COURSE GUIDE

PHS 311
CHILD HEALTH

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INTRODUCTION

This course, **PHS 311, Child Health** is a three-credit unit course. It discusses the physiology and care of the newborn, process of growth and nutrition in children 0-5 years, assessment of the health and immunization status of children 0-5 years. Children who are 'At Risk' for specific conditions, concept of Integrated Management of Childhood Illness (IMCI), conditions which may expose the child to grave danger and the rights of the child.

WHAT YOU WILL LEARN IN THIS COURSE

This course discusses the physiology and care of the newborn, process of growth and nutrition in children 0-5 years, assessment of the health and immunization status of children 0-5 years. Children who are 'At Risk' for specific conditions, concept of Integrated Management of Childhood Illness (IMCI), conditions which may expose the child to grave danger and the rights of the child.

COURSE AIM

The aim of this course is to provide a good understanding of the health of children, especially those under the age of five years.

COURSE OBJECTIVES

After going through this course, you should be able to:

- Discuss the physiology and care of the newborn
- Discuss the process of growth and nutrition in children 0-5 years
- Assess the immunization status of children 0-5 years
- Identify Children who are 'At Risk' for specific conditions
- Discuss the concept of Management of Childhood Illness (IMCI)
- Discuss conditions which may expose the child to grave danger
- Discuss the rights of the child.

WORKING THROUGH THIS COURSE

This course has been carefully put together bearing in mind that you might be new to the course. However, efforts have been made to ensure that adequate explanation and illustrations were made to enhance better understanding of the course. You are therefore advised to spend quality time

to study this course and ensure that you attend tutorial sessions where you can ask questions and compare your knowledge with that of your course mates.

COURSE MATERIALS

This course comprises of:

i. A course guide
ii. Study units

STUDY UNITS

This comprises of six modules broken down into29 units as listed below:

Module 1 Child Development Principles and Theories

Unit 1 Child Development
Unit 2 Areas of Development
Unit 3 Aspects of Child Development
Unit 4 Stages of Child Development
Unit 5 Theories of Child Development

Module 2 Physiology and Care of the New-born

Unit 1 Physiologic Adjustment to Extra-Uterine Life
Unit 2 Assessment for wellbeing of a Newborn
Unit 3 Feeding of Newborn
Unit 4 Bowel Movement, Bathing and Care of the Umbilical Cord in Newborn
Unit 5 Common Problems after Birth

Module 3 Nutrition in Children 0-5 Years

Unit 1 Introduction to Nutrition
Unit 2 Principles of Good Nutrition
Unit 3 Family Diets
Unit 4 Infants and Young Children Nutrition
Unit 5 Health and Nutrition Services

Module 4 Vaccine-Preventable Diseases and Immunization Programs

Unit 1 Vaccine Preventable Diseases
Unit 2 Immunization Schedule in Nigeria
Unit 3 EPI Plus and Vitamin a Deficiency
Unit 4 Vaccine and Cold Chain Management
Unit 5 Shake Test

Module 5 Concept of Integrated Management of Childhood Illness (Imci)

Unit 1 Introduction to the Integrated Management of Newborn and Childhood Illness (IMNCI**)**
Unit 2 The Concept of IMNCI
Unit 3 IMCI Package
Unit 4 Adaptation of IMCI to IMNCI
Unit 5 Growth Monitoring

Module 6 The Rights of the Child

Unit 1 The United Nations Convention on the Rights of the Child
Unit 2 Concept of Convention on the Rights of the Child
Unit 3 Summary of the UN Convention on the Rights of the Child (1)
Unit 4 Summary of the UN Convention on the Rights of the Child (2)

Module 1

In Unit 1, you will be taken through the meaning and concept of child development. In Unit 2, you will be taken through the areas of development. In Unit 3, you will be introduced to the various aspects of child development. In Unit 4, you will be introduced to the stages of child development and in unit 5, theories of child development.

Module 2

In Unit 1, you will be taken through physiologic adjustment to extra uterine life In Unit 2, you will be taken through the assessment for well-being of a newborn. In Unit 3, you learn about feeding of newborn, In Unit 4, you will be taken through Bowel movement, Bathing and care of the umbilical cord in newborn. In Unit 5, you will be taken through common problems after birth.

Module 3
In Unit 1, you will be taken through the Introduction to nutrition. In Unit 2, you will be taken through principles of good nutrition. Unit 3 teaches about family diets. In Unit 4, you will learn about infants and young children nutrition, in Unit 5, you will learn about Health and Nutrition Services.

Module 4
In Unit 1, you will be taken through Vaccine Preventable Diseases. In unit 2, you will learn about Immunization Schedule in Nigeria, unit 3 teaches about EPI Plus and vitamin A deficiency. In Unit 4, you will learn about Vaccine and cold chain management. Finally, in Unit 5, you will learn about Shake Test.

Module 5
In Unit 1, you will be taken through the Introduction to the Integrated Management of Newborn and Childhood Illness (IMNCI). In unit 2, you will learn about the concept of IMNCI, unit 3 teaches about IMCI Package. Unit 4 teaches about adaptation of IMCI to IMNCI. Finally, in Unit 5, you will learn about growth monitoring.

Module 6
In Unit 1, you will be taken through the United Nations Convention on the rights of the child. In unit 2, you will learn about the concept of Convention on the rights of the child, unit 3 teaches about summary of the UN Convention on the rights of the child In Unit 4, you will learn about summary of the UN Convention on the rights of the child.

TEXT BOOKS AND REFERENCES

The following are list of textbooks, journals and website addresses that can be consulted for further reading:

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Improve the Skills of Health Workers? A Systematic Review and Meta-Analysis. PLoS ONE 8(6): e66030. https://doi.org/10.1371/journal.pone.0066030

Bryce J, Victora CG, Habicht JP, Vaughan JP, Black REThe multi-country evaluation of the integrated management of childhood illness strategy: lessons for the evaluation of public health interventions. Am J Public Health. 2004 Mar;94(3):406-15.

Huicho L, Dávila M, Campos M, Drasbek C, Bryce J, Victora CGScaling up integrated management of childhood illness to the national level: achievements and challenges in Peru. Health Policy Plan. 2005 Jan;20(1):14-24.

ASSESSMENT

There are two components of assessment for this course. They are the tutor-marked assignment and the final examination.

TUTOR-MARKED ASSIGNMENT

The Tutor-Marked Assignment **(**TMA) is the continuous assessment component of your course. It accounts for 30 per cent of the total score. The TMAs will be given to you by your facilitator and you will return it after you have done the assignment.

FINAL EXAMINATION AND GRADING

The examination concludes the assessment for the course. It constitutes 70 per cent of the whole course. You will be informed of the time for the examination.

SUMMARY

This course intends to provide you with the knowledge of child health. It discusses the physiology and care of the newborn, process of growth and nutrition in children 0-5 years, assessment of the health and immunization status of children 0-5 years, children who are 'At risk' for specific conditions, concept of Integrated Management of Childhood Illness (IMCI). We wish you success in this course and hope that you will apply the knowledge gained to child health practice in the country.

MAIN COURS

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MODULE 1 CHILD DEVELOPMENT PRINCIPLES AND THEORIES

UNIT 1 CHILD DEVELOPMENT

CONTENTS

1.0 INTRODUCTION

Studying and understanding child growth and development are important parts of teaching young children. No two children are alike. Children differ in physical, cognitive, social, and emotional growth patterns. Even identical twins, who have the same genetic makeup, are not exactly alike.

They may differ in the way they respond to play, affection, objects, and people in their environment. Children are different from each other, take a look at some children around you, some always appear to be happy. Other children's personalities may not seem as pleasant. Some children are active while others are quiet. And some children are very friendly. To help all these children, you need to understand the sequence of their development. Knowledge of the principles of child development is basic to guiding young children. Linked to this is the understanding of healthy brain development.

Healthy brain development results from healthy human contact. Positive stimuli are major factors in brain development. These stimuli begin at birth. Therefore, it is vital for children to have loving caregivers.

Young children need dependable, trusting relationships. They thrive in environments that are predictable and nurturing. Understanding theories about how people develop helps form your knowledge base in caring for young children.

2.0 OBJECTIVES

At the end of this Unit, you will be able to:

- Describe the concept of child development.
- Discuss the principles of development.
- Discuss brain development.

3.0 MAIN CONTENT

3.1 Child Development

Growth and development are intrinsic characteristics of childhood. Though often used interchangeably, the two concepts are different. Growth is an increase in size of a child while Development refers to the progressive acquisition of physical (motor), cognitive (thought), linguistic (communication) and social (emotional) skills and/or attributes. Thus, development may be seen as an increase in function and complexity of skills.

Progress in growth and developmental milestones are age related and have a normal pattern. The process of child development starts with infancy and continues to adulthood. By studying child development, you will form a profile of what children can do at various ages. For instance, you will learn that two-year-old children like to run. This means you should provide space for them to move freely. Likewise, you will learn that infants explore with their senses, often mouthing objects. Knowing this, you will need to make sure that all toys for infants are clean and safe.

Different names are used to describe young children at different ages. From birth to first 28 days of life, they are termed neonates (newborns); from 28 days (one month) through the first year, they are called infants. Toddlers are children from age one up to the third birthday (Because of an awkward style of walking, the name toddler describes this age group.) The term preschooler is often used to describe children between the ages of two to five years.

Figure 1: Picture of a child crawling

Source: Early childhood development: The key to a full and productive life

3.2 Principles of Development

Although each child is unique, the basic patterns, or *principles*, of growth and development are universal, predictable, and orderly. Through careful observation and interaction with children, researchers and those who work with children understand the characteristics of the principles of child development. Some of these include:

a. Development tends to proceed from the head downward. This is called the cephalo-caudal principle. According to this principle, the child first gains control of the head, then the arms, then the legs. Infants gain control of head and face movements within the first two months after birth. In the next few months, they are able to lift themselves up using their arms. By 6 to 12 months of age, infants start to gain leg control and may be able to crawl, stand, or walk.
b. Development also proceeds from the center of the body outward according to the proximo-distal principle. Accordingly, the spinal cord develops before other parts of the body. The child's arms develop before the hands, and the hands and feet develop before the fingers and toes. Fingers and toes are the last to develop.
c. Development occurs in a relatively orderly sequence; A child develop ability to sit before he can crawl. He learns to run only after being able to walk.
d. Development proceeds at varying rates from child to child as well as unevenly within different areas of each child's functioning
e. Development proceeds from the simple (concrete) to the more complex and from general to specific: Children start off with

simple matter rather than complex in the process of cognition. Example, a child learns counting of numbers and simple summation/subtraction; then gradually learns to solve more complex arithmetic such as multiplication and division). He also tends to have general response to all stimuli, but with increasing development, a specific response is elicited to specific stimulus.

f. Domains of children development are inter-related. This means development in one domain influences and is influenced by development in other domains. Example, language skill can influence ability to establish social relations with other children and adults. On the other hand, skill in social development can facilitate or impede language development. Motor development (ability to crawl and walk) improves the child's ability to explore the world and consequently, enhances development of the cognitive domain.

g. Development also depends on maturation:
Maturation refers to the sequence of biological changes in children. These orderly changes give children new abilities. Much of the maturation depends on changes in the brain and the nervous system. These changes assist children to improve their thinking abilities and motor skills. A rich learning environment helps children develop to their potential.

3.3 Brain Development

Young children's brains are highly active. The most rapid development occurs during the first three years of life. Therefore, hours in infancy may have more impact on development than months in middle age. At birth, a child's brain weighs about one pound (0.45 Kg) and is underdeveloped. It contains billions of specialized nerve cells called neurons. Although these cells are present at birth, they are not linked. After birth, the links between the neurons develop rapidly. These links, or connections, are called synapses.

"Brain wiring" occurs as new links form. The larger the number of synapses, the greater would be the number of messages that can pass through the brain. These links are a result of the child's interaction with the world. They influence the ability of a child to learn, solve problems, get along with others, and control. Therefore, hours in infancy may have more impact on development than months in middle age.

For example, the child's growing brain responds each time a caregiver provides sensory stimulation. This stimulation could be in the form of holding, talking, reading, or singing. When stimulation occurs, the child's growing brain responds by forming new connections. The ability of an infant's brain to change according to stimulation is known as

plasticity. Early care has a long-lasting impact on how children develop. The number of brain connections children form and keep depends on the care they receive. Warm, nurturing, consistent, and responsive care causes positive changes in the brain. Likewise, children need environmental stimulation.

A wide variety of visual, auditory, and sensory experiences will help promote brain connections. On the other hand, a lack of nurturing and interaction can limit a child's potential. Some children are deprived of stimulation either intentionally or unintentionally. These children receive fewer touches. They are spoken to less often. They may also not receive much visual stimulation. This neglect can impair brain development and the child's potential. The amount of stress created by negative experiences also affects brain development. Overstimulation, a flood of sounds and sights, is one factor that can cause harmful stress to infants. When under stress, the body produces a steroid called cortisol. High levels of this hormone wash over the brain like an acid. Over a long length of time, cortisol can lead to problems with memory and regulating emotion. A child constantly exposed to stress can develop connections that trigger anxiety, fear, and mistrust. These children may grow up to be unhappy, sad, or even angry. They may also have problems with self-control. Below is the list of factors that can interfere with healthy brain development.

Risk Factors for impaired Brain Development

- Poor/inadequate nutrition
- Trauma
- Emotional or physical abuse
- Poverty
- Exposure to environmental toxins such as lead
- Parents who suffer from substance abuse, both during the prenatal period and after birth

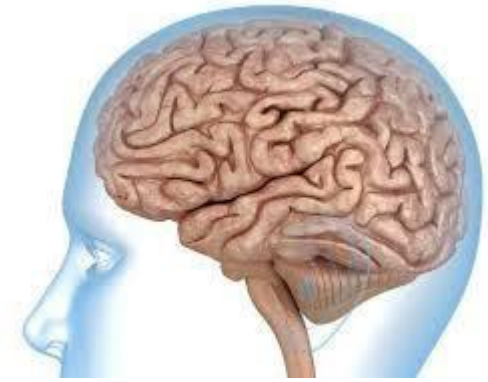

Figure 2: Human brain

Source: Early childhood development: The key to a full and productive life

4.0 CONCLUSION

The principles of child development help us to understand that the order or sequence of development in children is generally the same. However, each child develops at his or her own rate. In a classroom, you may find children the same age who have progressed to different levels in each developmental area. Knowing the principles of development will help you observe what abilities each child has gained. It will also help you plan appropriate activities that aid children in successfully developing new skills. Understanding the process of brain development and the factors that interfere with its healthy development is important.

5.0 SUMMARY

In this unit, you have learnt about child development. You also learnt the principles of development and had introduction to brain development in children. Brain development occurs rapidly during the first three years of life. The connections between nerve cells are formed as child interacts with the environment. The links allow a greater number of messages to pass through the brain. Therefore, optimum child's stimulation through loving care and interaction with caregivers is crucial to brain development. In the next unit, you will be taught the various areas of development.

6.0 TUTOR-MARKED ASSIGNMENT

List and explain three principles of development.

7.0 REFERENCES/FURTHER READING

UNICEF (2009) Maternal and newborn health. The state of the world's children. https://www.unicef.org/sowc09/ (Accessed November 2017)

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UNIT 2 AREAS OF DEVELOPMENT

CONTENTS

1.0 INTRODUCTION

The physical, cognitive, and social emotional areas of development are linked to one another. Development in one area can strongly influence another area. For instance, writing words requires fine-motor skills. It also requires cognitive development. Language, a part of cognitive development, is needed to communicate with others. It is also necessary for growing socially and emotionally.

2.0 OBJECTIVES

At the end of this Unit, you will be able to:

- Describe Physical development
- Discuss Cognitive development
- Discuss Social-Emotional development

3.0 MAIN CONTENT

3.1 Areas of Development

The study of child development is often divided into three main areas. These include physical, cognitive, and social-emotional development. Dividing development into these areas makes it easier to study.

3.2.1 Physical development

This occurs in a relatively stable, predictable sequence. It is orderly not random.

The gradual acquisition of Physical skills, such as crawling, walking, and writing, are the result of physical development. These skills fall into two main categories:

Gross-motor development involves improvement of skills using the large muscles in the legs and arms. Such activities as running, skipping, and bike riding fall into this category.

Fine-motor development involves the small muscles of the hands and fingers. Grasping, holding, cutting, and drawing are some activities that require fine motor development.

Environmental factors also affect what children can do physically. These factors include proper nutrition and appropriate toys and activities.

3.2.2 Cognitive development

Sometimes called intellectual development, refers to processes people use to gain knowledge. Language, thought, reasoning, and imagination are all included. Identifying colors and knowing the difference between one and many are examples of cognitive tasks. Language and thought are a result of cognitive development. These two skills are closely related. Both are needed for planning, remembering, and problem solving. As children mature and gain experience with their world, these skills develop.

3.2.3 Social-emotional development

These two areas are grouped together because they are interrelated. Learning to relate to others is social development. Emotional development, on the other hand, involves feelings and expression of feelings. Trust, fear, confidence, pride, friendship, and humor are all part of social-emotional development. Other emotional traits include timidity, interest, and pleasure. Learning to express emotions in appropriate ways begins early. Caregivers promote this learning when they positively model these skills. A person's self-concept and self-esteem are also part of this area. As children have success with all skills, confidence flourishes. This leads to a healthy self-concept and sense of worth.

4.0 CONCLUSION

Research has made known the areas of child development. These are divided into three main areas as physical, cognitive, and social-emotional development. Understanding these child development

domains will help make you a successful caregiver or early childhood teacher. In the next unit, you will be taught more on the aspects of child development

5.0 SUMMARY

In this unit, you have learnt that development can be divided into physical, cognitive and socio-emotional. Physical development is divided into gross and fine motor development. Cognitive or intellectual development involves the processes people use to gain knowledge while social-emotional development relates to the ability to relate to others (social development) and express feelings (emotional development).

6.0 TUTOR-MARKED ASSIGNMENT

1. Discuss with examples physical development in children
2. Differentiate between cognitive development and social-emotional development

7.0 REFERENCES/FURTHER READING

UNICEF (2009) Maternal and newborn health. The state of the world's children. https://www.unicef.org/sowc09/ (Accessed November 2017)

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UNIT 3 ASPECTS OF CHILD DEVELOPMENT

CONTENTS

1.0 INTRODUCTION

Child development is not a matter of a single topic, but progresses somewhat differently for different aspects of the individual. Here are descriptions of the development of a number of physical and mental characteristics.

