Plan B)

TREAT THE YOUNG INFANT AND COUNSEL THE MOTHER

➢ ***To Treat the Young Infant with Diarrhoea, Give Extra Fluids and Continue Feeding***

If the young infant has NO DEHYDRATION, use Plan A. If the young infant has SOME DEHYDRATION, use Plan B.

PLAN A: TREAT DIARRHOEA AT HOME

Counsel the mother on the Rules of Home Treatment for Young Infant:

1. **Give Extra Fluids**
2. **When to Return**

1. GIVE EXTRA FLUID **(as much as the young infant will take)**

TELL THE MOTHER:

- **Breastfeed frequently and for longer at each feed.**
- Also give ORS or clean water in addition to breastmilk.

It is especially important to give ORS at home when:

- *the young infant has been treated with Plan B or Plan C during this visit.*
- *the young infant cannot return to a clinic if the diarrhoea gets worse.*

TEACH THE MOTHER HOW TO MIX AND GIVE ORS. GIVE THE MOTHER 2 PACKETS OF ORS TO USE AT HOME.

SHOW THE MOTHER HOW MUCH FLUID TO GIVE IN ADDITION TO THE USUAL FLUID INTAKE:

Up to 2 years, 50 to 100 ml after each loose stool

Tell the mother to:

- Give frequent small sips from a cup.
- If the infant vomits, wait 10 minutes. Then continue, but more slowly.
- Continue giving extra fluid until the diarrhea stops.

2. WHEN TO RETURN

PLAN B: TREAT SOME DEHYDRATION WITH ORS

In the clinic, give recommended amount of ORS over 4-hour period

DETERMINE AMOUNT OF ORS TO GIVE DURING FIRST 4 HOURS

WEIGHT	**< 6 kg**
AGE*	**Up to 4 months**
ORS	200 – 450 ml

** Use the age only when you do not know the weight. The approximate amount of ORS required (in ml) can also be calculated by multiplying the young infant's weight (in kg) times 75.*

- If the young infant wants more ORS than shown, give more.
- For young infants who are not breastfed, also give 100 - 200 ml clean water during this period if you use standard ORS. This is not needed if you use new low osmolarity ORS.

SHOW THE MOTHER HOW TO GIVE ORS SOLUTION.

- Give frequent small sips from a cup.
- If the young infant vomits, wait 10 minutes. Then continue, but more slowly.
- **Continue breastfeeding whenever the young infant wants.**

AFTER 4 HOURS:

- Reassess the young infant and classify the infant for dehydration.
- Select the appropriate plan to continue treatment.
- **Begin breastfeeding the young infant in clinic**.

IF THE MOTHER MUST LEAVE BEFORE COMPLETING TREATMENT:

- Show her how to prepare ORS solution at home.
- Show her how much ORS to give to finish 4-hour treatment at home. Give her enough ORS packets to complete rehydration. Also give her 2 packets as recommended in **Plan A**.

Explain the Rules of Home Treatment for Young Infant:

1. **GIVE EXTRA FLUIDS. Breastfeed frequently and for longer at each feed.**
2. **WHEN TO RETURN**

Table 6.2.4: Treatment of Severe Diarrhea (Plan-C)

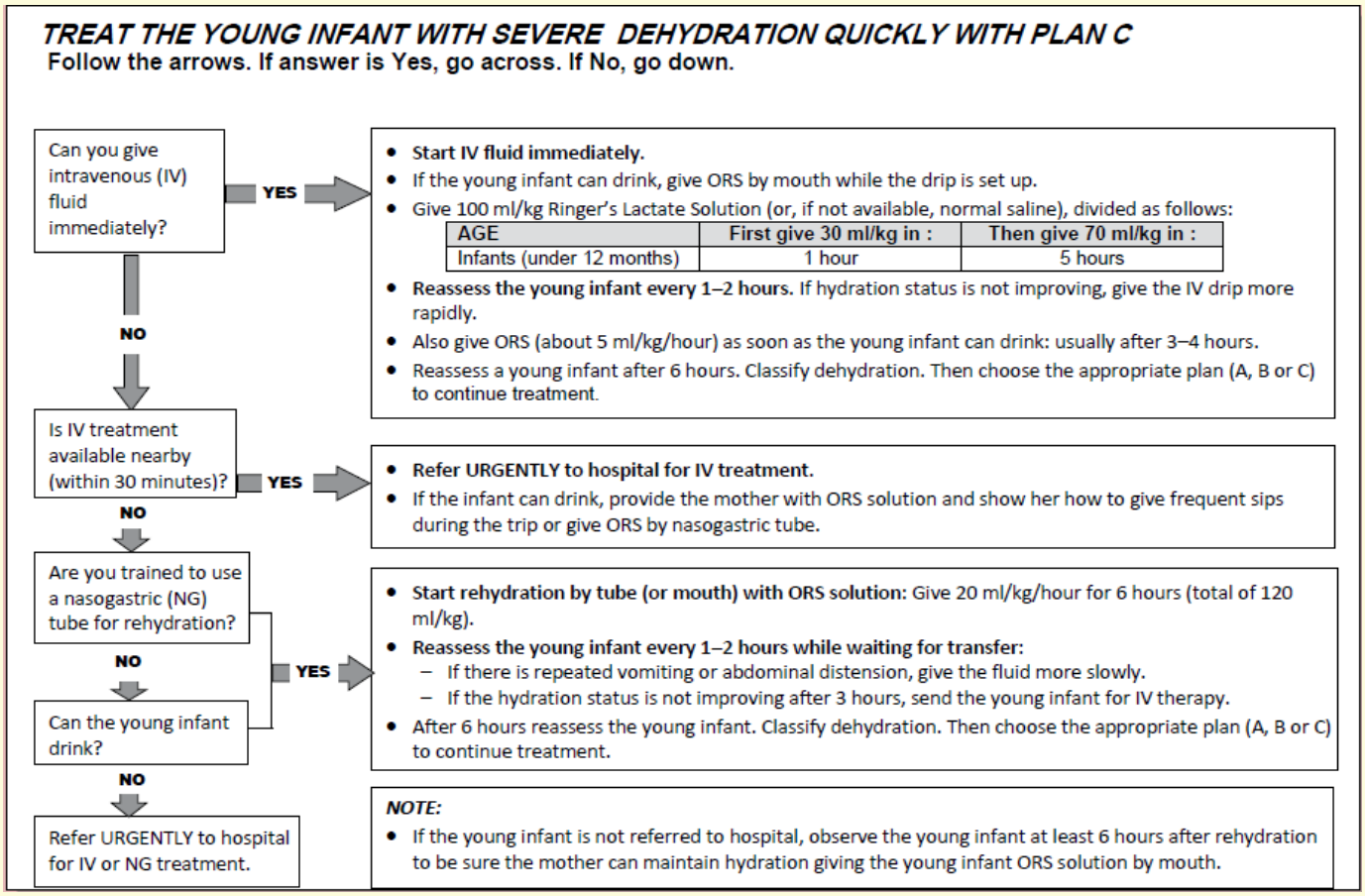


Table 6.2.5: WHO recommendations for zinc supplementation in acute diarrhea

Aspect	Recommendation
Target Group	**Children with acute diarrhea**
Dosage (Children > 6 months)	20 mg of zinc per day
Dosage (Children < 6 months)	10 mg of zinc per day
Duration of Treatment	10 to 14 days
Benefits	Reduces duration and severity of diarrhea, decreases risk of future episodes

Chapter 6

Session 6.3

Management of Feeding Problems in Young Infants

(IMNCI Guidelines)

Assessing Feeding Problems and Weight in Breastfed Infants

Adequate feeding is crucial for an infant's growth and overall development. Insufficient feeding during infancy can lead to long-term adverse effects. To evaluate an infant's growth, it's important to assess their weight relative to age, focusing on whether they are receiving adequate nutrition. Exclusive breastfeeding is the ideal method of feeding, providing optimal nutrition and immunity. Mothers should be encouraged to understand the benefits of exclusive breastfeeding to promote better health outcomes for their infants.

1. **Feeding History**:

   Ask if the infant is breastfed: Inquire about the frequency of breastfeeding. Ideally, the infant should be breastfed at least eight times in 24 hours. Assess additional foods or drinks: Determine if the infant receives any other substances, such as milk, juice, or water. Understand how often and in what amounts these are given.

2. **Weight Measurement**:

   Weigh the infant and document the weight. Use the appropriate weight-for-age chart to check if the infant is low weight for age (below -2 Z-score) or very low weight for age (below -3 Z-score). Any infant weighing less than 1.5 kg is considered very low weight for age.

3. **Oral Examination**:

   Look for signs of thrush by examining the mouth. Thrush appears as white patches or a thick coating on the tongue and inside the cheeks. Attempt to wipe these off; if they persist, it indicates thrush.

4. **Breastfeeding Assessment**

   If the infant is breastfed, observe the feeding:

   Ask mother if the infant has fed in the past hour: If the infant has, request the mother to indicate when the infant is ready to feed again. While waiting, assess the infant’s immunization status and address any necessary treatments, such as antibiotics for local infections or oral rehydration solutions for dehydration. Ask the mother to put her infant to the breast and observe the breastfeeding process for at least four minutes or ideally for the entire duration.

Signs of Good Attachment

During the observation, check for the following signs of good attachment:

1. More areola should be visible above the infant's top lip than below the bottom lip.
2. The infant's mouth should be wide open.
3. The lower lip should be turned outward.
4. The infant's chin should be touching the breast.

If all four signs are present, the infant is well attached.

Signs of Poor Attachment

If the infant exhibits any of the following signs, they are likely not well attached:

1. Equal or more areola visible below the bottom lip than above the top lip.
2. Mouth not wide open, with lips pushed forward.
3. Lower lip turned inward.
4. Chin not touching the breast.

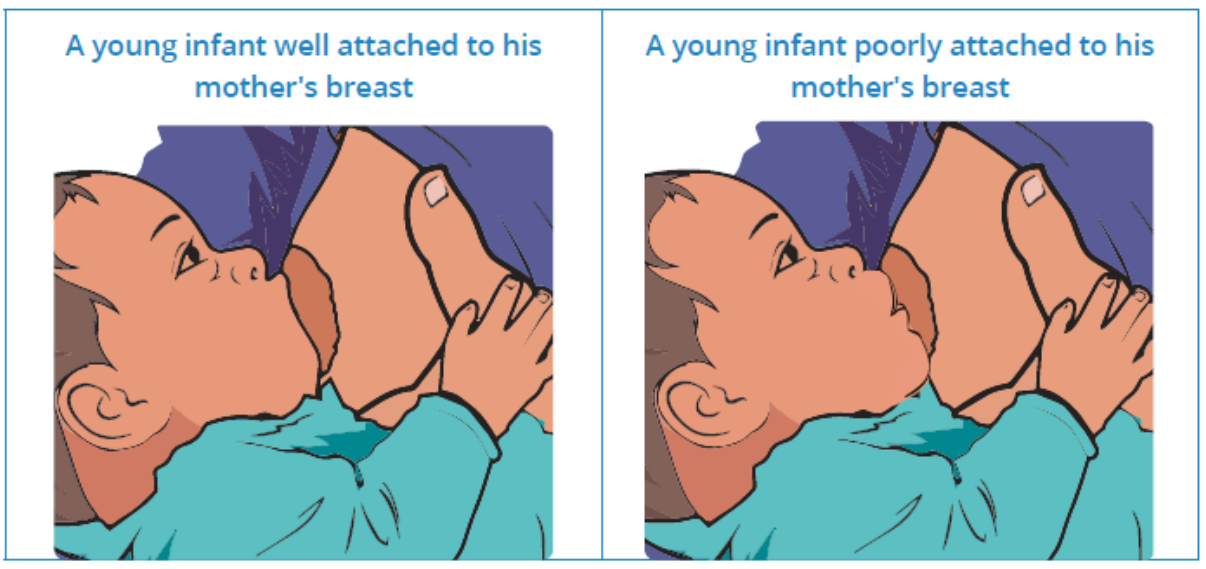


Figure: Signs of well attached and poorly attached young infant

Implications of Poor Attachment:

Poor attachment can lead to several issues, including:

- Incorrect attachment can cause pain and damage to the nipples.
- The infant may not effectively finish breast milk, leading to breast engorgement.
- An unsatisfied infant may want to feed more often or for longer durations.
- The infant may receive insufficient milk, resulting in poor weight gain.
- Prolonged poor attachment may lead to decreased breastmilk production.

Improving the infant's attachment can help resolve these problems and it will lead to a more satisfying breastfeeding experience for both the mother and the infant.

Assessing Effective Suckling in Infants:

Effective Suckling Indicators

To determine if the infant is suckling effectively, observe for the following signs:

The infant should exhibit slow, deep sucks with occasional pauses. You may see or hear the infant swallowing, indicating that milk is being consumed. After breastfeeding, a satisfied infant will spontaneously release the breast without any prompting from the mother. Signs of satisfaction include appearing relaxed, sleepy, and losing interest in breastfeeding.

Ineffective Suckling Indicators

An infant is not suckling effectively if you notice:

The infant may be taking quick, shallow sucks instead of deep ones. You may see the cheeks indrawing while suckling. There are no visible or audible signs of swallowing. The infant appears unsatisfied after feeding, may cry, or try to suckle again.

Addressing Feeding Issues

If you observe that a blocked nose is affecting the infant's ability to breastfeed, clear the infant's nose and reassess suckling effectiveness.

Support for Positioning and Attachment

If the infant is struggling with attachment or suckling, assist the mother in improving the infant's positioning and attachment. This will often enhance the effectiveness of breastfeeding. If, despite efforts to improve attachment and suckling, the infant continues to have difficulties, refer the infant urgently to the hospital for further evaluation and support.

Table 6.3.1: Feeding Problems in Low Weight for Age Breastfed Infant

THEN CHECK FOR FEEDING PROBLEM OR LOW WEIGHT FOR AGE IN BREASTFED INFANTS

ASK:

- Is the infant breastfed? If yes,how many times in 24 hours?
- Does the infant usually receive any other foods or drinks?
  - If yes, how often?
  - If yes, what do you use to feed the infant?

LOOK AND FEEL:

- Determine weight for age.
  - Weight less than 1.5 kg?
  - Weight for age less than -3 Z score?
- Look for ulcers or white patches in the mouth (thrush).

ASSESS BREASTFEEDING:

- Has the infant breastfed in the previous hour?

If the infant has not fed in the previous hour, ask the mother to put her infant to the breast. Observe the breastfeed for 4 minutes.

(If the infant was fed during the last hour, ask the mother if she can wait and tell you when the infant is willing to feed again.)

- Is the infant well attached?

not well attached *good attachment*

TO CHECK ATTACHMENT, LOOK FOR:
- *More areola seen above infant's top lip than below bottom lip*
- *Mouth wide open*
- *Lower lip turned outwards*
- *Chin touching breast*

(All of these signs should be present if the attachment is good).

- Is the infant suckling effectively (that is, slow deep sucks, sometimes pausing)?

not suckling effectively *suckling effectively*

➢ Clear a blocked nose if it interferes with breastfeeding.

Classify FEEDING

SIGNS	CLASSIFY	IDENTIFY TREATMENT
• Weight < 1.5 kg, or • Weight < -3 Z score	**VERY LOW WEIGHT**	➢ ***Treat to prevent low blood sugar.*** ➢ ***Refer URGENTLY to hospital.*** ➢ ***Teach the mother to keep the young infant warm on the way to hospital.***
• Not well attached to breast or • Not suckling effectively, or • Less than 8 breastfeeds in 24 hours, or • Receives other foods or drinks, or • Low weight for age, or • Thrush (ulcers or white patches in mouth)	**FEEDING PROBLEM and/or LOW WEIGHT FOR AGE**	➢ If not well attached or not suckling effectively, teach correct positioning and attachment. • If not able to attach well immediately, teach the mother to express breast milk and feed by a cup ➢ If breastfeeding less than 8 times in 24 hours, advise to increase frequency of feeding. Advise her to breastfeed as often and for as long as the infant wants, day and night. ➢ If receiving other foods or drinks, counsel mother about breastfeeding more, reducing other foods or drinks, and using a cup. • If not breastfeeding at all: - Refer for breastfeeding counselling and possible relactation. - Advise about correctly preparing breast-milk substitutes and using a cup. ➢ Advise the mother how to feed and keep the low weight infant warm at home ➢ If thrush, teach the mother to treat thrush at home. ➢ Advise mother to give home care for the young infant. ➢ Follow up FEEDING PROBLEM or thrush on day 3. ➢ Follow up LOW WEIGHT FOR AGE on day 14.
• Not low weight for age and no other signs of inadequate feeding	**NO FEEDING PROBLEM**	➢ Advise mother to give home care for the young infant. ➢ Praise the mother for feeding the infant well.

Assessing Feeding Problems and Weight Issues in Infants Not Receiving Breast Milk

Initial Assessment Steps

1. Ask About Milk: Determine what type of milk or fluids the mother provides. This could include breastmilk substitutes, animal milk, or other liquids.
2. Feeding Frequency: Inquire about how many times the infant is fed each day and night. Healthy frequency is at least 8 times in 24 hours.
3. Amount per Feed: Ask how much milk is given at each feeding. Use common bottles or cups for visual reference.
4. Preparation Method: Discuss how the milk is prepared and whether it is given via cup or bottle. Ask the mother to demonstrate.
5. Cleaning Utensils: Check how the feeding utensils are cleaned, as improper hygiene can lead to contamination.
6. Breastmilk Intake: Confirm if any breastmilk is being given alongside the replacement feeds.

Classification of Feeding Problems and Weight

Urgent Referral: If the infant shows signs requiring urgent referral to the hospital, do not proceed with the feeding classification.

1. **Very Low Weight for Age**:

   Infants weighing less than 1.5 kg or below the -3 Z-score line fall into this category. These infants are at high risk for temperature regulation and feeding issues and need urgent referral.

2. **Feeding Problem or Low Weight for Age**:

   This includes infants weighing below the -2 Z-score line or those showing signs of inadequate feeding. Advise mothers to ensure infants are breastfed frequently and adequately. For non-breastfed infants, counsel on appropriate feeding practices.

Recommendations for Care

For Breastfed Infants:

Encourage exclusive breastfeeding. Teach proper positioning and attachment techniques to improve feeding. If the infant struggles to attach, instruct the mother on expressing breast milk and feeding with a cup.

For Infants Receiving No Breast Milk:

Address any specific feeding issues and counsel on proper replacement feeds and hygiene. If using bottles, recommend transitioning to cup feeding for better hygiene.

Home Care:

Advise on keeping low-weight infants warm and treating thrush if present. Schedule a follow-up appointment to monitor improvement in feeding and weight.

No Feeding Problem

Infants in this category are either exclusively breastfed or receiving safe, adequate replacement feeds. They are not classified as low weight for age, meaning their weight is above the -2 Z-score line, indicating lower risk.

Proper assessment and intervention are crucial to ensure infants receive adequate nutrition and maintain healthy growth. Regular follow-ups will help monitor progress and provide additional guidance as needed.

Table 6.3.2: Feeding Problems or Low Weight for Age Infants receiving no Breast milk

THEN CHECK FOR FEEDING PROBLEM OR LOW WEIGHT FOR AGE IN INFANTS RECEIVING NO BREASTMILK

ASK:

- What milk are you giving?
- How many times during the day and night?
- How much is given at each feed?
- How are you preparing the milk?
  - Let mother demonstrate or explain how a feed is prepared, and how it is given to the infant.
- How is the milk being given? Cup or bottle?
- How are you cleaning the feeding utensils?
- Are you giving any breastmilk at all?
- What foods and fluids in addition to replacement feeds are given?

LOOK, LISTEN, FEEL:

- Determine the weight for age.
  - Weight less than 1.5 kg?
  - Weight for age less than -3 Z score?
- Look for ulcers or white patches in the mouth (thrush).

Classify FEEDING

SIGNS	CLASSIFY	IDENTIFY TREATMENT
• Weight < 1.5 kg, or • Weight < –3 Z score	**VERY LOW WEIGHT**	➢ ***Treat to prevent low blood sugar.*** ➢ ***Refer URGENTLY to hospital.*** ➢ ***Teach the mother to keep the young infant warm on the way to the hospital.***
• Giving inappropriate replacement feeds, or • Giving insufficient replacement feeds, or • Milk incorrectly or unhygienically prepared, or • Using a feeding bottle, or • An HIV positive mother mixing breastmilk and other feeds before 6 months, or • Low weight for age, or • Thrush	**FEEDING PROBLEM and/or LOW WEIGHT FOR AGE**	➢ Counsel about feeding ➢ Explain the guidelines for safe replacement feeding ➢ Identify concerns of mother and family about feeding. ➢ If mother is using a bottle, teach cup feeding. ➢ If thrush, teach the mother to treat it at home. ➢ Follow-up FEEDING PROBLEM or thrush on day 3. ➢ Follow up LOW WEIGHT FOR AGE on day 7.
• Not low weight for age and no other signs of inadequate feeding	**NO FEEDING PROBLEM**	➢ Advise mother to continue feeding, and ensure good hygiene ➢ Praise the mother for feeding the infant well

Assessment and Classification of Sick Young Infants When Referral is Not Possible

When a sick young infant cannot be referred to a hospital due to various barriers, the health worker must further assess and classify the infant's condition. This process is critical to ensure the infant receives appropriate care to reduce the risk of mortality.

Steps for Assessment

1. Check for Signs of Critical Illness
    - Convulsions
    - Unable to Feed at All
    - No Movement Even on Stimulation or Unable to Cry
    - Cyanosis
    - Bulging Fontanelle

    If any of these signs are present, classify the infant as CRITICAL ILLNESS. These infants require urgent referral and inpatient care due to their high risk of mortality.
    - Additional Signs:
        - Apnea: Breathing pauses longer than 20 seconds.
        - Cyanosis: Bluish discoloration of skin and mucous membranes.
        - Bulging Fontanelle: The soft spot on the head curves outward, indicating potential intracranial pressure.
        - Persistent Vomiting: Vomiting after three feeding attempts within 30 minutes.
2. Classify Clinical Severe Infection If none of the critical illness signs are present, check for signs of CLINICAL SEVERE INFECTION:
    - Not Feeding Well on Observation
    - Temperature 38°C or Higher
    - Temperature Less Than 35.5°C
    - Severe Chest Indrawing
    - Movement Only When Stimulated

    Infants with any of these signs are classified as CLINICAL SEVERE INFECTION. While referral is still recommended, treatment can be initiated at the outpatient level if necessary.

Treatment Options

- **For infants classified as** CRITICAL ILLNESS**:**
    - Pre-referral Treatment: Administer appropriate pre-referral treatments (e.g., parenteral antibiotics, oxygen if available).
    - Facilitate Referral: Engage with the mother to understand and address concerns that may prevent referral. Emphasize the urgency and importance of hospital care.
- **For infants classified as** CLINICAL SEVERE INFECTION**:**
    - Intramuscular Gentamicin: Administer at the outpatient clinic.
    - Oral Amoxicillin: Provide for home treatment.

Follow-Up Care

- Monitoring: Schedule a follow-up visits to assess the infant's progress.
- Education: Educate the mother about signs of worsening conditions that necessitate immediate care.

Proper assessment and classification of young infants who cannot be referred to a hospital are crucial to ensuring they receive the care they need. Timely interventions and supportive education can help improve outcomes for these vulnerable infants.

Table 6.3.3: Management of Young Infants when Referral is Refused or Referral is not Possible

WHERE REFERRAL IS REFUSED OR NOT POSSIBLE, FURTHER ASSESS AND CLASSIFY THE SICK YOUNG INFANT WITH POSSIBLE SERIOUS BACTERIAL INFECTION OR VERY SEVERE DISEASE

Asses	Classify	Identify Treatment
Young infant has any one of the following: • Convulsions • Unable to feed at all • No movement on stimulation • Unable to cry • Bulging fontanelle • Cyanosis	**CRITICAL ILLNESS**	➢ ***Give first dose of both ampicillin and gentamicin intramuscularly.*** ➢ ***Explain to the caregiver that the infant is very sick and needs urgent referral for hospital care.*** ➢ ***Treat to prevent low blood sugar.*** ➢ ***Teach the mother how to keep the young infant warm on the way to the hospital.*** ➢ ***Refer URGENTLY to hospital.*** ➢ ***If referral is still not possible, continue treatment with daily IM gentamicin and twice-daily IM ampicillin until referral is possible (up to 7 days).***

Young infant has any one of the following:
• Not feeding well on observation
• Temperature 38°C or more
• Temperature less than 35.5° C
• Severe chest indrawing
• Movement only when stimulated
	CLINICAL SEVERE INFECTION	➢ ***Explain to the caregiver that the infant is very sick and needs urgent referral for hospital care.***
		➢ ***Treat to prevent low blood sugar.***
		➢ ***Teach the mother how to keep the young infant warm on the way to the hospital.***
		➢ ***Refer URGENTLY to hospital.***
		➢ ***If referral still is not possible,***
		  ➢ Treat at outpatient clinic with daily intramuscular gentamicin*.
		  ➢ Give oral amoxicillin for 7 days.
		  ➢ Teach the mother how to give the oral amoxicillin twice daily.
		  ➢ Advise mother to return for the next injection tomorrow.
		  ➢ Treat also for any other classifications that the young infant has.
		  ➢ Reassess the young infant at each visit

Young infant has: • Fast breathing (60 breaths per minute or more) in infants less than 7 days old**	**SEVERE PNEUMONIA**	➢ Give oral amoxicillin for 7 days. ➢ Teach the mother how to give the oral amoxicillin twice daily. ➢ Treat also for any other classifications that the young infant has. ➢ Advise the mother to return for follow up on day 4.

*Countries may decide to treat with IM gentamicin for 7 days or 2 days. If a country chooses 2 days, then there is a mandatory follow-up visit on day 4.
**Note that a young infant 7-59 days old having fast breathing (60 breaths per minute or more) does NOT need to be referred; treat at outpatient clinic with oral amoxicillin.

Table 6.3.4: Pre-Referral Treatment of Young Infant with Critical Illness

➢ ***Give First Doses of IM Gentamicin and IM Ampicillin to Young Infants with CRITICAL ILLNESS and Refer Urgently to Hospital****

GENTAMICIN: Desired range is 5–7.5 mg/kg/day in once daily injection. In low birth weight infants, give 3–4 mg/kg/day in once daily injection.

- **Preparation**: From a 2 ml vial containing 40 mg/ml, remove 1 ml gentamicin from the vial and add 1 ml distilled water to make the required strength of 20 mg/ml.

AMPICILLIN: Desired dose is 50 mg per kg given twice daily.

- **Preparation**: To a vial of 250 mg, add 1.3 ml sterile water = 250 mg/1.5 ml.

	GENTAMICIN (Strength 20 mg/ml)	**AMPICILLIN** (Strength 250 mg/1.5 ml)
WEIGHT	**Amount per dose**	**Amount per dose**
1.5 to 2.4 kg	**0.4 ml**	**0.8 ml**
2.5 to 3.9 kg	**0.8 ml**	**1.2 ml**
4.0 to 5.9 kg	**1.2 ml**	**1.5 ml**

* If after additional counselling and problem solving, referral is still not possible, administer intramuscular gentamicin once daily AND intramuscular ampicillin twice daily until referral becomes possible, up to 7 days.

Table 6.3.5: Treatment of Young Infant: Where Referral Refused or not Possible with IM Gentamicin and Oral Amoxicillin

➢ ***Give Intramuscular Gentamicin to Young Infants with CLINICAL SEVERE INFECTION where Referral is Refused or Not Possible***

- Desired range is 5–7.5 mg/kg/day in once daily injection. In low birth weight infants, give 3–4 mg/kg/day in once daily injection.
- **Option 1:** Treat for 7 days. **Option 2:** Treat for 2 days. Option to be decided in the process of country adaptation.
- **Preparation**: From a 2 ml vial containing 40mg/ml, remove 1 ml gentamicin from the vial and add 1 ml distilled water to make the required strength of 20 mg/ml.

	GENTAMICIN (Strength 20 mg/ml)
WEIGHT	**Amount per dose**
1.5 to 2.4 kg	0.4 ml
2.5 to 3.9 kg	0.8 ml
4.0 to 5.9 kg	1.2 ml

➢ Ask the mother to bring back the young infant for the next injection tomorrow.

➢ ***Give Oral Amoxicillin where Referral is Refused or Not Possible***

- To young infants with CLINICAL SEVERE INFECTION
- To young infants less than 7 days old with SEVERE PNEUMONIA (fast breathing alone)

	AMOXICILLIN Desired range is 75 to 100 mg/kg/day divided into 2 daily oral doses Give twice daily for 7 days		
WEIGHT	**Dispersible tablet (250 mg)** **Per dose**	**Dispersible tablet (125 mg)** **per dose**	**Syrup (125 mg in 5 ml)** **Per dose**
1.5 to 2.4 kg	1/2 tablet	1 tablet	5 ml
2.5 to 3.9 kg	1/2 tablet	1 tablet	5 ml
4.0 to 5.9 kg	1 tablet	2 tablets	10 ml

➢ Teach the mother how to give oral medicines at home

Table 6.3.6: Treatment of Young Infant at Home

➢ *Teach the Mother to Give Oral Medicines at Home*

Follow the instructions below to teach the mother about each oral medicine to be given at home. Also follow the instructions listed with each medicine's dosage table.

- Determine the appropriate medicines and dosage for the infant's age or weight.
- Tell the mother the reason for giving the medicine to the infant.
- Demonstrate how to measure a dose.
- Watch the mother practice measuring a dose by herself.
- Ask the mother to give the first dose to her infant.
- Explain carefully how to give the medicine, then label and package the medicine.
- If more than one medicine will be given, collect, count and package each medicine separately.
- Explain that all the tablets or syrups must be used to finish the course of treatment, even if the infant gets better.
- Check the mother's understanding before she leaves the clinic.

➢ *Give Oral Amoxicillin*

- **Local Infection:** Give oral amoxicillin twice daily for 5 days
- **Pneumonia (fast breathing alone) in infant 7–59 days old:** Give oral amoxicillin twice daily for 7 days

	AMOXICILLIN Desired range is 75 to 100 mg/kg/day divided into 2 daily oral doses **Give twice daily**		
WEIGHT	**Dispersible Tablet (250 mg) Per dose**	**Dispersible Tablet (125 mg) Per dose**	**Syrup (125 mg in 5 ml) Per dose**
1.5 to 2.4 kg	**1/2 tablet**	**1 tablet**	**5 ml**
2.5 to 3.9 kg	**1/2 tablet**	**1 tablet**	**5 ml**
4.0 to 5.9 kg	**1 tablet**	**2 tablets**	**10 ml**

Table 6.3.7: Follow up Care for the Young Infant

COUNSEL THE MOTHER

➢ Advise the Mother to Give Home Care for the Young Infant

1. **EXCLUSIVELY BREASTFEED THE YOUNG INFANT (for breastfeeding mothers)**
   - Give only breastfeeds to the young infant.
   - Breastfeed frequently, as often and for as long as the infant wants, day or night, during sickness and health.
2. **MAKE SURE THAT THE YOUNG INFANT IS KEPT WARM AT ALL TIMES**
   - In cool weather cover the infant's head and feet and dress the infant with extra clothing.
3. **WHEN TO RETURN:**

Follow up visit	
If the infant has:	**Return for first follow-up on:**
• JAUNDICE	Day 2 of treatment
• DIARRHOEA • FEEDING PROBLEM • THRUSH • LOCAL INFECTION	Day 3 of treatment
• PNEUMONIA • SEVERE PNEUMONIA where referral is refused or not possible	Day 4 of treatment
• LOW WEIGHT FOR AGE in infant receiving no breastmilk	Day 7 of treatment
• LOW WEIGHT FOR AGE in breastfed infant	Day 14 of treatment

WHEN TO RETURN IMMEDIATELY:

Advise the caretaker to return immediately if the young infant has any of these signs:
➢ Breastfeeding poorly ➢ Reduced activity ➢ Becomes sicker ➢ Develops a fever ➢ Feels unusually cold ➢ Develops fast breathing ➢ Develops difficult breathing ➢ Palms or soles appear yellow

CHAPTER 7

Management of 2 Months to 5 Years Sick Child

(IMNCI Guidelines)

Comprehensive Assessment of Sick Children (2 months to 5 ears)

When a mother brings her child to the clinic, it's crucial to conduct a thorough assessment beyond the initial complaint. This approach ensures that you do not overlook other potential health issues that could be serious or life-threatening. Here's a structured way to assess and classify sick children aged 2 months to 5 years:

1. Initial Inquiry:
    - Ask the Mother: Begin by inquiring about the child's main problem or symptom. Understand her concerns and what brought them to the clinic.
2. General Danger Signs:
    - Assess for General Danger Signs: Look for critical indicators that may suggest severe illness, such as:
        - Not able to drink or breastfeed
        - Vomiting everything
        - Convulsions
        - Lethargy or unconsciousness
3. Four Main Symptoms:
    - Cough or Difficult Breathing:
        - Ask about the duration and severity.
        - Inquire if the child has any difficulty breathing or chest pain.
    - Diarrhoea:
        - Determine how many loose stools the child has per day.
        - Check for signs of dehydration.
    - Ear Problem:
        - Ask if the child has ear pain or discharge.
        - Look for any signs of ear infection.
    - Fever:
        - Ask about the duration of the fever.
        - Check for associated symptoms, such as chills or sweats.
4. Additional Questions:

- Based on the main symptoms identified, ask specific questions to gather more details that can help classify the illness.

5. Nutritional and Health Status:
    - Malnutrition and Anaemia: Assess the child's nutritional status and look for signs of anaemia, such as pallor.
    - Immunization Status: Verify if the child is up to date with vaccinations.
    - Vitamin A Supplementation: Check if the child has received vitamin A supplements.
    - Deworming Status: Inquire if the child has been dewormed recently.
6. Other Problems:
    - Additional Concerns: Ask the mother about any other issues or symptoms she has observed in her child.

By following this comprehensive assessment process, you can better identify and address multiple health issues that may be affecting the child. This holistic approach increases the chances of timely intervention and improves health outcomes for young children.

Learning Objectives:

The following are the learning objectives of this chapter:

1. Demonstrate the ability to ask the mother clear and relevant questions about her child's health concerns, facilitating a comprehensive understanding of the child's problem.
2. Identify and check for general danger signs in a child, understanding their significance in determining the urgency of care needed.
3. Accurately assess and classify the four main symptoms (cough or difficult breathing, diarrhoea, ear problem, fever) by asking targeted follow-up questions and evaluating related signs.
4. Assess for signs of malnutrition and anaemia, classify the child’s nutritional status, and determine appropriate interventions based on the findings.
5. Review the child’s immunization status, vitamin A supplementation, and de-worming history to decide on necessary preventive measures during the visit.

Important Considerations to assess a Sick Child:

1. Greet the Mother:
    - Welcome the mother warmly and invite her to sit with her child.
2. Determine the Child's Age:
    - Check the child's record to find their age.
    - If the child is 2 months to 5 years, prepare to use the ASSESS & CLASSIFY chart.
    - If the child is under 2 months, prepare to use the YOUNG INFANT chart.
3. Check Measurements:
    - Look for recorded weight and temperature.
    - If they haven't been measured, plan to weigh the child and measure their temperature later during the assessment.
4. Avoid Disturbing the Child:
    - Do not undress or disturb the child at this stage to ensure their comfort.

By following these steps, you ensure a smooth and effective consultation process.

How to approach asking the mother about her child's problems:

1. Ask Open-Ended Questions:
    - Gently ask, "What problems are you noticing with your child?" This encourages the mother to share freely.
2. Listen Actively:
    - Pay close attention to her responses, nodding or making affirming sounds to show you're engaged.
3. Record Information:
    - Write down her answers carefully. This documentation is crucial for understanding the child's condition and for future reference.
4. Reassure the Mother:
    - Let her know that her concerns are valid and that you are committed to providing good care for her child.

5. Encourage Communication:
    - Remind her that asking questions and sharing concerns is important for the child's care.

By establishing good communication from the start, you help build trust and ensure that the mother feels comfortable discussing her child's health.

How to use Good Communication Skills:

1. Active Listening:
    - Focus entirely on what the mother is saying. Nodding and maintaining eye contact can show you value her input.
2. Clear Language:
    - Use simple, clear language that the mother can easily understand. Avoid medical jargon unless you explain it.
3. Allow Time:
    - Give her sufficient time to respond to your questions. Avoid rushing her, as she may need a moment to think about her answers.
4. Clarifying Questions:
    - If the mother seems uncertain about a symptom, ask follow-up questions. For instance, "Can you describe what the cough sounds like?" This helps her provide more specific information.
5. Initial vs. Follow-Up Visit:
    - Determine if this is an initial or follow-up visit. Ask questions like, "Is this the first time you're bringing your child for this issue?" This distinction helps tailor your approach and care plan accordingly.

Chapter 7

Session 7.1

Management of

Very Severe Disease & Pneumonia in Sick Child

(IMNCI Guidelines)

Assess and Classify General Danger Signs:

When assessing a child for general danger signs, follow these steps:

1. Check Drinking Ability:
    - Ask: “Is the child able to drink or breastfeed?”
    - If the mother indicates the child cannot drink, ask her to describe what happens when she offers a drink. You may ask her to offer clean water or breast milk to observe if the child can swallow.
2. Check for Vomiting:
    - Ask: “Does the child vomit everything?”
    - If she’s unsure, ask how often the child vomits and whether the child can hold down any fluids. If needed, observe if the child vomits after having a drink.
3. Inquire About Convulsions:
    - Ask: “Has the child had convulsions?”
    - If yes, find out if it was more than one convulsion or if any lasted longer than 15 minutes. Use terms the mother understands, like “fits” or “spasms.”
4. Observe for Lethargy or Unconsciousness:
    - Look: See if the child is alert or appears drowsy.
    - Ask: “Does the child seem unusually sleepy or can’t be woken?” If the child is lethargic, check responsiveness to stimuli like voice or touch.
5. Look for Active Convulsions:
    - Observe: If the child is convulsing, manage the airway and prepare to administer diazepam rectally.

Classification of Illness

- Pink Row (Very Severe Disease):
    - Any general danger sign indicates urgent attention and referral for inpatient care.
- Yellow Row (Severe Disease):
    - Indicates the need for appropriate antibiotics or treatment, along with guidance for home care.

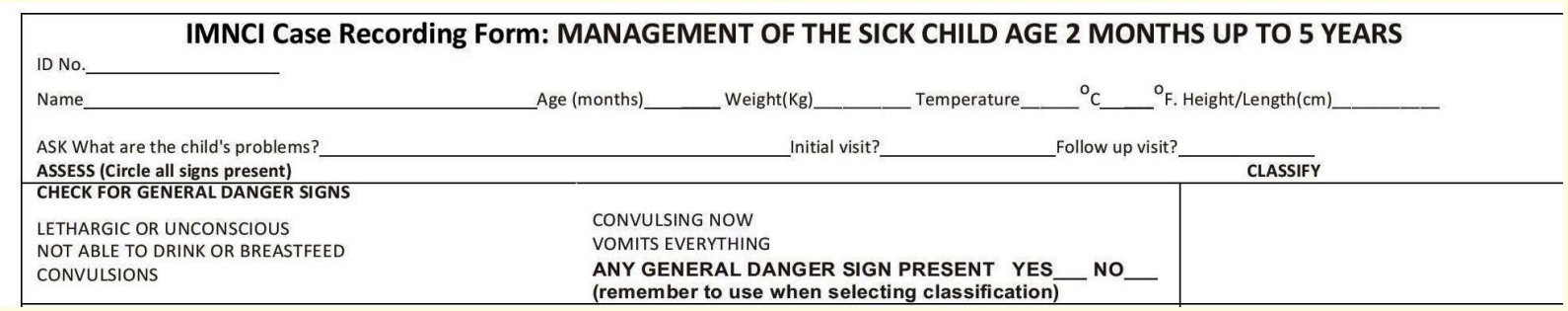
- Green Row (No Severe Disease):
    - Indicates the child does not require specific medical treatment. Focus on home care advice.

Classification with a General Danger Sign

If the child shows any general danger sign, classify them under Very Severe Disease and proceed with immediate assessment and treatment as shown in table 7.1.1 to 7.1.3.

Recording form for 2 months to 5 years sick child (Participant's hand out no: 20)

- Use the Recording Form to document the assessment. This form resembles the ASSESS & CLASSIFY chart and will guide you through the necessary questions and observations during the evaluation process as shown in following figure:



IMNCI Case Recording Form: MANAGEMENT OF THE SICK CHILD AGE 2 MONTHS UP TO 5 YEARS

ID No._____

Name_____Age (months)_____ Weight(Kg)_____ Temperature_____^{o}C_____^{o}F. Height/Length(cm)_____

ASK What are the child's problems?_____Initial visit?_____Follow up visit?_____

ASSESS (Circle all signs present)		**CLASSIFY**
CHECK FOR GENERAL DANGER SIGNS		
LETHARGIC OR UNCONSCIOUS NOT ABLE TO DRINK OR BREASTFEED CONVULSIONS	CONVULSING NOW VOMITS EVERYTHING **ANY GENERAL DANGER SIGN PRESENT YES___ NO___** **(remember to use when selecting classification)**	

Figure 7.1.1: 2 Months to 5 years Sick Child Recording Form

Table 7.1.1: Child Presenting with Signs and Symptoms of Urgent Attention:

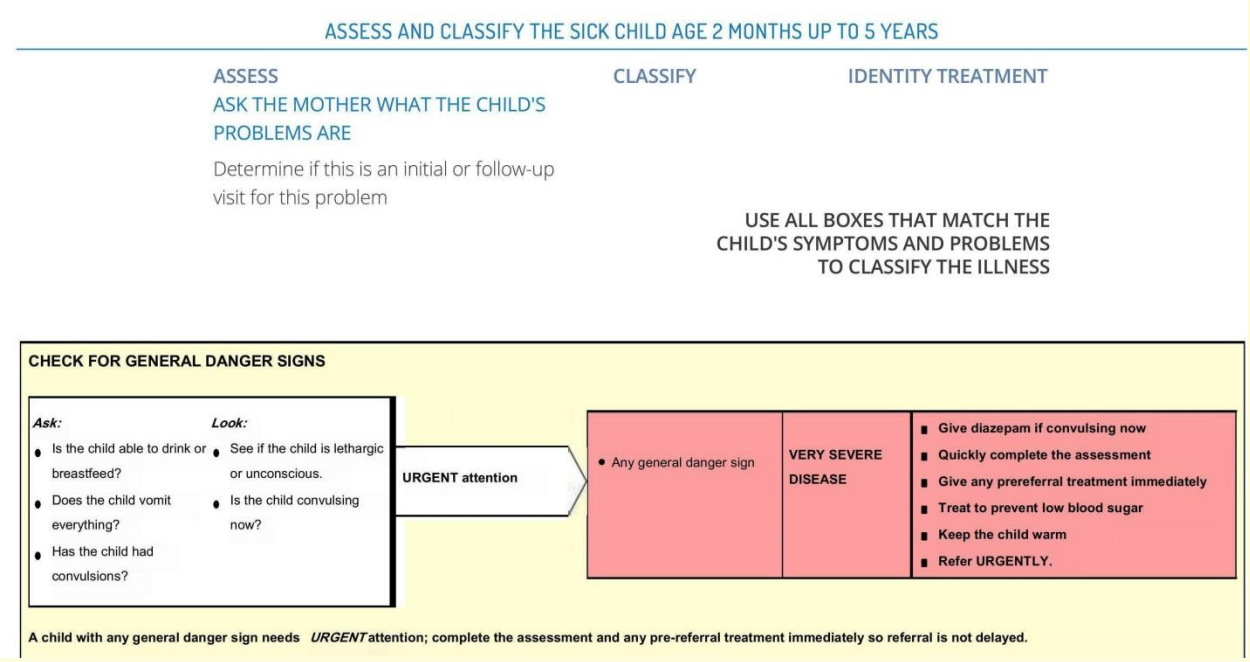


Table 7.1.2: Management of Hypoglycemia

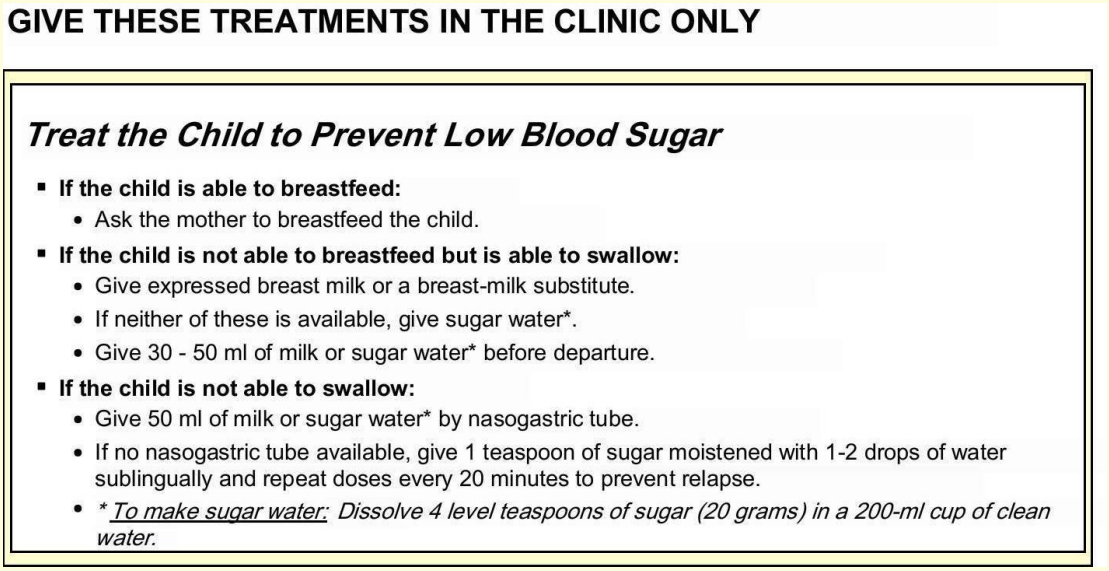


Table 7.1.3: Management of Very Severe Disease

GIVE THESE TREATMENTS IN THE CLINIC ONLY

- **Explain to the mother why the drug is given.**
- **Determine the dose appropriate for the child's weight (or age).**
- **Use a sterile needle and sterile syringe when giving an injection.**
- **Measure the dose accurately.**
- **Give the drug as an intramuscular injection.**
- **If child cannot be referred, follow the instructions provided.**

Give Intramuscular Antibiotics

GIVE TO CHILDREN BEING REFERRED URGENTLY

- Give Ampicillin (50 mg/kg) and Gentamicin (7.5 mg/kg).

AMPICILLIN

- Dilute 500mg vial with 2.1ml of sterile water (500mg/2.5ml).
- IF REFERRAL IS NOT POSSIBLE OR DELAYED, repeat the ampicillin injection every 6 hours.
- **Where there is a strong suspicion of meningitis, the dose of ampicillin can be increased 4 times.**

GENTAMICIN

- 7.5 mg/kg/day once daily

AGE or WEIGHT	AMPICILLIN 500 mg vial	GENTAMICIN 2ml/40 mg/ml vial
2 up to 4 months (4 - <6 kg)	1 m	0.5-1.0 ml
4 up to 12 months (6 - <10 kg)	2 ml	1.1-1.8 ml
12 months up to 3 years (10 - <14 kg)	3 ml	1.9-2.7 ml
3 years up to 5 years (14 - 19 kg)	5 m	2.8-3.5 ml

Give Diazepam to Stop Convulsions

- Turn the child to his/her side and clear the airway. Avoid putting things in the mouth.
- Give 0.5mg/kg diazepam injection solution per rectum using a small syringe without a needle (like a tuberculin syringe) or using a catheter.
- Check for low blood sugar, then treat or prevent.
- Give oxygen and REFER
- If convulsions have not stopped after 10 minutes repeat diazepam dose

AGE or WEIGHT	DIAZEPAM 10mg/2mls
2 months up to 6 months (5 - 7 kg)	0.5 ml
6 months up to 12months (7 - <10 kg)	1.0 ml
12 months up to 3 years (10 - <14 kg)	1.5 ml
3 years up to 5 years (14-19 kg)	2.0 ml

ii. Cough or Difficult Breathing

Respiratory Infections:

Respiratory infections can affect any part of the respiratory tract, including:

- Nose
- Throat
- Larynx
- Trachea
- Air passages
- Lungs

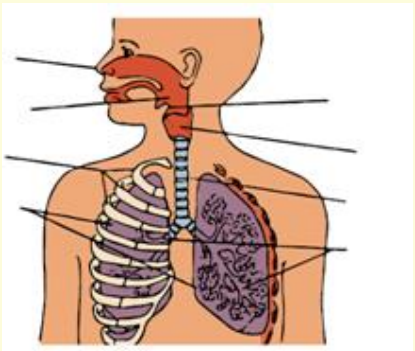


Figure 7.1.2: Site of Respiratory Infections

Common Conditions:

1. Pneumonia:
    - An infection of the lungs.
    - It can be caused by bacteria (like *Streptococcus pneumonia* and *Haemophilus influenzae*) or viruses.
    - Particularly dangerous in developing countries, often leading to severe outcomes such as hypoxia or sepsis.
2. Mild Respiratory Infections:
    - Many children present with less severe infections, such as:
        - Common Cold: Coughing may occur due to nasal discharge.
        - Bronchitis: A viral infection of the bronchi, typically less severe.

Management:

- Bacterial Pneumonia:
    - Requires prompt treatment with antibiotics.
    - Monitor for signs of severe illness (hypoxia, sepsis).
- Mild Respiratory Infections:
    - Generally do not require antibiotics.

- Families can manage symptoms at home with rest, fluids, and over-the-counter medications as appropriate.

Assessing Cough or Difficult Breathing in Children

Assessment Steps:

1. Initial Question:
    - ASK: Does the child have cough or difficult breathing?
        - *If NO:* Proceed to the next symptom (diarrhoea).
        - *If YES:* Continue with the assessment.
2. Duration of Symptoms:
    - ASK: For how long has the child had cough or difficult breathing?
        - A chronic cough lasts more than 14 days, which could indicate conditions like tuberculosis, asthma, or whooping cough.
3. Count Breaths:
    - Measure the child's respiratory rate over one minute while ensuring the child is calm.
    - Use a watch to count breaths:
        - 2 months to 12 months: Fast breathing if ≥50 breaths per minute.
        - 12 months to 5 years: Fast breathing if ≥40 breaths per minute.
4. Look for Signs:
    - Chest in-drawing:
        - Observe the lower chest wall during inhalation. It indicates severe respiratory distress if the lower chest goes IN while inhaling.
        - Ensure the child is in a position that allows clear observation.
    - Stridor:
        - A harsh noise during inhalation indicates swelling in the airway. It can be life-threatening.
        - Check for stridor when the child is calm.
    - Wheezing:
        - A soft, musical sound during exhalation suggests narrowed air passages.

        - Listen closely, as wheezing may not always be audible.
5. Recurrent Wheezing:
    - ASK: Has the child experienced wheezing episodes in the past year?
        - Recurrent wheezing indicates potential asthma or respiratory infections.