2.0 OBJECTIVES

At the end of this Unit, you will be able to:

- Describe the speed and pattern, mechanism of change and individual variation as regards physical development.
- Discuss the mechanisms and what develops in cognitive development
- Discuss the factors, speed and pattern, mechanism of change and population difference as relates to social-emotional development

3.0 MAIN CONTENT

3.1 Physical growth

Physical growth in stature and weight occurs over the 15–20 years following birth, as the individual changes from the average weight of 3.5 kg and length of 50 cm at full term birth to full adult size. As stature and weight increase, the individual's proportions also change, from the relatively large head and small torso and limbs of the neonate, to the adult's relatively small head and long torso and limbs. The child’s pattern of growth is in a head- to-toe direction, or cephalo-caudal, and in an inward to outward pattern (center of the body to the peripheral) called proximodistal.

3.1a Speed and pattern

The speed of physical growth is rapid in the months after birth, and then slows, so birth weight is doubled in the first four months, tripled between age 9 and 12 months, but not quadrupled until 24 months. Growth then proceeds at a slow rate until shortly before puberty (between about 9 and 15 years of age), when a period of rapid growth occurs. Growth is not uniform in rate and timing across all body parts. At birth, head size is already relatively near to that of an adult, but the lower parts of the body are much smaller than adult size. In the course of development, then, the head grows relatively little, and torso and limbs undergo a great deal of growth.

3.1b Mechanisms of change

Two key processes are involved in growth –increase in size of cells (hypertrophy) and increase in number of cells (hyperplasia). Several factors act singly or in combination to influence the pattern and speed of growth. These include biologic factors (genetic inheritance, intrauterine infections and teratogens), psychologic factors (e.g presence of mother figure/emotional support, appropriate feeding practices, child rearing environment) and social factors (e.g families socio-economic status, the extend family interactions, cultural practices and geopolitical societal mileu).

Genetic (biologic) factors play a major role in determining the growth rate, and particularly the changes in proportion characteristic of early human development. However, genetic factors can produce the maximum growth only if environmental conditions are adequate. Poor nutrition and frequent injury and disease can reduce the individual's adult stature. On the other hand, the best environment cannot cause growth to a greater stature than is determined by heredity.

3.1c Individual variation versus disease

Individual differences in height and weight during childhood are considerable. Some of these differences are due to family genetic factors, others to environmental factors, but at some points in development they may be strongly influenced by individual differences in reproductive maturation. The American Association of Clinical Endocrinologists defines short stature as height more than 2 standard deviations below the mean for age and gender, which corresponds to the shortest 2.3% of individuals. In contrast, failure to thrive is usually defined in terms of weight, and can be evaluated either by a low weight for the child's age, or by a low rate of increase in the weight. A similar term, stunted growth, generally refers to reduced growth rate

(height for age) as a manifestation of chronic malnutrition in early childhood.

Growth monitoring is a vital component of child survival strategy. The main instrument used for this is the WHO growth chart, in which each child's growth parameters (i.e weight for age, height for age, weight for height and head circumference for age) are plotted from birth and monitored on a continuous basis. Children tend to follow a particular channel or curve in the absence of any disruptive influences. Analysis of the growth charts can lead to early detection and appropriate diagnosis of growth problems. Thus:

a. In failure to thrive: the child's weight remains below 5^{th} percentile or drops below two major percentile lines
b. In acute under nutrition: The curves for weight for age (W/A) and weight for height (W/H) drop, but that for height for age (H/A) remains normal.
c. In stunting: the curve for height for age (H/A) drops while the weight for height (W/H) curve may returns to normal.
d. In all nutritional causes of growth disorder, the weight usually drops before or at the same time as the height. However, in congenital, constitutional, familial or endocrine causes of growth disorder, the height curve is first affected.

3.1d Motor

Abilities for physical movement change through childhood from the largely reflexive (unlearned, involuntary) movement patterns of the young infant to the highly skilled voluntary movements' characteristic of later childhood and adolescence.

Definition
"Motor learning refers to the increasing spatial and temporal accuracy of movements with practice". Motor skills can be divided into two categories: first as basic skills necessary for everyday life and secondly, as recreational skills such as skills for employment or certain specialties based on interest.

Speed and pattern
The speed of motor development is rapid in early life, as many of the reflexes of the newborn (moro reflex, palmar grasp reflex) alter or disappear within the first three months of life. Like physical growth, motor development shows predictable patterns of cephalo-caudal (head to foot) and proximo-distal (torso to extremities) development, with movements at the head and in the more central areas coming under control before those of the lower part of the body or the

hands and feet. Types of movement develop in stage-like sequences; for example, locomotion at 6–8 months involves creeping on all fours, and then proceeds to pulling to stand, "cruising" while holding on to an object, walking while holding an adult's hand, and finally walking independently. Older children continue the sequence by walking sideways or backward, galloping, hopping, skipping with one foot and walking with the other, and finally skipping. By middle childhood and adolescence, new motor skills are acquired by instruction or observation rather than in a predictable sequence.

Mechanisms

The mechanisms involved in motor development involve some genetic components that determine the physical size of body parts at a given age, as well as aspects of muscle and bone strength. The main areas of the brain involved in motor skills are the frontal cortex, parietal cortex and basal ganglia. The dorsolateral frontal cortex is responsible for strategic processing. The parietal cortex is important in controlling perceptual-motor integration and the basal ganglia and supplementary motor cortex are responsible for motor sequences.

It has also been shown that the frontal lobe develops posterio-anteriorally (from back to front). This is significant in motor development because the hind portion of the frontal lobe is known to control motor functions. This form of development is known as "Portional Development" and explains why motor functions develop relatively quickly during typical childhood development, while logic, which is controlled by the middle and front portions of the frontal lobe, usually will not develop until late childhood and early adolescence. Opportunities to carry out movements help establish the abilities to flex (move toward the trunk) and extend body parts, both capacities are necessary for good motor ability. Skilled voluntary movements such as passing objects from hand to hand develop as a result of practice and learning. Mastery Climate is a suggested successful learning environment for children to promote motor skills by their own motivation. This promotes participation and active learning in children, which according to Piaget's theory of cognitive development is extremely important in early childhood rule. Nutrition and exercise also determine strength and therefore the ease and accuracy with which a body part can be moved. Flexibility is also affected by nutrition and exercise as well.

Individual differences

Typical individual differences in motor ability are common and depend in part on the child's weight and built. However, after the infant period, typical individual differences are strongly affected by opportunities to practice, observe, and be instructed on specific

movements. Atypical motor development such as persistent primitive reflexes beyond 4–6 months or delayed walking may be an indication of developmental delays or conditions such as autism, cerebral palsy, or down syndrome. Lower motor coordination results in difficulties with speed accuracy and trade-off in complex tasks.

Population differences

Regardless of the culture a baby is born into, they are born with a few core domains of knowledge. These allow him or her to make sense of their environment and learn upon previous experience by using motor skills such as grasping or crawling. There are some population differences in motor development, with girls showing some advantages in small muscle usage, including articulation of sounds with lips and tongue. Ethnic differences in reflex movements of newborn infants have been reported, suggesting that some biological factor is at work. Cultural differences may encourage learning of motor skills like using the left hand only for sanitary purposes and the right hand for all other uses, producing a population difference. Cultural factors are also seen at work in practiced voluntary movements such as the use of the foot to dribble a soccer ball or the hand to dribble a basketball.

3.2 Cognitive/intellectual

Cognitive development is primarily concerned with ways in which infants and children acquire, develop, and use internal mental capabilities such as problem solving, memory and language

3.2a What develops?

The capacity to learn, remember, and symbolize information, and to solve problems, exists at a simple level in young infants, who can perform cognitive tasks such as discriminating animate and inanimate beings or recognizing small numbers of objects. During childhood, learning and information processing increase in speed, memory becomes increasingly longer, and symbol use and the capacity for abstraction develop, until a near-adult level is reached by adolescence.

3.2b Mechanisms

Cognitive development has genetic and other biological mechanisms, as is seen in the many genetic causes of intellectual disability. Environmental factors including food and nutrition, responsiveness of parents, daily experiences, physical activity and love can influence early brain development of children. However, although it is assumed that brain functions cause cognitive events, it has not been possible to measure specific brain changes and show that they cause cognitive

change. Developmental advances in cognition are also related to experience and learning, and this is particularly the case for higher-level abilities like abstraction, which depend to a considerable extent on formal education.

3.2c Speed and pattern

The ability to learn temporal patterns in sequenced actions was investigated in elementary- school age children. Temporal learning depends upon a process of integrating timing patterns with action sequences. Children aged 6–13 years and young adults performed a serial response time task in which a response and a timing sequence were presented repeatedly in a phase-matched manner, allowing for integrative learning. The degree of integrative learning was measured as the slowing in performance that resulted when phase-shifting the sequences. Learning was similar for the children and adults on average but increased with age for the children.

3.2d Individual differences

There are typical individual differences in the ages at which specific cognitive abilities are achieved, but schooling for children in industrialized countries is based on the assumption that these differences are not large. Atypical delays in cognitive development are problematic for children in cultures that demand advanced cognitive skills for work and for independent living.

3.2e Population differences

There are few population differences in cognitive development. Boys and girls show some differences in their skills and preferences, but there is a great deal of overlap between the groups. Differences in cognitive achievement of different ethnic groups appear to result from cultural or other environmental factors.

3.3 Social-emotional

3.3a Pattern of emotional development

Newborn infants do not seem to experience fear or have preferences for contact with any specific people. In the first few months they only experience happiness, sadness, and anger. A baby's first smile usually occurs between 6 and 10 weeks. It is called a 'social smile' because it usually occurs during social interactions. Trust is usually established by the age of two months if the child rearing environment has not been stressful. By 4 months, the infant can recognize the primary emotions of anger, joy, interest, fear and surprise

as facial expressions and can match these appropriately. As from 7 months, the infants begin to distinguish familiar from unfamiliar persons and shows anxiety in the presence of strangers. By about 8–12 months, they go through a fairly rapid change and become fearful of perceived threats; they also begin to prefer familiar people and show anxiety and distress when separated from them or approached by strangers.

Separation anxiety is a typical stage of development to an extent. Kicking, screaming, and throwing temper tantrums are perfectly typical symptoms for separation anxiety. Depending on the level of intensity, one may determine whether or not a child has separation anxiety disorder. This is when a child constantly refuses to separate from the parent, but in an intense manner. This can be given special treatment but the parent usually cannot do anything about the situation.

The capacity for empathy and the understanding of social rules begin in the preschool period and continue to develop into adulthood. The toddler (between 12-18 months) has a rather labile mood ranging from irritability during the trial steps of walking to elation from mastery of walking. Fear and separation anxiety are predominant features of the toddler's behavior. Anger seems most intense during the toddler and early preschool period and during adolescence. Temper tantrums may increase or wanes depending on the emotional environment.

The period between 2-5 years represents a transition period characterized by emulation of adults, attention seeking, curiosity, exploration, defiance and role playing. Parental self-confidence and empathy in handling this phase of emotional development contributes significantly to the child's overall temperament.
The emotional development during middle childhood is characterized by friendships with age-mates. The parents' moral judgments are internalized; and the same-sex parent is most likely to be adopted as a role model. With a stable parent-child relationship, the school child feels secure; and influences from the school and neighbors become secondary and complimentary.

However, when the parents fail, the child may seek emotional support from school or the neighbors; and this can result in juvenile delinquency.

The period of adolescence is driven by emotions connected with morality and self –concept, as well as sexuality and the beginnings of romantic love. Guilt feelings are determined by group code of ethics/preferred lifestyle rather than societal norms; and this may be a source of conflict with the parents.

3.3b Speed and pattern

Some aspects of social-emotional development, like empathy, develop gradually, but others, like fearfulness, seem to involve a rather sudden reorganization of the child's experience of emotion. Sexual and romantic emotions develop in connection with physical maturation.

3.3c Mechanism

Genetic factors appear to regulate some social-emotional developments that occur at predictable ages, such as fearfulness, and attachment to familiar people. Experience plays a role in determining which people are familiar, which social rules are obeyed, and how anger is expressed.

Parenting practices have been shown to predict children's emotional intelligence. The objective is to study the time mothers and children spent together in joint activity, the types of activities that they develop when they are together, and the relation that those activities have with the children's trait emotional intelligence. The amount of time mothers spent with their children and the quality of their interactions are important in terms of children's trait emotional intelligence, not only because those times of joint activity reflect a more positive parenting, but because they are likely to promote modeling, reinforcement, shared attention, and social cooperation.

3.3d Population differences

Population differences may occur in older children, if, for example they have learned that it is appropriate for boys to express emotion or behave differently from girls, or if customs learned by children of one ethnic group are different from those learned in another. Social and emotional differences between boys and girls of a given age may also be associated with differences in the timing of puberty characteristic of the two sexes.

3.3e Language and communication Mechanisms

Language serves the purpose of communication to express oneself though a systematic and traditional use of sounds, signs, or written symbols. There are four subcomponents in which the child must attain in order to acquire language competence. They include phonology, lexicon, morphology and syntax, and pragmatics. These subcomponents of language development are combined to form the components of language, which are sociolinguistics and literacy. Currently, there is

no single accepted theory of language acquisition but various explanations of language development have been accumulated.

Components
The four components of language development include:

- **Phonology** is concerned with the sounds of language. It is the function, behavior, and organization of sounds as linguistic items. Phonology considers what the sounds of language are and what the rules are for combining sounds. Phonological acquisition in children can be measured by accuracy and frequency of production of various vowels and consonants, the acquisition of phonemic contrasts and distinctive features, or by viewing development in regular stages in their own speech sound systems and to characterize systematic strategies they adopt·

- **Lexicon** is a complex dictionary of words that enables language speakers to use these words in speech production and comprehension. Lexicon is the inventory of a language's morphemes. Morphemes act as minimal meaning-bearing elements or building blocks of something in language that makes sense. For example, in the word "cat", the component "cat" makes sense as does "at", but "at" does not mean the same thing as "cat". In this example, "ca" does not mean anything.

- **Morphology** is the study of form or forms. It is the mental system involved in word formation or to the branch of linguistics that deals with words, their internal structure and how they are formed.

- **Pragmatics** is the study of relationships between linguistic forms and the users of those forms. It also incorporates the use of utterance to serve different functions and can be defined as the ability to communicate one's feelings and desires to others.

Children's development of language also includes semantics, which is the attachment of meaning to words. This happens in three stages. First, each word means an entire sentence. For example, a young child may say "mama" but the child may mean "Here is Mama",

"Where is Mama?", or "I see Mama." In the second stage, words have meaning but do not have complete definitions. This stage occurs around age two or three. Third, around age seven or eight, words have adult-like definitions and their meanings are more complete.

A child learns the syntax of his or her language when he or she is able to join words together into sentences and understand multiple-word sentences said by other people. There appear to be six major stages in which a child's acquisition of syntax develops.

a. First, is the use of sentence-like words in which the child communicates using one word with additional vocal and bodily cues. This stage usually occurs between 12 and 18 months of age.
b. Second, between 18 months to two years, there is the modification stage where children communicate relationships by modifying a topic word.
c. The third stage, between two and three years old, involves the child using complete subject-predicate structures to communicate relationships.
d. Fourth, children make changes on basic sentence structure that enables them to communicate more complex relationships. This stage occurs between the ages of two and a half years to four years.
e. The fifth stage of categorization involves children aged three and a half to seven years refining their sentences with more purposeful word choice that reflects their complex system of categorizing word types.
f. Finally, children use structures of language that involve more complicate syntactic relationships between the ages of five years old to ten years old.

Milestones

Infants begin with cooing and soft vowel sounds. Shortly after birth, this system is developed as the infants begin to understand that their noises, or non-verbal communication, lead to a response from their caregiver. This will then progress into babbling around 5 months of age, with infant's first babbling consonant and vowel sounds together that may sound like "ma" or "da". At around 8 months of age, babbling increases to include repetition of sounds, such as "da-da" and infants learn the forms for words and which sounds are more likely to follow other sounds. At this stage, much of the child's communication is open to interpretation. For example, if a child says "bah" when they're in a toy room with their guardian, it is likely to be interpreted as "ball" because the toy is in sight. However, if you were to listen to the same 'word' on a recorded tape without knowing the context, one might not be able to figure out what the child was trying to say. A child's receptive language, the understanding of others' speech, has a gradual development beginning at about 6 months. However, expressive language, the production of words, moves rapidly after its beginning at about a year of age, with a "vocabulary explosion" of rapid word acquisition occurring in the middle of the second year.

Grammatical rules and word combinations appear at about age two. Between 20 and 28 months, children move from understanding the difference between high and low, hot and cold and begin to change “no” to “wait a minute”, “not now” and “why”. Eventually, they are able to add pronouns to words and combine them to form short sentences. Mastery of vocabulary and grammar continue gradually through the preschool and school years. Adolescents still have smaller vocabularies than adults and experience more difficulty with constructions such as the passive voice.

By age 1, the child is able to say 1–2 words, responds to its name, imitates familiar sounds and can follow simple instructions. Between 1–2 years old, the child uses 5–20 words, is able to say 2-word sentences and is able to express their wishes by saying words like "more" or "up", and they understand the word "no". During 2 and 3 years of age, the child is able to refer to itself as "me", combine nouns and verbs, has a vocabulary of about 450 words, use short sentences, use some simple plurals and is able to answer "where" questions. By age 4, children are able to use sentences of 4–5 words and have a vocabulary of about 1000 words. Children between the ages of 4 and 5 years old are able to use past tense, have a vocabulary of about 1,500 words, and ask questions like "why?" and "who?". By age 6, the child has a vocabulary of 2,600 words, is able to form sentences of 5–6 words and use a variety of different types of sentences. By the age of 5 or 6 years old, the majority of children have mastered the basics of their native language. Infants, 15 month-olds, are initially unable to understand familiar words in their native language pronounced using an unfamiliar accent. This means that a Canadian-English speaking infant cannot recognize familiar words pronounced with an Australian-English accent. This skill develops close to their second birthdays. However, this can be overcome when a highly familiar story is read in the new accent prior to the test, suggesting the essential functions of underlying spoken language is in place before previously thought.

Vocabulary typically grows from about 20 words at 18 months to around 200 words at 21 months. From around 18 months the child starts to combine words into two-word sentences. Typically, the adult expands it to clarify meaning. By 24–27 months the child is producing three- or four-word sentences using a logical, if not strictly correct, syntax. The theory is that children apply a basic set of rules such as adding’s’ for plurals or inventing simpler words out of words too complicated to repeat like "choskit" for chocolate biscuit. Following this there is a rapid appearance of grammatical rules and ordering of sentences.

There is often an interest in rhyme, and imaginative play frequently includes conversations. Children's recorded monologues give insight into the development of the process of organizing information into meaningful units.

By three years the child begins to use complex sentences, including relative clauses, although still perfecting various linguistic systems. By five years of age the child's use of language is very similar to that of an adult.