Classifying Cough or Difficult Breathing in Children

When assessing a child with cough or difficult breathing, the classification process involves determining the severity of the illness based on observed signs. Here's how to classify:

Classification Options:

1. Severe Pneumonia or Very Severe Disease
2. Pneumonia
3. Cough or Cold

Steps for Classification:

1. Check for Severe Indicators: (Table 7.1.4)
    - Look at the pink row of the classification table.
    - Does the child have a general danger sign?
    - Does the child have stridor while calm?
    - If available, check oxygen saturation.
        - *If saturation is less than 90%*, classify as SEVERE PNEUMONIA or VERY SEVERE DISEASE.

    Note: If the child has wheezing, treat the wheezing first before proceeding with classification.

2. Assess for Pneumonia:
    - If the child does not meet the criteria for severe classification, look at the yellow row.
    - Does the child have fast breathing or lower chest in-drawing while calm?
    - If yes, classify as PNEUMONIA.

Note: If wheezing is present, treat it with a rapid-acting bronchodilator before classification.

3. Final Classification:
    - If the child does not exhibit any severe signs and does not meet the criteria for pneumonia, classify as COUGH OR COLD.

Additional Management:

- If the child exhibits chest in-drawing and fast breathing with wheezing, manage them carefully, as both conditions can present similarly. After administering the bronchodilator, reassess and classify again.

IMNCI Case Recording Form: MANAGEMENT OF THE SICK CHILD AGE 2 MONTHS UP TO 5 YEARS

ID No._____

Name_____Age (months)_____ Weight(Kg)_____ Temperature_____^{o}C_____^{o}F. Height/Length(cm)_____

ASK What are the child's problems?_____Initial visit?_____Follow up visit?_____

ASSESS (Circle all signs present)		**CLASSIFY**
CHECK FOR GENERAL DANGER SIGNS LETHARGIC OR UNCONSCIOUS NOT ABLE TO DRINK OR BREASTFEED CONVULSIONS	CONVULSING NOW VOMITS EVERYTHING **ANY GENERAL DANGER SIGN PRESENT YES___ NO___** **(remember to use when selecting classification)**	
DOES THE CHILD HAVE COUGH OR DIFFICULT BREATHING? YES___ NO___		
For how long? ____ Days Look and listen for stridor Look and listen for wheeze	Count the breaths in one minute. (child must be calm) _____ breaths per minute. Fast breathing? YES____ NO___	

Figure 7.1.3: 2 months to 5 years Sick Child Recording Form

Table 7.1.4: Classify Cough or Difficult Breathing:

THEN ASK ABOUT MAIN SYMPTOMS:

Does the child have cough or difficult breathing?

If yes, ask:

- For how long?

Look, listen, feel*:

- Count the breaths in one minute.
- Look for chest indrawing.
- Look and listen for stridor.
- Look and listen for wheezing.

CHILD MUST BE CALM

Classify COUGH or DIFFICULT BREATHING

If wheezing with either fast breathing or chest indrawing:
Give a trial of rapid acting inhaled bronchodilator for up to three times 15-20 minutes apart. Count the breaths and look for chest indrawing again, and then classify.

If the child is: / ***Fast breathing is:***

2 months up to 12 months	**50** breaths per minute or more
12 Months up to 5 years	**40** breaths per minute or more

• Any general danger sign **or** • Stridor in calm child.	**SEVERE PNEUMONIA OR VERY SEVERE DISEASE**	▸ **Give first dose of an appropriate antibiotic** ▸ **Refer URGENTLY to hospital****
• Chest indrawing **or** • Fast breathing.	**PNEUMONIA**	▸ **Give oral Amoxicillin for 5 days***** ▸ If wheezing (or disappeared after rapidly acting bronchodilator) give an inhaled bronchodilator for 5 days**** ▸ If coughing for more than 14 days or recurrent wheeze, refer for possible TB or asthma assessment ▸ Advise mother when to return immediately ▸ Follow-up in 3 days
• No signs of pneumonia or very severe disease.	**NO PNEUMONIA: COUGH OR COLD**	▸ If wheezing (or disappeared after rapidly acting bronchodilator) give an inhaled bronchodilator for 5 days**** ▸ Soothe the throat and relieve the cough with a safe remedy ▸ If coughing for more than 14 days or recurrent wheezing, refer for possible TB or asthma assessment ▸ Advise mother when to return immediately ▸ Follow-up in 5 days if not improving

**If pulse oximeter is available, determine oxygen saturation and refer if < 90%.*

*** If referral is not possible, manage the child as described in the pneumonia section of the guidelines.*

****Oral Amoxicillin for 3 days could be used in patients with fast breathing but no chest indrawing.*

***** In settings where inhaled bronchodilator is not available, oral salbutamol may be tried but not recommended for treatment of severe acute wheeze.*

Table 7.1.5: Oral Treatment at Home:

TEACH THE MOTHER TO GIVE ORAL DRUGS AT HOME

Follow the instructions below for every oral drug to be given at home.
Also follow the instructions listed with each drug's dosage table

Give Inhaled Salbutamol for Wheezing

USE OF A SPACER*

A spacer is a way of delivering the bronchodilator drugs effectively into the lungs. No child under 5 years should be given an inhaler without a spacer. A spacer works as well as a nebulizer if correctly used.

- From salbutamol metered dose inhaler (100 microgram/puff) give 2 puffs
- Repeat up to 3 times every 15 minutes before classifying pneumonia.

Spacers can be made in the following way:

- Use a 500ml drink bottle or similar.
- Cut a hole in the bottle base in the same shape as the mouthpiece of the inhaler.
- This can be done using a sharp knife.
- Cut the bottle between the upper quarter and the lower 3/4 and disregard the upper quarter of the bottle.
- Cut a small V in the border of the large open part of the bottle to fit to the child's nose and be used as a mask.
- Flame the edge of the cut bottle with a candle or a lighter to soften it.
- In a small baby, a mask can be made by making a similar hole in a plastic (not polystyrene) cup.
- Alternatively, commercial spacers can be used if available.

To use an inhaler with a spacer:

- Remove the inhaler cap. Shake the inhaler well.
- Insert mouthpiece of the inhaler through the hole in the bottle or plastic cup
- The child should put the opening of the bottle into his mouth and breath in and out through the mouth.
- A carer then presses down the inhaler and sprays into the bottle while the child continues to breathnormally.
- Wait for three to four breaths and repeat.
- For younger children place the cup over the child's mouth and use as a spacer in the same way.

** If a spacer is being used for the first time, it should be primed by 4-5 extra puffs from the inhaler.*

Give Paracetamol for High Fever (>38.5^{0}C or more) or Ear pain

Give paracetamol every 6 hours until high fever or ear pain is gone.

AGE or WEIGHT	PARACETAMOL	
	TABLET (100 mg)	**TABLET** (500 mg)
2 months up to 3 years (4 - <14 kg)	1	¼
3 years up to 5 years (14 - <19 kg)	1 ½	½

FOR PNEUMONIA, ACUTE EAR INFECTION:

FIRST-LINE ANTIBIOTIC: Oral Amoxicillin

AGE or WEIGHT	AMOXICILLIN* *Give two times daily for 5 days*	
	TABLET 250 mg	**SYRUP** 250mg/5 ml
2 months up to 12 months (4 - <10 kg)	1	5 ml
12 months up to 3 years (10 - <14 kg)	2	10 ml
3 years up to 5 years (14-19 kg)	3	15 ml

** Amoxicillin is the recommended first-line drug of choice in the treatment of pneumonia due to its efficacy and increasing high resistance to cotrimoxazole*

Chapter 7

Session 7.2

Management of Dehydration in Sick Child

(2 months to 5 years of age group)

(IMNCI Guidelines)

Diarrhoea in Children:

Diarrhoea is characterized by stools that contain more water than normal, resulting in loose or watery stools. It is particularly common in children aged 6 months to 2 years, but can also affect infants under 6 months, especially those on cow's milk or formula.

Key Points:

- Frequent passing of normal stools is not considered diarrhoea.
- Diarrhoea is generally defined as having three or more loose or watery stools within a 24 hours period.

Its types are;

1. Acute Diarrhoea:
    - Lasts less than 14 days.
    - Often causes dehydration, which is a leading cause of mortality in children.
    - Commonly associated with infections, such as viral or bacterial pathogens.
2. Persistent Diarrhoea:
    - Lasts 14 days or more.
    - Can lead to nutritional deficiencies and is linked to higher morbidity and mortality in children.
    - Often results from inadequate treatment of acute diarrhoea.
3. Dysentery:
    - Characterized by diarrhoea with blood in the stool, with or without mucus.
    - Most commonly caused by Shigella bacteria.
    - Can occur alongside watery diarrhoea.

Mothers typically recognize diarrhoea through changes in stool consistency or frequency. It's crucial for caregivers to differentiate between normal stool variations (especially in breastfed infants) and diarrhoea to ensure appropriate management and treatment.

Assessing Diarrhoea in Children (Ask & Look)

When assessing a child for diarrhoea, follow these steps:

1. Initial Inquiry:

- ASK: *Does the child have diarrhoea?*
    - Use terms the mother understands.
    - If the answer is NO, move on to the next symptom.
    - If the answer is YES, record the response and proceed with further assessment.

2. Duration of Diarrhoea:

- ASK: *For how long has the child had diarrhoea?*
    - Diarrhoea lasting 14 days or more is classified as persistent diarrhoea.
    - Allow the mother time to recall the duration.

3. Checking for Blood:

- ASK: *Is there blood in the stool?*
    - Inquire if she has observed any blood during this episode.

4. Assessing for Dehydration:

Dehydration can be serious and needs careful assessment. Observe and feel for the following signs:

- General Condition:
    - LOOK: Is the child lethargic or unconscious?
    - Restlessness and Irritability: A child who is persistently irritable or restless when touched or handled may be showing signs of dehydration.
- Physical Signs:
    - Sunken Eyes: Check if the eyes appear sunken.

- Skin Turgor: Pinch the skin and observe how quickly it returns. If it takes longer to return, the child may be dehydrated.

5. Observations:

- If the child shows signs of lethargy or unconsciousness, record this as a general danger sign.
- Consider how the child responds to the environment; a child who calms down when breastfeeding but becomes restless again once feeding stops may still be classified as "restless and irritable."

6. Check for Sunken Eyes:

- LOOK: Observe the child's eyes for signs of being sunken.
- ASK: *Do you think your child's eyes look unusual?*
  - The mother's opinion can help confirm whether the eyes appear sunken.

Note: In severely malnourished children, such as those with marasmus, eyes may always look sunken even if not dehydrated. Use this sign cautiously.

7. Offer the Child Fluid:

- OFFER: Provide the child with water in a cup or spoon.
- WATCH: Observe how the child drinks:
  - Not Able to Drink: If the child cannot suck or swallow at all.
  - Drinking Poorly: If the child is weak and needs help to drink.
  - Drinking Eagerly/Thirsty: If the child actively reaches for the drink and shows a desire for more.

8. Assess Skin Turgor:

- PINCH the Skin:
  - Position the child lying flat (either on an examining table or in the mother's lap).
  - Locate the area on the abdomen halfway between the umbilicus and the side.

- Technique:
    - Use your thumb and first finger (not fingertips) to pinch the skin.
    - Ensure the skin fold is oriented vertically (up and down) rather than horizontally.
- Evaluate the Skin Response:
    - After pinching, release the skin and observe:
        - Very Slowly: Takes longer than 2 seconds to return.
        - Slowly: Takes some time but less than 2 seconds.
        - Immediately: Returns to normal right away.

Classifying Diarrhoea and Dehydration

1. Classify Dehydration:

There are three classifications for dehydration in a child with diarrhoea:

- SEVERE DEHYDRATION
- SOME DEHYDRATION
- NO DEHYDRATION

Steps to Classify Dehydration: (Table 7.2.1)

1. Start with the Pink Row (Severe Dehydration):
    - If two or more signs from this row are present, classify the child as having SEVERE DEHYDRATION.
2. Move to the Yellow Row (Some Dehydration):
    - If two or more signs are not present in the pink row, check the yellow row.
    - If two or more signs from the yellow row are present, classify the child as having SOME DEHYDRATION.
3. Determine No Dehydration:
    - If two or more signs from the yellow row are not present, classify the child as having NO DEHYDRATION.
    - Note that some children may have one sign of dehydration without sufficient signs to meet the criteria for classification.

Classifying Persistent Diarrhoea

1. Severe Persistent Diarrhoea:

- Criteria: If a child has had diarrhoea for 14 days or more and also exhibits some or severe dehydration, classify the condition as SEVERE PERSISTENT DIARRHOEA.
- Management:
    - Treat the child's dehydration before referral unless the child has another severe classification. Children with severe persistent diarrhoea and dehydration often require hospitalization for effective treatment.

2. Persistent Diarrhoea:

- Criteria: A child who has had diarrhoea for 14 days or more and shows no signs of dehydration is classified as having PERSISTENT DIARRHOEA.

Classifying Dysentery

- Dysentery:
    - Classify a child with diarrhoea who has blood in the stool as having DYSENTERY.

IMNCI Case Recording Form: MANAGEMENT OF THE SICK CHILD AGE 2 MONTHS UP TO 5 YEARS

ID No._____

Name_____Age (months)_____ Weight(Kg)_____ Temperature_____^{o}C_____^{o}F. Height/Length(cm)_____

ASK What are the child's problems?_____Initial visit?_____Follow up visit?_____

ASSESS (Circle all signs present)		**CLASSIFY**
CHECK FOR GENERAL DANGER SIGNS LETHARGIC OR UNCONSCIOUS NOT ABLE TO DRINK OR BREASTFEED CONVULSIONS	CONVULSING NOW VOMITS EVERYTHING **ANY GENERAL DANGER SIGN PRESENT YES___ NO___** **(remember to use when selecting classification)**	
DOES THE CHILD HAVE COUGH OR DIFFICULT BREATHING? YES____ NO____		
For how long? ____ Days Look and listen for stridor Look and listen for wheeze	Count the breaths in one minute. (child must be calm) _____ breaths per minute. Fast breathing? YES____ NO____	
DOES THE CHILD HAVE DIARRHOEA? YES____ NO____ For how long? ____ Days Is there blood in the stools? YES____ NO____ Pinch the skin of the abdomen. Does it go back: Very slowly (longer than 2 seconds) Slowly	Look at the child's general condition. Is the child: Lethargic or unconscious Restless or irritable Offer the child fluid. Is the child: Not able to drink or drinking poorly? Drinking eagerly, thirsty?	

Figure 7.2.1: 2 months to 5 years Recording Form

Table 7.2.1: Assess and Classify Dehydration:

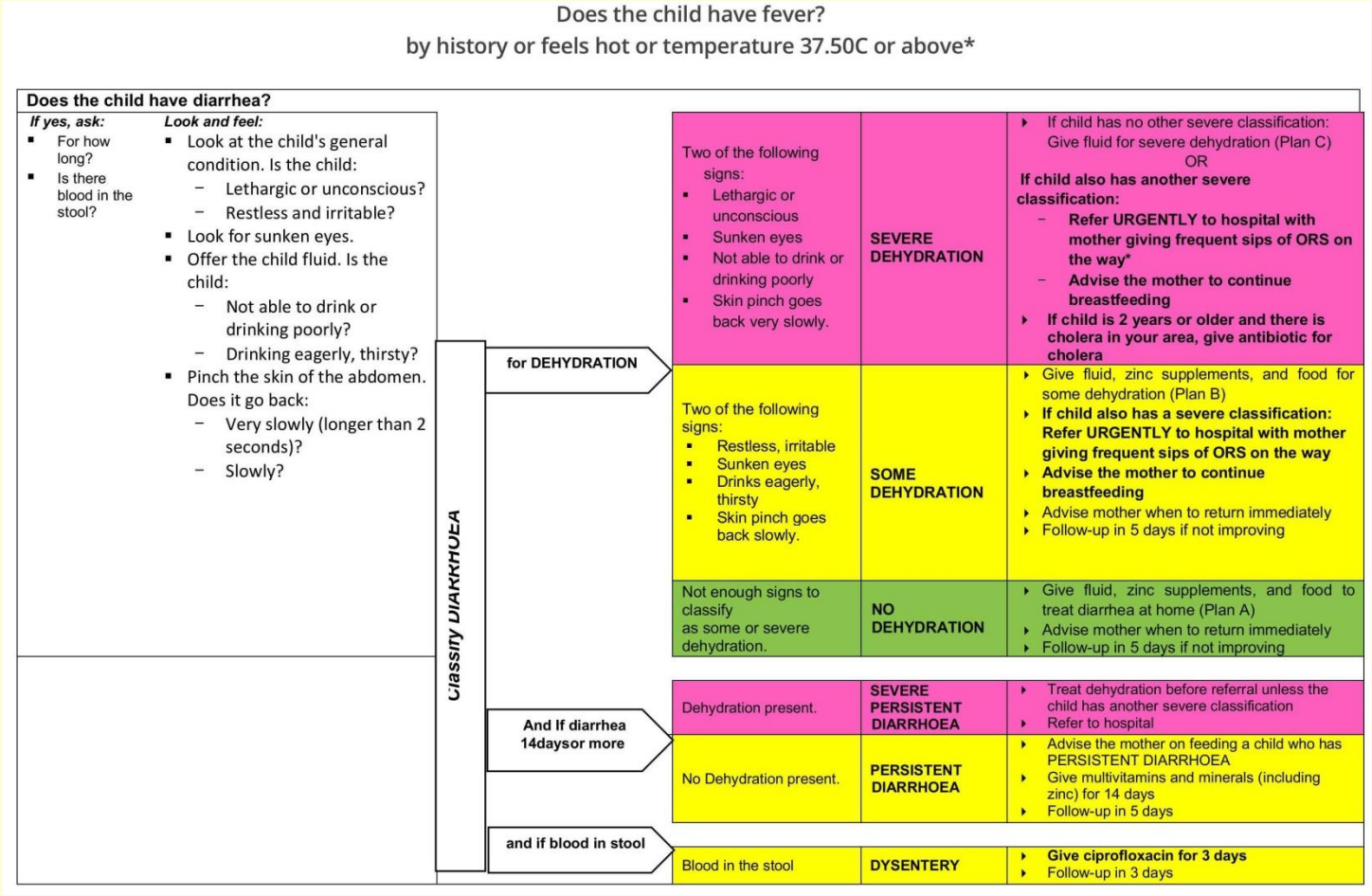
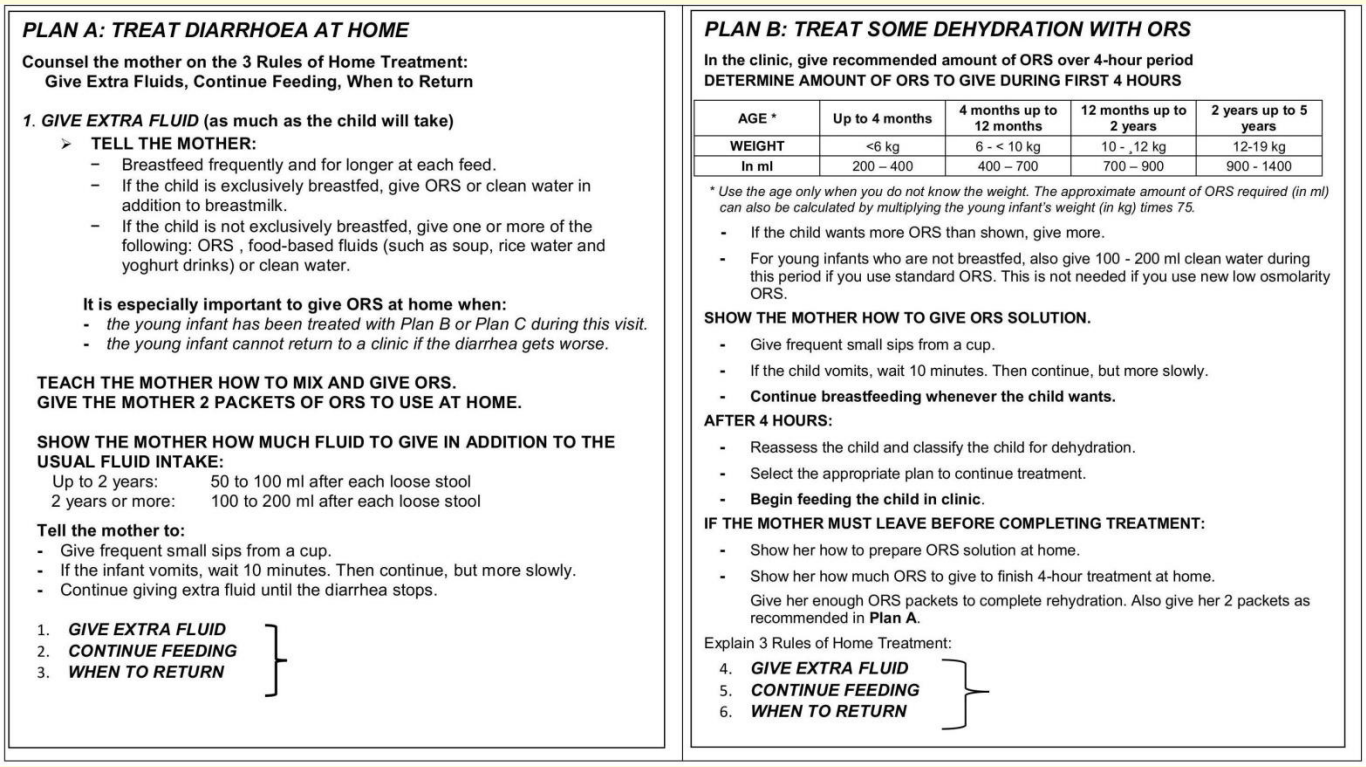


Table 7.2.2: Plan A and B to treat Dehydration:



PLAN A: TREAT DIARRHOEA AT HOME

Counsel the mother on the 3 Rules of Home Treatment:
Give Extra Fluids, Continue Feeding, When to Return

***1. GIVE EXTRA FLUID* (as much as the child will take)**

- **TELL THE MOTHER:**
  - Breastfeed frequently and for longer at each feed.
  - If the child is exclusively breastfed, give ORS or clean water in addition to breastmilk.
  - If the child is not exclusively breastfed, give one or more of the following: ORS , food-based fluids (such as soup, rice water and yoghurt drinks) or clean water.

It is especially important to give ORS at home when:
- *the young infant has been treated with Plan B or Plan C during this visit.*
- *the young infant cannot return to a clinic if the diarrhea gets worse.*

TEACH THE MOTHER HOW TO MIX AND GIVE ORS.
GIVE THE MOTHER 2 PACKETS OF ORS TO USE AT HOME.

SHOW THE MOTHER HOW MUCH FLUID TO GIVE IN ADDITION TO THE USUAL FLUID INTAKE:

Up to 2 years:	50 to 100 ml after each loose stool
2 years or more:	100 to 200 ml after each loose stool

Tell the mother to:
- Give frequent small sips from a cup.
- If the infant vomits, wait 10 minutes. Then continue, but more slowly.
- Continue giving extra fluid until the diarrhea stops.

1. ***GIVE EXTRA FLUID***
2. ***CONTINUE FEEDING***
3. ***WHEN TO RETURN***

PLAN B: TREAT SOME DEHYDRATION WITH ORS

In the clinic, give recommended amount of ORS over 4-hour period
DETERMINE AMOUNT OF ORS TO GIVE DURING FIRST 4 HOURS

AGE *	Up to 4 months	4 months up to 12 months	12 months up to 2 years	2 years up to 5 years
WEIGHT	<6 kg	6 - < 10 kg	10 - ,12 kg	12-19 kg
In ml	200 – 400	400 – 700	700 – 900	900 - 1400

** Use the age only when you do not know the weight. The approximate amount of ORS required (in ml) can also be calculated by multiplying the young infant's weight (in kg) times 75.*

- If the child wants more ORS than shown, give more.
- For young infants who are not breastfed, also give 100 - 200 ml clean water during this period if you use standard ORS. This is not needed if you use new low osmolarity ORS.

SHOW THE MOTHER HOW TO GIVE ORS SOLUTION.
- Give frequent small sips from a cup.
- If the child vomits, wait 10 minutes. Then continue, but more slowly.
- **Continue breastfeeding whenever the child wants.**

AFTER 4 HOURS:
- Reassess the child and classify the child for dehydration.
- Select the appropriate plan to continue treatment.
- **Begin feeding the child in clinic**.

IF THE MOTHER MUST LEAVE BEFORE COMPLETING TREATMENT:
- Show her how to prepare ORS solution at home.
- Show her how much ORS to give to finish 4-hour treatment at home.

  Give her enough ORS packets to complete rehydration. Also give her 2 packets as recommended in **Plan A**.

Explain 3 Rules of Home Treatment:

4. ***GIVE EXTRA FLUID***
5. ***CONTINUE FEEDING***
6. ***WHEN TO RETURN***

….

Table 7.2.3: Plan C- Treatment of Severe Dehydration:

GIVE EXTRA FLUID FOR DIARRHOEA AND CONTINUE FEEDING

(see food advise in COUNSIL THE MOTHER chart)

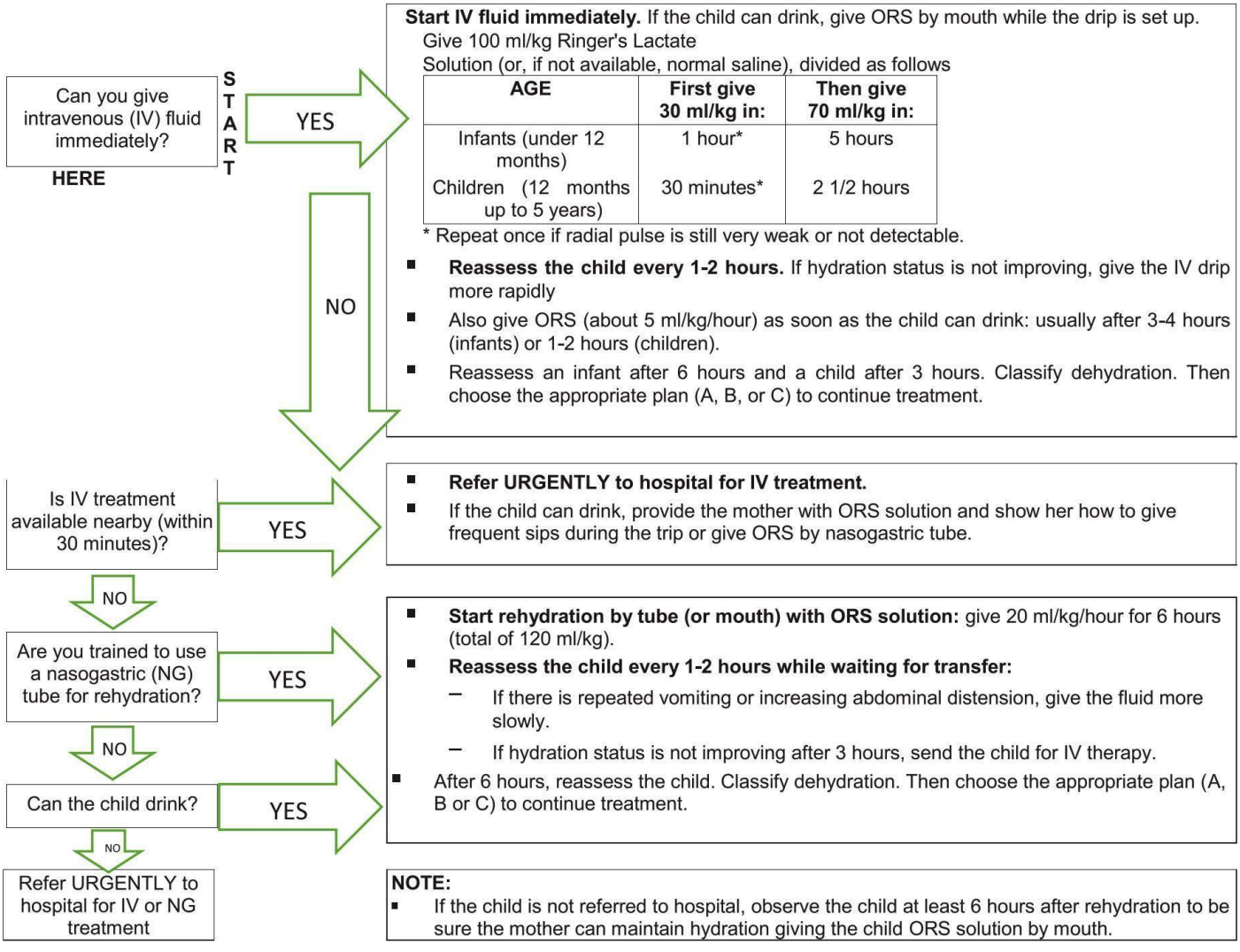


Table 7.2.4 (a): WHO recommendations for zinc supplementation in acute diarrhea

Aspect	Recommendation
Target Group	**Children with acute diarrhea**
Dosage (Children > 6 months)	20 mg of zinc per day
Dosage (Children < 6 months)	10 mg of zinc per day
Duration of Treatment	10 to 14 days
Benefits	Reduces duration and severity of diarrhea, decreases risk of future episodes

Table 7.2.4: Oral Treatment of Dysentery and Cholera:

FOR DYSENTERY

FIRST-LINE ANTIBIOTIC: Oral Ciprofloxacine

AGE	CIPROFLOXACINE Give 15mg/kg two times daily for 3 days	
	250 mg tablet	500 mg tablet
Less than 6 months	1/2	1/4
6 months up to 5 years	1	1/2

FOR: CHOLERA

FIRST-LINE ANTIBIOTIC FOR CHOLERA: Ciprofloxacine

AGE or WEIGHT	ERYTHROMYCIN *Give four times daily for 3 days*	TETRACYCLINE *Give four times daily for 3 days*
	TABLET 250 mg	**TABLET** 250 mg
2 years up to 5 years (10 - 19 kg)	1	1

SECOND-LINE ANTIBIOTIC FOR CHOLERA: as under:

Chapter 7

Session 7.3

Management of Fever, Ear Problem & Anemia

(IMNCI Guidelines)

Assess and Classify Fever

A child with fever may be suffering from various serious illnesses, including malaria, measles, dengue, or bacterial infections like pneumonia, dysentery, or typhoid. Identifying key symptoms rapidly is crucial for health workers, as some severe diseases present with general signs that necessitate immediate referral for further assessment and treatment. A child is considered to have a fever if there is a history of fever, if they feel hot, or if their axillary temperature is 37.5°C (or 38°C rectal) or above. Even in the absence of elevated temperature, a history of fever warrants assessment using the IMNCI classification (Table 7.3.1).

Malaria

Malaria, primarily caused by the Plasmodium falciparum parasite transmitted through female Anopheles mosquitoes, is characterized by intermittent or continuous fever accompanied by chills and sweating. In malaria-endemic areas, children exhibiting fever alongside symptoms such as headache, nausea, vomiting, and joint pain are suspected of having uncomplicated malaria. Signs of malaria can overlap with those of other illnesses, necessitating simultaneous treatment for both malaria and conditions like pneumonia.

The risk of malaria is classified based on annual parasite incidence, with areas categorized as hyper-endemic (over 5 cases per 1,000 population/year), meso-endemic (1-5 cases), or hypo-endemic (less than 1 case). Regions like Sindh and Baluchistan are hyper-endemic, while Punjab has the lowest endemicity. Understanding local malaria risk is essential for effective diagnosis and treatment, as complications from malaria can develop rapidly, with fatalities occurring every 30 seconds globally from severe forms of the disease.

Malaria transmission in Pakistan follows an unstable, seasonal pattern, primarily occurring after monsoon rains from July to December. According to national policy, any suspected case of malaria must be confirmed through blood microscopy or rapid diagnostic tests (RDTs) as soon as possible to facilitate timely and effective antimalarial treatment. In areas lacking facilities for blood testing, alternative strategies for diagnosis and management should be implemented to ensure that affected individuals receive appropriate care promptly. This approach helps to minimize the risk of severe complications and reduces the overall burden of malaria in the population.

No Malaria Risk Areas

In areas classified as having no malaria risk, if a child shows no history of travel to malaria-prone regions, the likelihood of the fever being malaria-related is negligible. Therefore, testing for malaria is unnecessary. If malaria testing is deemed necessary, use a blood smear if microscopy is available, or opt for rapid diagnostic tests (RDTs) based on clinic resources. Record the test results as follows:

- POSITIVE: Indicate the presence of malaria parasites or a positive RDT. Specify if it is *P. falciparum* or *P. vivax*, if possible. Treat *P. vivax* as per national treatment guidelines.
- NEGATIVE: Note the absence of parasites in microscopy or a negative RDT result.

Classification of Malaria

- High Malaria Risk Areas: A child with fever (or a history of fever), without any general danger signs or stiff neck, and with a positive malaria test is classified as having MALARIA. If no test is available, the same criteria apply for classification.
- Low Malaria Risk Areas: A malaria test should be conducted for children with fever (or a history of fever) who do not display general danger signs or a stiff neck, and lack other obvious causes of fever. A positive test result under these conditions indicates MALARIA. If a test is unavailable, classify as MALARIA if the child has fever (or a history of fever), no general danger signs or stiff neck, and no other identifiable causes of fever.

In low malaria risk areas, if a child presents with an obvious cause of fever, the likelihood of malaria as the cause decreases significantly. Always ensure the reliability of blood slides if using microscopy or RDTs.

Measles

Measles is characterized by fever and a generalized rash, and it is highly contagious. Maternal antibodies provide protection for infants for about six months, after which susceptibility increases, particularly for children aged 6 months to 2 years. Overcrowding and inadequate housing heighten the risk of early infection.

Causes and Effects

The measles virus infects the skin and respiratory, gastrointestinal, ocular, oral, and throat mucosal cells. It significantly weakens the immune system for weeks post-infection, leaving the child vulnerable to additional infections.

Complications

About 30% of measles cases lead to complications, including:

- Diarrhea (including dysentery and persistent diarrhea)
- Pneumonia
- Stridor
- Mouth ulcers
- Ear infections
- Severe eye infections, which can cause corneal ulceration and blindness
- Encephalitis, occurring in roughly one in a thousand cases, can present with severe symptoms such as convulsions, lethargy, or unconsciousness.

Impact on Malnutrition

Measles exacerbates malnutrition due to symptoms like diarrhea, high fever, and mouth ulcers, which hinder feeding. Malnourished children face a higher risk of severe complications, particularly those with vitamin A deficiencies. Approximately one in ten severely malnourished children with measles may die, underscoring the importance of ensuring that mothers continue to feed their children during the illness.

Assessing Fever in Children

A child is considered to have a fever if any of the following is true:

- There is a history of fever.
- The child feels hot to touch.
- The axillary temperature is 37.5°C (99.5°F) or higher.

If the child is in an area with known malaria transmission or has traveled to a malaria-endemic region within the last 15 days, and other causes of fever have been ruled out, malaria should be suspected. Follow the case definition for suspected malaria.When assessing a child with fever, consider the following:

1. Duration of Fever: Ask how long the child has had a fever.
2. Measles History: Inquire about any recent measles infection.
3. Symptoms:
    - Check for a stiff neck or runny nose.
    - Look for signs of measles, including a generalized rash and symptoms like cough, runny nose, or red eyes.
    - If the child had measles in the last three months, assess for complications such as mouth ulcers, pus from the eye, and clouding of the cornea.
4. Signs of Dengue Hemorrhagic Fever: Be vigilant for symptoms indicative of dengue.

Temperature Measurement

- For axillary readings: Fever is defined as 37.5°C (99.5°F), and high fever is 38.5°C (101.3°F). For rectal readings: Fever is 38°C (100.4°F), and high fever is 39°C (102°F).

Always ask about fever in all sick children. Use simple language to ensure the mother understands what fever means. For example, you might ask if the child feels hot.

Measuring Temperature

- If the child's temperature has already been recorded, check this against the fever thresholds.
- If the temperature hasn't been measured and a thermometer is available, take the child's temperature.

- If the child does not meet the fever criteria (history, feels hot, or temperature ≥37.5°C), record "NO" and do not assess further for fever-related signs.
- If the child has a fever, proceed with a thorough assessment, even if they don't currently feel hot or have a temperature above 37.5°C. A history of fever is sufficient for evaluation.

Assessing Malaria Endemicity and Fever in Children

Determining Malaria Endemicity

- Check for Malaria Transmission: Identify if the area is classified as hyper-endemic or meso-endemic based on local malaria transmission patterns. Areas with high transmission have significant malaria cases, while meso-endemic areas have fewer cases.
- Travel History: Even in low or no malaria risk areas, a recent travel history to malaria-endemic regions (within the last 15 days) may indicate potential malaria infection.
- Consult the Mother: Ask the mother about her knowledge of malaria transmission in the area they visited.

Fever Assessment

1. Duration of Fever:
    - Inquire how long the child has had fever.
    - If the fever lasts more than 7 days, ask if it has been present daily. A prolonged fever could indicate severe diseases like typhoid and may require referral.
2. Associated Symptoms:
    - Ask about headaches, pain behind the eyes, rash, and whether the child has had measles in the last 3 months. Measles can lead to complications that increase the risk of other infections.
3. Stiff Neck:
    - Assess for stiffness in the neck, which may suggest meningitis. A child with a stiff neck requires urgent treatment and referral.

4. Movement Observation:
    - Observe the child's ability to move and bend their neck. If unsure, encourage movement by drawing attention to their toes or umbilicus.
5. Runny Nose:
    - Check if the child has a runny nose, which may indicate a common cold rather than malaria. In low malaria risk areas, this generally does not require antimalarial treatment.
6. Signs of Dengue:
    - Look for petechiae, gum bleeding, or nosebleeds. If present, perform a tourniquet test to confirm potential dengue hemorrhagic fever, which requires urgent referral.

Assessing for Measles

Signs of Measles:

- Look for a generalized rash starting from behind the ears and neck, spreading to the face and body.
- Confirm the presence of a rash alongside one of the following: cough, runny nose, or red eyes. The red eyes should show clear redness in the sclera.

Classify Malaria

- A child with fever in a high malaria risk area and a positive malaria test is classified as having malaria.
- In low-risk areas, a fever without other obvious causes can still lead to a malaria classification if no other signs are present.

- Distinguish measles from other rashes to ensure accurate diagnosis and treatment.

Assessing Complications of Measles in Children

Checking for Mouth Complications

Mouth Ulcers:

- Examine the child's mouth for painful open sores (ulcers) on the inside of the lips, tongue, or cheeks.
- Note the characteristics: are the ulcers deep and extensive? Severe mouth ulcers hinder the child's ability to eat or drink.
- Differentiate mouth ulcers from Koplik spots, which are small, bright red spots with a white center that occur in the early stages of measles but do not affect eating or drinking.

Checking for Eye Complications

1. Signs of Eye Infection:
    - Pus Draining from the Eye:
        - Look for any pus coming from the eye, indicating conjunctivitis (infection of the conjunctiva).
        - Check for crusting on the eyelids, which can seal the eye shut during sleep. Use clean hands to gently open the eye.
        - Always wash your hands after examining a child with eye discharge.
2. Clouding of the Cornea:
    - Inspect the cornea for any haziness or clouding, which may appear similar to a glass of water with a small amount of milk mixed in.
    - Clouding can signify a serious condition, often related to vitamin A deficiency exacerbated by measles. This requires urgent treatment to prevent complications like corneal ulceration and blindness.
    - Observe the child's response to light; they may keep their eyes shut due to irritation or pain.
    - If clouding is observed, inquire how long it has been present and whether it has been evaluated or treated at a hospital. If treated, no further referral is necessary.

Mouth ulcers and eye complications are critical areas to assess in children with measles. Proper evaluation and timely treatment are essential to prevent severe complications. Always ensure hygiene when examining affected areas to prevent the spread of infections.

Classifying Fever

Assess for Fever:

- If the child has fever and no signs of measles, classify the child for fever only.
- If the child has both fever and signs of measles, classify for both fever and measles.

Classification in Hyper Endemic Areas

i. Very Severe Febrile Disease

- If the child exhibits any general danger signs or has a stiff neck or a positive tourniquet test, classify as Very Severe Febrile Disease. In hyper-endemic areas for falciparum malaria, children under 5 are particularly vulnerable. Delayed diagnosis and inappropriate treatment can lead to rapid progression to severe disease.

ii. Malaria

If there are no general danger signs or stiff neck, refer to the yellow row for classification. In hyper or meso-endemic malaria areas, classify the child as having Malaria if microscopy or rapid diagnostic tests (RDTs) are unavailable. In areas of high malaria endemicity, the likelihood that the fever is due to malaria is significantly increased. If microscopy or RDTs are available, all children with fever in malaria endemic areas should be tested. Common types of malaria in Pakistan are; Falciparum and Vivax Malaria

iii. Fever: No Malaria

In non-endemic malaria areas or when other causes of fever (like runny nose or measles) are evident, classify the child as Fever: No Malaria.

Utilize this classification framework to assess and respond appropriately to febrile illnesses in children, considering local malaria endemicity and other contributing factors.

According to 2019 KP-MICS results about fever, 31% of children experienced an episode of fever, with 61% of these children taken to a health facility or healthcare provider—23% to public facilities and 37% to private ones. Among those with fever, only 4% received treatment with anti-malarial drugs such as SP/Fansidar or Chloroquine, while 48% were administered Paracetamol, Panadol, or Acetaminophen for symptom relief. This highlights the need for improved access to appropriate treatments for childhood illnesses.

Table 7.3.1: Management of Fever:

If yes: Decide Malaria Risk: high or low ***Then ask:*** ▪ For how long? ▪ If more than 7 days, has fever been present every day? ▪ Has the child had measles within the last 3 months? ***Look and feel:*** ▪ Look or feel for stiff neck. ▪ Look for runny nose. ▪ Look for any bacterial cause of fever**. ▪ Look for signs of MEASLES: – Generalized rash and – One of these: – cough, runny nose, or red eyes. ***Do a malaria test***: If NO severe classification*** ▪ In all fever cases if High malaria risk. ▪ In Low malaria risk if no obvious cause of fever present. Decide Dengue Rik: High or Low Then Ask for: ▪ Headache ▪ Myalgia ▪ Rash ▪ Retro-orbital pain/ ocular pain ▪ Hemorrhagic manifestations (e.g. positive tourniquet test, purpura/ ecchymosis, epistaxis, gum bleeding) …… …….. **If the child has measles now or within the last 3 months:** ▪ Look for mouth ulcers. ▪ Are they deep and extensive? ▪ Look for pus draining from the eye. ▪ Look for clouding of the cornea.	**CLASSIFY FEVER**	▪ Any general danger sign or ▪ Stiff neck.	**VERY SEVERE FEBRILE DISEASE**	▸ **Give first dose of artesunate or quinine for severe malaria** ▸ **Give first dose of an appropriate antibiotic** ▸ **Treat the child to prevent low blood sugar** ▸ **Give one dose of Paracetamol in clinic for high fever (38.5°C or above)** ▸ **Refer URGENTLY to hospital**
	High or Low malaria Risk	Malaria test POSITIVE.	**MALARIA**	▸ **Give one dose of Paracetamol in clinic for high fever (38.8°C or above)** ▸ Give appropriate antibiotic treatment for an identified bacteri5l cause of fever ▸ Advise mother when to return immediately ▸ Follow-up in 3 days if fever persists ▸ If fever is present every day for more than 7 days, refer for assessment
		▪ Malaria test NEGATIVE ▪ Other cause of fever PRESENT.	**FEVER: NO MALARIA**	▸ **Give recommended first line oral antimalarial** ▸ **Give one dose of Paracetamol in clinic for high fever (38.8°C or above)** ▸ **Give appropriate antibiotic treatment** for an identified bacterial cause of fever ▸ Advise mother when to return immediately ▸ Follow-up in 3 days if fever persists ▸ If fever is present every day for more than 7 days, refer for assessment
	No Malaria Risk and No travel to malaria Risk area	▪ Any general danger sign or ▪ Stiff neck.	**VERY SEVERE FEBRILE DISEASE**	▸ **Give first dose of an appropriate antibiotic.** ▸ **Treat the child to prevent low blood sugar.** ▸ **Give one dose of Paracetamol in clinic for high fever (38.5°C or above).** ▸ **Refer URGENTLY to hospital.**
		▪ No general danger signs ▪ No stiff neck.	**FEVER**	▸ **Give one dose of Paracetamol in clinic for high fever (38.5°C & or above)** ▸ **Give appropriate antibiotic treatment** for any identified bacterial cause of fever ▸ Advise mother when to return immediately ▸ Follow-up in 2 days if fever persists ▸ If fever is present every day for more than 7 days, refer for assessment
	Measles now or within 3 months	▪ Any general danger sign or ▪ Clouding of cornea or ▪ Deep or extensive mouth ulcers.	**SEVERE COMPLICATED MEASLES******	▸ **Give Vitamin A treatment** ▸ **Give first dose of an appropriate antibiotic** ▸ **If clouding of the cornea or pus draining from the eye, apply tetracycline eye ointment Refer URGENTLY to hospital**
		▪ Pus draining from the eye or ▪ Mouth ulcers.	**MEASLES WITH EYE OR MOUTH COMPLICATIONS******	▸ **Give Vitamin A treatment** ▸ **If pus draining from the eye, treat eye infection with tetracycline eye ointment** ▸ If mouth ulcers, treat with gentian violet ▸ Follow-up in 3 days
		▪ Measles now or ▪ within the last 3 months.	**MEASLES**	**Give Vitamin A treatment**
	Dengue	▪ Bleeding from the nose or gums ▪ Bleeding in the stool or vomits ▪ Black stool or vomitus ▪ Skin petechiae ▪ Slow capillary refill (more than 3 seconds) ▪ Persistent abdominal; pain ▪ Persistent vomiting ▪ Positive tourniquet test	**SEVERE DENGUE HEMORRHAGIC FEVER**	▸ ***If skin petechiae, peritent abdominal pain, persistent vomiting or positive tourniquet test are the only positive signs, then give ORS.*** ▸ ***If any other sign of bleeding is positive, give fluids rpidly as in Plan C.*** ▸ ***Treat the child to prevent low blood sugar.*** ▸ ***Refer URGENTLY to hospital.*** ▸ ***Do not give Aspirin.***
		▪ No sign of Dengue hemorrhagic fever	**FEVER ONLY: DENGUE HEMORRHAGIC FEVER UNLIKELY**	▸ Advise mother to when to return immediately. ▸ **Follow up in 2 days if the fever persists or if the child shows signs of bleeding** ▸ **Do not give aspirin**

- **These temperatures are based on axillary temperatures.**
- ** Look for local tenderness; oral sores; refusal to use a limb; hot tender swelling; red tender skin or boils; lower abdominal pain or pain on passing urine in older children.
- *** If no malaria test available: High malaria risk - classify as MALARIA; Low malaria risk AND NO obvious cause of fever - classify as MALARIA.
- **** *Other important complications of measles - pneumonia, stridor, diarrhoea, ear infection, and acute malnutrition - are classified in other tables.*

Table 7.3.2: Oral Treatment of Malaria:

Give Oral Antimalarial for MALARIA

- Give the first dose of artemether-lumefantrine in the clinic and observe for one hour.
- If the child vomits within an hour repeat the dose.
- Give second dose at home after 8 hours.
- Then twice daily for further two days as shown below.
- Artemether-lumefantrine should be taken with food.

UNCOMPLICATED PLASMODIUM FALCIPARUM MALARIA

Artemether-Lumefantrine tablets
(20 mg artemether and 120 mg lumefantrine)
Give two times daily for 3 days

WEIGHT (age)	Day 1	Day 2	Day 3
5 - <10 kg (2 months up to 12 months)	1	1	1
10 - <14 kg (12 months up to 3 years)	1	1	1
14 - <19 kg (3 years up to 5 years)	2	2	2

Artisunate – Sulfadoxine-pyrimethamine tablets
(50 mg artisunate and 500 mg sulphadoxine+25mg pyrimethamine)
Give two times daily for 3 days

AGE	Day 1		Day 2	Day 3
	SP	ARTISUMATE	ARTISUMATE	ARTISUMATE
5 months up to 11 months)	½	½	½	½
12 months up to 6 years)	1	1	1	1

UNCOMPLICATED PLASMODIUM VIVAX MALARIA

WEIGHT (age)	CHLOROQUINE					
	TABLETS 150 mg base (250 mg salt)			SYRUP 50 mg base per 5 ml teaspoon full (TSF)		
	Day 1	Day 2	Day 3	Day 1	Day 2	Day 3
5 - <10 kg (2 months up to 12 months)	¼	¼	¼	¾ TSF	¾ TSF	¾ TSF
10 - <14 kg (12 months up to 3 years)	1	1	1	¾ TSF	¾ TSF	¾ TSF

Table 7.3.3: Treatment of Severe Malaria:

Give Artesunate Suppositories or Intramuscular Artesunate or Quinine for Severe Malaria

FOR CHILDREN BEING REFERRED WITH VERY SEVERE FEBRILE DISEASE:

- Check which pre-referral treatment is available in your clinic (rectal artesunate suppositories, artesunate injection or quinine).
- Artesunate suppository: Insert first dose of the suppository and refer child urgently
- Intramuscular artesunate or quinine: Give first dose and refer child urgently to hospital.

IF REFERRAL IS NOT POSSIBLE:

- For artesunate injection:
  - Give first dose of artesunate intramuscular injection
  - Repeat dose after 12 hrs and daily until the child can take orally
  - Give full dose of oral antimlarial as soon as the child is able to take orally.

  For artesunate suppository:
  - Give first dose of suppository
  - Repeat the same dose of suppository every 24 hours until the child can take oral antimalarial.
  - Give full dose of oral antimalarial as soon as the child is able to take orally
- For quinine:
  - Give first dose of intramuscular quinine.
  - The child should remain lying down for one hour.
  - Repeat the quinine injection at 4 and 8 hours later, and then every 12 hours until the child is able to take an oral antimalarial. Do not continue quinine injections for more than 1 week.

  If low risk of malaria, do not give quinine to a child less than 4 months of age.

AGE or WEIGHT	RECTAL ARTESUNATE SUPPOSITORY		INTRAMUSCULAR ARTESUNATE	INTRAMUSCULAR QUININE	
	50 mg suppositories Dosage 10 mg/kg	200 mg suppositories Dosage 10 mg/kg	60 mg vial (20mg/ml) 2.4 mg/kg	150 mg/ml* (in 2 ml ampoules)	300 mg/ml* (in 2 ml ampoules)
2 months up to 4 months (4 - <6 kg)	1		1/2 ml	0.4 ml	0.2 ml
4 months up to 12 months (6 - <10 kg)	2		1 ml	0.6 ml	0.3 ml
12 months up to 2 years (10 - <12 kg)	2	-	1.5 ml	0.8 ml	0.4 ml
2 years up to 3 years (12 - <14 kg)	3	1	1.5 ml	1.0 ml	0.5 ml
3 years up to 5 years (14 - 19 kg)	3	1	2 ml	1.2 ml	0.6 ml

** quinine salt*

Table 7.3.4: Treatment of Local Infections:

TEACH THE MOTHER TO TREAT LOCAL INFECTIONS AT HOME

- **Explain to the mother what the treatment is and why it should be given.**
- **Describe the treatment steps listed in the appropriate box.**
- **Watch the mother as she does the first treatment in the clinic (except for remedy for cough or sore throat).**
- **Tell her how often to do the treatment at home.**
- **If needed for treatment at home, give mother the tube of tetracycline ointment or a small bottle of gentian violet.**
- **Check the mothers understanding before she leaves the clinic.**

Soothe the Throat, Relieve the Cough with a Safe Remedy

- **Safe remedies to recommend:**
  - Breast milk for a breastfed infant.