From the age of about three children can indicate fantasy or make-believe linguistics, produce coherent personal stories and fictional narrative with beginnings and endings. It is argued that children devise narrative as a way of understanding their own experience and as a medium for communicating their meaning to others. The ability to engage in extended discourse emerges over time from regular conversation with adults and peers. For this the child needs to learn to combine his perspective with that of others and with outside events and learn to use linguistic indicators to show he is doing this. They also learn to adjust their language depending on to which they are speaking. Typically, by the age of about 9 a child can recount other narratives in addition to their own experiences, from the perspectives of the author, the characters in the story and their own views.

Sequential skill in learning to talk

Child Age in Months	**Language Skill**
0–3	Vocal play: cry, coo, gurgle, grunt
3-6	Babble: undifferentiated sounds
6–10	Babble: canonical/reduplicated syllables
9- 8–18	First words
13	Expressive jargon, intonation sentences
13	10-word vocabulary
14	50-word vocabulary
	Single-word stage and a few sentences, two
	Irregular past: went, modal and verb: can/will
25	Regular past: -ed, Auxiliary “be”: -‘m, -‘s
	Third-person singular: -s, 896 to 1 507-word

Communication

Communication can be defined as the exchange and negotiation of information between two or more individuals through verbal and nonverbal symbols, oral and written (or visual) modes, and the production and comprehension processes of communication. According to First International Congress for the Study of Child Language, "the general hypothesis [is that] access to social interaction is a prerequisite to normal language acquisition". Principles of conversation include two or more people focusing on one topic. All questions in a conversation should be answered, comments should be understood or acknowledged and any form of direction should, in theory, be followed. In the case of young, undeveloped children, these conversations are expected to be basic or redundant. The role of guardians during developing stages is to convey that conversation is meant to have a purpose, as well as teaching them to recognize the other speaker's emotions. Communicative language is nonverbal and/or verbal, and to achieve communication competence, four components must be met. These four components of communication competence include: grammatical competence (vocabulary knowledge, rules of word sentence formation, etc.), sociolinguistic competence (appropriateness of meanings and grammatical forms in different social contexts), discourse competence (knowledge required to combine forms and meanings), and strategic competence (knowledge of verbal and nonverbal communication strategies). The attainment of communicative competence is an essential part of actual communication.

4.0 CONCLUSION

Child development entails the biological, psychological and emotional changes that occur in human beings between birth and the end of adolescence, as the individual progresses from dependency to increasing autonomy. It is a continuous process with a predictable sequence, yet having a unique course for every child. It does not progress at the same rate and each stage is affected by the preceding developmental experiences. Because these developmental changes may be strongly influenced by genetic factors and events during prenatal life, genetics and prenatal development are usually included as part of the study of child development.

5.0 SUMMARY

In this unit, you have learnt more details about child development. The speed and pattern of development, mechanism of change, how individual, genetic and environmental factors influence development and what develops at each stage. In the next unit, you will be taught on stages of child development.

6.0 TUTOR-MARKED ASSIGNMENT

1. Write briefly on the four components of language development
2. Discuss in detail the factors that influence child development

7.0 REFERENCES/FURTHER READING

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UNIT 4 STAGES OF CHILD DEVELOPMENT

CONTENTS

1.0 INTRODUCTION

The term development refers to the growth and changes that occur in a child. These changes follow an orderly yet complex pattern. Development occurs throughout the life span; however, this review will focus on three primary periods of development.

2.0 OBJECTIVES

At the end of this Unit, you will be able to:

- Understand the fundamentals of child development including the domains and stages of the developmental process.
- Discuss maturation in children
- Describe adolescence

3.0 MAIN CONTENT

3.1 Infancy, early and middle childhood

3.1a Infancy

The period of infancy begins from the first 28-day (one month) of life and ends at one year of age. It is the most rapid period of growth throughout the lifespan. During this period of child development, human beings go from being helpless, reflexive babies to toddlers who can communicate and reason. Specific physical milestones during this period include rolling over, sitting up, crawling, and walking. Fine motor development takes longer to develop, which is why babies generally cannot write or create refined drawings. Cognitive milestones

include early problem solving and increased sensory awareness and perception. Social milestones that usually occur during this period include the development of a sense of self-awareness.

3.1b Early Childhood

When we think of early childhood, we usually think of ABCs and 123s. This period of **early childhood** development lasts from two years of age through six years of age. Physically, our center of gravity shifts from the breastbone, where it was when we were infants, to the belly button. Our physical growth occurs much more slowly during this period as compared to the rapid growth that took place during infancy.

We also increase dramatically in our fine and gross motor skills and are now able to run, jump, climb, and balance. We can also write letters and create very detailed drawings due to fine motor development. Cognitive processing speed increases, which allows us to advance in thinking, reasoning, and problem solving, as well as master our native language. Social development advances as we learn to understand our own emotions and those of others; our earliest playmates tend to be chosen based on availability.

3.1c Middle Childhood

Middle childhood typically takes place from ages 6years through 12 years. Physical growth continues and spurts of rapid growth in height and weight may occur. Fine and gross motor skills continue to develop, and we become stronger and faster than ever before. This time is known as the school years, as children are usually focused on traditional education at this point in development. Cognitive development allows for advanced and refined communication between both hemispheres of the brain, which enables us to use advanced logic and problem-solving skills more efficiently. As a result, children in middle childhood begin learning advanced math techniques. Increased participation in competitive team sports is common during middle childhood. In this stage of childhood development, children begin to separate more from their parents, and social comparisons occur as kids seek out peers with common interests and abilities. Social isolation and bullying may occur in children who do not fit in with their peers, which often lead to decreases in feelings of self-esteem.

3.2 Maturation in children

Child maturation refers to the genetic, biological and physical development from conception through adolescence. There are several

developmental milestones that occur in healthy children. Although there are normal patterns of maturation in child development, individual and environmental factors make it impossible to pinpoint exact time frames, as no two children develop in the same way.

3.2a The First Year

The first 12 months of maturation culminate with the child's ability to walk unassisted. By about 12 months, most children have become confident on their feet. Leading up to this major milestone, however, is the ability to roll over (approximately 3 months), grasp a rattle (approximately 3 months), sit without support (approximately 6 months) and stand while holding on (approximately 7 months). According to Robert S. Feldman in "Life Span Development," these hallmarks are typically met by 50 percent of children by the month indicated.

3.2b The Second Year

When a baby is first born, his head accounts for one-quarter of his body length. By the second year, the body has grown at a faster pace than the head, which now makes up one- fifth of the child's entire body. Birth to Three," the "terrible twos" are so known for the child's increased ability to walk and scamper, which results in increased autonomy and exploration. In addition to squatting, balancing on one foot and climbing stairs, the child's baby teeth have now grown in. It is not uncommon for children of this age to climb up onto chairs and stack objects above their own height.

3.2c The Third Year

In the third year, legs grow faster than arms. A three-year-old can typically kick a ball, balance on one foot, and show left or right hand dominance. It is typical at this time for children to begin grasping a crayon between their first two fingers and thumb.

3.2d The Fourth Year

During the fourth year, fine motor skills begin to develop, as demonstrated by the ability to draw lines and shapes, walk in a straight line and run around obstacles with finesse. The child is also beginning to throw overhand and catch a ball, as well as play on the jungle gym and playground.

3.2e Ages 5 and 6

By the sixth year, a child's head makes up one-sixth of her entire body. As the body grows close to its adult proportions, the child is able to walk backwards, walk down stairs with ease, catch a ball, ride a tricycle, walk the balance beam and have control of a crayon or pencil. Gross motor skills are now well established, and fine motor skills are becoming refined.

3.2f Ages 7 to 11

Between the seventh and 12th year, children develop the physical ability to balance on one foot with their eyes closed, jump hopscotch with agility, grasp and squeeze objects with increased pressure, jump increasing lengths up to 5 feet and run for prolonged distances. By the 12th year, the head is one-seventh of the entire size of the body, and primary and secondary sex characteristics are becoming more distinguishable. Adolescence

Adolescence is the period of child development where kids transition to adulthood during their teenage years. The onset of puberty is the hallmark of the stage of adolescence. Boys experience spermarche, or the initial ejaculation of sperm. Girls experience menarche, which is the onset of the menstrual period. Both of these events mark physical sexual maturation. Hormones are the driving forces behind these events, with testosterone peaking in males and estrogen rising in females. As a result of testosterone, males begin to develop facial hair and their voices deepen. Increases in estrogen levels cause females to develop breasts and hips. Cognitive advancements continue as higher-level thinking and processing begins to reach a peak. Very advanced problem solving and reasoning is common in adolescence. Teenagers separate further from parents as they seek to establish a unique identity. Experimentation is common during adolescence as teens work to figure out who they are. Social development usually includes an interest in intimate relationships with others. Romantic relationships are fairly common among adolescents as teens establish their sexual orientation.

Primary sex characteristics, including reproductive ability, as well as secondary sex characteristics, such as pubic and facial hair, become fully expressed in each sex. The conclusion of childhood and beginning of adulthood is marked by "semenarche" in males, which is the first ejaculation, and the first menstruation in females referred to as "menarche."

4.0 CONCLUSION

The term development refers to the growth and changes that occur in a child. These changes follow an orderly yet complex pattern. Child development is a process of maturation that includes infancy, early childhood, middle childhood, and adolescence.

5.0 SUMMARY

In this unit, you have learnt more details about child development. We have discussed infancy, early childhood, middle childhood and adolescence. In the next unit, you will be taught theories of child development stages.

6.0 TUTOR-MARKED ASSIGNMENT

1. Describe in details the stages of developmental process.
2. Discuss in detail the period of adolescence

7.0 REFERENCES/FURTHER READING

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UNIT 5 THEORIES OF CHILD DEVELOPMENT STAGES

CONTENTS

1.0 INTRODUCTION

A theory is a set of facts or principles analyzed in relation to one another and used to explain phenomena (a fact or behavior that can be observed). Psychologists and development researchers have proposed a number of different theories to describe and explain the process and stages that children go through as they develop. Some tend to focus on the developmental milestones or specific achievements that children reach by a certain age. Others focus on specific aspects of child development such as personality, cognition, and moral growth.

2.0 OBJECTIVES

At the end of this Unit, you will be able to:

- Understand the current developmental frameworks and perspectives put forth by recognized theorists.
- Discuss Freud's stages of psychosexual development
- Discuss risk factors for child development

3.0 MAIN CONTENT

3.1 Developmental milestone, cognitive and psychosexual stages

3.1a Developmental Milestones

Developmental milestones describe abilities that children typically achieve by a certain age. For example, walking is a milestone that many children reach sometime between the ages of 9 and 12 months. Milestone centers on a number of abilities including those for physical growth, intellectual development, social and emotional growth, and language development.

3.1b Cognitive Stages

Psychologist Jean Piaget proposed a theory centered on the intellectual development of children. Concepts such as schemas, egocentrism and assimilation are central to Piaget's theory. Each stage of development is marked by distinct changes on how children think about themselves, others and the world.

Jean Piaget
He is most known for his work on the psychology of intelligence. Piaget was interested in learning how children develop an intellectual understanding of the world. His theory was based on the concept of cognitive structures. Cognitive structures are patterns of physical or mental action that underlie acts of intelligence and correspond to stages of child development. According to Piaget, children develop the ability to learn in four basic stages. In each stage, development focuses around acquiring a different set of related characteristics and abilities.

Piaget's Cognitive Development

Stage 1: Sensorimotor Age: 0-2years

- Understand the world by physically manipulating objects
- Trial and error problem solving
- Object permanence – child does not know that physical objects remain in existence even when they are out of sight.

Stage 2: Preoperational

Age: 2-7 years

- Uses symbols to mentally represent objects
- Increase development of language and concepts
- Reasoning may be illogical not sequential
- Egocentric thought process

Stage 3: Concrete-Operational

Age: 7-11 years

- Deal with changes and process
- Are able to make realizations about why things happen
- Understand how things relate to one another

Stage 4: Formal Operations Age: 11+ years

- Begin to think about thinking
- Think in abstract terms
- Make educated guesses

Piaget's four stages of cognitive development explain how children interact with their environment to construct knowledge. Each stage represents a change from one type of thought or behavior to another and builds on the stage before.

3.1c Psychosocial Stages

Unlike many other developmental theories, Erik Erikson's psychosocial theory focuses on development across the entire lifespan. At each stage, children and adults face a developmental crisis that serves as a major turning point. Successfully managing the challenges of each stage leads to the emergence of a lifelong psychological virtue. On the right are the stages that occur during childhood and adolescence.

Erik Erikson

Erikson is recognized as a developmental psychologist who can be compared to Sigmund Freud because of his theory that humans develop in stages. He developed eight psychosocial stages through which humans develop throughout their entire lifetime. Individuals must go through each of these stages, called conflicts. Moving successfully through these develops a strong social and emotional life

Meaning of Erikson's theory to a child's care professional

1. Creates a relationship with your children based on trust
2. Allows your children to exercise autonomy wherever safe
3. Guide child to initiate activities
4. Promote children's creativity during activities

Erikson's theory on emotional and personality development describes eight conflicts that must be resolved at stages throughout life. During the childhood years, encouraging trust, autonomy, initiative and industry can resolve conflicts and create a resilient social and emotional life.

Vygotsky's theory for learning

He developed the social development theory of learning. Children acquire knowledge through culture. Children learn through problem-solving experiences shared with a knowledgeable adult or peer. Initially, the person interacting with the child assumes more responsibility for guiding the learning. As the child learns, the responsibility is gradually transferred to him. This is an instructional technique called scaffolding.

A child can perform a task under adult guidance or with peer collaboration that could not be achieved alone. Vygotsky called this the Zone of Proximal Development and claimed that learning occurred in this zone.

Learning environments must be developed where children play an active role in their own education as well as the education of their peers.

- In scaffolding, the adult provides children with the opportunity to extend their current skills and knowledge.
- Reciprocal teaching encourages a conversation between children and the adult.
- The process has four main strategies for success. They are:Generating a question for understanding;
- Clarifying that they are understanding what they are reading;
- Stopping to predict from clues what they think will happen in the learning material and
- Summarizing what they have learned.

Vygotsky's sociocultural theory of cognitive development focuses on the connections between people and the culture in which they interact. The culture that surrounds children and their social interaction leads to continuous step-by-step changes in their learning and behavior.

3.1d Moral Stages

Psychologist Lawrence Kohlberg proposed a stage theory focused specifically on the moral development of children. The theory describes three (Preconventional morality, Conventional morality and Postconventional morality) overall levels of moral development that can then be broken down further into six stages.

3.2 Freud's stages of psychosexual development

3.2a Psychosexual Development

The theory of psychosexual development was proposed by the famous psychoanalyst Sigmund Freud and described how personality developed over the course of childhood. Freud believed that personality developed through a series of childhood stages in which the pleasure-seeking energies of the id become focused on certain erogenous areas. This psychosexual energy, or libido, was described as the driving force behind behavior. The Psychoanalytic theory suggested that personality is mostly established by the age of five. Early experiences play a large role in personality development and continue to influence behavior later in life. So, what happens during each stage? What if a person fails to progress through a stage completely or favorably? If these psychosexual stages are completed successfully, a healthy personality is the result. If certain issues are not resolved at the appropriate stage, fixations can occur. A fixation is a persistent focus on an earlier psychosexual stage. Until this conflict is resolved, the individual will remain "stuck" in this stage. For example, a person who is fixated at the oral stage may be over-dependent on others and may seek oral stimulation through smoking, drinking, or eating.

3.2b The Oral Stage: Age Range: Birth to 1 Year Erogenous Zone: Mouth

During the oral stage, the infant's primary source of interaction occurs through the mouth, so the rooting and sucking reflex is especially important. The mouth is vital for eating and the infant derives pleasure from oral stimulation through gratifying activities such as tasting and sucking. Because the infant is entirely dependent upon caretakers (who are responsible for feeding the child), the infant also develops a sense of trust and comfort through this oral stimulation. The primary conflict at this stage is the weaning process--the child must become less dependent upon caretakers. If fixation occurs at this stage, Freud believed the individual would have issues with dependency or aggression. Oral fixation can result in problems with drinking, eating, smoking, or nail biting.

3.2c The Anal Stage: Age Range: 1 to 3 years

Erogenous Zone: Bowel and Bladder Control
During the anal stage, Freud believed that the primary focus of the libido was on controlling bladder and bowel movements. The major conflict at this stage is toilet training-

-the child has to learn to control his or her bodily needs. Developing this control leads to a sense of accomplishment and independence.

According to Freud, success at this stage is dependent upon the way in which parents approach toilet training. Parents who utilize praise and rewards for using the toilet at the appropriate time encourage positive outcomes and help children feel capable and productive. Freud believed that positive experiences during this stage served as the basis for people to become competent, productive, and creative adults. However, not all parents provide the support and encouragement that children need during this stage. Some parents instead punish, ridicule or shame a child for accidents.

According to Freud, inappropriate parental responses can result in negative outcomes. If parents take an approach that is too lenient, Freud suggested that an anal-expulsive personality could develop in which the individual has a messy, wasteful, or destructive personality. If parents are too strict or begin toilet training too early, Freud believed that an anal-retentive personality develops in which the individual is stringent, orderly, rigid, and obsessive.

3.2d The Phallic Stage: Age Range: 3 to 6 Years

Erogenous Zone: Genitals
During the phallic stage, the primary focus of the libido is on the genitals. At this age, children also begin to discover the differences between males and females. Freud also believed that boys begin to view their fathers as a rival for the mother's affections. The Oedipus complex describes these feelings of wanting to possess the mother and the desire to replace the father. However, the child also fears that he will be punished by the father for these feelings, a fear Freud termed castration anxiety. The term Electra complex has been used to describe a similar set of feelings experienced by young girls. Freud, however, believed that girls instead experience penis envy. Eventually, the child begins to identify with the same-sex parent as a means of vicariously possessing the other parent. For girls, however, Freud believed that penis envy was never fully resolved and that all women remain somewhat fixated on this stage. Psychologists such as Karen Horney disputed this theory, calling it both inaccurate and demeaning to women.

Instead, Horney proposed that men experience feelings of inferiority because they cannot give birth to children, a concept she referred to as womb envy.

3.2e The Latent Period: Age Range: 6 to Puberty Erogenous Zone: Sexual Feelings Are Inactive

During the latent period, the libido interests are suppressed. The development of the ego and superego contribute to this period of calm. The stage begins around the time that children enter into school and become more concerned with peer relationships, hobbies, and other interests. The latent period is a time of exploration in which the sexual energy is still present, but it is directed into other areas such as intellectual pursuits and social interactions. This stage is important in the development of social and communication skills and self-confidence.

3.2f The Genital Stage: Age Range: Puberty to Death Erogenous Zone: Maturing Sexual Interests

During the final stage of psychosexual development, the individual develops a strong sexual interest in the opposite sex. This stage begins during puberty but last throughout the rest of a person's life. Where in earlier stages the focus was solely on individual needs, interest in the welfare of others grows during this stage. If the other stages have been completed successfully, the individual should now be well-balanced, warm, and caring. The goal of this stage is to establish a balance between the various life areas.

3.3 Risk factors for child development

Child development can be negatively influenced by a number of risk factors, many of which have been studied in developing countries. They can be broadly grouped under two headings.

1. Hereditary
2. Environmental factors

1. Pre-natal environment
- Factors related to mothers during pregnancy
  - Nutritional deficiencies
  - Diabetic mother
  - Exposure to radiation
  - Infection with German measles
  - Smoking
  - Use of drugs
- Factors related to fetus

- Mal-position in uterus
- Faulty placental implantation

2. Post-Natal Environment

➢ External environment
- Socio-economic status of the family
- Child's nutrition
- Exposure to radiation
- Climate and season
- Child's ordinal position in the family
- Number of siblings in the family
- Family structure (single parent or extended family etc.)

➢ Internal environment
- Child's intelligence
- Hormonal influences
- Emotions

4.0 CONCLUSION

A theory is a set of facts or principles analyzed in relation to one another and used to explain phenomena (a fact or behavior that can be observed). Psychoanalyst Sigmund Freud proposed a controversial theory of psychosexual development, suggesting that the energy of the libido was focused on specific erogenous zones at specific stages. Failure to progress through a stage can result in a fixation at that point in development, which Freud believed could have an influence on adult behavior. While Erikson believed that personality continues to change and grow over the entire lifetime, Freud believed that it was early experiences that played the greatest role in shaping development. According to Freud, personality is largely set in stone by the age of five.

5.0 SUMMARY

In this unit, you have learnt in details the different theories of developmental stages. Developmental theories provide insights into how children grow and learn. Theories are helpful for understanding and guiding developmental processes. Theories can be useful decision-making tools. Since a variety of theories exist, teachers need to understand these different approaches for working with children.

6.0 TUTOR-MARKED ASSIGNMENT

1. Discuss in detail Freud's Stages of Psychosexual Development
2. List and discuss the Risk factors for child development
3. Write on the Piaget's Cognitive Development theory

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MODULE 2 PHYSIOLOGY AND CARE OF THE NEWBORN

UNIT 1 PHYSIOLOGIC ADJUSTMENT TO EXTRA-UTERINE LIFE

CONTENTS

1.0 INTRODUCTION

During intrauterine life, the lungs serve no ventilatory purpose because the placenta supplies the fetus with oxygen. In other words, the lungs do not perform gas exchange as they are filled with fluid and the vessels in the pulmonary circulation are vaso-constricted (narrowed). The blood from the right side of the heart cannot enter the lungs because of the increased resistance to flow in the constricted vessels in the foetal lung. At the time of birth, however, several changes need to take place for the lungs to take over the vital function of supplying the body with oxygen. The first cry and active breath of air would set in motion a chain of events that empties the lungs of fluid, establishes the neonatal lung volume and subsequent normal breathing, and finally converts the foetal to adult circulation. It is estimated that 90% of babies make this transition, from intra uterine to extra uterine life, smoothly with little or no assistance and only 10% will need help.

2.0 OBJECTIVES

At the end of this Unit, you will be able to:

- Describe physiologic adjustments of the newborn to extra uterine life
- Describe the normal characteristics of a term newborn.

3.0 MAIN CONTENT

3.1 Physiologic adjustments of the newborn:

The neonatal period is a very vulnerable time for a newborn baby in view of the risks and uncertainties of transition and subsequent adaptation to extra uterine life. The transition to extra-uterine life is characterized by a series of physiologic events: Following the first breaths the lungs are filled with air and the fluid is absorbed into the lymphatic. From the air filled alveolar, there is subsequent diffusion of oxygen to the lung vasculature causing the blood vessels to relax. This would lead to a decrease in the resistance to blood flow through the lungs. Hence, pulmonary blood flow increases dramatically. Secondly, with the clamping of the cord (umbilical vessels), the low resistance placental circulation is removed and there is an increase in systemic blood pressure. These changes result in oxygen rich blood returning from the left side of the heart, from where it is distributed to the rest of the body.

At the end of normal transition (first 6-12 hours), the newborn (6-12hours) is able to breathe in enough air into the lungs to oxygenate the blood and perfuse tissues, giving the newborn a pink colour. Physiologic adaptation is usually completed within 24hours of birth and is manifested by stability of vital signs, feeding, digestive and renal functions. Such babies exhibit hunger and are able to maintain temperature. Babies with delayed adaptation tend to have delayed hunger and feeding, persistent tachycardia (fast heart rate) or difficulty maintaining temperature.

3.2 Appearance of a newborn- Skin

A neonate is classified as all infants up to 28 days' post-due date. If the baby is born at 40 weeks' gestation, he is a neonate for 4 weeks. If the infant is born at 30 weeks' gestation, he will be a neonate for 14 weeks. Although all newborns have similar physical findings, there are individual differences. General inspection of a newborn's skin reveals many characteristic findings or abnormalities that may suggest systemic disease conditions.

Color
Most newborns have a ruddy complexion because of the increased concentration of red blood cells in blood vessels and a decrease in the amount of subcutaneous fat, which makes the blood vessels more visible. This ruddiness fades slightly over the first month. A normal term neonate should be pink all over, with absence of skin mottling. In preterm neonate, the skin is remarkably thin, reddish and fragile, with sparse lanugo hair on the body.

Cyanosis.
Generalized mottling of the skin is common. A newborn's lips, hands, and feet are likely to appear blue from immature peripheral circulation. Acrocyanosis (blueness of hands and feet) is a normal phenomenon in the first 24 to 48 hours after birth; however, **central cyanosis,** or cyanosis involving the trunk and tongue, is always a cause for concern.

Jaundice:
This is yellowish appearance of the skin and sclerae of the eyes due to hyperbilirubinemia (elevated bilirubin levels in the blood). This may occur on the second or third day of life in about 50% of all newborns, as a result of the breakdown of fetal red blood cells (**physiologic jaundice**). However, jaundice noticed within the first 24hours of life is always abnormal and should be promptly treated. **Cephalhematoma,** a collection of blood under the periosteum of the skull bone, can also cause jaundice. As the bruising heals and the red blood cells are hemolyzed, additional indirect bilirubin is released causing hyperbilirubinemia. Many other disease conditions such as blood group incompatibility (ABO and Rhesus isoimmunization), severe neonatal sepsis and prematurity can cause hyperbilirubinemia or jaundice in a newborn. Very high bilirubin in the blood during neonatal period can damage the brain (kernicterus), resulting in long term neurologic handicap. Hence it is necessary to identify the problem early and institute prompt intervention.

Pallor
Pallor in newborns is usually the result of anemia. This may be caused by (1) excessive blood loss when the cord was cut, (2) inadequate flow of blood from the cord into the infant at birth, (3) fetal–maternal transfusion, (4) low iron stores caused by poor maternal nutrition during pregnancy, or (5) blood incompatibility in which a large number of red blood cells were hemolyzed in utero. It also may be the result of internal bleeding. Besides anaemia, pallor in a newborn may occur due to severe asphyxia, shock and oedema.

Birthmarks
Several common types of birthmarks occur in newborns.

Skin Turgor
Newborn skin should feel resilient if the underlying tissue is well hydrated. If a fold of the skin is grasped between the thumb and fingers, it should feel elastic. When it is released, it should fall back to form a smooth surface. If severe dehydration is present, the skin will not smooth out again but will remain in an elevated ridge.

3.3 Appearance of a newborn- Head Head

A newborn's head appears disproportionately large because it is about one fourth of the total body length; in an adult, the head is one eighth of total height. The forehead of a newborn is large and prominent. The chin appears to be receding, and it quivers easily if the infant is startled or cries.

Figure 3: A newborn baby
Source : Chapter 4 Child Development Principles and Theories

Fontanelles
The fontanelles are the spaces or openings where the skull bones join. The anterior fontanelle is located at the junction of the two parietal bones and the two fused frontal bones. It is diamond shaped and measures 2 to 3 cm (0.8 to 1.2 in) in width and 3 to 4 cm (1.2 to 1.6 in) in length. The anterior fontanel may pulsate. It should normally close by 18months. The posterior fontanelle is located at the junction of the parietal bones and the occipital bone. It is triangular and measures about 1 cm (0.4 in) in length. It usually closes by second months of life.

Some common conditions associated with large anterior fontanel include hydrocephalus (excessive fluid in the brain), congenital hypothyroidism and Downs syndrome. Conditions associated with very small anterior

fontanel include microcephaly and craniosynostosis (premature closure of skull sutures).

Sutures
The skull *sutures,* the separating lines of the skull, may override at birth because of the extreme pressure exerted on the head during passage through the birth canal. Suture lines should never appear widely separated in newborns.

Molding
The part of the infant's head that engages the cervix (usually the vertex) is molded to fit the cervix contours. After birth, this area appears prominent and asymmetric. Molding may be so extreme in the baby of a primiparous woman that the baby's head looks like a dunce cap. The head will be restored to its normal shape within a few days after birth.

Caput Succedaneum
Caput succedaneum is edema of the scalp at the presenting part of the head usually following a prolonged labor. It normally resolves within a few days and needs no treatment.

Eyes
Newborns usually cry tearlessly, because their lacrimal ducts do not fully mature until about 3 months of age. Almost without exception, the irises of the eyes of newborns are gray or blue; the sclera may be blue due to its thinness. Infant eyes assume their permanent color between 3 and 12 months of age.

Ears
A newborn's external ear is not as completely formed as it will be eventually, so the pinna tends to bend easily. In the term newborn, however, the pinna should be strong enough to recoil after bending.

Nose
A newborn's nose tends to appear large for the face. As the infant grows, the rest of the face grows more than the nose does, and this discrepancy disappears.

Mouth
A newborn's mouth should open evenly when he or she cries. If one side of the mouth moves more than the other, cranial nerve injury is suggested. A newborn's tongue appears large and prominent in the mouth. Because the tongue is short, the frenulum membrane is attached close to the tip of the tongue, creating the impression that the infant is "tongue tied." It is unusual for a newborn to have teeth, but sometimes one or two (called **natal teeth**) will have erupted. Any teeth that are present must be evaluated for stability.

3.4 Appearance of newborn- Neck/Trunk Neck

The neck of a newborn is short and often chubby, with creased skin folds. The head should rotate freely on it. If there is rigidity of the neck, congenital torticollis, caused by injury to the sternocleidomastoid muscle during birth, might be present. In newborns whose membranes were ruptured more than 24 hours before birth, nuchal rigidity suggests meningitis.

Chest
The chest in some newborns looks small because the head is large in proportion. Not until a child is 2 years of age does the chest measurement exceed that of the head.

Abdomen
The contour of a newborn abdomen looks slightly protuberant. A scaphoid or sunken appearance may indicate missing abdominal contents or a diaphragmatic hernia. Bowel sounds should be present within 1 hour after birth.

Anogenital Area
Inspect the anus of the newborn to be certain it is present, patent, and not covered by a membrane (imperforate anus).

Male Genitalia
The scrotum in most male newborns is edematous and has rugae. It may be deeply pigmented in African-American or dark-skinned newborns. Both testes should be present in the scrotum. If one or both testicles are not present (cryptorchidism), further referral is needed to establish the extent of the problem.

Female Genitalia
The vulva in female newborns may be swollen because of the effect of maternal hormones. Some female newborns have a mucus vaginal secretion, which is sometimes blood-tinged (**pseudo menstruation**). Again, this is caused by the action of maternal hormones. The discharge disappears as soon as the infant's system has cleared the hormones. The discharge should not be mistaken for an infection or taken as an indication that trauma has occurred.

Back
The spine of a newborn typically appears flat in the lumbar and sacral areas. The curves seen in an adult appear only after the child is able to sit and walk

Extremities
The arms and legs of a newborn appear short. The hands are plump and clenched into fists. Newborn fingernails are soft and smooth, and usually long enough to extend over the fingertips. Normally, newborn legs are bowed as well as short. The sole of the foot appears flat because of an extra pad of fat in the longitudinal arch. The foot of a term newborn has many crisscrossed lines on the sole, covering approximately two thirds of the foot.

4.0 CONCLUSION

It is not unusual to hear the comment "all newborns look alike" from people viewing a nursery full of babies. In actuality, every child is born with individual physical and personality characteristics that make him or her unique right from the start. Newborns undergo profound physiologic changes at the moment of birth (and, probably, psychological changes as well), as they are released from a warm, snug, dark, liquid-filled environment that has met all of their basic needs, into a chilly, unbounded, brightly lit, gravity-based, outside world.

5.0 SUMMARY

In this unit, you have learnt about the appearance of the normal newborn in relation to the skin, the head, the neck and other parts of the body.

6.0 TUTOR-MARKED ASSIGNMENT

Describe the physical appearance of a newborn skin.

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UNIT 2 ASSESSMENT FOR WELL-BEING OF A NEWBORN

CONTENTS

1.0 INTRODUCTION

Worldwide there are over 4 million neonatal deaths per year and another 4 million stillbirths. The newly born infant is the most vulnerable and needs most careful attention during the first hours and days of life. About two-thirds of infant deaths occur during the newborn period. About two-thirds of newborn deaths occur during the first week of life. Of these deaths, two-thirds occur within the first 24 hours of life. There are a number of traditional standardized assessments to evaluate a newborn quickly at birth.

2.0 OBJECTIVES

At the end of this unit, the student is expected to:

- Explain and describe the APGA Score in the assessment of a newborn
- Discuss the essential care necessary for a newborn
- Discuss the required laboratory studies for a newborn

3.0 MAIN CONTENT

3.1 Apgar Scoring

At 1 minute and 5 minutes after birth, newborns are observed and rated according to an Apgar score, an assessment scale used as a standard since 1958 (Apgar et al., 1958). The Apgar score was designed to identify babies who need resuscitation and also to monitor response to resuscitation. The one-minute score determines the need for immediate

resuscitation and not necessarily survival; while the 5-minute score indicates responsiveness to therapy and is therefore a predictor of neonatal survival.

As shown in table below, heart rate, respiratory effort, muscle tone, reflex irritability, and color of the infant are each rated 0, 1, or 2; the five scores are then added. A newborn whose total score is less than 4 is in serious danger and needs resuscitation. A score of 4 to 6 means that the infant's condition is guarded and the baby may need clearing of the airway and supplementary oxygen. A score of 7 to 10 is considered good, indicating that the infant scored as high as 70% to 90% of all infants at 1 to 5 minutes after birth (10 is the highest score possible). The Apgar score standardizes infant assessment at birth and serves as a baseline for future evaluations. There is a high correlation between low 5-minute Apgar scores and mortality and morbidity, particularly neurologic morbidity. The following points should be considered in obtaining an Apgar rating.

Table 1: Apgar Scoring Chart score

Sign	**0**	**1**	**2**
Heart rate	Absent	Slow (<100)	>100
Respiratory effort	Absent	Slow, irregular;	Good; strong cry
Muscle tone Reflex	Flaccid	weak cry Some	Well flexed
irritability:		flexion of	
Response to	No response	extremities	Cough or sneeze
catheter in nostril,	No response		Cry and
or Slap to sole of	Blue, pale	Grimace Grimace	withdrawal of
foot Color		Body normal	foot Normal skin
		pigment,	coloring

Source : Evaluation of the newborn infant: Apgar, V., et al. (1958).

Heart Rate: Auscultating a newborn heart with a stethoscope is the best way to determine heart rate; however, heart rate also may be obtained by observing and counting the pulsations of the cord at the abdomen if the cord is still uncut.

Respiratory Effort: Respirations are counted by watching respiratory movements. A mature newborn usually cries and aerates the lungs spontaneously at about 30 seconds after birth. By 1 minute, he or she maintains regular, although rapid, respirations. Difficulty with breathing might be anticipated in a newborn whose mother received large amounts of analgesia or a general anesthetic during labor or birth

Muscle Tone: Mature newborns hold their extremities tightly flexed, simulating their intrauterine position. Muscle tone is tested by observing their resistance to any effort to extend their extremities.

Reflex Irritability: One of two possible cues is used to evaluate reflex irritability in a newborn: response to a suction catheter in the nostrils and response to having the soles of the feet slapped. A baby whose mother was heavily sedated will probably demonstrate a low score in this category.

Color: All infants appear cyanotic at the moment of birth. They grow pink with or shortly after the first breath, which makes the color of newborns correspond to how well they are breathing. Acrocyanosis (cyanosis of the hands and feet) is so common in newborns that a score of 1 in this category can be thought of as normal.

3.2 Caring for the Newborn Thermoregulation in Neonate

Thermoregulation is defined as the balance among heat production, heat gain, and heat loss during the neonatal period. The newborn, coming from a warmer uterine environment to the cooler delivery room will have an obligate heat loss to the environment. Such heat loss need be controlled so that the baby does not develop hypothermia (low body temperature). The baby should therefore be properly dried up and wrapped in a warm towel to minimize heat loss. Some specific indicators suggesting that normal thermoregulation has been achieved include evidence of the following in the neonate:

- Body temperature within normal limits
- Absence of respiratory distress, restlessness, and lethargy
- Skin color changes and weight gain within accepted parameters
- Adequate hydration
- Blood glucose and bilirubin levels and acid-base balance within normal limits
- Ability to assume heat retention and heat dissipation postures as necessary.

Newborn Monitoring

Newborn monitoring is defined as the measurement and interpretation of physiologic status of the neonate in the first 24 hours after delivery. Some important activities involved when implementing this intervention include the following:

- Performing Apgar scoring at 1 and 5 minutes after birth
- Assessing color, temperature, heart rate, respiratory rate, and

breathing pattern
- Assessing the neonate's ability to suck and first feeding
- Evaluating umbilical cord site
- Monitoring weight and intake and output
- Recording first voiding and bowel movement
- Monitoring for signs and symptoms of respiratory distress and hyperbilirubinemia

Newborn Care

Newborn care is defined as the management of the neonate during the transition to extrauterine life and subsequent period of stabilization. Some important activities involved when implementing this intervention include the following:

- Obtaining weight and measurements of length and head circumference, estimating gestational age, and comparing measurements with estimated gestational age.
- Clearing the airway of mucus and elevating the head of the mattress to promote respiratory function
- Maintaining warm body temperature with frequent monitoring of newborn, drying immediately after birth, wrapping in warm blanket, applying cap to head, and placing in isolate or under warmer as needed
- Putting the neonate to the mother's breast and monitoring sucking reflex
- Bathing neonate once temperature has stabilized.
- Swaddling neonate to promote sleep and sense of security
- Providing umbilical cord site care, keeping the site dry and exposed to air
- Protecting neonate from sources of infection
- Providing a quiet, soothing environment
- Responding to cues and making eye contact when giving care

3.3 Laboratory Studies

After the first hour of undisturbed rest, newborns may have heel-stick tests for hematocrit, hemoglobin, and blood glucose assay for hypoglycemia determinations. Heel-sticks require a minimum of blood, and, although not pain free, they cause minimal trauma to a baby. In some settings, these tests are not routine but are reserved only for newborns with symptoms of anemia, polycythemia, or hypoglycemia. Hematocrit and hemoglobin determinations are done to detect newborn anemia, because it is difficult to appreciate that anemia is present by clinical observation alone. Anemia can be caused by hypovolemia due to bleeding from placenta previa or abruptio placentae or by a cesarean birth that involved incision into the placenta.