  _____
  _____
- **Harmful remedies to discourage:**

  _____
  _____
  _____

Treat Eye Infection with Tetracycline Eye Ointment

- **Clean both eyes 4 times daily**.
  - Wash hands.
  - Use clean cloth and water to gently wipe away pus.
- **Then apply tetracycline eye ointment in both eyes 4 times daily.**
  - Squirt a small amount of ointment on the inside of the lower lid.
  - Wash hands again.
- **Treat until there is no pus discharge.**
- **Do not put anything else in the eye.**

Treat for Mouth Ulcers with Gentian Violet (GV)

- **Treat for mouth ulcers twice daily.**
  - Wash hands.
  - Wash the child's mouth with clean soft cloth wrapped around the finger and wet with salt water.
  - Paint the mouth with half-strength gentian violet (0.25% dilution).
  - Wash hands again.
  - Continue using GV for 48 hours after the ulcers have been cured.
  - Give paracetamol for pain relief.

Treat Thrush with Nystatin

Treat thrush four times daily for 7 days

- Wash hands
- Wet a clean soft cloth with salt water and use it to wash the child's mouth
- Instill nystatin 1ml four times a day
- Avoid feeding for 20 minutes after medication
- If breastfed check mother's breasts for thrush. If present treat with nystatin
- Advise mother to wash breasts after feeds. If bottle fed advise change to cup and spoon
- Give paracetamol if needed for pain

AGE or WEIGHT	PARACETAMOL	
	TABLET (100 mg)	**TABLET** (500 mg)
2 months up to 3 years (4 - <14 kg)	1	¼
3 years up to 5 years (14 - <19 kg)	1 ½	½

Give Vitamin A Supplementation and Treatment

VITAMIN A SUPPLEMENTATION:

- Give first dose any time after 6 months of age to ALL CHILDREN
- Thereafter vitamin A **every six months** to ALL CHILDREN

VITAMIN A TREATMENT:

- Give an extra dose of Vitamin A (same dose as for supplementation) for ***treatment*** if the child has MEASLES or PERSISTENT DIARRHOEA. If the child has had a dose of vitamin A within the past month or is on RUTF for treatment of severe acute malnutrition, DO NOT GIVE VITAMIN A.
- Always record the dose of Vitamin A given on the child's card.

AGE or WEIGHT	
6 up to 12 months	100 000 IU
One year and older	200 000 IU

Assessing Ear Problems in a sick child from 2 months to 5 years

A child with ear issues may have an ear infection, characterized by pain, fever, and possible discharge. Prompt assessment is crucial to prevent complications like hearing loss or severe infections.

- Ask: Does the child have an ear problem?
  - If NO: Record the answer and proceed to assess nutrition status.
  - If YES: Continue with further questions.
- Ask: Does the child have ear pain?
  - Severe pain typically indicates an acute ear infection. If unsure, ask if the child has been irritable, crying, or rubbing their ear.
- Ask: Is there ear discharge? If yes, for how long?
  - Use clear terms for "ear discharge" that the mother understands.
  - Classify the ear problem based on the duration of discharge:
    - Less than 2 weeks: Acute ear infection.
    - 2 weeks or more: Chronic ear infection.
- Look for Pus:
  - Inspect the ear for any pus drainage, indicating infection.
- Tender Swelling Check:
  - Feel behind both ears for tenderness and swelling.
  - Both tenderness and swelling must be present to classify mastoiditis, a severe infection of the mastoid bone. Be careful not to confuse this with swollen lymph nodes.

Complications of Untreated Ear Infections

If left untreated, an ear infection can lead to:

- Ruptured Eardrum: This may relieve pain but can result in hearing loss.
- Mastoiditis: Infection spreading to the mastoid bone.
- Meningitis: Infection spreading to the brain.

These conditions require urgent medical attention. Prompt assessment and classification of ear problems are essential to prevent complications, such as hearing loss or severe infections. Proper treatment can mitigate long-term impacts on a child's development and well-being.

Classification of Ear Problems

1. Mastoiditis

A sick child with tenderness and swelling of the mastoid bone behind the ear is called Mastoiditis. Administer the first dose of antibiotics and one dose of paracetamol for pain before referral is required in all such cases.

2. Acute Ear Infection

A child with ear pain or ear discharge (pus) present for fewer than 14 days is called acute ear infection. Ear pain or ear discharge are its signs.

3. Chronic Ear Infection

A child with ear discharge (pus) present for 14 days or more is considered chronic ear infection. Ear discharge is the main sign. The treatment includes;

- Dry the ear using wicking techniques.
- Administer ear drops for at least two weeks

4. No Ear Infection

A child showing no signs of ear infection including ear pain and pus drainage from the ear is declared as no ear infection.

Accurate classification of ear problems is essential for appropriate treatment. Early identification and intervention can prevent complications, such as hearing loss or more severe infections. Always refer to the treatment guidelines for specific management of each classification.

Table 7.3.5: Management of Ear Infection:

Does the child have an ear problem?

If yes, ask:	*Look and feel:*
• Is there ear pain? Is there ear discharge? If yes, for how long?	• Look for pus draining from the ear. • Feel for tender swelling behind the ear.

Classify EAR PROBLEM

• Tender swelling behind the ear.	**MASTOIDITIS**	▪ **Give first dose of an appropriate antibiotic** ▪ **Give first dose of paracetamol for pain** ▪ **Refer URGENTLY to hospital**
• Pus is seen draining from the ear and discharge is reported for less than 14 days, or Ear pain.	**ACUTE EAR INFECTION**	▪ **Give an antibiotic for 5 days** ▪ **Give paracetamol for pain** ▪ Dry the ear by wicking ▪ Follow-up in 5 days
• Pus is seen draining from the ear and discharge is reported for 14 days or more.	**CHRONIC EAR INFECTION**	▪ Dry the ear by wicking ▪ Treat with topical quinolone eardrops for 14 days ▪ Follow-up in 5 days
• No ear pain and No pus seen draining from the ear.	**NO EAR INFECTION**	▪ No treatment

Table 7.3.6: Management of Anemia

THEN CHECK FOR ANAEMIA

Check for anaemia
- Look for palmar pallor. Is it:
  - Severe palmar pallor*?
  - Some palmar pallor?

Classify ANAEMIA

• Severe palmar pallor	**SEVERE ANAEMIA**	▪ **Refer URGENTLY to hospital**
• Some pallor	**ANAEMIA**	▪ Give iron** ▪ Give mebendazole if child is 1 year or older and has not had a dose in the previous 6 months ▪ Advise mother when to return immediately Follow-up in 14 days
• No palmar pallor	**NO ANAEMIA**	If child is less than 2 years old, assess the child's feeding and counsel the mother according to the feeding recommendations If feeding problem, follow-up in 5 days

*Assess for sickle cell anaemia if common in your area.

**If child has severe acute malnutrition and is receiving RUTF, DO NOT give iron because there is already adequate amount of iron in RUTF.

Table 7.3.7: Oral Treatment for Ear Infection:

Clear the Ear by Dry Wicking and Give Eardrops*

- **Dry the ear at least 3 times daily.**
  - Roll clean absorbent cloth or soft, strong tissue paper into a wick.
  - Place the wick in the child's ear.
  - Remove the wick when wet.
  - Replace the wick with a clean one and repeat these steps until the ear is dry.
  - Instill quinolone eardrops after dry wicking three times daily for two weeks.

** Quinolone eardrops may include ciprofloxacin, norfloxacin, or ofloxacin.*

FOR PNEUMONIA, ACUTE EAR INFECTION:

FIRST-LINE ANTIBIOTIC: Oral Amoxicillin

AGE or WEIGHT	AMOXICILLIN* *Give two times daily for 5 days*	
	TABLET 250 mg	SYRUP 250mg/5 ml
2 months up to 12 months (4 - <10 kg)	1	5 ml
12 months up to 3 years (10 - <14 kg)	2	10 ml
3 years up to 5 years (14-19 kg)	3	15 ml

** Amoxicillin is the recommended first-line drug of choice in the treatment of pneumonia due to its efficacy and increasing high resistance to cotrimoxazole*

AGE or WEIGHT	PARACETAMOL	
	TABLET (100 mg)	**TABLET** (500 mg)
2 months up to 3 years (4 - <14 kg)	1	¼
3 years up to 5 years (14 - <19 kg)	1 ½	½

Table 7.3.8: Oral Treatment for Anemia:

*Give Iron**

- Give one dose daily for 14 days.

AGE or WEIGHT	IRON/FOLATE TABLET	IRON SYRUP
	Ferrous sulfate 200 mg + 250 mcg Folate (60 mg elemental iron)	Ferrous fumarate 100 mg per 5 ml (20 mg elemental iron per ml)
2 months up to 4 months (4 - <6 kg)		1.00 ml (< 1/4 tsp.)
4 months up to 12 months (6 - <10 kg)		1.25 ml (1/4 tsp.)
12 months up to 3 years (10 - <14 kg)	1/2 tablet	2.00 ml (<1/2 tsp.)
3 years up to 5 years (14 - 19 kg)	1/2 tablet	2.5 ml (1/2 tsp.)

* Children with severe acute malnutrition who are receiving ready-to-use therapeutic food (RUTF) should not be given Iron

Give Pyrantel Pamoate

- FOR TREATMENT OF ANEMIA AND STOOL POSITIVE FOR WORMS
  - If the child is 2 years of age or older, and has not had a dose in the previous 6 months OR
  - If the child is 4 months of age or older and has evidence of worm infestation
- **GIVE PYRANTEL PAMOATE AS A SINGLE DOSE IN CLINIC**

AGE or WEIGHT	TABLET (125 mg)	TABLET (220 mg)
4 months up to 9 moths (6 - <8 kg)	½	¼
9 months up to 1 year (8 - <10 kg)	¾	½
1 year up to 3 years (10 - <14 kg)	1	½
3 years up to 5 years (14 – 19 kg)	1 ½	¾

Give Multivitamin / Mineral supplement

- For persistent diarrhea give 5 ml (one tea spoon full) once a day for 2 weeks

Chapter 7

Session 7.4

Assessing Nutritional Status of Sick Child

(IMNCI Guidelines)

Introduction:

Malnutrition among children aged 2 months to 5 years is a critical public health concern that can have long-lasting effects on their growth, development, and overall health. During these formative years, children require adequate nutrition to support rapid physical growth and cognitive development. Malnutrition can manifest as under nutrition, which includes stunting, wasting, and underweight, as well as over nutrition, leading to obesity and related health issues. Factors contributing to malnutrition in this age group often include inadequate dietary intake, poor feeding practices, lack of access to nutritious foods, and underlying health conditions. In Pakistan, the situation of child malnutrition is alarming, with 40% of children under five experiencing stunting and 17.7% suffering from wasting. This growing double burden of malnutrition is further evidenced by 28.9% of children being underweight, while 9.5% are classified as overweight. Notably, the prevalence of overweight among children under five has nearly doubled in recent years, increasing from 5% in 2011 to 9.5% in 2018.

Stunting is a major problem in Pakistan, affecting 12 million children who are of low height for their age. Addressing this form of malnutrition is crucial to prevent it from undermining the human capital necessary for the country's socioeconomic development, making stunting reduction a top national priority. While the national average for stunting is 40.2%, this figure masks significant provincial disparities. The prevalence of stunting varies from 32.6% in the Islamabad Capital Territory (ICT) to 48.3% in Khyber Pakhtunkhwa (KP-NMD). Additionally, the rates in Sindh, Balochistan, KP-NMD, and Gilgit-Baltistan (GB) are higher than the national average, highlighting the urgent need for targeted interventions in these regions as shown in following figure.

According to the 2019 KP-MICS data on child nutrition indicates that 23% of children under five are moderately underweight, while 37% are moderately stunted and 11% are moderately wasted. Among different divisions, the prevalence of underweight children is lowest in Hazara at 20% and highest in Dera Ismail Khan at 30%. Additionally, these anthropometric indicators show significant variation based on household wealth. Nearly half (46%) of children living in the lowest wealth quintile are moderately stunted, and 28% are moderately underweight. In contrast, only 26% of children in the richest quintile are stunted, with just 16% underweight, highlighting the impact of socioeconomic factors on child nutrition.

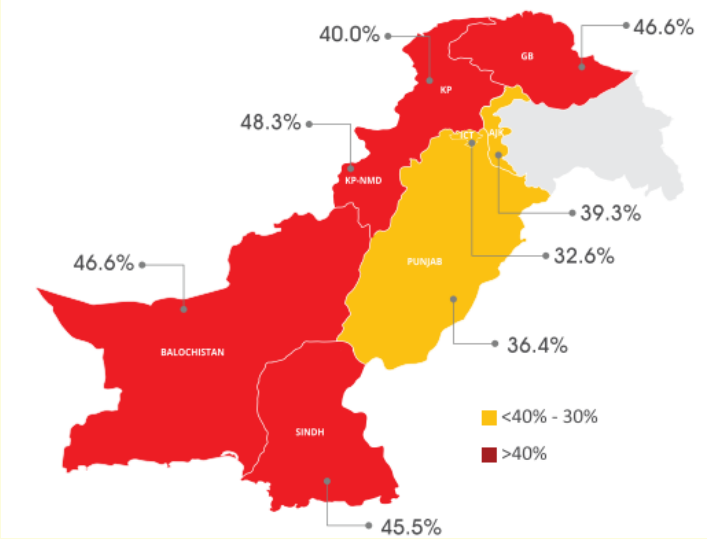


Figure 7.4.1: Stunting prevalence in different provinces/regions of Pakistan.

Since 1997, the prevalence of low weight for height among young children in Pakistan has been steadily increasing, rising from 8.6% in 1997 to 15.1% in 2011 and reaching 17.7% in 2018. Despite progress in various socioeconomic indicators, acute malnutrition persists at alarming levels, creating a state of nutritional emergency. This represents the highest rate of wasting recorded in Pakistan's history, highlighting the urgent need for effective interventions to address this critical issue.

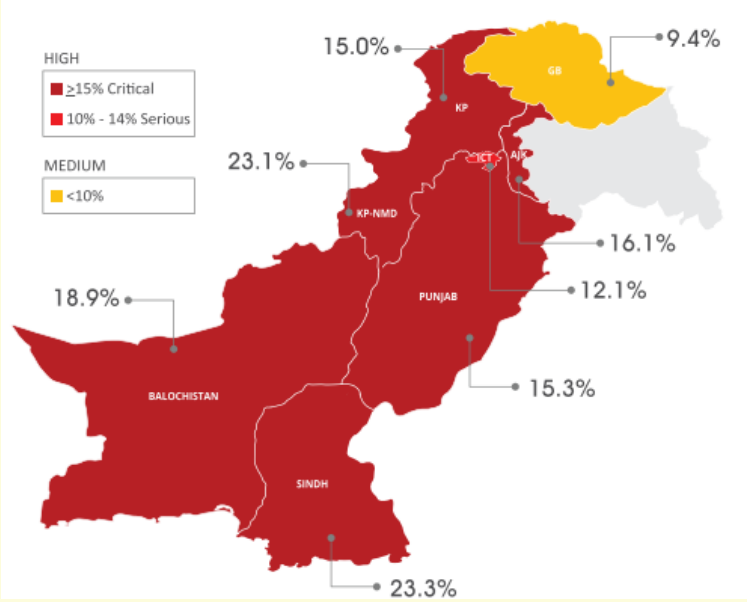


Figure 7.4.2: prevalence in different provinces/regions of Pakistan

Learning Objectives:

At the end of the session the participants will be able to;

1. Perform thorough assessments of malnutrition in children, utilizing key indicators such as weight-for-height, height-for-age, and measuring MUAC to accurately identify cases of stunting, wasting, and underweight.
2. Learn and implement IMNCI guidelines for management of malnourished children, incorporating appropriate dietary interventions, supplementation, and referral to healthcare services as needed.

Identifying and Managing Acute Malnutrition

Importance of Detection

- Malnutrition and Illness: A sick child may be malnourished without obvious signs. Malnutrition increases the risk of severe diseases and death, even in mild to moderate cases.
- Early Intervention: Identifying and treating malnutrition can prevent severe illnesses and mortality. Some cases can be managed at home, while severe cases require hospital referral.

Types of Malnutrition

1. Acute Malnutrition: Characterized by inadequate nutrients necessary for growth and repair, leading to weight loss and decreased appetite. It can result from frequent illnesses, impacting nutrient efficiency.
2. Severe Acute Malnutrition (SAM): A critical condition that requires urgent intervention. Traditionally, SAM children were referred to hospitals for therapeutic diets and medical care.

Home Management with RUTF (Ready-to-Use Therapeutic Foods):

It is designed for children over 6 months old with SAM but without medical complications. It is composed of energy-dense ingredients such as full-fat milk powder, sugar, peanut butter, and vegetable oil, supplemented with vitamins and minerals. Advantages of RUTF: long shelf life without refrigeration and it requires no preparation, making it practical for home use.

Important Points for Health Workers

1. Screen for Malnutrition: Regularly assess children for signs of malnutrition during health visits, even if there are no specific complaints.
2. Educate Families: Inform families about the importance of nutrition, especially during illnesses, and how to identify potential signs of malnutrition.
3. Referral and Treatment:
    - Refer children with severe acute malnutrition to hospitals if they have complications.
    - Provide RUTF for home management in uncomplicated SAM cases, ensuring families understand how to use it effectively.
4. Follow-Up: Monitor the child's progress and adjust the treatment plan as necessary to ensure recovery and prevent future episodes of malnutrition.

Acute malnutrition is a critical public health issue that can severely impact child health. Through early detection, education, and the use of RUTF, health workers can effectively manage malnutrition at home, reducing the need for hospitalization while still providing essential care.

Causes of Malnutrition

Malnutrition can be caused by various factors which may differ by region. Understanding these causes is essential for effective prevention and treatment.

1. Protein-Energy Malnutrition (PEM)

It occurs when a child does not receive sufficient energy or protein to meet nutritional needs.

Its consequences include:

- Marasmus: Severe wasting due to insufficient caloric intake. The child appears thin and frail.
- Kwashiorkor: Characterized by edema (swelling) due to protein deficiency, despite possibly adequate calorie intake.
- Stunting: Poor growth resulting in a child being shorter than the expected height for their age.

2. Micronutrient Deficiencies

- Vitamin A Deficiency:

  It is caused by lack of foods rich in vitamin A (e.g., carrots, spinach) resulting in increased susceptibility to infections (e.g., measles, diarrhea) and potential blindness.

- Iron Deficiency and Anemia:

  It is defined as reduced number of red blood cells or decreased hemoglobin in each cell. The main causes are;

  - Insufficient iron intake from the diet.
  - Infections: Such as hookworm or whipworm, leading to blood loss.
  - Malaria: Can rapidly destroy red blood cells, leading to anemia, especially in children with recurrent malaria episodes or those inadequately treated.

Assessment

- To evaluate malnutrition and anemia, health workers should refer to the "Assess" column of the of the table 7.4.1 and 7.3.6 respectively. This includes:
  - Monitoring growth metrics (weight and height).
  - Observing signs of PEM (wasting, edema, stunting).
  - Assessing dietary intake for essential vitamins and minerals.

Addressing malnutrition requires a comprehensive approach, including improving dietary quality, ensuring access to nutritious foods, and addressing underlying health issues such as infections and malaria. Early detection and intervention are key to preventing the severe consequences of malnutrition in children.

Clinical Assessment for Malnutrition

Signs of Acute Malnutrition

i. Oedema of Both Feet:

   Indicates possible kwashiorkor. Check by pressing on the top of each foot; if a dent remains, the child has oedema.

ii. Weight-for-Height (WFH) or Weight-for-Length (WFL):

   Use z-scores to assess:

   - Severe Acute Malnutrition (SAM): Below -3 z-scores.
   - Moderate Acute Malnutrition (MAM): Between -2 and -3 z-scores.
   - No Malnutrition: At or above -2 z-scores.

iii. Mid-Upper Arm Circumference (MUAC):

Measuring MUAC is a quick indicator of malnutrition is a simple and effective tool used to assess malnutrition, especially in children. To use MUAC tape, you need to measure the circumference of a child's upper arm at the midpoint between the shoulder and the elbow. First, have the child stand or sit with their arm relaxed and hanging by their side. Place the MUAC tape around the upper arm, making sure the tape is snug but not tight. The tape will have color-coded markings that help determine whether the child is malnourished. Read the measurement where the tape overlaps and record it.

If the tape shows a red marking (MUAC < 115 mm) it indicates severe malnutrition and the child needs immediate medical attention. If it shows yellow (MUAC 115-124mm**)**, it suggests moderate malnutrition, and the child should be closely monitored and receive proper nutrition. A green marking (MUAC $\geq$ 125 mm) indicates normal nutrition status. The MUAC measurement is a quick and reliable method to assess nutritional status in children aged 6 months to 5 years. It is especially useful in field settings and emergencies where other resources may not be available.

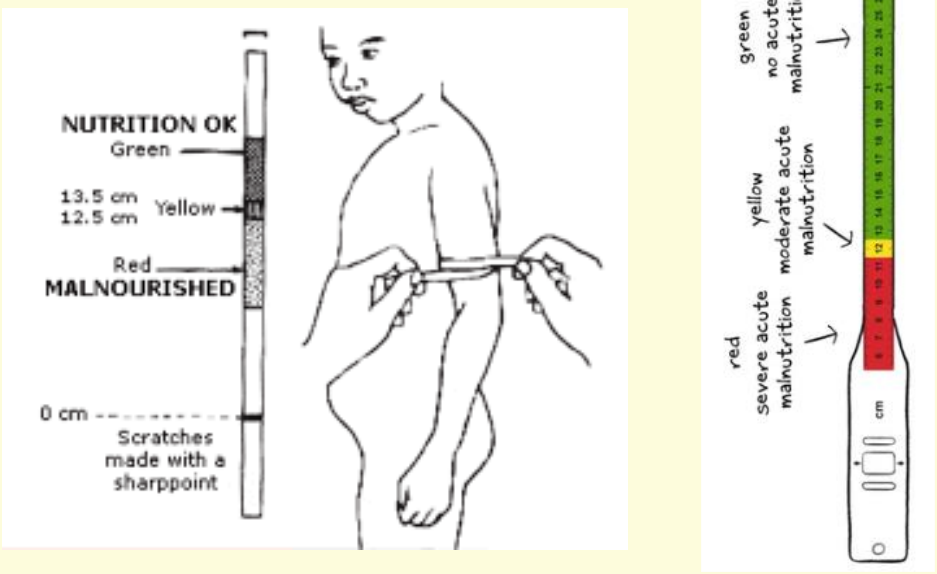


Figure: Measuring Mid Upper Arm Circumference with MUAC tape

Steps for Assessment

1. Check for Oedema:
2. Measure Weight and Height:

   Measure length for children <2 years (lying down) or height for those ≥2 years (standing)
3. Plot on WFH/WFL Chart:

   Find the intersection of weight and height on the chart.

   Determine z-score classification.
4. Measure Mid Upper Arm Circumference (MUAC):

   Place the measuring tape midway between the shoulder and elbow.

   Record measurement and classify based on MUAC values.
5. Check for Medical Complications:

   If any signs of severe malnutrition (oedema, MUAC < 115 mm, WFH/L < -3 z-scores), assess for:

   - General danger signs (e.g., altered consciousness, seizures).
   - Severe pneumonia or chest in-drawing.
6. Assess for Anaemia:

Identifying malnutrition and associated complications early is crucial for effective intervention. Children with severe acute malnutrition, especially those with medical complications, require urgent referral and treatment to prevent serious health risks. Regular monitoring and assessment can help in timely management and improve outcomes for affected children.

Assessing Appetite in Children with Severe Acute Malnutrition

The appetite test helps determine if a child with severe acute malnutrition can be treated at home or needs urgent referral. A poor appetite may indicate significant infections or metabolic issues, increasing the risk of death.

When to Conduct the Appetite Test

Perform the appetite test for children aged 6 months or older who:

- Have a MUAC less than 115 mm, OR
- Have WFH/L less than -3 z-scores, OR
- Exhibit oedema of both feet, AND
- Do NOT have medical complications.

Steps to Conduct the Appetite Test

1. Choose a Quiet Area:

   Ensure the environment is calm and free from distractions (noise, other children, intimidating staff). If a quiet area isn't available, conduct the test outside the clinic.

2. Explain to the Mother:

   Inform her that her child is malnourished and needs to consume Ready-to-Use Therapeutic Food (RUTF) to aid recovery. Explain the purpose of the appetite test.

3. Provide Guidance:
   - Instruct the mother to wash her hands before feeding.
   - Encourage her to sit with the child and gently offer the RUTF.
   - Suggest she calmly encourages the child without forcing them to eat.
   - Offer plenty of clean water for the child to drink alongside the RUTF.
   - Allow up to 30 minutes for the child to eat the RUTF.

Assessing the Results

- Passes the Appetite Test:

  If the child consumes at least one-third of a packet of RUTF (92 g) or 3 teaspoons, they can be treated at home. Explain to the mother how to continue feeding at home and schedule a follow-up visit.

- Fails the Appetite Test:

  If the child consumes less than one-third of a packet (92 g) or 3 teaspoons, they need urgent hospital treatment. Inform the mother that a poor appetite is a concern, and the child cannot adequately consume RUTF at home, posing serious health risks.

The appetite test is a critical component in managing severe acute malnutrition. Properly assessing a child's willingness to eat RUTF can guide appropriate treatment decisions and help ensure the child's safety and recovery.