Another condition as dangerous as anemia is the presence of an excess of red blood cells (polycythemia), probably caused by excessive flow of blood into an infant from the umbilical cord. A heel-stick hematocrit reveals both of these conditions and treatment then can be instituted. If a newborn exhibits symptom of hypoglycemia (jitteriness, lethargy, seizures) in addition to the finding of low blood glucose on laboratory test results, intravenous glucose should be prescribed. A continuous intravenous infusion of glucose may be necessary if the newborn is unable to maintain normal glucose levels.

4.0 CONCLUSION

A newborn should be gently rubbed, so that little body heat is lost by evaporation. Next, swaddle the newborn loosely with a blanket to prevent compromising respiratory effort, and place a cap on the infant's head and place the infant in the parent's arms. This helps conserve heat and encourages bonding. The period immediately after birth is an important time for mothers to begin interaction with their child. Newborns are alert (first period of activity) and respond well to the mothers' first tentative touches or interactions with them. Although the temperature of newborns who are dried, wrapped, and then held by their mothers immediately after birth apparently falls slightly lower than that of infants placed in heated cribs, their core temperature does not fall below safe limits. If a mother wishes to begin breast-feeding immediately after birth, encourage her to do this. Accomplish all nursing care as quickly as possible, with minimal exposure of the newborn to chilling air. Any extensive procedures, such as resuscitation, should be done under a radiant heat source to reduce heat loss.

5.0 SUMMARY

In this unit, you have learnt APGAR scoring of newborn, the care of newborn and the laboratory investigations that may be required for a newborn.

6.0 TUTOR-MARKED ASSIGNMENT

1. What do you understand by the term Apgar score
2. List the processes involve in Apgar scoring for a newborn
3. Briefly describe the care of the newborn
4. Write briefly on Laboratory investigations for a newborn.

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UNIT 3 FEEDING OF A NEWBORN

CONTENTS

1.0 INTRODUCTION

Feeding is just about the most important experience a newborn will have during the early months. Actually, there is nothing especially difficult or technical about figuring out what to feed your baby. Feeding means more to a baby than just satisfying hunger or gratifying the desire to suck. It is the first social and emotional experience as well. The close contact with you and the feeling of love, warmth, and security that a newborn acquires from being close to the mother are just as important to growth and development as the milk. The feeding contact gives the newborn the first pleasant and satisfying relationship with another person.

2.0 OBJECTIVES

At the end of this Unit, you will be able to:

- Explain what is breastfeeding
- Explain how to nurse
- Explain how long and how often to nurse
- Describe manual expression of milk
- Explain burping, hiccups and spitting up

3.0 MAIN CONTENT

3.1 Breastfeeding

The human milk plays a unique role in neonatal nutrition. It has special characteristics that match the nutritive, physiologic, psychologic and immunologic needs of the infant. This makes it the most appropriate of all available milk for the human infant. Large breasts are not important for breastfeeding. Breast size does not affect the amount of milk produced. Regaining figure after delivery is a matter of proper diet and exercise, before as well as after delivery. Breast milk usually does not "come in" fully until the end of the third day with the first baby. During the first couple of days, a thick, yellowish milk known as "colostrum" is produced; and this is rich in protein, minerals and vitamins. Newborn should be nursed frequently during the first few days so as to get the benefit of the colostrum. There is no need for other milk or water supplements during this time. After the first few days of delivery, breast milk becomes a thin, floury looking liquid, bluish in color. Do not take this to mean that it is not rich enough or strong enough.

Breastfeeding is not entirely a comfortable experience, especially in the early weeks. Mothers may have some discomfort in the first week because of sore nipples, and/or fullness and engorgement of the breasts when the milk "comes in". To help with this soreness, some of the following can be done:

- Wear a nursing bra with good support.
- Manual expression of some milk may help to soften the breasts and relieve some of the pressure.
- Warm towels applied to the breasts before feeding may help to stimulate let-down. Standing in a warm shower can induce milk flow and relieve engorgement. Mother may need to stand with her back to the shower so that the water does not hit her breasts directly.
- Ice packs after feeding may help to ease swelling and pain. Apply for about 15 minutes.
- The nipples may hurt when the baby first begins to suck. The soreness is usually worse by the 3rd or 4th day and then gets better over the next week. This discomfort can be reduced by:
- Washing the nipples with water only, and not soap.
- Allowing the nipples to dry out for 10 to 15 minutes after each feeding. This can be done with the nursing bra flaps down under a blouse or nightgown. Application of nipple cream after nursing may help in some cases.
- Rotate feeding positions at first, for example lying down, cradle

hold, and football-hold. The hospital nursing routine is not a fair trial for breastfeeding for several reasons:

- Breast milk probably will not have "come in" prior to discharge.
- There will be fewer interruptions at home, where baby will have free access to the mother.
- Babies are usually very sleepy at first and often do not nurse well until the 3rd or 4th day.

To ensure optimum breastfeeding, the mother should be encouraged to rest often, relax as much as possible and be patient. She should also take naps and drink lots of fluids, at least 8 oz. with every breastfeeding. Breast milk supply will increase gradually as the baby nurses over the first 10 days. It is important to note that all newborn infants lose weight, even premature babies, during the first few days, regardless of how they are fed. It is normal to lose as much as 10% of their birth weight before starting to gain.

3.1.1 How to Nurse

1. First and foremost, a mother should make herself comfortable before she begins. Whatever position is most comfortable for her will usually work best. She may want to try lying on her side at first or perhaps sitting in a comfortable chair, supporting the baby with a pillow in her lap or under her arm.
2. Touch the nipple to the baby's cheek. He/she will turn toward the nipple because of a built-in reflex (rooting reflex). Do not try to force the baby to turn. If you do this, he/she will turn instead toward your hand.
3. With the opposite hand, place the index finger above and the middle finger below the nipple, both behind the dark circular area known as the areola. Help the baby take the entire nipple into his/her mouth and as much of the areola as possible. Sucking will be easier and more effective for the baby this way and it will not be as hard on mothers' nipples.
4. If needed, hold the breast back from the baby's nose with the fingers so that he/she can breathe easily while nursing.
5. When finished, press down gently on the part of the breast next to the corner of the baby's mouth. This lets air into the mouth and breaks the suction, allowing for easy removal of the nipple.

3.1.2 Care of the Nipples

1. Wash hands thoroughly with soap and water before touching the breasts.
2. Wipe cream (if any) off the nipples with breast pad or soft cloth prior to feedings. Clear water washing of breasts is sufficient; do not use soap on the nipples.

3. If the nipples become very sore, place a modified heat lamp (60-watt light bulb, without lampshade) 1 1/2 feet (18 inches) away from exposed breasts for 30 minutes, twice a day until feeling better.
4. If it seems to help soreness, apply nipple cream as directed. This is usually necessary only for the first few days**.**

3.1.3 How Long to Nurse

1. Allow the baby to suck up to 10 minutes on each breast for each feeding on the first day. If baby want to nurse longer, change the sucking position so that he/she will suck at a different angle. This will help to minimize some of the soreness mothers feel in their breasts during the first 3 to 4 days. In addition to the lying down and cradling positions, mother may use the football hold with the baby's feet out beside her. Prolonged nursing at first will not make the milk come in any sooner and may make mother's nipple unnecessarily sore.
2. Mothers should begin to increase the nursing time gradually. Twenty to thirty minutes should be a maximum even after the nipples are well conditioned and mother is producing full quota of milk. The baby gets most of the milk in the first 5 to 10 minutes. The rest is mainly to satisfy his/her desire to suck.

3.1.4 How Often to Nurse

1. Often with the first feedings, baby will not be very wide-awake, hungry, or interested. Mothers should not be discouraged by this slow start.
2. By the 3rd or 4th day, baby will have worked up an appetite and will be eager to breastfeed..Most of the time, baby will want to nurse more often than 4-hour intervals, probably at 2 to 3-hour intervals, but anywhere from 2 to 5-hour intervals are acceptable. It is recommended that newborn should be fed on demand.
3. Frequent nursing helps build up a full supply of milk.

3.2 Manual Expression of Milk

1. May be necessary if:

    - Baby drops off to sleep before Mother empties her breast and this leaves makes the breast uncomfortably full.
    - Mother have to skip one or more nursing for any reason.
    - Presence of illnesses in the newborn that make suckling rather difficult.

2. How to do it:

   - Mother should wash her hands with soap and water.
   - Place her thumb just above upper edge of areola and her index finger just below the lower edge.
   - Press her hand inward until she can feel ribs. At the same time, raise her breast with palm of hand.
   - Press fingers against her breast and open and close in scissors motion.
   - To empty the entire breast, she should use the same hand position, but start with fingers at the outer edges of the breast and gently massage down toward nipple.

3. A hand-held, non-electric breast pump or an electric pump can be used, if available. Some models may be obtained at drugstores or medical supply outlets.

3.2.1 Mother's Diet while Nursing

1. Mothers should eat what please her and be observant. If a particular food seems to upset the baby after eating it, she should omit it from her diet for a few days, then try again. Caffeine can stimulate babies, making them irritable and fussy for several hours.
2. Mothers should avoid alcoholic beverages while breastfeeding.
3. During nursing mother will need all the foods which are necessary in any healthy person's diet. Include at least one serving daily of lean meat, poultry, or fish, eggs, fruit, vegetables, and whole grain cereal or bread. Drink some whole milk each day (unless you are sensitive to milk products). Adequate fluid intake is important. She can use supplemental vitamins as prescribed by your obstetrician. She should drink at least 8 oz. of liquid with every feeding and at meals.1
4. Many drugs are excreted in small quantities in breast milk when taken by the nursing mother. Mothers should ask her doctor (obstetrician, family physician, and/or pediatrician) if it is okay before taking any medication while breastfeeding.

3.3 Burping

1. **Why?** Burping is often necessary to help a baby expel swallowed air from the stomach. Air swallowing occurs normally during crying and feedings. Accumulated air can make a baby fretful and uncomfortable.
2. **When?** Mother will learn by experience how often she needs to burp her baby. One way to tell is when the baby stops nursing,

pulls away from the nipple and begins to squirm about. If baby does not do this, mother should try to burp them between breasts if breastfeeding or after 1 to 2 ounces (about halfway through the feeding) if formula feeding. Mother should also try to burp baby briefly before you start a feeding (if your baby has been crying to let you know it is feeding time) and spend a longer time trying at the end of the feeding.

3. **How?** The best burping position is with baby held upright against your shoulder or in a sitting position on mother's lap (or beside mother on the bed). Pat the baby on the back to help get up the air bubble or rock gently back and forth. Mother should support his/her head and back with her hand. After about six months of age, the baby probably will be able to burp without assistance.

3.3.1 Water

Baby does not need any water other than what he/she gets from breast milk until starting cereal, usually between 4 to 6 months of age. It is okay to offer an ounce or two, once or twice a day between regular feedings (especially in hot weather). Mothers should not worry
if baby does not want the water. The milk feedings will usually be preferred since they satisfy hunger as well as thirst.

3.3.2 Hiccups

Most babies have hiccups during or after some feedings (one observer noted 6% of the newborn's day). Some have hiccups even before they are born. Hiccups are not harmful to the baby, but they do sometimes make them irritable. If mother still have the bottle or breast milk available, a few swallows will often make the hiccups stop. Otherwise, just wait for the baby to stop by self.

3.3.3 Spitting-up

The term spitting-up is often used when only small amounts of stomach contents are regurgitated. The term vomiting is reserved for larger amounts, especially when they gush out with some force. In reality, it is hard to tell how much a baby is vomiting. Fortunately, it is really not important to determine how much a baby is vomiting, rather look at how your baby is doing. If he/she is throwing up milk, but is mostly happy, resting two or more hours between feeds, and is gaining weight appropriately at his/her checkups, then there probably is not a problem. If he/she is vomiting, irritable, feeding very often, and is not sleeping well, you should call the doctor for advice. Some vomiting is due to the feeding procedure. It may be that the nipple holes are of improper size (either too large or too small) or that the baby is gulping

down the milk too fast even from properly sized nipple holes. In the beginning, spitting may occur because of inadequate coordination of the swallowing and sucking. This will improve with experience and maturing. Other things that may increase spitting include over-anxious atmosphere during feeding, bouncing around on a full tummy, and overeating.

Mothers should note that as long as the baby is healthy, happy, sleeping 2 to 6 hours between feedings, and gaining weight normally, spitting-up is only a laundry problem, not a problem for the baby. If baby is a healthy, happy "spitter", you can expect for the spitting- up to improve considerably around ten months of age. Incidentally, whether or not regurgitated (vomited) milk smells sour and looks curdled is not important. This is because the first step in the digestive process in the stomach is the action of stomach acid on the milk protein, resulting in souring and curdling. If the milk comes back looking exactly as it did when it went down, it just means it has not stayed down long enough for this to take place.

4.0 CONCLUSION

A term newborn that is to be breast-fed may be fed immediately after birth. A baby who is to be formula-fed may receive a first feeding at about 2 to 4 hours of age. Both formula- fed and breast-fed infants do best on a demand schedule; many need to be fed as often as every 2 hours in the first few days of life.

5.0 SUMMARY

In this unit, you have learnt about newborn feeding, breast milk, mother's diet while nursing, burping, spitting, hiccups, etc., as regards to newborns. In the next unit, you will learn about bowel movement in newborns.

6.0 TUTOR-MARKED ASSIGNMENT

1. Explain the following terms; Hiccups, burping, spitting as regards to neonate
2. Describe the process involve in manual expression of breast milk
3. Write briefly on infants feeding.

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UNIT 4 BOWEL MOVEMENT, BATHING AND CARE OF THE UMBILICAL CORD IN NEWBORN

CONTENTS

1.0 INTRODUCTION

A care giver needs to know the correct method of caring for the umbilical cord and how a baby should be bathed to ensure hygiene while avoiding unnecessary harm. This will go a long way in preventing infections and ensuring the newborn remains in good state of health. The pattern of bowel movements in a newborn may vary depending on age after birth, presence of disease state and whether or not the baby is being breast fed or not. Being aware of these variations can help in identifying abnormal conditions that may require intervention.

2.0 OBJECTIVES

At the end of this unit, you will be able to:

- Explain bowel movement in the newborns
- Discuss the process of bathing the newborns
- Discuss the care of umbilical cord in newborn

3.0 MAIN CONTENT

3.1 Bowel Movements

1. General Considerations.

    - A newborn baby's bowel movements (BM's) will go through several changes over several months. The first two days, the BM's are dark green and very sticky (called "meconium stools). Then they become progressively looser over the next week.

- Normal babies may have anywhere from one BM every third day, up to eight BM's per day (about one per feeding).
- After the first two days, normal BM colors include, yellow, yellow-green, and green.
- Starting around two weeks of age, they grunt, strain, and cry regardless of size, shape, consistency or frequency. This is because they lack the muscle coordination required to grunt and relax at the same time. They will scream, turn purple, and then poop out a normal, soft stool. At around 3 to 4 months of age, a baby may begin to grunt and strain without crying as he/she has a BM.

2. Constipation means hard, dry bowel movements, regardless of how often they occur. A baby might have several BM's a day in the form of little hard, dry pellets and, thus, be constipated. On the other hand, they might skip a few days and then produce a perfectly normal, soft BM.

3. Diarrhea (frequent, watery stools) can be a much more urgent problem, especially in the young infant. If this occurs, BM's will increase in number and become progressively looser in consistency and greener in color, contain increasing amounts of mucous and, perhaps, smell more offensive. One characteristic of problem diarrhea is that it almost always gets worse before it gets better. If you are suspicious at any time of 1 or 2 BM's because they seem extra in number, watch closely for a progressive increase. If the number of watery stools is getting more frequent and/or your baby is getting fussy, call the doctor for advice.

4. A breastfed baby:

   - is almost never constipated.
   - BM's are quite variable in number. From 6 to 8 or more a day, especially at first (often 1 with each feeding) to 1 every 3 days.
   - Color is usually pale yellow but often may contain traces of green.
   - Consistency soft to lose, maybe granular.
   - Odor often rather pungent (strong).

5. A bottle-fed baby:

   - May have frequent BM's like a breastfed baby in the beginning. Later, usually 1 to 4 BM's per day.

- Color yellow to yellow-orange.
- Consistency usually pasty to firm.
- May contain curds or lumps

3.2 Bathing of newborn

In most hospitals, newborns receive a complete bath to wash away vernix caseosa within an hour after birth. Thereafter, they are bathed once a day, although the procedure may be limited to washing only the baby's face, diaper area, and skin folds. Wear gloves when handling newborns until the first bath, to avoid exposing your hands to body secretions; babies of mothers with human immunodeficiency virus (HIV) infection should have a thorough bath immediately, to decrease the possibility of HIV transmission. Bathing of an infant is best done by the parents under a nurse's supervision. Be sure the room is warm (about $75^{O}F$ [$24^{O}C$]), to prevent chilling. Bath water should be approximately $98^{O}F$ to $100^{O}F$ ($37^{O}C$ to $38^{O}C$), a temperature that feels pleasantly warm to the elbow or wrist. If soap is used, it should be mild and without a hexachlorophene base.

Bathing should take place before, not after, a feeding, to prevent spitting up or vomiting and possible aspiration. Equipment necessary for an infant's bath consists of a basin of water, soap, washcloth, towel, comb, and clean diaper and shirt. Assemble these items beforehand, so the baby is not left exposed or unattended while you go for more equipment. Teach parents to wash the infant's hair daily with the bath. The easiest way to do this is to first soap the hair with the baby lying in the bassinet. Then, hold the infant in one arm over the basin of water, as you would a football. Splash water from the basin against the head to rinse the hair. Dry the hair well to prevent chilling. Wash each area of the baby's body, rinse so no soap is left on the skin (soap is drying and newborns are susceptible to desquamation), and then dry the body part. When you wash the skin around the cord, take care not to soak the cord, because a wet cord remains in place longer than a dry one and furnishes a breeding ground for bacteria. Give particular care to the creases of skin, where

milk tends to collect if the child spits up after feedings. In male infants, the foreskin of the uncircumcised penis should not be forced back, or constriction of the penis may result. Wash the vulva of a female infant, wiping from front to back to prevent contamination of the vagina or urethra by rectal bacteria. Most health care agencies do not apply powder or lotion to newborns, because some infants are allergic to these products. In addition, many adult talcum powders contain zinc stearate, which is irritating to the respiratory tract; such preparations should

always be avoided. If a newborn's skin seems extremely dry and portals for infection are becoming apparent, a lubricant such as Nivea oil, added to the bath water or applied directly to the baby's skin, should relieve the condition.