Classification of Nutritional Status

Based on the assessment of oedema of both feet, weight-for-height/length (WFH/L), and mid-upper arm circumference (MUAC), a child's nutritional status can be classified as follows:

1. Severe Acute Malnutrition (SAM)

i. Complicated Severe Acute Malnutrition
   - Oedema of both feet.
   - WFH/L less than -3 z-scores or MUAC less than 115 mm with medical complications (e.g., infections, severe metabolic issues).
   - Inability to finish RUTF if aged 6 months or older or breastfeeding problems if younger than 6 months.

ii. Uncomplicated Severe Acute Malnutrition

- WFH/L less than -3 z-scores or MUAC less than 115 mm without medical complications.
- Able to finish RUTF if aged 6 months or older.

2. Moderate Acute Malnutrition

- WFH/L between -3 z-scores and -2 z-scores, or MUAC between 115 mm and 124 mm.

3. No Malnutrition

Severe Acute Malnutrition is identified with visible signs like severe wasting or oedema. Further classification into complicated or uncomplicated depends on the presence of medical complications and the child's ability to consume therapeutic foods. Moderate Malnutrition indicates a less severe condition but still requires attention. No Malnutrition indicates a healthy nutritional status.

Table 7.4.1: Management of Malnutrition:

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 RUTF 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 hospital**
• WFH/L less than -3 z-scores **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 malanutrition.

Table 7.4.2: Treatment of Malnutrition:

Assess Child's Feeding
Assess feeding if child is Less Than 2 Years Old, Has MODERATE ACUTE MALNUTRITION, ANAEMIA. Ask questions about the child's usual feeding and feeding during this illness. Compare the mother's answers to the ***Feeding Recommendations*** for the child's age. **ASK - How are you feeding your child?** **If the child is receiving *any* breast milk, ASK**: ▪ How many times during the day? ▪ Do you also breastfeed during the night? **Does the child take any other food or fluids?** ▪ What food or fluids? ▪ How many times per day? ▪ What do you use to feed the child? **If MODERATE ACUTE MALNUTRITION or if a child with CONFIRMED HIV INFECTION fails to gain weight or loses weight between monthly measurements, ASK:** ▪ How large are servings? ▪ Does the child receive his own serving? ▪ Who feeds the child and how? ▪ What foods are available in the home? **During this illness, has the child's feeding changed?** ▪ If yes, how?

Table 7.4.3: Treatment of Malnutrition:

FEEDING COUNSELLING

Assess Child's Appetite

All children aged 6 months or more with SEVERE ACUTE MALNUTRITION (oedema of both feet or WFH/L less than -3 z-scores or MUAC less than 115 mm) and no medical complication should be assessed for appetite.

Appetite is assessed on the initial visit and at each follow-up visit to the health facility. Arrange a quiet corner where the child and mother can take their time to get accustomed to eating the RUTF. Usually the child eats the RUTF portion in 30 minutes.

Explain to the mother:

- **The purpose of assessing the child's appetite.**
- **What is ready-to-use-therapeutic food (RUTF).**
- **How to give RUTF:**
  - **Wash hands before giving the RUTF.**
  - **Sit with the child on the lap and gently offer the child RUTF to eat.**
  - **Encourage the child to eat the RUTF without feeding by force.**
  - **Offer plenty of clean water to drink from a cup when the child is eating the RUTF.**

Offer appropriate amount of RUTF to the child to eat:

- **After 30 minutes check if the child was able to finish or not able to finish the amount of RUTF given and decide:**
  - **Child ABLE to finish at least one-third of a packet of RUTF portion (92 g) or 3 teaspoons from a pot within 30 minutes.**
  - **Child NOT ABLE to eat one-third of a packet of RUTF portion (92 g) or 3 teaspoons from a pot within 30 minutes**

Table 7.4.4: Treatment of Malnutrition:

FEEDING COUNSELLING

Stopping Breastfeeding

STOPPING BREASTFEEDING means changing from all breast milk to no breast milk.

This should happen gradually over one month. Plan in advance for a safe transition.

1. **HELP MOTHER PREPARE**:
   - Mother should discuss and plan in advance with her family, if possible
   - Express milk and give by cup
   - Find a regular supply or formula or other milk
   - Learn how to prepare a store milk safely at home
2. **HELP MOTHER MAKE TRANSITION:**
   - Teach mother to cup feed (See chart booklet Counsel part in Assess, classify and treat the sick young infant aged up to 2 months)
   - Clean all utensils with soap and water
   - Start giving formula or cow's milk once baby takes all the feeds by cup

STOP BREASTFEEDING COMPLETELY:

- Express and discard enough breast milk to keep comfortable until lactation stops

Feeding Recommendations for a Child Who Has PERSISTENT DIARRHOEA

- If still breastfeeding, give more frequent, longer breastfeeds, day and night.
- If taking other milk:
  - replace with increased breastfeeding OR
  - replace with fermented milk products, such as yoghurt OR
  - replace half the milk with nutrient-rich semisolid food.
  - For other foods, follow feeding recommendations for the child's age.

Table 7.4.5: Treatment of Malnutrition:

EXTRA FLUIDS AND MOTHER'S HEALTH

Advise the Mother to Increase Fluid During Illness

FOR ANY SICK CHILD:

- Breastfeed more frequently and for longer at each feed. If child is taking breast-milk substitutes, increase the amount of milk given.
- Increase other fluids. For example, give soup, rice water, yoghurt drinks or clean water.

FOR CHILD WITH DIARRHOEA:

- Giving extra fluid can be lifesaving.
- Give fluid according to Plan A or Plan B on *TREAT THE CHILD* chart.

Counsel the Mother about her Own Health

- If the mother is sick, provide care for her, or refer her for help.
- If she has a breast problem (such as engorgement, sore nipples, breast infection), provide care for her or refer her for help.
- Advise her to eat well to keep up her own strength and health.
- Check the mother's immunization status and give her tetanus toxoid if needed.

  Make sure she has access to:
  - Family planning
  - Counselling on STD and AIDS prevention.

Table 7.4.6: Treatment of Malnutrition:

FEEDING RECOMMENDATIONS DURING ILLNESS AND HEALTH

Up to 6 Months of Age

Breast feed as often as the child wants, day and night at least 8 times in 24 hours.

Breast feed at least for 10 minutes on each breast every time.

Do not give other foods water.

Do not use bottles or pacifiers.

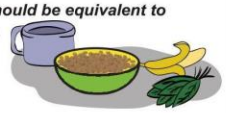
6 Months up to 12 Months

Breast feed as often as the child wants

Give adequate servings of: Khichri ,Rice (Bhatt)* with seasonal vegetables (Carrot, Spinach ,Potatoes etc.), or Minced Meat. Rice Kheer, Suji ka Halwa or Kheer*, Dalia*, Vermicellis'*, Choori*, Mashed Potato or vegetables* ,Egg, Banana.*

And others Seasonal fruits (upto 9 months food should be mashed)

- *3 times per day if breastfed;*
- *5 times per day if not breastfed.*
- *Each serving should be equivalent to 1/2-3/4 or a cup*



12 Months up to 2 Years

Breast feed as often as the child wants

Give adequate servings of: Roti, Parattha, Khichri or Rice, Curry, Minced Meat, Chicken ,Egg, Seasonal Vegetables, Choori, Vermicellis', and/or any foods listed for 6-12 months child.

Give food at least 3 times per day AND Give also snacks 2 times per day between meals such as seasona fruit (Banana, Apple, Mango, Orange etc.) Biscuit ,home made Pakora or Samosa, Lassi, Yoghurt ,Bread with Egg, Halwa etc.

2 Years and Older

Give family foods at Least 3 meals each day. Also, twice daily, give nutritious food between meals, such as: Seasonal fruit (Banana, Apple, Mango, Orange etc.) Biscuit ,Rusk, Chips, Pakora, Samosa, Lassi, Yoghurt ,Bread with Eggs, Halwa etc.

Wash your hands before preparing the child's food and use clean cooking utensils.

A good daily diet should be adequate in quantity and include an energy-rich food (for example, thick cereal with added oil / Ghee / Butter); meat, fish, eggs, or pulses; and fruits and vegetables

Feeding Recommendations For a Child Who Has PERSISTENT DIARRHOEA

If still breast feeding ,give more frequent ,longer breastfeeds ,day and night.
If taking other milk:
- *replace with increased breastfeeding OR*
- *replace with fermented milk products, such as yoghurt OR*
- *replace half the milk with nutrient-rich semisolid food.*

For other foods, follow feeding recommendations for the child's age.

Table 7.4.6: Treatment of Malnutrition:

GIVE READY-TO-USE THERAPEUTIC FOOD

Give Ready-to-Use Therapeutic Food for SEVERE ACUTE MALNUTRITION

- Wash hands before giving the ready-to-use therapeutic food (RUTF).
- Sit with the child on the lap and gently offer the ready-to-use therapeutic food.
- Encourage the child to eat the RUTF without forced feeding.
- Give small regular meals of RUTF and encourage child to often eat 5-6 meals per day
- If still breastfeeding, continue by offering breast milk first before every RUTF feed.
- Give only the RUTF for at least two weeks, if breastfeeding continue to breast and gradually introduce foods recommended for the age (See Feeding recommendations in *COUNSEL THE MOTHER* chart).
- When introducing recommended foods, ensure that the child completes his daily ration of RUTF before giving other foods. Offer plenty of clean water, to drink from a cup, when the child is eating the ready-to-use therapeutic food.

Recommended Amounts of Ready-to-Use Therapeutic Food

CHILD'S WEIGHT (kg)	Packets per day (92 g Packets Containing 500 kcal)	Packets per Week Supply
4.0-4.9 kg	2.0	14
5.0-6.9 kg	2.5	18
7.0-8.4 kg	3.0	21
8.5-9.4 kg	3.5	25
9.5-10.4 kg	4.0	28
10.5-11.9 kg	4.5	32
>12.0 kg	5.0	35

Chapter 7

Session 7.5

Follow-up Care

(IMNCI Guidelines)

Feeding Counseling and Follow-up care

This session focuses on the important aspects of counseling and to guide mothers on when to seek follow-up care and recognize signs that require immediate attention.

LEARNING OBJECTIVES

This session will describe and provide opportunities to practice the following tasks:

- Counseling the mother on addressing feeding issues
- Advising the mother to increase fluid intake during illness
- Guiding the mother on:
    - When to return for follow-up visits
    - When to seek immediate care
    - When to come for immunizations

FOLLOW-UP VISITS

It is essential to advise every mother taking her child home about when to return to the health worker. She may need to come back for a:

- **FOLLOW-UP VISIT** in a specific number of days to check on the child's progress, such as ensuring an antibiotic is effective.
- **IMMEDIATE VISIT** if any signs indicate the child's condition is worsening.
- **NEXT IMMUNIZATION** during the upcoming well-child visit.

Teaching mothers the signs that require immediate attention is particularly important. Certain conditions require follow-up within a specific timeframe. For instance, pneumonia, dysentery, and acute ear infections need follow-up to confirm that antibiotics are effective, while persistent diarrhea requires monitoring to ensure that dietary changes are beneficial. Other issues, like fever or cough, only necessitate follow-up if they persist.

At the conclusion of the sick child visit, inform the mother about the timeline for follow-up. If the child has multiple issues, provide guidance on the earliest and most urgent return time. Recommended follow-up times for various problems are summarized below.

Follow-Up Visit: Advise mother to return for follow-up at the earliest time indicated for the child's specific health issues.

Table: Follow-up recommendations for various conditions in children:

Condition	**Return for Follow-Up in**
Pneumonia	3 days
Cough and cold with wheeze (if no improvement)	
Malaria (if fever persists)	
Fever – no malaria (if fever persists)	
Dysentery	
Measles with eye or mouth complications	
Measles (if measles now)	
Persistent diarrhea	5 days
Acute ear infection	
Chronic ear infection	
Feeding problem	
Any other illness (if not improving)	
Anemia	14 days
Uncomplicated severe acute malnutrition	30 days

This table provides a clear overview of when to return for follow-up based on the child's condition.

Follow-Up Times Related to Nutrition

It's important to note the specific follow-up recommendations for various nutrition-related issues:

- **Feeding Problems:** If a child has a feeding problem and you have suggested changes, schedule a follow-up in **7 days** to assess whether the mother has implemented these changes. Additional counseling may be provided as needed.
- **Pallor:** For a child showing signs of pallor, a follow-up is necessary in **14 days** to administer more iron and evaluate progress.
- **Uncomplicated Severe Acute Malnutrition (SAM):** For children diagnosed with uncomplicated SAM, follow-up is required in **30 days**. This visit should include weighing the child, reassessing feeding practices, and offering any further advice based on the COUNSEL chart.

When to Return Immediately

It's crucial to emphasize the importance of recognizing signs that necessitate immediate return to healthcare services. The following table outlines the urgent situations where further medical attention is required and should not be overlooked.

Table 7.5.2: Signs that indicate a mother should return immediately to the health worker

Condition	Signs to Return Immediately
Any Sick Child	- Not able to drink or breastfeed
	- Becomes sicker
	- Develops a fever
If Child Has No Pneumonia, cough or Cold: Also return if;	Cough or Cold:
	- Chest indrawing
	- Fast breathing
	- Difficult breathing
If Child has Diarrhoea	- Blood in stool
	- Drinking poorly

This table provides a clear reference for the signs that require immediate medical attention.

Advising the Mother

When counseling the mother, emphasize the importance of recognizing signs that require immediate medical attention. Use the **Mother's Card** to teach these signs, ensuring you use local terms that she can easily understand. The card includes both written descriptions and drawings to aid comprehension.

Key Steps:

- **Circle the Signs:** Highlight the specific signs the mother should remember.
- **Check Understanding:** After explaining, ask the mother questions to confirm her understanding of the signs.

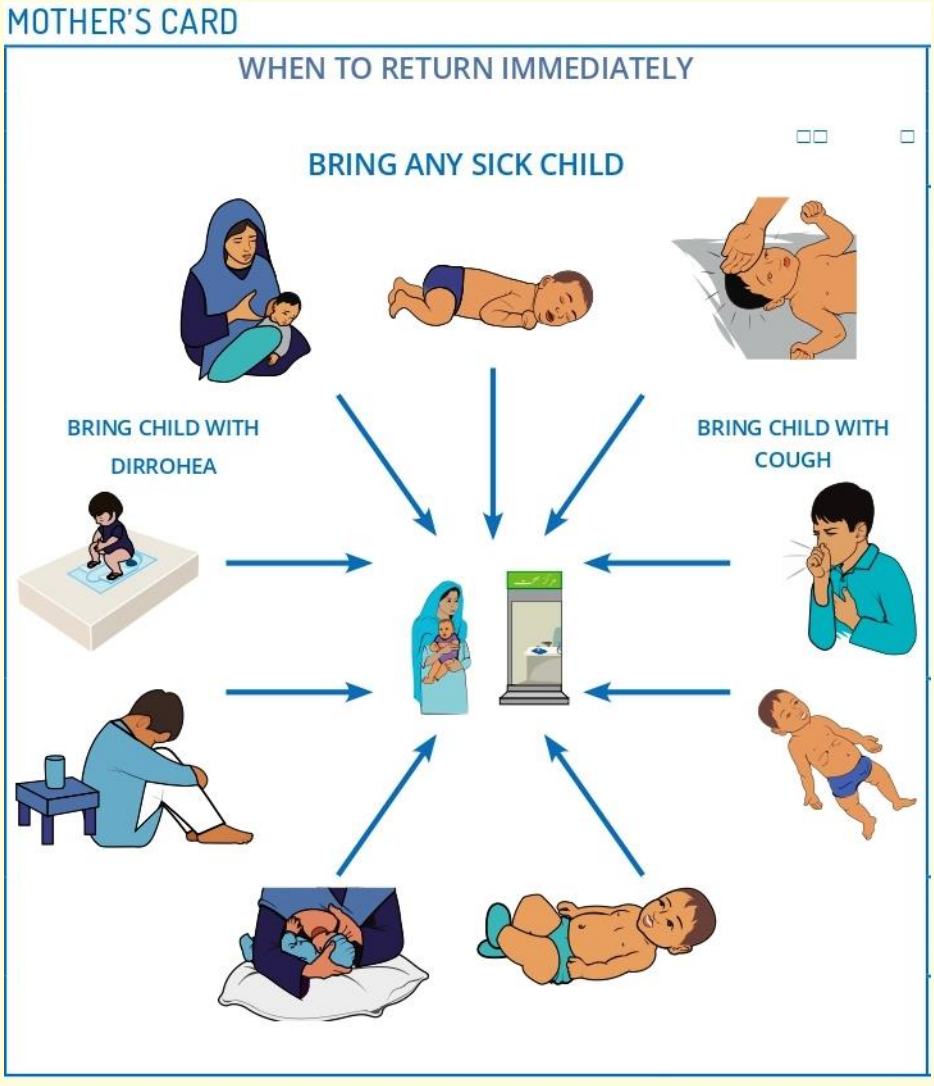


Figure 7.1.1 (a): Mother's Card to Counsil her about when to return to health care worker

Next Well-Child Visit

Remind the mother about the next well-child visit for immunization but be mindful of her ability to remember multiple instructions. If she has several things to keep track of—such as an antibiotic schedule, home care instructions, and a follow-up visit in 3 days—do not overwhelm her with information about a well-child visit scheduled for a month later.

Instead, make sure to record the date of the next immunization clearly on the **Mother's Card** for her reference. This will help her stay organized and ensure her child receives timely vaccinations.

Name: _____ M F Date of Birth: _____

Address: _____

Always bring this card with you to the clinic

FLUIDS

For any Sick Child

- Breastfeed frequently
- Increase fluid. Give soup, rice water, yougurt, drinks or clean water.

FOR CHILD WITH DIARRHOEA

Giving more fluids can be life saving!

- Give these extra fluids, as much as the child will take:
  - ☐ ORS Solution
  - ☐ Food based fluids, such as soup, rice water, yogurt drinks
  - ☐ Clean water
- Breastfeed more frequently and longer at each feeding.
- Continue giving extra fluids until diarrhoea stops.s

BCG	OPV 0	Hep B 0	Rota 1
Pentavalent* 1	OPV 1	Pnemococcal 1	Rota 2
Pentavalent 2	OPV 2	Pnemococcal 2	IPV
Pentavalent 3	OPV 3	Pnemococcal 3	
Measles 1	Measles 2		

VITAMIN A (Record Date Given)

_____ _____ _____

PYRANTEL POMOATE (Record Date Given)

_____ _____ _____

Managing Child during Follow-Up Visit

When managing a child returning for a follow-up visit, begin by asking the mother about the child’s problem. It's essential to determine whether this is a follow-up visit or an initial visit for the same illness. The method of finding out will depend on your clinic's registration process and how it tracks patient visits.

For example, the mother may inform you or the clinic staff that she was advised to return for follow-up regarding a specific issue. If your clinic provides follow-up slips, ask the mother to present it. If there is a patient chart, check for previous visits related to the current illness.

Once you confirm that this visit is indeed for a follow-up, ask the mother if the child has developed any new problems. For instance, if the child is returning for pneumonia but now also has diarrhea, this indicates a new issue that requires full assessment. In this case, you should:

1. **Check for General Danger Signs:** Assess the child’s overall condition.
2. **Assess Main Symptoms and Nutritional Status:** Conduct a thorough evaluation.
3. **Classify and Treat New Problems:** If diarrhea is present, classify and treat it as you would during an initial visit.
4. **Reassess Existing Conditions:** Evaluate and manage the pneumonia based on the follow-up guidelines.

If the child does not have any new problems, locate the follow-up box that corresponds to the child’s previous classification. Follow the instructions in that box:

- **Assess the Child:** Adhere to the assessment guidelines in the follow-up box, which may include evaluating a major symptom using the ASSESS & CLASSIFY chart.
- **Skip Classification for Main Symptoms:** Do not use the classification table to categorize a primary symptom, and skip the "Classify" and "Identify Treatment" columns to avoid unnecessary repeated treatments. The only exception is if the child presents with any form of diarrhea—here, classify and treats for dehydration as you would during an initial assessment.

5. **Select Appropriate Treatment:** Use the information gathered from the child's signs to determine the necessary treatment.
6. **Administer Treatment:** Provide the treatment as needed.

If a mother returns with her child who had a cough or cold, or diarrhea (without dysentery or persistent diarrhea) and the child has not improved after five days, conduct a full assessment of the child to ensure comprehensive care.

Managing Children with Chronic Problems:

Some children may return repeatedly with chronic issues that do not respond to the treatments you can provide. For example, children with AIDS may experience persistent diarrhea or frequent episodes of pneumonia, and they often respond poorly to standard pneumonia treatment due to opportunistic infections. In such cases, it is crucial to refer these children to the hospital for specialized care when they do not show improvement.

Children with HIV infection who have not progressed to AIDS typically cannot be distinguished clinically from those without HIV. However, when they develop pneumonia, they usually respond well to standard treatments.

Important Guidelines for Referral:

- **Refer Immediately:** If a child presents with multiple problems and is deteriorating, refer them to the hospital.
- **Second-Line Drugs:** Refer the child if a second-line drug is unavailable.
- **Professional Concerns:** If you have concerns about the child's condition or are unsure about the appropriate course of action, do not hesitate to refer.
- **Consider Other Illnesses:** If a child has not improved despite treatment, they may have a different illness than initially indicated by the assessment chart, and further evaluation and treatment may be necessary.

By following these guidelines, you can ensure that children with complex health issues receive the appropriate care they need.

A. Follow-Up Visit for Pneumonia

When a child returns to the clinic after 3 days of antibiotic treatment for pneumonia, here's how to manage the follow-up visit:

1. **Assessment:** Begin by checking the child for general danger signs and reassessing the main symptom, which is cough. Refer to the **ASSESS & CLASSIFY** session of the respective age group (0-2 months & 2 months to 5 years) for guidance on how to evaluate these aspects.
2. **Additional Questions:** Ask the mother the following:
    - Is the child breathing slower?
    - Is there less fever?
    - Is the child eating better?
3. **Evaluate Signs:** Use the information gathered from your assessment to determine the appropriate treatment.

Referral Criteria:

- If the child exhibits any general danger signs (e.g., not able to drink or breastfeed, vomiting everything, convulsions, lethargy, or unconsciousness) or shows stridor, this indicates that the child is worsening. **Urgent referral to a hospital is necessary.** Administer a dose of intramuscular antibiotics before referring the child urgently.
- If there is **chest indrawing** or the breathing rate, fever, and eating habits remain unchanged, refer the child urgently to the hospital. Note that the WHO currently does not recommend a second-line antibiotic, so referral is essential.

Before Referral:

- Confirm with the mother whether the child has taken the antibiotic as prescribed over the past 3 days. If there were issues (e.g., the child did not receive the antibiotic, or the doses were too low or infrequent), the child may be treated again with the same antibiotic. In this case, instruct the mother to bring the child back in another 3 days for follow-up.

If the Child is Improving:

- If the child is breathing more slowly, shows no chest indrawing, has reduced fever (or is fever-free), and is eating better, this indicates improvement. While the child may still have a cough, most improving children will no longer exhibit fast breathing.

In this scenario, advise the mother that the child should complete the full 5 days of antibiotic treatment.

B. Follow-Up Visit for Persistent Diarrhea

When a child with persistent diarrhea returns for a follow-up visit after 5 days, follow the following instructions:

1. **Initial Assessment:**
    - Ask the mother if the diarrhea has stopped and how many loose stools the child has per day.
2. **If Diarrhea Persists:**
    - If diarrhea has not stopped (the child is still having 3 or more loose stools per day) conduct a complete assessment as described in the **ASSESS & CLASSIFY** section of respective age group (0-2 months & 2 months to 5 years)
    - Identify and manage any immediate issues such as dehydration and refer the child to the hospital if necessary.
3. **If Diarrhea Has Stopped:**
    - If the diarrhea has stopped (the child is having fewer than 3 loose stools per day), instruct the mother to follow the feeding recommendations appropriate for the child's age.

C. Follow-Up Visit for Dysentery

When a child classified as having dysentery returns for a follow-up visit after 3 days, follow the following instructions:

Reassessment:

- Reassess the child for diarrhea as per the guidelines in the **ASSESS & CLASSIFY** section of respective age group (0-2 months and 2 months to 5 years)
- Ask the mother additional questions to determine if the child is improving.

2. **Determine Treatment Based on Assessment:**
   - Use the gathered information to classify whether the child is the same, worse, or better, and select the appropriate treatment:
   - **If Dehydrated:**
     - If the child is dehydrated at the follow-up visit, classify the dehydration using the classification table. Select the appropriate fluid plan and treat the dehydration.
   - **If Condition is Same or Worse:**
     - If the number of stools, amount of blood in stools, fever, abdominal pain, or eating habits remains the same or worsens, discontinue the initial antibiotic and prescribe the second-line antibiotic recommended for Shigella. If the second-line antibiotic is unavailable, refer the child to the hospital.
   - **If Improving:**

     If the child has fewer stools, less blood in the stools, reduced fever, decreased abdominal pain and is eating better, this indicates improvement. These signs typically lessen if the antibiotic is effective. Inform the mother that the child should complete the full 3 days of ciprofloxacin.

D. Follow-Up Visit for Malaria

Any child classified as having malaria should return for a follow-up visit if the fever persists for 3 days. If the fever continues after 3 days from the initial visit or returns within 14 days, it may indicate that the child has a malaria parasite resistant to the first-line antimalarial treatment.

If the child had measles at the initial visit, note that persistent fever may also result from measles, which can last several days. Therefore, consider that the fever might stem from measles rather than resistant malaria.

Follow-Up Instructions:

1. **Full Reassessment:**
    - Conduct a comprehensive reassessment of the child. Look for other potential causes of the fever.
    - Do not use the classification table from the ASSESS & CLASSIFY section (2months to 5 years) to classify the fever; instead, refer to the "Malaria" box in the follow-up section of the TREAT chart for guidance.
2. **Additional Causes of Fever:**
    - If you suspect a cause of fever other than malaria, assess that issue further as needed and refer to the relevant treatment guidelines.
    - If the child presents with any general danger signs or a stiff neck, treat according to the ASSESS & CLASSIFY chart for very severe febrile disease.
3. **If No Other Apparent Cause of Fever:**
    - **If Fever Has Been Present for 7 Days:** Refer for assessment.
    - **Microscopy for Malaria Parasites:** If fever has persisted and a microscopy is available, check for malaria parasites.
        - If parasites are present and the child has completed a full course of the first-line antimalarial, administer the second-line antimalarial (if available) or refer the child to a hospital.
        - If microscopy is unavailable and there is no apparent cause of fever, refer the child to a hospital.
    - **Do Not Repeat Rapid Diagnostic Test:** If the test was positive during the initial visit, do not conduct it again.

Follow-Up Visit for Fever – No Malaria

1. **Persistent Fever:**
    - If the fever persists after 3 days, perform a full reassessment of the child as outlined in the ASSESS & CLASSIFY chart (2 months to 5 years).
2. **Repeat Malaria Test:**
    - Conduct a repeat malaria test to confirm the status of malaria infection.

By following these steps, one can ensure that children with malaria or other febrile illnesses receive appropriate care and treatment.

Follow-Up Visit for Measles with Eye or Mouth Complications

When managing a child with measles who presents with eye or mouth complications, follow the instructions outlined in the "Measles with eye or mouth complications, gum or mouth ulcers" box in the concerned section of assess and classify fever (2 months to 5 years).

Treatment for Eye Infection:

1. **Assessment of Eye Treatment:**
    - If pus is still draining from the eye, ask the mother to describe or demonstrate how she has been treating the eye infection. This helps determine if the treatment was done correctly.
    - If the mother has correctly treated the eye infection for 3 days and there is still pus refer the child to the hospital.
2. **If Treatment was Incorrect:**
    - Ask the mother if she encountered any problems while treating the eye infection. Teach her any necessary aspects of the treatment that she may not understand.
    - Discuss how to overcome difficulties and emphasize the importance of proper treatment.
    - Instruct her to return if the eye does not improve. If you believe the mother may not be able to manage treatment effectively, arrange for daily treatment in the clinic or refer the child to the hospital.
3. **If Pus is gone but Redness Remains:**
    - Continue the current treatment and encourage the mother to keep administering it until all redness has disappeared.
4. **If no Pus or Redness:**
    - Stop the treatment and praise the mother for her effective management.

Treatment for Mouth Ulcers:

1. **If Mouth Ulcers Worsen:**
    - If the ulcers are worse or there is a very foul smell from the mouth, refer the child to the hospital, as this could indicate a serious infection that might prevent the child from eating or drinking.
2. **If Mouth Ulcers Are the Same or Better:**
    - Instruct the mother to continue treating the mouth with half-strength gentian violet for a total of 5 days.
    - Review when to seek further care and discuss feeding strategies as outlined in the COUNSEL chart. Given the increased risk of illness for children with measles, ensure the mother knows the signs that warrant bringing the child back for care, especially regarding feeding to prevent malnutrition.

Treatment for Thrush:

1. **If Thrush Worsens:**
    - Check to ensure that treatment is being administered correctly.
2. **If Swallowing Issues occur:**
    - Refer the child to the hospital if they have problems with swallowing.
3. **If Thrush is the same or better:**
    - If the child is feeding well, continue administering nystatin for a total of 7 days.

By following these guidelines, you can provide effective care for children with measles and associated complications, ensuring timely referrals and appropriate treatments.

Follow-Up Visit for Ear Infection

When a child diagnosed with an ear infection returns for a follow-up visit after 5 days, follow the instructions outlined in the 2 months to 5 years assess and classify ear problem section.

Assessment and Treatment:

1. **Reassess the Child:**

- Check the child's ear problem and measure their temperature (or assess for fever).
- Choose treatment based on the child's current signs.

2. **Signs of Complications:**
    - If you detect a tender swelling behind the ear (compared to the other side) or if there is a high fever, this may indicate mastoiditis or a serious infection. In such cases, refer the child to the hospital.
3. **For Acute Ear Infection:**
    - If ear pain or discharge persists after 5 days of antibiotic treatment, prescribe an additional 5 days of the same antibiotic and instruct the mother to return in another 5 days.
    - If the ear is still draining or has started draining since the last visit, demonstrate how to wick the ear dry and emphasize the importance of keeping the ear dry for healing.
4. **For Chronic Ear Infection:**
    - Confirm that the mother is correctly wicking the ear and administering ear drops. Ask her to demonstrate the process and discuss any challenges she faces. Provide guidance on overcoming these issues and encourage her to continue treatment.
5. **If No Symptoms Persist:**
    - If the child has no ear pain or discharge, praise the mother for her diligent care. Confirm whether she has completed the 5 days of antibiotic treatment. If not, instruct her to finish the entire course.

Follow-Up Visit for Feeding Problem

When a child with a feeding problem returns for a follow-up in 7 days, follow these steps:

1. **Reassess Feeding:**
    - Reassess the child's feeding by asking the relevant questions
    - Review any feeding issues identified during the initial visit.
2. **Counsel the Mother:**
    - Discuss any new or ongoing feeding problems the mother may have encountered. Provide support and strategies to address these issues.

3. **If Child Has Moderate Acute Malnutrition:**
    - Instruct the mother to return in 30 days for another follow-up visit. At that time, measure the child's weight gain to evaluate whether the recommended changes in feeding have been effective.

E. Follow-Up Visit for Anaemia (Pallor)

When a child classified as having anaemia returns for a follow-up visit after 14 days, follow the following instructions;

1. **Iron Supplementation:**
    - Provide the mother with additional iron for the child.
    - Advise her to return in 14 days for more iron.
    - Continue to provide iron supplements during each visit for up to 2 months.
2. **Referral:**
    - If the child still shows signs of palmar pallor after 2 months of treatment, refer the child to the hospital for further evaluation.

F. (a) Follow-Up Visit for Uncomplicated Severe Acute Malnutrition

When a child receiving Ready-to-Use Therapeutic Food (RUTF) for uncomplicated severe acute malnutrition returns for a follow-up after 7 days, follow the following guidelines:

1. **Full Reassessment:**
    - Conduct a full reassessment of the child according to the ASSESS & CLASSIFY section of malnutrition.
    - Use the same measurements (Weight-for-Height/Length [WFH/L], Mid-Upper Arm Circumference [MUAC]) that were used for classification during the initial visit.
2. **Appetite Assessment:**
    - For children aged 6 months or older, check the child's appetite by offering RUTF.
3. **Classification and Treatment:**

- If the child's WFH/L is less than -3 z-scores and/or MUAC is less than 115 mm, or if there is oedema in both feet AND the child has developed a medical complication or failed the appetite test, treat the child as having complicated severe acute malnutrition and refer accordingly.
- If the child's WFH/L is less than -2 z-scores and/or MUAC is less than 125 mm, or if there is oedema in both feet, advise the mother to continue RUTF. After 1-2 weeks, counsel her about gradually introducing other foods based on age-appropriate feeding recommendations from the COUNSEL chart. Instruct her to return in 7 days.
- Continue weekly visits until the child has no oedema for 2 weeks and the WFH/L is above -2 z-scores and/or MUAC is at least 125 mm.
- If the child's WFH/L is -2 z-scores or more and/or MUAC is 125 mm or more and there is no oedema, praise the mother and provide age-appropriate feeding guidance.
- If the child has WFH/L -2 z-scores or more and/or MUAC 125 mm or more but has had oedema, praise the mother and advise continuing RUTF for at least two more weeks with no oedema before reassessing.

4. **Stopping RUTF Treatment:**
    - Discontinue RUTF when:
        - WFH/L is equal to or more than -2 z-scores and the child has had no oedema for at least 2 weeks.
        - MUAC is equal to or more than 125 mm and the child has had no oedema for at least 2 weeks.

By following these guidelines, you can effectively monitor and manage cases of severe acute malnutrition, ensuring children receive the necessary care and support.

(b) Follow-Up Visit for Uncomplicated Severe Acute Malnutrition

After 14 Days or During Regular Follow-Up:

1. **Full Reassessment:**

- Conduct a full reassessment of the child using the ASSESS & CLASSIFY chart.
- Measure the same parameters as during the initial visit: Weight-for-Height/Length (WFH/L) and Mid-Upper Arm Circumference (MUAC).
- Check for oedema in both feet.
- Assess the child's appetite by offering Ready-to-Use Therapeutic Food (RUTF) if the child is 6 months or older.

2. **Treatment:**
    - **Complicated Severe Acute Malnutrition:**
        - If WFH/L is less than -3 z-scores, or MUAC is less than 115 mm, or there is oedema of both feet AND the child has developed a medical complication or failed the appetite test, **refer urgently to the hospital**.
    - **Uncomplicated Severe Acute Malnutrition:**
        - If WFH/L is less than -3 z-scores or MUAC is less than 115 mm or there is oedema of both feet, but there are NO medical complications and the child passes the appetite test:
            - Counsel the mother and encourage her to continue RUTF feeding.
            - Ask the mother to return in 14 days.
    - **Moderate Acute Malnutrition:**
        - If WFH/L is between -3 and -2 z-scores or MUAC is between 115 and 125 mm:
            - Advise the mother to continue RUTF.
            - Counsel her to introduce other foods according to age-appropriate feeding recommendations (see COUNSEL THE MOTHER chart).
            - Schedule a follow-up in 14 days and continue visits every 14 days until the child’s WFH/L is -2 z-scores or more and/or MUAC is 125 mm or more.
    - **No Acute Malnutrition:**
        - If WFH/L is -2 z-scores or more or MUAC is 125 mm or more:
        - Praise the mother, **stop RUTF**, and counsel her on age-appropriate feeding recommendations

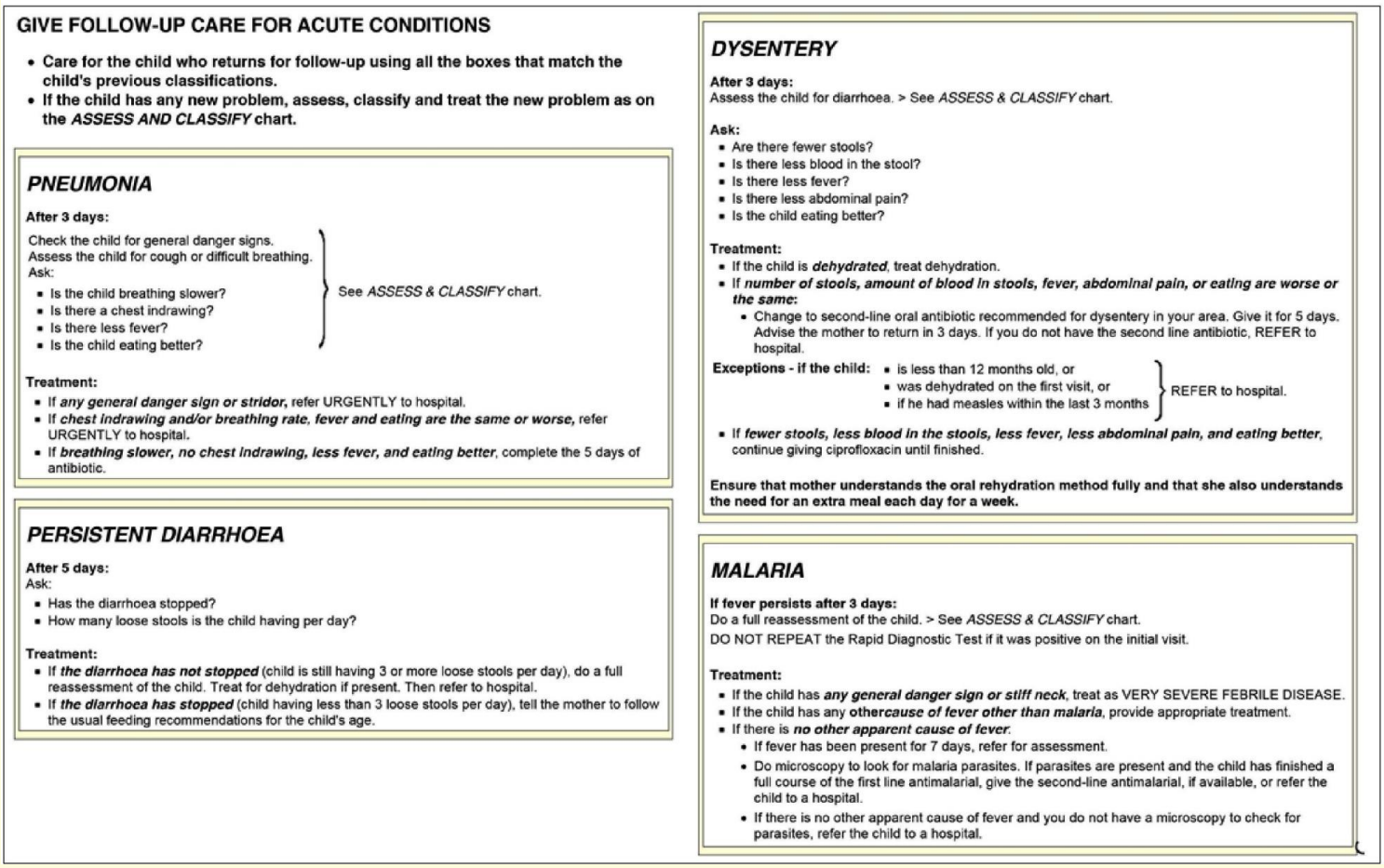
[c] Follow-Up Visit for Moderate Acute Malnutrition

When a child classified as having moderate acute malnutrition returns for a follow-up visit after 30 days, follow these instructions:

1. **Assessment:**
    - Weigh the child and measure height/length.
    - Determine if the child's WFH/L is still between -3 and -2 z-scores.
    - Check for oedema of both feet.
    - Reassess feeding by asking questions from the COUNSEL THE MOTHER chart.
2. **Outcomes:**
    - **If the Child is No Longer Classified as Moderate Acute Malnutrition:**
        - Praise the mother and encourage her to continue feeding according to age recommendations.
    - **If the Child is Still Classified as Moderate Acute Malnutrition:**
        - Counsel the mother about any feeding problems identified.
        - Ask her to return in one month.
3. **Ongoing Support:**
    - Continue monthly visits until the child is feeding well, gaining weight regularly, or until WFH/L is no longer below -2 z-scores or MUAC is at least 125 mm.

By following these guidelines, you can effectively manage and monitor children with severe and moderate acute malnutrition, ensuring they receive the appropriate care and support.

Table 7.5.1: Follow-up Care for Pneumonia, Diarrhoea, Dysentery and Malaria:



GIVE FOLLOW-UP CARE FOR ACUTE CONDITIONS

- **Care for the child who returns for follow-up using all the boxes that match the child's previous classifications.**
- **If the child has any new problem, assess, classify and treat the new problem as on the *ASSESS AND CLASSIFY* chart.**

PNEUMONIA

After 3 days:

Check the child for general danger signs.
Assess the child for cough or difficult breathing.
Ask:
- Is the child breathing slower?
- Is there a chest indrawing?
- Is there less fever?
- Is the child eating better?

} See *ASSESS & CLASSIFY* chart.

Treatment:
- If ***any general danger sign or stridor,*** refer URGENTLY to hospital.
- If ***chest indrawing and/or breathing rate, fever and eating are the same or worse,*** refer URGENTLY to hospital.
- If ***breathing slower, no chest indrawing, less fever, and eating better***, complete the 5 days of antibiotic.

PERSISTENT DIARRHOEA

After 5 days:
Ask:
- Has the diarrhoea stopped?
- How many loose stools is the child having per day?

Treatment:
- If ***the diarrhoea has not stopped*** (child is still having 3 or more loose stools per day), do a full reassessment of the child. Treat for dehydration if present. Then refer to hospital.
- If ***the diarrhoea has stopped*** (child having less than 3 loose stools per day), tell the mother to follow the usual feeding recommendations for the child's age.

DYSENTERY

After 3 days:
Assess the child for diarrhoea. > See *ASSESS & CLASSIFY* chart.

Ask:
- Are there fewer stools?
- Is there less blood in the stool?
- Is there less fever?
- Is there less abdominal pain?
- Is the child eating better?

Treatment:
- If the child is ***dehydrated***, treat dehydration.
- If ***number of stools, amount of blood in stools, fever, abdominal pain, or eating are worse or the same:***
  - Change to second-line oral antibiotic recommended for dysentery in your area. Give it for 5 days. Advise the mother to return in 3 days. If you do not have the second line antibiotic, REFER to hospital.

Exceptions - if the child:
- is less than 12 months old, or
- was dehydrated on the first visit, or
- if he had measles within the last 3 months

} REFER to hospital.

- If ***fewer stools, less blood in the stools, less fever, less abdominal pain, and eating better***, continue giving ciprofloxacin until finished.

Ensure that mother understands the oral rehydration method fully and that she also understands the need for an extra meal each day for a week.

MALARIA

If fever persists after 3 days:
Do a full reassessment of the child. > See *ASSESS & CLASSIFY* chart.
DO NOT REPEAT the Rapid Diagnostic Test if it was positive on the initial visit.

Treatment:
- If the child has ***any general danger sign or stiff neck***, treat as VERY SEVERE FEBRILE DISEASE.
- If the child has any ***other cause of fever other than malaria***, provide appropriate treatment.
- If there is ***no other apparent cause of fever***:
  - If fever has been present for 7 days, refer for assessment.
  - Do microscopy to look for malaria parasites. If parasites are present and the child has finished a full course of the first line antimalarial, give the second-line antimalarial, if available, or refer the child to a hospital.
  - If there is no other apparent cause of fever and you do not have a microscopy to check for parasites, refer the child to a hospital.

Table 7.5.2: Follow-up Care for Fever, Ear Infection, Anaemia and Measles with Mouth and Eye Complications:

GIVE FOLLOW-UP CARE FOR ACUTE CONDITIONS

FEVER: NO MALARIA

If fever persists after 3 days:
Do a full reassessment of the child. > See *ASSESS & CLASSIFY* chart.
Repeat the malaria test.

Treatment:

- If the child has ***any general danger sign or stiff neck***, treat as VERY SEVERE FEBRILE DISEASE.
- If a child has a ***positive malaria test***, give first-line oral antimalarial. Advise the mother to return in 3 days if the fever persists.
- If the child has any **other *cause of fever other than malaria***, provide treatment.
- If there is ***no other apparent cause*** of fever:
  - If the fever has been present for 7 days, refer for assessment.

MEASLES WITH EYE OR MOUTH COMPLICATIONS, GUM OR MOUTH ULCERS, OR THRUSH

After 3 days:
Look for red eyes and pus draining from the eyes.
Look at mouth ulcers or white patches in the mouth (thrush).
Smell the mouth.

Treatment for eye infection:

- If ***pus is draining from the eye***, ask the mother to describe how she has treated the eye infection. If treatment has been correct, refer to hospital. If treatment has not been correct, teach mother correct treatment.
- If ***the pus is gone but redness remains***, continue the treatment.
- If ***no pus or redness***, stop the treatment.

Treatment for mouth ulcers:

- If ***mouth ulcers are worse, or there is a very foul smell from the mouth***, refer to hospital.
- If ***mouth ulcers are the same or better***, continue using half-strength gentian violet for a total of 5 days.

Treatment for thrush:

- If ***thrush is worse*** check that treatment is being given correctly.
- If the child has ***problems with swallowing***, refer to hospital.
- If ***thrush is the same or better***, and the child is feeding well, continue nystatine for a total of 7 days.

EAR INFECTION

After 5 days:
Reassess for ear problem. > See *ASSESS & CLASSIFY* chart.
Measure the child's temperature.

Treatment:

- If there is ***tender swelling behind the ear or high fever (38.5°C or above)***, refer URGENTLY to hospital.
- ***Acute ear infection:***
  - If ***ear pain or discharge*** persists, treat with 5 more days of the same antibiotic. Continue wicking to dry the ear. Follow-up in 5 days.
  - If ***no ear pain or discharge***, praise the mother for her careful treatment. If she has not yet finished the 5 days of antibiotic, tell her to use all of it before stopping.
- ***Chronic ear infection:***
  - Check that the mother is wicking the ear correctly and giving quinolone drops tree times a day. Encourage her to continue.

FEEDING PROBLEM

After 7 days:
Reassess feeding. > See questions in the *COUNSEL THE MOTHER* chart.
Ask about any feeding problems found on the initial visit.

- Counsel the mother about any new or continuing feeding problems. If you counsel the mother to make significant changes in feeding, ask her to bring the child back again.
- If the child is classified as MODERATE ACUTE MALNUTRITION, ask the mother to return 30 days after the initial visit to measure the child's WFH/L, MUAC.

ANAEMIA

After 14 days:

- Give iron. Advise mother to return in 14 days for more iron.
- Continue giving iron every 14 days for 2 months.
- If the child has palmar pallor after 2 months, refer for assessment.

Table 7.5.3: Follow-up Care for Malnutrition

GIVE FOLLOW-UP CARE FOR ACUTE CONDITIONS

UNCOMPLICATED SEVERE ACUTE MALNUTRITION

After 14 days or during regular follow up:

Do a full reassessment of the child. > See *ASSESS & CLASSIFY* chart.

Assess child with the same measurements (WFH/L, MUAC) as on the initial visit.

Check for oedema of both feet.

Check the child's appetite by offering ready-to use therapeutic food if the child is 6 months or older.

Treatment:

- If the child has **COMPLICATED SEVERE ACUTE MALNUTRITION** (WFH/L less than -3 z-scores or MUAC is less than 115 mm or edema of both feet AND has developed a medical complication or edema, or fails the appetite test), refer URGENTLY to hospital.
- If the child has **UNCOMPLICATED SEVERE ACUTE MALNUTRITION** (WFH/L less than -3 z-scores or MUAC is less than 115 mm or edema of both feet but NO medical complication and passes appetite test), counsel the mother and encourage her to continue with appropriate RUTF feeding. Ask mother to return again in 14 days.
- If the child has **MODERATE ACUTE MALNUTRITION** (WFH/L between -3 and -2 z-scores or MUAC between 115 and 125 mm), advise the mother to continue RUTF. Counsel her to start other foods according to the age appropriate feeding recommendations (see COUNSEL THE MOTHER chart). Tell her to return again in 14 days. Continue to see child every 14 days until child's WFH/L is -2 z-scores or more, and/or MUAC is 125 mm or more.
- If the child has **NO ACUTE MALNUTRITION** (WFH/L is -2 z-scores or more, or MUAC is 125 mm or more), praise the mother, STOP RUTF and counsel her about the age appropriate feeding recommendations

MODERATE ACUTE MALNUTRITION

After 30 days:

Assess the child using the same measurement (WFH/L or MUAC) used on the initial visit:

- If WFH/L, weigh the child, measure height or length and determine if WFH/L.
- If MUAC, measure using MUAC tape.
- Check the child for oedema of both feet.

Reassess feeding. See questions in the COUNSEL THE MOTHER chart.

Treatment:

- If the child is no longer classified as **MODERATE ACUTE MALNUTRITION**, praise the mother and encourage her to continue.
- If the child is still classified as **MODERATE ACUTE MALNUTRITION**, counsel the mother about any feeding problem found. Ask the mother to return again in one month. Continue to see the child monthly until the child is feeding well and gaining weight regularly or his or her WFH/L is -2 z-scores or more or MUAC is 125 mm. or more.

Exception:

If you do not think that feeding will improve, or if the child has lost weight or his or her MUAC has diminished, refer the child.

Table 7.6.4: Follow up Care for young Infant where referral was refused or not possible

GIVE FOLLOW-UP CARE FOR THE YOUNG INFANT

➢ *CLINICAL SEVERE INFECTION where REFERRAL WAS REFUSED OR NOT POSSIBLE*

- ➢ Follow up at the next contact for injection (day 2) and on day 4 of treatment.
- ➢ At each contact, reassess the young infant as on page 12.
- ➢ ***Refer*** young infant if:
  - Infant **becomes worse** after treatment is started or
  - Any **new sign of CLINICAL SEVERE INFECTION appears** while on treatment or
  - Any **sign of CLINICAL SEVERE INFECTION is still present** after day 8 of treatment or
  - If **no improvement on day 4** after 3 full days of treatment.
- ➢ If the young infant is improving, complete the 2 days treatment with IM gentamicin. Ask the mother to continue giving the oral amoxicillin twice daily until all the tablets are finished.

➢ *PNEUMONIA or SEVERE PNEUMONIA*

- ➢ Follow up on day 4 of treatment.
- ➢ Reassess the young infant for POSSIBLE SERIOUS BACTERIAL INFECTION OR VERY SEVERE DISEASE, PNEUMONIA AND LOCAL INFECTION as on page 2.
- ➢ ***Refer*** young infant if:
  - Infant **becomes worse** after treatment is started or
  - Any **new sign of VERY SEVERE DISEASE** appears while on treatment
- ➢ If the young infant is improving, ask the mother to continue giving the oral amoxicillin twice daily until all the tablets are finished.
- ➢ Ask the mother to bring the young infant back in 4 more days.
- ➢ Young infants with fast breathing alone should be checked as often as possible but it is mandatory to do so on day 4 of treatment.