3.3 Care of the umbilical cord in newborn

The umbilical cord (belly-button cord, navel) usually comes off after about 7 to 14 days. It may come off as early as 4 days. Separation occurs by softening. You may see, as separation occurs, a "gooey" appearing material in the navel and some of this will probably spill to the outside. You may also see a spotting of blood. This may persist for up to a week until the belly button looks dry and healing is completed.

1. Keep the umbilical cord as dry as possible. The drier it stays, the less likely it is to get infected. Avoid getting soaking wet with soap, water, lotion, etc. during baths.
2. Do not use binders, bands, adhesive tape, or dressings of any sort.
3. Keep the diaper edge folded down to avoid constant rubbing and the constant wetness of a wet diaper.
4. Clean the umbilical cord with rubbing alcohol (isopropanol) to keep the cord dry and reduce the chance of infection.
5. Moisten a cotton ball with alcohol and wipe up and down the cord and into the fold around the base of the cord. Continue to cleanse inside the belly button with cotton tip swab (Q-Tip) with alcohol for several days after the cord comes off.
6. Caring for the belly button and cord 2 or 3 times a day is usually enough. If the surrounding tissue becomes inflamed (red), call the doctor.

Diaper Area Care

Preventing diaper dermatitis is a practice that parents need to start from the very beginning with their newborns. With each diaper change, the area should be washed with clear water and dried well, to prevent the ammonia in urine from irritating the infant's skin and causing a diaper rash. After cleaning, a mild ointment (e.g., petroleum jelly, A and D ointment) may be applied to the buttocks. The ointment keeps ammonia away from the skin and also facilitates the removal of meconium, which is sticky and tarry. Wear gloves for diaper care as part of standard precautions.

FOR BOYS ONLY

Care of the circumcised penis. The circumcision of the foreskin of the penis of a baby boy often leaves him a little fussy for a few hours afterward, and whenever the penis is cleaned during diaper changes for the next couple of days. The penis heals quite rapidly after

circumcision and these tissues are back to normal in a week. Wash the penis, including the circumcision area, with a soft wash cloth or a soft wipe when changing diapers. Apply a liberal amount of Vaseline to the penis tip and head of the penis to prevent the healing tissues from sticking to the diaper. It is not necessary to bandage or wrap the penis or circumcision area with gauze except for the day of the circumcision. Continue to clean and apply Vaseline until the first office visit.

Care of the uncircumcised penis. There is no special care needed for the uncircumcised penis during the first few months. Simply clean off the foreskin with bathing and diaper changes as you would the rest of the diaper area. After a few months, during the bath, you can gently pull back on the foreskin of the penis until you meet resistance, to see how far it will retract easily. Then clean the exposed area of the head of the penis with water and pull the foreskin forward again. For most children, the foreskin will be fully retractable by school age. Do not forcibly pull the foreskin back. It is very painful for the baby and may cause scarring.

4.0 CONCLUSION

Newborn care is very important in preventing neonatal illness and deaths. Essential care of the normal newborn involves ensuring optimum hygiene and umbilical cord care for the newborn.

5.0 SUMMARY

In this unit, you have learnt about bowel movement in the newborns, bathing of newborns, care of the umbilical cord, Care of the circumcised penis and Care of the uncircumcised penis in male infants.

6.0 TUTOR-MARKED ASSIGNMENT

1. Write briefly on prevention of diaper dermatitis
2. Explain clearly the care of the umbilical cord in the newborns
3. Write briefly on the equipment necessary for an infant's bath.

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UNIT 5 COMMON PROBLEMS AFTER BIRTH

CONTENTS

1.0 INTRODUCTION

Most newborns who experience a difficult transition to extra uterine life will improve over a few hours. However, newborns with underlying pathology will deteriorate over time instead of improving. Health care providers should be aware that progressive worsening of symptoms indicates a baby who will require increasing levels of support to maintain stability.

2.0 OBJECTIVES

At the end of this Unit, you will be able to:

- Discuss signs and symptoms of Hypothermia
- List Symptoms of Hypoglycemia
- List Infants at Risk
- Discuss clearing of a newborn Airway

3.0 MAIN CONTENT

3.1 Thermal instability

Cold stress can lead to metabolic acidosis, hypoglycemia, decreased surfactant production, and increased caloric requirements. Signs and Symptoms of Hypothermia include; C o r e temperature <35.0.°C, colour changes, decreased activity, feeding intolerance, apnea and bradycardia, grunting, increased respiratory rate

3.2 Blood glucose levels

Hypoglycaemia refers to low blood sugar, is when blood sugar decreases to below normal levels. Symptoms of hypoglycemia include: Abnormal high-pitched cry, apnoea, cyanosis, poor feeding, hypothermia, vomiting, temperature instability, lethargy, hypotonia, jitteriness, poor tone, poor suck, seizures, tachycardia, tachypnoea.

Infants at risk of hypoglyacemia include those with; Diabetic mother, birth weight >4,500 grams (macrosomia), birth weight <2,500 grams, prematurity, post maturity, prolonged perinatal stress, sepsis, endocrine and metabolic disorders.

3.3 Oxygenation

At term, the fetal lung is filled with approximately 30ml/kg of an ultra-filtrate of fetal serum fluid. During and after birth, this fluid must be removed and replaced with air. Passage through the vagina or birth canal squeezes the thorax and 25–33% of fetal lung fluid is expelled. Over the next few hours, pulmonary capillaries and the lymphatics remove the remaining fluid. Babies born by elective cesarean section, where the woman did not labour, do not have the benefit of epinephrine present during labour; the baby is born with most of the fetal lung fluid present.

Clearing the Airway
Routine suctioning is not recommended. Placing the baby prone and skin-to-skin on the mother facilitates drainage of gastric contents as well as residual upper airway secretions. If there is blood or meconium in the baby's mouth, suction to prevent aspiration. Use a bulb syringe to suction in the baby's mouth. Facilitate drainage by positioning the baby prone and skin-to-skin on the mother's chest. Suctioning can cause a vagal response which can result in an increase in blood pressure, decrease in heart rate, vomiting and retching, and apnoea. Vigorous suctioning of the nares (nasal openings) with a catheter should be avoided because it can lead to oedema and respiratory distress.

Gastric suctioning is also not recommended. The risk of gastric aspiration in the first hours of life is negligible if the infant is placed in the prone position.

Cyanosis and Oxygen
A period of cyanosis lasting several minutes and transient dusky episodes during crying is considered a normal part of newborn transition. Persistent central cyanosis in room air or the need for supplemental oxygen after 2 hours of age represents an abnormal transition to extrauterine life.

4.0 CONCLUSION

Immediate care of the newborn consists of careful and systematic observation and assessment. All newborns seem to move through periods of irregular adjustment in the first 6 hours of life, before their body systems stabilize. These periods are termed periods of reactivity. The first phase lasts about half an hour. During this time, the baby is alert and exhibits exploring, searching activity, often making sucking sounds. Heart beat and respiratory rate are rapid. This is called the first period of reactivity. Next comes a quiet resting period. Heartbeat and respiratory rates slow, and the newborn typically sleeps for about 90 minutes. The second period of reactivity, between 2 and 6 hours of life, occurs when the baby wakes again, often gagging and choking on mucus that has accumulated in the mouth. He or she is again alert and responsive and interested in the surroundings.

5.0 SUMMARY

In this unit, you have learnt about signs and symptoms of Hypothermia, Symptoms of Hypoglycemia, Infants at Risk, clearing of a newborn Airway, cyanosis and oxygen, etc.

6.0 TUTOR-MARKED ASSIGNMENT

1. Define Hypoglycaemia
2. List the infants at risk of Hypoglycaemia
3. Describe the process involved in Airway clearance in newborns.

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MODULE 3 NUTRITION IN CHILDREN 0-5 YEARS

UNIT 1 INTRODUCTION TO NUTRITION

CONTENTS

1.0 INTRODUCTION

Nearly one billion people worldwide suffer from under nutrition, meaning they do not have enough of the right food to eat. However, lack of access to food is not the only cause; poor dietary and feeding practices and behaviours also play a role. Children are most vulnerable. More than one-third of children in Africa suffer from chronic malnutrition, which by two years of age results in permanent impairment of physical growth and mental development. Malnutrition rates are therefore best measured by the number of children under five years of age who are too short by international standards (known as "stunting"). High stunting rates usually indicate that the entire community may be suffering from nutritional problems

2.0 OBJECTIVES

At the end of this Unit, you will be able to:

- Understand why good nutrition is important.
- Know about malnutrition and its causes.
- Know what health and nutrition services and interventions are available

3.0 MAIN CONTENT

3.1 Importance of Nutrition

Our bodies need enough of the right foods to give us energy to grow, learn, work and stay healthy. Children under the age of two have particular needs because their bodies are growing and changing quickly, even before birth. Pregnant and breastfeeding women also need to eat well for their own and their infants' health.

Health and nutrition are closely linked. A well-nourished child is much more likely to recover from a serious illness than a malnourished child. Serious or repeated illnesses such as malaria or diarrhoea can increase the likelihood that a child will become malnourished. School children and adults suffering from micronutrient (vitamin and mineral) or other nutritional deficiencies may feel tired and find it difficult to work hard and may be prone to poor health. In adults this may make it difficult for them to provide for their families. Similarly, adults who are very overweight are more likely to have certain kinds of serious health problems such as hypertension and diabetes. Good nutrition is important for every person's health and well-being. However, it is especially important for infants and young children, mothers and adolescent girls, who then become mothers. Poor nutrition at even one stage of the life cycle can adversely affect the health not just of the person concerned, but also of future generations.

3.2 Malnutrition

Malnutrition is a condition that results from lack of food, from not eating the right foods or from the inability to absorb the necessary nutrients from food. A malnourished person has difficulties growing, learning, doing physical work and resisting and recovering from diseases and injuries. Poor nutrition has serious impacts:

- In more than half of all child deaths from diarrhoea, malaria and pneumonia, malnutrition is an underlying cause.4
- In childhood, one out of five malnutrition-related deaths are due to severe malnutrition, but the remaining four are linked to mild or moderate forms of malnutrition, which affect most children but are not easily recognizable and are often missed at the community level. Pregnant and breastfeeding women and young children are the most vulnerable to malnutrition. Children who are malnourished in their first two years of life are proven to suffer permanent (irreversible) physical and mental damage. Malnutrition during pregnancy puts both the mother and the unborn child at high risk. A malnourished pregnant woman may

have complications during her pregnancy or while giving birth. Her child may have growth problems in the womb, resulting in low birth weight. Infants5 with low birth weight are more likely to have health problems.

3.3 Causes of malnutrition

The causes of malnutrition are diverse, interlinked and complex. They are classified into immediate causes, underlying causes and basic (remote) causes

- **Immediate causes**

  - **Inadequate diet:** A person does not consume an adequate diet either due to lack of right variety (quality) and/or amount (quantity) of food.
  - **Diseases:** When a person is ill, appetite is reduced, which in turn affects the body's ability to use food, weakening it and reducing its resistance to further diseases. Diseases and injuries also increase the need for nutrients in order to recover.

- **Underlying causes**

  - **Food insecurity:** Food insecurity occurs when a family is unable to produce or buy enough food or a good variety of foods for its needs. Even when there is enough food in the household, it may not be distributed equally, and priority may not be given to vulnerable members such as children or women.
  - **Inadequate mother and child care:** Sometimes, mothers and children do not eat the right foods because of limited knowledge, local taboos or poor caring attitudes and practices. Many children become malnourished due to poor weaning practices.
  - **Inadequate healthcare and an unhealthy environment:** Limited availability and/or use of basic health services, lack of hygiene in the living area, little or no sanitation and no safe drinking water create health risks and contribute to poor nutrition.

- **Basic (remote) causes:**

These are factors operating within the larger society, community or country. Examples are political stability (absence of war, strife), political will and sound religious ideology, effort at National food

production and food distribution network, sustainable manpower development.

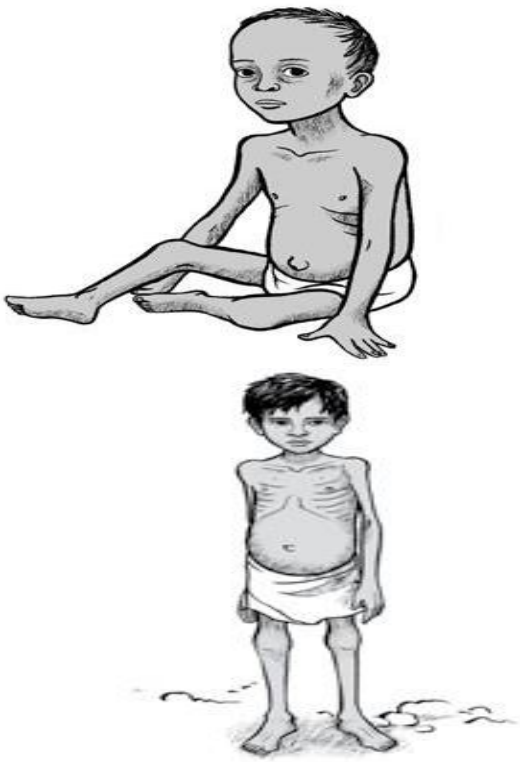

Figure 4: Malnourished Children

Source: International Federation of Red Cross and Red Crescent Societies. Nutrition guidelines

4.0 CONCLUSION

Health and nutrition are closely linked. Around half of child deaths could be prevented if the child was not malnourished as well as ill. At the same time, illness increases the likelihood that a child will become malnourished. Malnourished mothers give birth to underweight babies, who grow up more likely to have underweight babies themselves.

5.0 SUMMARY

In this unit, you have learnt about the importance of nutrition, what malnutrition is and the causes of malnutrition. Good nutrition is important at all stages of life. Our bodies need enough of the right foods to give us energy to grow, learn, work and stay healthy. Children under the age of two have particular needs because their bodies are growing and changing quickly, even before birth. Health and nutrition

are closely linked, a person must be well nourished to be healthy, while poor health can affect nutritional status. In the next unit, we you will learn about promotion of good nutrition, types of malnutrition and critical forms of malnutrition.

6.0 TUTOR-MARKED ASSIGNMENT

1. Define malnutrition
2. What are the causes of malnutrition?

7.0 REFERENCES/FURTHER READING

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UNIT 2 PRINCIPLES OF GOOD NUTRITION

CONTENTS

1.0 INTRODUCTION

Health and nutrition are closely linked. Around half of child deaths could be prevented if the child was not malnourished as well as ill. At the same time, illness increases the likelihood that a child will become malnourished. Malnourished mothers give birth to underweight babies, who grow up more likely to have underweight babies themselves. HIV-positive adults need extra nutrients, especially when on antiretroviral medications.

2.0 OBJECTIVES

At the end of this Unit, you will be able to:

- Understand Promotion of good nutrition.
- Describe types of malnutrition
- Describe Critical forms of malnutrition

3.0 MAIN CONTENT

3.1 Promoting good nutrition

The **three key principles** are:

- Adequate diet
    - Everyone in the household eats enough and a variety of food at all times.

- Absence of disease

    - Everyone in the household protects themselves against diseases, such as diarrhoea, malaria and HIV, and against intestinal worms, all of which affect use of food by the body.

- Appropriate caring practices

    - Everyone in the household is well taken care of, especially the most vulnerable members such as pregnant and breastfeeding women and young children.

For children, this means good feeding practices and a caring and loving environment. It also means a supportive environment for mothers so that they have adequate food, rest and time to care for their children. Throughout these guidelines, these three key principles will be referred to, along with recommended behaviours and supporting messages specific to particular groups, such as families, adolescent girls and pregnant and breastfeeding women, and infants and young children.

3.2 Types of malnutrition

Malnutrition comprised of "undernutrition" (acute or chronic and including micronutrient deficiencies) and "overnutrition" (overweight or obesity). These guidelines use the more commonly used terms of "malnutrition" to refer to situations of inadequate nutrition and "overweight" to refer to people who are obese. An overweight person can also suffer from micronutrient or other dietary deficiencies. While prevention is best, it is important to be able to recognize the different types of malnutrition and to know how to refer people for further treatment when needed.

There are various types of malnutrition. **Underweight** is another common measure of malnutrition, where a person weighs too little for a given age, being either too thin and/or too short compared to most people of similar age. Underweight can be caused by chronic or acute malnutrition and is considered a combined measure of the two kinds of malnutrition. It is reversible with adequate diet and good health and caring practices. Underweight children are most likely to suffer from impaired development and are more vulnerable to diseases and illnesses. Underweight is measured by comparing weight and age (weight-for-age).

Acute malnutrition (wasting)
An acutely malnourished person is very thin. Acute malnutrition is also known as "wasting" and can be severe or moderate. It is reversible with appropriate treatment. Wasted children are up to 20 times more likely than well-nourished children to die of common diseases like diarrhoea. Wasting can be common in children between 6 and 24 months. It can be measured by comparing weight and height (weight-for-height) or mid- arm circumference (MAC).

The MAC is a useful measure of current nutritional status. It is measured usually on the left arm, at the midpoint between the acromion (shoulder) and olecranon (elbow) process. MAC < 13.5cm is abnormal while a value <11.5cm indicates severe acute malnutrition. The shakir strip is a three-color coded tape that can be used to easily measure the MAC. It is marked off in three different colors:

Green- if the child is well nourished
Yellow – if in danger of becoming malnourished
Red- If severely malnourished and at risk of dying.

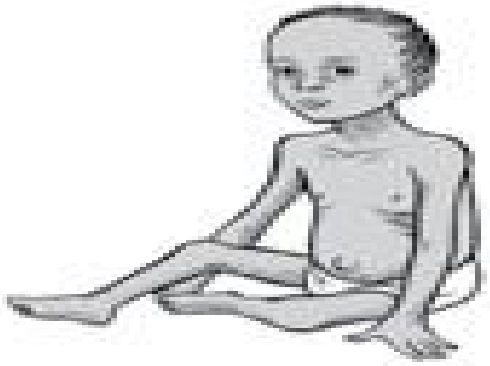

Figure 5: Acute malnutrition (wasting)
Source: International Federation of Red Cross and Red Crescent Societies. Nutrition guidelines

Chronic malnutrition (stunting)
A chronically malnourished person is normally too short for his or her age but is not always thin. Chronic malnutrition is also known as "stunting". Stunting is irreversible after the age of two years. Stunted children are most likely to suffer from impaired development and are more vulnerable to illness and disease. Stunting can be measured by comparing height and age (height-for-age).

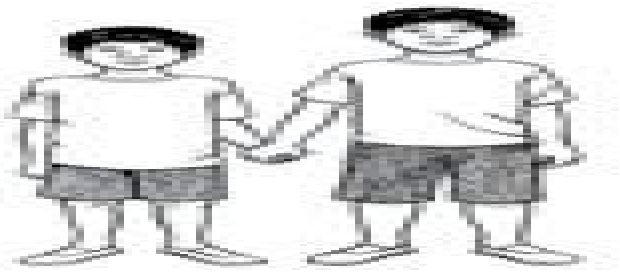

Figure 6: Chronic malnutrition (stunting)

Source: International Federation of Red Cross and Red Crescent Societies. Nutrition guidelines

Obesity (overweight)
An obese or overweight person is too heavy and fat for his or her height. Overweight is reversible with adequate diet and good health and caring practices, especially among growing children and adolescents. Overweight children and adolescents are more likely to suffer from high blood pressure, diabetes and heart disease as adults. Many overweight adults suffer from these diseases. Overweight can be measured by comparing weight and height (weight-for-height). Overweight and obesity are better defined using Body Mass Index (BMI), which can be derived using the formula = weight/height^2. A BMI greater than or equal 85th percentile is defined as overweight, while a BMI greater than or equal 95th percentile is obesity. In children, it is not the absolute figure that is used as in adult.

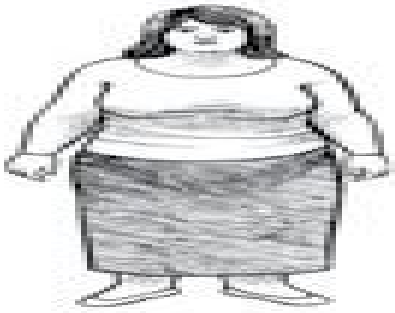

Figure 7: Obesity (overweight)
Source: International Federation of Red Cross and Red Crescent Societies. Nutrition guidelines

Micronutrient deficiencies
Special nutrients called vitamins and minerals are needed by the body in very small amounts, so they are called “micronutrients”. Micronutrient deficiencies are not usually immediately noticeable but can have a big impact on growth, health and learning ability. Common micronutrient deficiencies include vitamin A, iron and iodine. Micronutrient deficiencies are usually treated on a preventive basis, where they are known to be common in an area.

3.3 Critical forms of malnutrition

Two forms of **acute malnutrition** pose an immediate threat to a child's life and need to be acted upon rapidly: wasting (too skinny or thin) and nutritional oedema (too much fluids in body tissues), or a combination of both conditions.

Wasting/thinness (marasmus)
Due to inadequate diet (not enough variety but especially amount of foods) and/ or presence of diseases that reduces the capacity of the body to properly use foods. Wasting can appear as moderate and severe forms of acute malnutrition.

Signs:
Growth failure

- Thin, old-looking face with sunken eyes and cheeks
- Prominent bones, e.g. ribs visible
- Skinny limbs
- Loose skin, especially around buttocks
- Usually has appetite
- Irritable moods (cries a lot)

Detection:
- MAC: In a child between the ages of 6months and 5years, there is very little change in a normal child's arm circumference. Hence, this measure gives a simple anthropometric index of wasting which is age-independent. The severity of wasting is categorized as follows:

  MAC $\geq$ 13.5cm = normal
  12.5 – 13.5cm = Mild/moderate wasting
  < 12.5cm = Severe wasting

In a child, wasting can also be assessed by comparing weight and height to a standard (i.e standard deviation score from median for age and sex, otherwise called Z scores). Thus: Normal = -2SD; Moderate wasting = -2SD to – 3SD and Severe wasting = < -3SD.

Figure 8: Wasting/thinness (marasmus)
Source: International Federation of Red Cross and Red Crescent Societies. Nutrition guidelines

Nutritional oedema (kwashiorkor)
Due to inadequate diet (mostly not enough variety of foods) and/or presence of diseases that reduces the capacity of the body to properly use the nutrients in foods. Nutritional oedema is always regarded as a severe form of acute malnutrition.

Signs:

- Bulging, swollen face
- Swollen belly
- Oedema (swelling), which starts with both feet and lower legs but can also expand to the entire body
- Skin changes (pale, peeling, with sores)
- Hair changes (brownish, scanty, straight)
- Loss of appetite
- Loss of interest in surroundings

Detection:

- ONLY through checking with finger pressure
- CANNOT tell by just looking

Figure 9: Nutritional oedema8 (kwashiorkor)

Source: International Federation of Red Cross and Red Crescent Societies. Nutrition guidelines

4.0 CONCLUSION

A person who is extremely thin may have acute malnutrition. This is determined by measuring the upper arm with a special tape or by comparing weight and height against a standard. This person may recover with treatment, so referral to a health clinic for treatment is important. Someone who is very short for his or her age may have chronic malnutrition. This is determined by comparing height and age against a standard. Children with chronic malnutrition may be more likely to get sick and have difficulty in school. Effects on physical and mental growth are permanent (irreversible). On the other hand, a person who is very fat is overweight and may be more likely to suffer from certain diseases such as diabetes later in life. This is determined by comparing height and weight. Returning to normal weight helps reduce health risks. Someone who does not eat a varied diet may lack certain vitamins and minerals (micronutrients). This can affect health at all stages of life and prevent adequate growth and development in children.

5.0 SUMMARY

In this unit, you have learnt about Promotion of good nutrition. Types of malnutrition and critical forms of malnutrition have also been described.

6.0 TUTOR-MARKED ASSIGNMENT

1. Discuss the principles of Promotion of good nutrition.
2. Describe the types of malnutrition
3. Discuss in details the critical forms of malnutrition

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UNIT 3 FAMILY DIETS

CONTENTS

1.0 INTRODUCTION

The most important aspects of a healthy diet are variety and balance. A healthy diet is made up of a variety and balance of different types of food each day, including fruit and vegetables, cereals, tubers, roots, pulses, nuts and animal products. The variety of foods in the diet will usually depend on what is in season and locally available. The amount of food a person requires depends on age, sex and time of life.

2.0 OBJECTIVES

At the end of this Unit, you will be able to:

- Understand why good nutrition matters in the family.
- Describe good nutrition behaviours.
- Discuss common micronutrient deficiencies

3.0 MAIN CONTENT

3.1 Healthy nutrition in family

Healthy food is fresh and natural, and a balanced diet is full of flavour and colour. Food is made up of different kinds of nutrients that are essential for the body to function correctly, grow, fight and recover from diseases. Essential nutrients are carbohydrates, proteins, fats, vitamins and minerals.

Table 2: Essential Nutrients

ESSENTIAL NUTRIENTS	**MACRONUTRIENTS**	**MICRONUTRIENTS**
	Carbohydrates, proteins,	Vitamins, minerals
Purpose	Required by the body to function correctly and grow normally	Required by the body to function correctly and fight and recover from diseases
Required amounts	Measurable amounts based on age, sex and time of life	Very small amounts

FOUR GROUPS OF FOOD

1. STAPLE FOODS (STARCHES) – ENERGY

- Grains and cereals– wheat, sorghum, rice, millet, maize/corn, teff, etc.
- Products made from grains– bread, noodles, tortillas, chapattis, pasta, polenta, couscous, rice cakes, etc.
- Tubers and roots– cassava/manioc, potatoes, lotus, yams, taro, etc.

2. MEAT/ANIMAL PRODUCTS AND LEGUMES/NUTS – PROTEINS, MICRONUTRIENTS

- Pulses, green beans and peas: chickpeas/cowpeas, kidney beans, soy beans, lentils, green peas, etc.
- Products from beans: – tofu/soy curd, bean sprouts
- Nuts and seeds: – groundnuts, almonds, cashews, sesame, etc.
- Fish and shellfish
- Meat, insects and game
- Poultry
- Eggs
- Dairy: – milk, yoghurt, curds and cheeses, dried milk powder

3. VEGETABLES AND FRUITS – MICRONUTRIENTS

- Vegetables – green leafy and orange vegetables: spinach, cabbage, lettuce, fresh green herbs, chard, amaranthus, carrots, pumpkin, tomatoes, red peppers, etc.

– other vegetables: okra, cauliflower, broccoli, onion, radish, mushrooms, eggplant (aubergine), etc.

- Fruits – orange fruits: papayas, mangos, pomegranates, etc.

– other: dates, citrus fruits, avocados, melons, apples, guavas, berries, plums, etc

4. FATS – ENERGY, VITAMIN A

- Butter, ghee and margarine
- Vegetable oil (fortified with vitamin A)
- Oily seeds: – sunflower seeds

Figure 10: Four basic food groups
Source: International Federation of Red Cross and Red Crescent Societies. Nutrition guidelines

3.2 Good Nutrition Behaviours

Below is a list of nine key good nutrition behaviours

1. EAT *VARIETY* OF DIFFERENT FOODS.

"**Variety**" in the diet means consuming all four of the basic food groups each day: staple foods (starches); vegetables and fruits; meat/animal products and legumes/nuts; and fats. Many poor families consume less than four food groups per day, especially during the famine season. Likewise, poor families most often consume only staple foods such as cereals, roots and tubers, and small amounts of pulses such as beans or lentils.

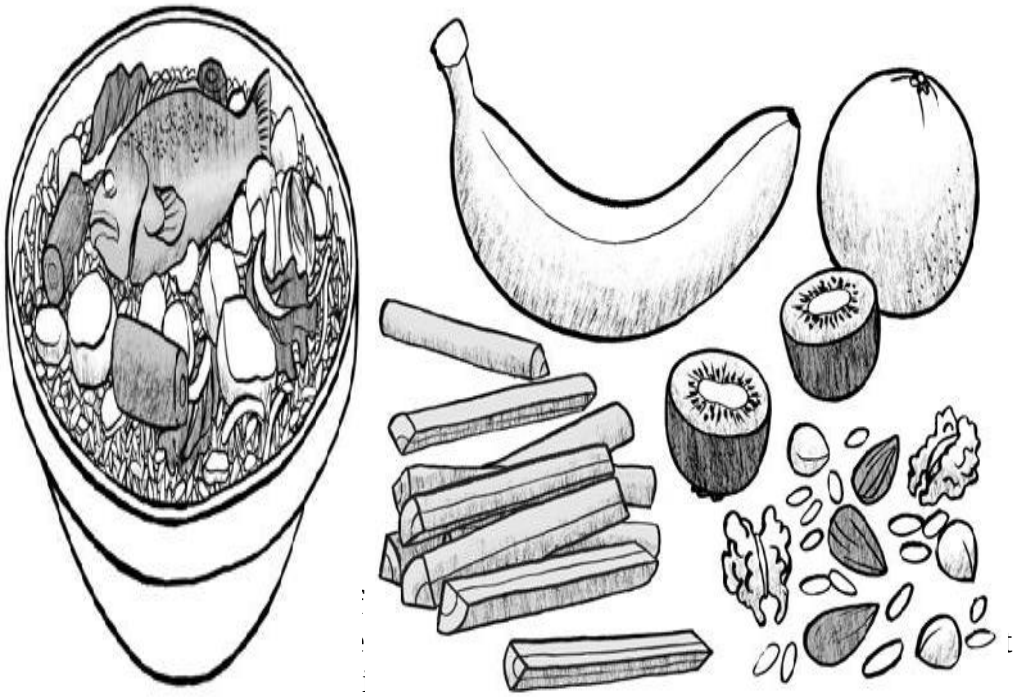
A **healthy, balanced meal** contains all four basic food groups:

- At least half a plate made up of **staple foods** such as cereals, roots and tubers to provide

carbohydrates.

- Some **meat/animal products** (e.g., meat, eggs, fish or milk) and/or **pulses** (e.g., dried beans or lentils) to provide **proteins**.
- Plenty of **vegetables** and some **fruits** to provide **vitamins and minerals**.
- Small amounts of **oil** or **butter** to provide **fats.**

Very small amounts of iodized salt should also be consumed to provide **iodine** (mineral). Healthy snacks, such as fresh fruits, raw vegetables and nuts, and fermented foods, such as yoghurt, can be eaten between meals.



TWELVE FOOD CATEGORIES FOR HEALTHY DIET

1. Cereals
2. Roots and tubers
3. Vegetables
4. Fruits
5. Meat, poultry, organs (kidney and liver)
6. Eggs

7. Fish and seafood
8. Pulses/legumes/nuts
9. Milk and milk products
10. Oil/fats
11. Sugar/honey
12. Others, such as condiments and spices

2. Include carbohydrates in every meal

Carbohydrates are the largest proportion of foods eaten to provide most of the body's energy. They are divided into two groups: Starches and Sugars.

1. Starches

Starches are the plant's energy stores and are converted into sugars in the body. They are found in plant foods such as cereals, pulses, tubers (e.g. potatoes) and some roots (e.g. carrots). Starches such as sorghum, millet, whole grains and brown flours are also a good source of proteins and contain some vitamins and minerals. Starches are best when unrefined (whole grain – no parts removed).

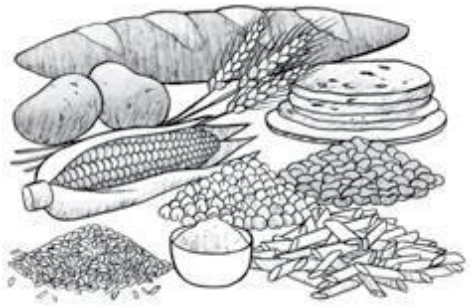


Figure 12: Starches
Source: International Federation of Red Cross and Red Crescent Societies. Nutrition guidelines

2. **Sugars**

Sugars that are naturally present in plants and fruits are a source of energy. Juice made from raw sugar cane provides energy and other nutrients such as vitamins and minerals. Sugars that are added to sweetened drinks and foods are obtained from sugar cane or sugar beet through a process that takes out most nutrients.

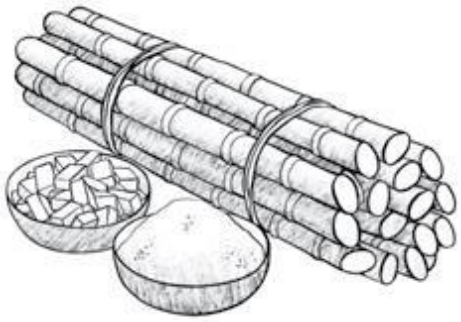


Figure 13: Sugars
Source: International Federation of Red Cross and Red Crescent Societies. Nutrition guidelines

3. **Eat proteins daily**

Proteins provide the nutrients for building and maintaining the body. About 17 per cent of the body, including muscles, bones, skin, nails and hair, is made of protein. Proteins come from plant or animal sources. For growing children, proteins from animal sources are better than proteins from plants.

Foods that are rich in proteins are:

- Animal products, such as meat, eggs, fish and dairy.
- Pulses, such as beans, chickpeas/cowpeas and lentils, and green peas.
- Oil seeds, such as groundnut, sesame and sunflower.
- Cereals, especially unrefined, such as whole grains.

It is important to eat proteins from different sources: a combination of cereals and pulses or animal products provides the best level of proteins.

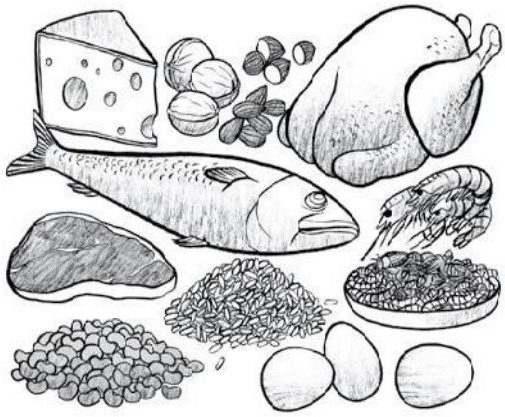


Figure 14: Protein rich foods
Source: International Federation of Red Cross and Red Crescent Societies. Nutrition guidelines

4. Include fibres in the diet every day.

Fibres are an essential part of the diet even though they do not provide any nutrients. Diets with sufficient fibres promote regular digestion which helps the body to remove waste products and increase use of nutrients. Fibres are found in the husks and skins of cereals and pulses. All plant foods are useful sources of fibres, but the richest are:

- Whole grains and foods made with whole grains.
- Pulses, such as dried beans, peas and lentils.
- Tubers and roots, such as beetroots and carrots.
- Fresh fruits, such as figs, oranges, plums, papayas, apples and mangos.
- Dried fruits, such as dates and raisins.
- Vegetables, such as spinach and cabbage.
- Nuts and seeds, such as sesame and sunflower.

Fibres are particularly important in the adult diet but should be limited in the young child's as they can cause bloating of the stomach and reduce the body's capacity to absorb nutrients.

- Cereals and pulses given to young children should have the husks and the skins removed.

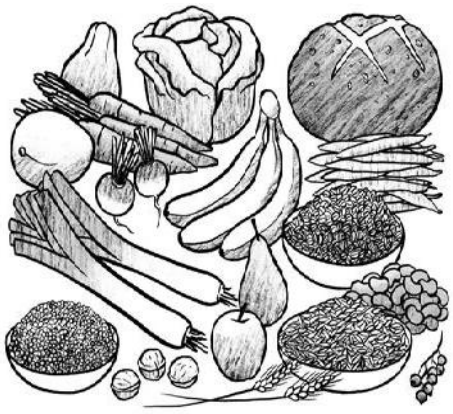


Figure 15: Fibre rich foods
Source: International Federation of Red Cross and Red Crescent Societies. Nutrition guidelines

5. Include only small amounts of fats in diet every day

Fats are a prime source of energy and are stored by the body in special cells as concentrated sources of energy. Fats ensure the smooth functioning of the body, in particular the nervous system.
Fats can be divided into two groups:

1. Saturated fats are more solid at room temperature. They mostly come from animal sources such as butter and lard but can also come from plant sources such as coconut oil and palm oil.
2. Unsaturated fats are more liquid at room temperature. They mostly come from plant sources such as corn oil, sunflower oil, groundnut oil and olive oil. Unsaturated fats are healthier than saturated fats. Natural sources of good fats are:
    - Seeds, such as sunflower, pumpkin and sesame.
    - Nuts, such as peanuts.
    - Fruits, such as avocados and olives.
    - Fatty fish.

Almost half (40 per cent) of a child's energy should come from fat sources. This is because they have small stomachs and can only consume little amounts of food at a time. By contrast, adults need only gain 17 per cent of their energy from fat sources. At least 70 per cent of adults' energy can come from carbohydrate sources such as staple foods. Pregnant and breastfeeding women should get at least 20 per cent of their energy from fat sources.

6. **Include vitamins and minerals in the diet**

By eating plenty of vegetables and fruits every day and adding small amounts of iodized salt to every meal. Vitamins and minerals are needed by the body in small amounts to enable it to grow, develop and function. They do not supply energy but work with macronutrients such as carbohydrates, proteins and fats to produce energy.