Chapter 7

Session 7.6

Routine Essential Immunization

Introduction:

Child immunization is a critical component of public health in Pakistan, serving as a fundamental strategy to prevent the spread of vaccine-preventable diseases and reduce child mortality rates. Despite significant progress in expanding immunization coverage over the years, challenges remain in ensuring that all children receive timely and complete vaccinations. Factors such as socioeconomic disparities, cultural beliefs, and logistical barriers contribute to inconsistencies in immunization rates across different regions of the country. Additionally, the influence of religious community leaders and the complications arising from conflict further complicate the situation. Compared to globally standardized immunization targets, Pakistan lags significantly, raising concerns both nationally and internationally.

The persistence of wild polio in Pakistan has been perceived by the global health community as a significant governmental failure, influenced in part by regional conflicts and terrorism. In response, substantial resources have been allocated to enhance childhood vaccination efforts aimed at addressing this critical issue. Despite these initiatives, sustained public health campaigns are essential to eradicate polio and ensure long-term success. While deaths from vaccine-preventable diseases like whooping cough and tetanus have declined, the targets for reducing measles prevalence and eliminating polio remain unmet. Additionally, there are growing concerns about the emergence of drug-resistant typhoid, with the burden of typhoid and paratyphoid in Pakistan ranking among the highest in the world. These challenges underscore the urgent need for comprehensive strategies to improve vaccination coverage and combat the spread of these diseases.

This chapter aims to provide an in-depth overview of the current state of child immunization in Pakistan, examining the national immunization schedule, identifying key challenges, and exploring effective strategies to enhance vaccination uptake.

Situation in Khyber Pakhtunkhwa:

According to the 2019 KP-MICS data on child vaccination, about 78% of children aged 12-23 months received the BCG vaccine by their first birthday. Additionally, 74% of children received their first dose of the PENTA vaccine. The coverage for Polio 1 was 68%, and 60% of children were vaccinated against measles by their first birthday. Furthermore, in Khyber Pakhtunkhwa, 43% of children aged 6-59 months received a high-dose Vitamin A supplement in the six months prior to the survey.

Vaccination Schedule in Pakistan:

The Expanded Programme of Immunization (EPI) was launched in Pakistan in 1978 to protect children by providing vaccinations against diseases such as tuberculosis, poliomyelitis, diphtheria, pertussis, tetanus, and measles. Over time, with the help of development partners, several new vaccines were added: hepatitis B in 2002, Haemophilus influenzae type b (Hib) in 2009, pneumococcal vaccine (PCV10) in 2012, inactivated polio vaccine in 2015 and rotavirus vaccine in 2017.

The program also focuses on protecting mothers and newborns from tetanus. By immunizing children with these vaccines, it is estimated that up to 17% of childhood mortality could be prevented in Pakistan, thereby supporting the achievement of Sustainable Development Goal (SDG) 3, which aims to reduce child morbidity and mortality.

Disease	Causative agent	Vaccine	Doses	Age of administration
Childhood TB	Bacteria	BCG	1	Soon after birth
Hepatitis	Bacteria	Hep B	1	Soon after birth
Poliomyelitis	Virus	OPV	4	OPV0: soon after birth OPV1: 6 weeks OPV2: 10 weeks OPV 3: 14 weeks
		IPV	2	IPV-1: 14 weeks IPV-2: 9 months
Diphtheria	Bacteria	Pentavalent vaccine (DPT + Hep B + Hib)	3	Penta 1: 6 weeks Penta 2: 10 weeks Penta 3: 14 weeks
Tetanus	Bacteria			
Pertussis	Bacteria			
Hepatitis B	Virus			
Hib pneumonia and miningitis	Bacteria			
Diarrhoea with rotavirus	Virus	Rotavirus	2	Rota1: 6 weeks Rota2: 10 weeks
Measles	Virus	MR	2	Measles-1: 9 months Measles-2: 15 months
Rubella				
Typhoid	Bacteria	Typhoid vaccine	1	09 month

Learning Objectives:

At the end of this session the participants will be able to;

- Describe the national immunization schedule in Pakistan, including the recommended vaccines, ages for administration, and the importance of timely vaccination for children.
- Effectively communicate the benefits of routine immunization to parents and caregivers, addressing common misconceptions and encouraging community participation in vaccination programs.

The following section will provide a brief overview of vaccine-preventable diseases, highlighting the conditions that can be effectively prevented through vaccination. It will cover key diseases such as measles, polio, diphtheria, and hepatitis B, discussing their symptoms, transmission methods, and the significant health risks they pose to individuals and communities.

Childhood Tuberculosis (TB)

Overview: Childhood tuberculosis is caused by the bacteria *Mycobacterium tuberculosis*, primarily affecting the lungs but can also impact other parts of the body. TB is both preventable and curable, primarily transmitted through the droplet nuclei when an infected person coughs, sneezes, or spits.

Symptoms of Childhood Tuberculosis:

Children with TB may exhibit symptoms such as:

- Cough (persistent)
- Weight Loss
- Fatigue
- Fever
- Night sweats
- Chills
- Loss of appetite

Disease Burden:

According to the World Health Organization (WHO), approximately 74,000 children die from TB annually, with around half a million new cases reported each year worldwide. Pakistan faces a significant burden from tuberculosis, ranking fifth globally with an estimated 1.5 million TB patients. The country sees about 250,000 new cases annually, with an incidence rate of 181 per 100,000 people, where around 50% of these are AFB-positive cases. The precise figures for childhood TB in Pakistan are not well-documented.

Prevention of Childhood Tuberculosis:

In Pakistan, the BCG (Bacille Calmette-Guérin) vaccine is administered to newborns at birth to protect against severe forms of TB. While it doesn't offer complete protection, it significantly reduces the risk of serious disease. The vaccine is given just under the skin and can be administered later if the initial dose is missed.

Poliomyelitis:

Polio, or poliomyelitis, is a highly infectious viral disease that primarily affects the nervous system, potentially leading to total paralysis within hours. The virus spreads mainly through the faecal-oral route, often via contaminated food or water, and multiplies in the intestine.

Symptoms of Polio:

Symptoms can vary, but common signs include:

- Fever
- Sore throat
- Headache
- Vomiting
- Fatigue
- Back pain or stiffness
- Neck pain or stiffness
- Pain or stiffness in arms or legs

- Muscle weakness or tenderness
- Loss of reflexes
- Severe muscle aches or weakness
- Flaccid paralysis (often affecting one side of the body)

Approximately 1 in 200 infections can lead to irreversible paralysis, typically in the legs, with a mortality rate of 5% to 10% among those who become paralyzed if their breathing muscles are affected.

Disease Burden:

Since the launch of global immunization efforts in 1988, over 2.5 billion children have been vaccinated against polio. The number of polio cases worldwide has dropped dramatically from an estimated 350,000 in 1988 to just 407 in 2013—a decline of more than 99%. Four regions (the Americas, Europe, South East Asia, and the Western Pacific) have been certified as polio-free. Currently, only three countries remain endemic: Afghanistan, Nigeria, and Pakistan. Pakistan is one of the last three endemic countries fighting to eradicate polio. Since the initiation of supplementary immunization activities (SIAs) in 2000, the number of reported cases has fluctuated. While cases dropped to 32 in 2007, they have increased again since 2008, with Pakistan reporting the highest number of cases globally in 2011. Over 100 SIAs have been conducted since 2000 to ensure every child under five is vaccinated multiple times for adequate immunity.

Polio eradication is a national priority, with the government declaring a national emergency to halt transmission. The National Emergency Action Plan for Polio Eradication was launched in 2011 to reinforce efforts.

Prevention of Polio:

The Oral Polio Vaccine (OPV) is the primary preventive measure, administered as drops by mouth. The vaccination schedule includes doses at birth, 6 weeks, 10 weeks, and 14 weeks of age, ensuring widespread immunization among children.

Diphtheria:

Diphtheria is a serious bacterial infection caused primarily by *Corynebacterium diphtheriae* and, less commonly, by *Corynebacterium ulcerans*. The bacteria are typically spread through respiratory droplets when an infected person coughs or sneezes. Once inhaled, they multiply in the throat or mouth, leading to illness.

Symptoms of Diphtheria:

Common symptoms include:

- Thick gray membrane covering the throat and tonsils
- Sore throat and hoarseness
- Swollen glands (enlarged lymph nodes) in the neck
- Difficulty breathing or rapid breathing
- Nasal discharge
- Fever and chills
- Malaise (general feeling of discomfort)

Disease Burden:

Historically, diphtheria was a major health issue, with around 150,000 cases and 13,000 deaths reported annually in the 1920s. The introduction of diphtheria immunization led to a significant decline in cases, with numbers dropping to about 19,000 in 1945. Despite this progress, the World Health Organization (WHO) estimated that approximately 2,500 deaths still occur annually worldwide as of 2012. In Pakistan, reported cases of diphtheria have varied. In 2010, there were 37 cases, with a low of 34 cases in 2009 and 22 cases reported in 2011. These numbers reflect ongoing challenges in controlling the disease, despite vaccination efforts.

Prevention of Diphtheria:

Vaccination is the primary method of preventing diphtheria. The DPT (Diphtheria, Pertussis, and Tetanus) vaccine is administered in three doses to children under one year of age (1st dose at 6 weeks, 2nd dose at 10 weeks and 3rd dose at 14 weeks)

The DPT vaccine includes diphtheria and tetanus toxoids and killed whole cells of the pertussis bacterium, providing combined protection against these three diseases. Regular immunization is crucial for preventing outbreaks and protecting public health.

Measles:

Measles, also known as morbilli, English measles, or rubeola, is a highly contagious viral infection caused by the measles virus, which belongs to the paramyxovirus family. The virus primarily infects the respiratory system and can affect the immune system and skin. It typically multiplies in the cells lining the back of the throat and lungs.

Symptoms of Measles:

Common symptoms include:

- Fever
- Dry cough
- Runny nose
- Sore throat
- Inflamed eyes (conjunctivitis)
- Koplik's spots: Tiny white spots with bluish-white centers on a red background, found inside the mouth
- Skin rash: A characteristic rash made up of large, flat blotches that often merge together

Disease Burden:

Before widespread vaccination began in 1980, measles caused an estimated 2.6 million deaths annually. Despite the availability of a safe and effective vaccine, measles remains a leading cause of death among young children. In 2012, approximately 122,000 people died from measles, primarily children under five years old. The introduction of measles vaccination led to a 78% reduction in measles deaths between 2000 and 2012. By 2012, about 84% of children globally received at least one dose of the measles vaccine by their first birthday, up from 72% in

2000. Mass vaccination campaigns have reached over 1 billion children in high-risk countries since 2000.

In Pakistan, measles remains a significant health issue. In 2012, more than 300 children died from measles, a sharp increase from previous years, exacerbated by the effects of consecutive years of flooding. The World Health Organization reported 64 measles-related deaths in 2011, with many occurring in Sindh province.

Prevention of Measles:

Preventing measles involves vaccination. In Pakistan, two doses of the measles vaccine are recommended:

- First dose at 9 months of age
- Second dose during the second year of life

Despite the availability of the vaccine, a significant number of children remain unvaccinated, making it essential to improve vaccination coverage to prevent outbreaks.

Whooping Cough:

Whooping cough, also known as pertussis, is a highly contagious respiratory tract infection caused by the bacterium *Bordetella pertussis*. The infection spreads through respiratory droplets when an infected person coughs or sneezes, and it typically takes about 10 days for symptoms to develop after exposure.

Symptoms of Whooping Cough:

Common symptoms include:

- Runny nose
- Nasal congestion
- Watery eyes
- Fever

- Severe cough: The cough often has a distinctive "whooping" sound, especially in children.

Disease Burden:

In 2015, the World Health Organization reported approximately 142,512 cases of whooping cough globally, with an estimated 89,000 deaths attributed to the disease. A study conducted in Pakistan in 2016 found the incidence of whooping cough to be 3.96 cases per 1,000 infants. This indicates that the disease is present and highlights the need for continued monitoring and vaccination efforts.

Prevention of Whooping Cough:

The best way to prevent whooping cough is through vaccination. Children are typically vaccinated against pertussis with the DPT (Diphtheria, Pertussis, Tetanus) vaccine, which is administered in three doses:

- 1st dose at 6 weeks of age
- 2nd dose at 10 weeks of age
- 3rd dose at 14 weeks of age

Diarrhea:

Diarrhea is a condition characterized by loose, watery stools and an increased frequency of bowel movements. It can lead to dehydration due to the excessive loss of water and electrolytes through the stools.

Symptoms of Diarrhea:

Common symptoms include:

- Loose, watery stools
- Vomiting
- Fever

- Dehydration (signs may include dry mouth, decreased urine output, and fatigue)

Global Burden:

According to estimates from the World Health Organization (WHO) in 2004, around 527,000 children under five years old die each year from vaccine-preventable rotavirus infections, with most of these children living in low-income countries. Diarrhea remains a significant cause of morbidity and mortality among young children globally. In Pakistan, the incidence of diarrhea due to rotavirus is estimated to be around 24%, based on data from sentinel sites. This highlights the need for effective prevention and treatment strategies to address the issue.

Prevention of Diarrhea:

Diarrhea caused by rotavirus can be prevented through vaccination. The rotavirus vaccine is administered to children at:

- 6 weeks of age
- 10 weeks of age

In addition to vaccination, improving hygiene and sanitation practices is crucial in minimizing the chances of contracting diarrhea. This includes ensuring access to clean drinking water, proper sanitation facilities, and educating communities about handwashing and safe food handling practices.

Hepatitis B:

Hepatitis B is a potentially life-threatening liver infection caused by the hepatitis B virus (HBV). It is a major global health concern, capable of leading to chronic liver disease and infection, significantly increasing the risk of death from cirrhosis of the liver and liver cancer.

Symptoms of Hepatitis B:

Common symptoms may include:

- Abdominal pain

- Dark urine
- Fever
- Joint pain
- Loss of appetite
- Nausea and vomiting
- Weakness and fatigue
- Jaundice (yellowing of the skin and the whites of the eyes)

Disease Burden:

Globally, more than 240 million people are estimated to have chronic liver infections due to hepatitis B. Approximately 600,000 people die each year from acute or chronic consequences related to the virus. In Pakistan, it is estimated that nearly four million people have been exposed to the hepatitis B virus. A national survey conducted by the Pakistan Medical Research Council between 2007-2008 indicated a prevalence rate of 2.5% for hepatitis B (HBsAg).

Prevention of Hepatitis B:

Timely vaccination is crucial for preventing hepatitis B. The hepatitis B vaccine was incorporated into Pakistan's Expanded Program on Immunization (EPI) in 2009, replacing the previous DPT and hepatitis B combination vaccine. In Pakistan, three doses of the hepatitis B vaccine are administered for free during the first year of life, specifically at:

- 6 weeks
- 10 weeks
- 14 weeks

If any doses are missed, they can be administered later. Ensuring vaccination coverage is essential to control and prevent the spread of hepatitis B.

Meningitis:

Meningitis is a serious infection of the meninges, the protective membranes surrounding the brain and spinal cord. Meningococcal meningitis is a bacterial form caused by *Neisseria*

meningitidis, which can lead to severe brain damage and has a high mortality rate if untreated. It is known for its potential to cause large epidemics, particularly in certain regions.

Symptoms of Meningitis:

Common symptoms include:

- Sudden high fever
- Severe headache (distinct from other types of headaches)
- Stiff neck
- Vomiting or nausea
- Confusion or difficulty concentrating
- Seizures
- Sleepiness or difficulty waking up
- Sensitivity to light
- Lack of interest in drinking or eating
- Skin rash (in some cases, particularly with meningococcal meningitis)

In newborns, symptoms may include:

- Constant crying
- Excessive sleepiness or irritability
- Inactivity or sluggishness
- Poor feeding
- A bulge in the soft spot on the baby's head (fontanel)
- Stiffness in the baby's body and neck

Disease Burden:

Bacterial meningitis epidemics affect over 400 million people living in the "African meningitis belt," which stretches from Senegal to Ethiopia. Over the last 15 years (1996-2010), there were more than 800,000 reported cases in this region, with a mortality rate of about 10%. In the 2010 epidemic season, 22,831 cases were recorded across 14 countries, resulting in 2,415 deaths and a

case-fatality ratio of 10.6%. Burkina Faso, Nigeria, and Chad reported the highest numbers of cases. In Pakistan, it is estimated that around 23,000 children die from bacterial meningitis each year. While meningococcus is known to cause meningitis in both children and adults, the prevalence in Pakistan is not well-documented due to a lack of comprehensive epidemiological studies.

Prevention of Meningitis:

Vaccines against meningococcal disease are available in Pakistan. These vaccines can be administered as a single injection to individuals aged 2 to 55 years. Increasing vaccination coverage is crucial for preventing meningitis outbreaks and protecting public health

Pneumonia:

Pneumonia is an acute respiratory infection that affects the lungs, specifically the alveoli—small air sacs that fill with air. In pneumonia, these alveoli become filled with pus and fluid, making breathing painful and limiting oxygen intake.

Symptoms of Pneumonia:

Common symptoms include:

- Fever
- Sweating and shaking chills
- Lower than normal body temperature (especially in people over 65 or those with weakened immune systems)
- Cough (which may produce thick, sticky mucus)
- Chest pain (when breathing deeply or coughing)
- Shortness of breath
- Fatigue and muscle aches
- Nausea, vomiting, or diarrhea
- Headache

Disease Burden:

Pneumonia is the leading cause of death in children worldwide, claiming an estimated 1.1 million lives of children under five each year. This mortality rate surpasses that of AIDS, malaria, and tuberculosis combined. Pneumonia is the top killer of children under five in Pakistan, where approximately one-fifth of the population falls into this age group. Studies indicate that the annual incidence of acute respiratory infections (ARI) among Pakistani children under five is about 4%. Given that this group constitutes roughly 22% of Pakistan's 160 million population, this translates to approximately 15 million episodes of ARI each year among children in this age range.

Prevention of Pneumonia:

Preventing pneumonia is a crucial part of the National Immunization Strategy aimed at reducing child mortality. Effective immunization against:

- Haemophilus influenzae type b (Hib)
- Pneumococcus
- Measles
- Whooping cough (pertussis)

is essential for preventing pneumonia. The pneumococcal vaccine, which protects against the germ responsible for many severe pneumonia cases as well as meningitis and bloodstream infections, is particularly important.

In Pakistan, the pneumococcal vaccine is administered in three doses during the first year of life:

- 1st dose at 6 weeks
- 2nd dose at 10 weeks
- 3rd dose at 14 weeks
- A 4th dose is given at 15 months.

If any doses are missed, they can be administered later. Ensuring widespread vaccination is key to reducing pneumonia incidence and related deaths.

Tetanus:

Tetanus is a serious infection caused by the bacterium *Clostridium tetani*. The spores of this bacterium are commonly found in soil and manure and can enter the body through puncture wounds, burns, or other serious injuries. Once inside, the bacteria release toxins that affect the central nervous system (CNS), leading to the characteristic symptoms of the disease. Symptoms typically appear within four to 21 days of exposure, most commonly around ten days.

Symptoms of Tetanus:

Common symptoms include:

- Spasms and stiffness of jaw muscles (often referred to as "lockjaw")
- Stiffness of neck muscles
- Difficulty swallowing
- Stiffness of abdominal muscles
- Painful body spasms that can last for several minutes, often triggered by minor stimuli such as drafts, loud noises, or physical touch
- Fever
- Sweating
- Elevated blood pressure
- Rapid heart rate

Disease Burden:

In 2005, the World Health Organization (WHO) reported approximately 15,516 cases of tetanus worldwide, with an estimated 290,000 deaths occurring between 2000 and 2003, primarily among neonates. Studies have shown that neonatal tetanus accounts for 18-38% of all neonatal deaths, with UNICEF reporting that around 58,000 newborns died from this condition in 2010. These figures are likely underreported, particularly in rural areas where many infants die without receiving medical attention.

Pakistan is among the 34 countries that have not achieved the WHO's global elimination target for neonatal tetanus. The disease is significantly underreported and remains a major cause of neonatal and infant mortality. Tetanus toxoid (TT) vaccination coverage in Pakistan has ranged from 60% to 74% over the last decade. Factors contributing to low vaccination rates include:

- Inadequate knowledge about the TT vaccine among women of reproductive age.
- Poor information dissemination regarding the benefits of the TT vaccine.
- Barriers related to living in rural areas, lack of formal education, and low awareness about vaccination.
- Disparities in vaccination coverage between urban and rural populations due to differences in access to healthcare.

Prevention of Tetanus:

Tetanus can be effectively prevented through vaccination with tetanus toxoid, which stimulates the production of specific antitoxins. Key preventive measures include:

- Administering appropriate doses of tetanus toxoid to pregnant women to prevent maternal and neonatal tetanus, along with ensuring clean delivery and proper cord care.
- The vaccination schedule for infants include 3 doses of tetanus toxoid vaccine at 4^{th}, 10^{th} and 14^{th} week of life.
- This vaccination schedule for women includes five doses for lifelong immunity at:
    - 1st Dose at any age in reproductive period
    - 2^{nd} Dose (1 month after 1^{st} dose)
    - 3^{rd} Dose (6 months after 2^{nd} dose)
    - 4^{th} Dose (1 year after 3^{rd} dose)
    - 5^{th} Dose (1 year after 4^{th} dose)

If previously not vaccinated the Pregnant women are advised to receive the 2 doses tetanus toxoid vaccine between 27 and 36 weeks of pregnancy to enhance protection for themselves and their newborns. Additionally, a booster dose is recommended every ten years to maintain immunity.

References:

1. Chen H, Chai Y, Dong L, Niu W, Zhang P. Effectiveness and appropriateness of mHealth interventions for maternal and child health: systematic review. JMIR mHealth and uHealth. 2018 Jan 9;6(1):e8998.
2. Willcox ML, Price J, Scott S, Nicholson BD, Stuart B, Roberts NW, Allott H, Mubangizi V, Dumont A, Harnden A. Death audits and reviews for reducing maternal, perinatal and child mortality. Cochrane Database of Systematic Reviews. 2020(3).
3. Osendarp S, Akuoku JK, Black RE, Headey D, Ruel M, Scott N, Shekar M, Walker N, Flory A, Haddad L, Laborde D. The COVID-19 crisis will exacerbate maternal and child undernutrition and child mortality in low-and middle-income countries. Nature food. 2021 Jul;2(7):476-84.
4. Tharwani ZH, Bilal W, Khan HA, Kumar P, Butt MS, Hamdana AH, Essar MY, Nashwan AJ, Habib Z, Marzo RR. Infant & child mortality in Pakistan and its determinants: A review. INQUIRY: The Journal of Health Care Organization, Provision, and Financing. 2023 Apr;60:00469580231167024.
5. National Institute of Population Studies (NIPS). Pakistan Demographic and Health Survey 2018,Available at: https://dhsprogram.com/pubs/pdf/FR354/FR354.pdf.
6. Sundari TK. The untold story: how the health care systems in developing countries contribute to maternal mortality. Women's Health, Politics, and Power. 2020 Nov 25:173-90.
7. Iqbal S, Maqsood S, Zakar R, Zakar MZ, Fischer F. Continuum of care in maternal, newborn and child health in Pakistan: analysis of trends and determinants from 2006 to 2012. BMC health services research. 2017 Dec;17:1-5.
8. United Nations. Millennium Development Goals report 2015. New York (NY). 2015. (https://www.un.org/millenniumgoals/2015_MDG_Report/pdf/MDG%202015%20rev%20(July%201).pdf.
9. Shaukat U, Javaid U, Majeed G. The Second Millennium Development Goal in Pakistan: Targets, Results and Challenges. Pakistan Vision. 2017;18 (2):179-92.

10. World Health Organization. From MDGs TO SDGs: General Introduction 2015. Available from: https://www.who.int/gho/publications/mdgs-sdgs/ MDGs SDGs2015_chapter1.pdf?ua=1.
11. Asadullah MN, Savoia A, Sen K. Will South Asia achieve the Sustainable Development Goals by 2030? Learning from the MDGs experience. 2019.
12. WHO. Health in 2015: from MDGs, millennium development goals to SDGs, sustainable development goals: World Health Organization; 2015.
13. National Institute of Population Studies and ICF. Pakistan maternal mortality survey 2019: key indicators report. Islamabad and Rockville: NIPS & ICF; 2020.
14. Ayyaz M, Chima KK, Butt UI, Khan WH, Umar M, Farooka MW, et al. Combating COVID 19 in a public sector hospital in Pakistan. Ann Med Surg (Lond). 2020;60:372–9.
15. Shaikh BT, Ali N. Universal health coverage in Pakistan: is the health system geared up to take on the challenge?. Globalization and Health. 2023 Jan 12;19(1):4.
16. Bozorgmehr K, Razum O. Forced Migration and Global Responsibility for Health: Comment on" Defining and Acting on Global Health: The Case of Japan and the Refugee Crisis". International journal of health policy and management. 2017;6(7):415.
17. World Health Organization. Country Cooperation Strategy at a glance: Pakistan, 2018. Available from https://apps.who.int/iris/handle/10665/136607,
18. Pakistan Nutritional Survey: Available at: https://www.unicef.org/pakistan/media/1951/file/Final%20Key%20Findings%20Report%202019.pdf.
19. UNICEF. Every Child Alive. The Urgent Need to End Newborn Deaths. Genève, Switzerland: UNICEF. 2018. Available from https://www.unicef.org/ publications/files/Every_Child_Alive_The_urgent_need_to_end_newborn_deaths.pdf.
20. Thaddeus S, Maine D. Too far to walk: maternal mortality in context. Social science & medicine. 1994 Apr 1;38(8):1091-110.
21. Asim M, Hameed W, Saleem S. Do empowered women receive better quality antenatal care in Pakistan? An analysis of demographic and health survey data. PLoS One. 2022 Jan 6;17(1):e0262323.

22. World Health Organization, Antenatal care recommendations for a positive pregnancy experience. Nutritional interventions update: Zinc supplements during pregnancy, WHO, Geneva, 2021