Vitamins are vital for the body to function properly and to fight against and recover from diseases. While each vitamin has specific properties, their most important functions are to:

- boost the body's capacity to fight against and recover from diseases
- improve the functioning of the nervous system (brain, nerves) and the digestive system (stomach, gut)
- prevent low birth weight
- support growth of the child
- build and maintain strong vision and healthy skin, bones, teeth and muscles.

Minerals provide much of the body structure for bones and teeth and help the body fight against and recover from diseases. While each mineral has specific properties, their most important functions are to:

- promote children's growth and brain development
- boost the body's capacity to fight against and recover from diseases
- improve functioning of the nervous system and the digestive system
- build and maintain healthy bones, teeth and muscles (including the heart)
- improve blood circulation and blood pressure.

To be most effective, vitamins and minerals need to work together. The main sources of vitamins and minerals are:

- Fresh orange, yellow, red and green fruits, such as oranges, mangos, papayas, bananas, pineapples, apples, strawberries, guavas, avocados, etc.
- Fresh green leafy vegetables such as spinach, broccoli, watercress, cabbage, etc.
- Fresh orange, yellow and red vegetables, such as carrots, pumpkins, peppers, tomatoes, etc. unrefined cereals, such as whole grains, millet, sorghum, oats, etc.
- Pulses, such as dried beans, peas and lentils, etc.
- Fresh red meat and organ meat such as liver and kidney
- Fresh fish and fish oil
- Nuts and seeds

Iodized salt should be added to every meal because the body cannot store iodine for a long time. Iodine-rich natural sources include:

- Milk
- Egg yolks
- Fish from the sea and other seafood.

Figure 16: Vitamins and Minerals
Source: International Federation of Red Cross and Red Crescent Societies. Nutrition guidelines

7. Ensure a healthy balance of all types of nutrients in the diet.

Too little or too much of each type of nutrient can be unhealthy. When too much carbohydrate is eaten, the body will not use it immediately. Instead it will be turned into fats and stored by the body. Processed carbohydrates, such as white bread, white rice and maize flour, lose important natural nutrients such as proteins, minerals and vitamins during the refining process. If too much sugar is eaten, especially white processed sugar and sweetened foods and drinks, it will also be turned into body fat. It can also increase the risk of tooth decay and vitamin and mineral deficiencies, particularly in children.

It can also easily lead to being overweight. Too much protein in the adult's diet, especially from animal sources, can increase cholesterol levels and lead to a higher risk of heart disease and cancer. Too little protein in a child's diet, especially from animal sources, can slow down growth. Too much of the "bad" fats in an adult's diet, especially animal fats, can increase cholesterol levels and lead to an increased risk of heart disease, overweight and cancer.
To reduce the health risks associated with bad fats, it is important to:

- Keep use of animal fats, such as lard and butter, to a minimum.
- Use vegetable oils instead of margarine and other spreads.
- To reduce fat intake generally, use stir-frying with a little oil instead of deep frying in a lot of oil.

8. Use simple and careful cooking methods to ensure maximum nutrients are obtained from foods.

Raw fruits and vegetables are the richest sources of vitamins and minerals. Fruits and raw carrots, tomatoes and cucumber make excellent snacks between meals. Raw vegetables can also be served as salads with meals. Herbs, such as parsley, mint, lemongrass, fennel and dill, and flavouring plants, such as ginger root and garlic cloves, are beneficial and may be added to salads and meals. Raw fruits and vegetables need to be cut or washed in safe water just before eating. The less vegetables are cooked, the more vitamins and minerals will be preserved. Vitamins and minerals can be damaged by:

- Soaking vegetables and fruits for too long in water.
- Cooking vegetables and fruits for too long and with too much water.
- Cooking green vegetables with bicarbonate of soda.
- Cutting leafy vegetables with a knife instead of ripping the leaves into pieces.

The best way of cooking vegetables is by steaming them with a little water instead of boiling them. Leaves from vegetables such as spinach can be steamed for about five minutes in a sieve over rapidly boiling water. Leaves will need to be stirred with a wooden spoon so that all of them are exposed to the steam. The boiled water from vegetables contains a lot of vitamins and minerals and can be added to a stew or used as a sauce, soup or drink.

PULSES

Pulses include sugar beans, fava beans, chickpeas/cowpeas, pigeon peas, soya beans and lentils. Pulses can take a long time to cook and use a lot of fuel. They can also cause bloating and gas in the stomach. To reduce cooking time and gas effects, soak pulses overnight and skim off the foam produced during cooking with a spoon.

MEAT, POULTRY AND FISH

Fresh meat, poultry and fish contain more nutrients than products that have been processed and put in cans. All meat, poultry and fish should be thoroughly cooked. Salmonella is an infection which can be transmitted through undercooked foods (most often chicken or raw or lightly cooked eggs with runny whites/yolks). Children, older persons and sick people are at highest risk of salmonella. The risk of food poisoning is also high with undercooked meat, poultry or fish. Food grilled or roasted over fire or charcoal may burn on the outside and remain undercooked on the inside, which can cause food poisoning. Especially when grilled, meat and poultry should be checked to ensure it is well cooked through. Fish and seafood can be grilled or steamed lightly in as little water as possible until thoroughly cooked. It is advisable to cut off the fat from all types of meat because fat can contain chemicals and pesticides that the animal has absorbed through grazing.

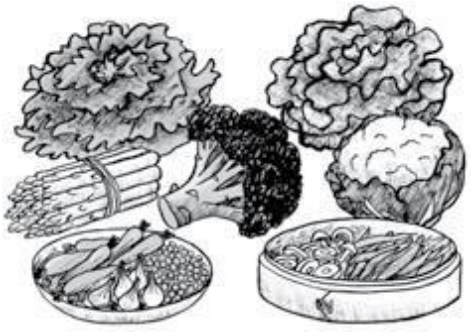


Figure 17: Vegetables

Source: International Federation of Red Cross and Red Crescent Societies. Nutrition guidelines

9. Consume safe water daily

Safe water is defined as water of sufficiently high quality that can be consumed or used for personal and domestic hygiene with low risk of immediate or long-term harm. Safe water sources include properly constructed and maintained piped systems, tube wells or boreholes, covered dug wells, and springs protected from animal and other contamination. This include surface water (e.g., ponds, rivers and streams), unprotected dug wells and open tanks. Water from these sources can be made safe by boiling, filtering or treating with chlorine. Water should always be stored in a clean container, preferably with a tap. If the container is open, it should be covered with a lid or cloth to avoid insects or dirt coming in. Water should be taken out of the container with a clean scoop or cup. Avoid putting hands into the container or drinking directly from it. Animals should be kept away from stored water. Water is essential to life and is crucial for the digestion of food, proper absorption of nutrients and removal of waste from the body. It is recommended that adults drink about eight glasses (approximately 1.5–2 litres) of safe14 water a day. If it is very hot or a person is suffering from diarrhoea, vomiting or fever, he/ she must drink more to replace the lost water. Herbal teas can strengthen and cleanse the body by improving digestion and removal of waste from the body. A glass of fresh fruit or vegetable juice is considered to be the equivalent of a serving of fresh fruit containing at least the recommended daily intake of important nutrients.

- Concentrated vitamins, minerals, sugars and proteins in raw juices are absorbed into the blood quickly, placing minimum effort on the digestive system.
- Juices should be diluted with safe water for young children to avoid diarrhoea. Unhealthy drinks can adversely affect a healthy diet:
- Tea and coffee reduce the absorption of some important minerals and are best not taken during meals or together with vitamin and mineral supplements.
- Fizzy drinks contain processed sugar and artificial flavours. They can affect the health and feeding habits of young children and should be avoided as long as possible. Because they are highly sweetened, they actually increase the body's need for water, so they are not the best option for quenching thirst.
- Alcohol in excess can cause damage to the liver, vitamin (especially vitamin B) deficiency, digestive problems and loss of memory and concentration.

Table 3: Elements of a Healthy Diet

ELEMENTS OF A HEALTHY DIET FOR FAMILY					
UNREFINED STAPLES FOODS	**SUGARS**	**FIBRES**	**PROTEINS**	**HEALTHY FATS**	**VITAMINS / MINERALS**
Whole grains, unpolished rice, millet and sorghum are the cheapest and healthiest sources of energy, fibres	Healthiest are those naturally contained in fresh foods, fruits and raw	Mostly contained in raw fruits and vegetables and unrefined cereals.	Best taken from different sources, for example pulses and/or animal products	Healthiest are those contained in oils from seeds, nuts, fish and avocados.	Mostly present in raw fruits and vegetables, unrefined cereals and pulses, and

3.3 Common micronutrient deficiencies

The most common micronutrient deficiencies are iron, vitamin A and iodine, lack of which affects health and growth. Micronutrient deficiency is often referred to as “hidden malnutrition”. This is because clinical features are not always overt. Thus, special skills may be needed to detect these potentially life- threatening problems. A varied diet or taking special supplements can ensure people get the micronutrients they need.

1. IRON DEFICIENCY ANAEMIA (IDA)

This occurs when there is inadequate or no iron in the diet and/or presence of diseases such as malaria and intestinal worms (particularly hook worm) as well as loss of iron from hemorrhage (blood loss). It is the most common micronutrient deficiency I the world. Anaemia affects health and energy.

Signs and symptoms of Anaemia:

- Paleness of inner eyelids (conjunctiva), nail beds, gums, tongue, lips and skin
- Tiredness/fatigue
- Headaches
- Lack or shortness of breath (especially following physical activity e.g walking, sucking in young infant)
- Behavioral abnormalities: PICA (eating of non-food articles e.g soil),

2. VITAMIN A DEFICIENCY

Due to lack of vitamin A in the diet and/or presence of diseases such as diarrhoea and measles. Vitamin A deficiency affects health and growth. Deficiency most commonly affects the eye.

Signs:

- Night blindness- in which there is reduced dark adaptation.

Signs of severe deficiency:

- Eye dryness accompanied by foamy build-up on the inner eyelids that often appears near the outer edge of the iris (Bitot's spots)
- Eye dryness or dullness or clouding of the cornea (corneal xerosis)
- Eye softening and ulceration of the cornea (keratomalacia)

Deficiency of vitamin A is also associated with other problems beside the eyes. These include:

- Increased risk of infection
- Anemia
- Growth retardation
- Skin abnormalities (e.g follicular hyperkeratosis)
- Sterility

3. IODINE DEFICIENCY DISORDERS

Due to lack of iodized salt and seafood in the diet. Also lack of iodine in the soil (often in mountainous areas) and therefore food grown has no iodine. The body cannot store iodine for a long time and therefore needs tiny amounts every day. Iodine deficiency affects health and mental growth. Lack of iodine can lead to a condition known as "goitre".

Signs:

- The visible sign of severe goitre is an enlarged neck (thyroid gland).

4.0 CONCLUSION

Healthy food is fresh and natural, and a balanced diet is full of flavour and colour. Food is made up of different kinds of nutrients that are essential for the body to function correctly, grow, fight and recover from diseases.

5.0 SUMMARY

In this unit, you have learnt about why good nutrition matters in the family. We also described good nutrition behaviours and common micronutrient deficiencies.

6.0 TUTOR-MARKED ASSIGNMENT

1. List and discuss in details good nutrition behaviours
2. Describe the common types of micronutrient deficiencies.
3. Discuss the elements of a healthy diet

7.0 REFERENCES/FURTHER READING

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UNIT 4 INFANTS AND YOUNG CHILDREN NUTRITION

CONTENTS

Figure 18: Infants and 0
4+young children nutrition
Source: International Federation of Red Cross and Red Crescent Societies. Nutrition guidelines

1.0 INTRODUCTION

Good nutrition in the first two years of life ensures that a child has the best possible mental and physical growth as a good start for health in adulthood. Young children grow very fast and have huge nutritional needs, especially from six to nine months, making this period critical for a child's future well-being. Experts have shown that children who do not receive good nutrition in their first two years of life are more likely to suffer from poor health later in life, and their bodies and brains may not grow properly. Malnourished children are often sick and become tired easily. As a result, their performance in school is not as good as healthier, well-nourished children.

2.0 OBJECTIVES

At the end of this Unit, you will be able to:

- Understand why good nutrition matters in the first two years of life.
- Describe adequate diet for Infants and young children nutrition
- Discuss optimal breastfeeding practices
- Discuss complementary feeding

3.0 MAIN CONTENT

3.1 Adequate diet (EXCLUSIVE BREASTFEEDING)

The nutritional requirements of the child change continuously in the first two years. "Exclusive breastfeeding" means that breast milk is provided as the only food and drink for an infant during the first six months. "Early breastfeeding" means within the first hour of birth. Infants should be fed only breast milk for the first six months, beginning within one hour of birth, with skin-to skin contact. The thick yellow milk (colostrum) produced by the mother in the first few days after childbirth is very good for infants. No other liquids should be given to infants except if medically indicated. Benefits of Breastfeeding

a. Benefits to the baby:
Breast milk contains the right balance of nutrients (energy, protein, fat, minerals and viamins) for the baby and is readily available.

Provision of antibodies that help boost immunity against infections

Reduction of baby's risk of developing allergies and Asthma, high blood pressure, diabetes mellitus and obesity later in life.

Promotion of mother-infant bonding and development of sensory and cognitive abilities.

It is fully and more readily digested than formula feed.

Stool less offensive and this make it easier to care for the baby

b. Benefits to the mother:
Breast feeding help in child spacing (lactational amenorhoe –no menses during breastfeeding)

Reduction of the risk of ovarian cancers

Helps in weight reduction –this is because breast feeding assist in burning the fat stored during pregnancy and makes it easier for the mother to return to her pre-pregnancy weight.

Personal satisfaction for the mother

c. Benefits to the family and community
Breast feeding is less expensive and more convenient that formula feeding

It saves family and national income/resources

Safe for the environment – as there is no litters in terms of cans and wastes.

It enhances family and human relationships

PROCESS OF BREASTFEEDING AT BIRTH

1. Place the infant on the breast within ONE HOUR of the birth, with skin-to-skin contact. Breast milk ALONE is the best start to every infant's life. NO water, sugar water or any other fluids such as tea or fizzy drinks should be given to the infant. Putting the infant on the breast immediately after birth will help the mother to:
   - produce breast milk
   - reduce bleeding from childbirth
   - expel the placenta.

If childbirth has taken place without complications, skilled birth attendants will only need to cut the umbilical cord and dry the infant before putting him/her on the mother's breast. Continued skin-to-skin contact with the mother protects the infant from the cold. For this reason, it is better to bathe the infant the next day. First-time mothers often need encouragement to begin breastfeeding. A family member or friend who has breastfed can help them overcome initial worries and prevent future difficulties.

Figure 19: A mother breastfeeding a baby
Source: International Federation of Red Cross and Red Crescent Societies. Nutrition guidelines

Ensure the infant consumes the thick yellow milk produced directly after birth. The thick yellow milk produced by the mother is called "colostrum" and is very important for the infant in the first days after birth because:

It is highly nutritious and rich in vitamin A. It protects the infant from diseases.

It helps the infant to expel the first dark stool (meconium).

2. Give the infant ONLY breast milk for the first six months.

Breast milk is the *only* drink required by an infant up to six months of age, even in hot, dry climates. Breast milk is always available at the right temperature and comes at no cost. Animal milk, infant formula, powdered milk, teas, sugar drinks, water and cereal foods should *not* be given to the infant in the first six months as they are not as nutritious as breast milk and cannot protect the infant from diseases. Some of these products can even be harmful to the infant. An infant needs ONLY breast milk for the first six months because it:

- is the only food/drink required by the infant to grow healthy and strong
- will protect the infant against diseases such as diarrhoea and pneumonia
- is quick and easy to digest for the infant's small stomach.

It is best for the mother to completely empty one breast before offering the second breast. This is the only way the infant will get the:

- "front milk" to satisfy thirst
- "back milk" to satisfy appetite.

If the mother is separated from the infant during the day, she can express (extract) enough breast milk to feed the infant in her absence. If this is done, a few things should be kept in mind:

- Expressed breast milk can be stored up to 8 hours at room temperature or up to 24 hours in a refrigerator
- Expressed breast milk can be given to the infant using a clean, open cup
- Expressed breast milk should NOT be given to the infant using a bottle because it can affect good breastfeeding.

Figure 20: Direct breast feeding
Source: International Federation of Red Cross and Red Crescent Societies. Nutrition guidelines

Figure 21: Mother expressing breast milk
Source: International Federation of Red Cross and Red Crescent Societies. Nutrition guidelines

Optimal breastfeeding practices

"Optimal breastfeeding" means that the mother starts breastfeeding at birth and continues until the child is at least two years. Recommended behaviours help mothers produce breast milk and avoid breastfeeding problems. Infants should be fed as often and for as long as they want. First time mothers may need support and guidance to ensure infants are well positioned and attached for successful breastfeeding and to minimize possible discomfort. It can take time for the mother and infant to settle into and adapt to a routine. Recommended behaviours help mothers produce breast milk and avoid difficulties. It is important that mothers continue breastfeeding even if they or their babies are unwell. Pregnant women can continue to breastfeed.

FROM BIRTH UP TO AT LEAST TWO YEARS:

1. **Allow the infant to breastfeed on demand**
   Breastfeeding on demand means offering the breast as often and as long as the infant wants. Breastfeeding frequently helps the milk to flow, stimulated by the suckling of the infant at the breast. Breastfeeding at least eight to ten times a day means feeding the infant every three hours or even more frequently, especially in the first six months. Pacifiers or dummies should not be given because they affect good breastfeeding, causing the infant to stop or reduce suckling at the breast.

2. **Ensure correct positioning and attachment of the infant at the breast.**

Correct positioning of the infant at the breast can prevent common breastfeeding problems. **Signs that an infant is properly positioned are**:

- The infant's whole body is close to the mother's body.
- The infant's whole body is facing the mother's body.
- The infant's whole body is held, not just the neck and shoulders.
- The infant looks relaxed and content.

Correct attachment of the infant to the breast can prevent common breastfeeding problems. **Signs that an infant is properly attached are**:

- The infant is brought to the breast (not the breast to the infant).
- The infant's mouth is open wide.
- The infant's mouth covers the whole nipple and a good portion of the dark skin around the nipple.
- The infant's lips curl outwards.
- The infant's chin touches the breast.
- The infant takes long, deep sucks.
- The mother does not feel any pain in the nipple.

Figure 22: Poor attachment
Source: International Federation of Red Cross and Red Crescent Societies. Nutrition guidelines

Figure 23 : Good attachment

Figure 24: Different breastfeeding positions
Source: International Federation of Red Cross and Red Crescent Societies. Nutrition guidelines

3. Continue breastfeeding even when unwell

Mothers can continue to breastfeed even if they have a headache, backache or common diseases such as fever, diarrhoea and chest infections. Malnourished mothers are still able to produce breast milk. Rest is important for recovery. Other family members can help the mother with her domestic tasks. For a faster and better recovery, mothers should try to:

- Drink extra water and herbal teas.
- Continue to eat at least four meals a day, even when not hungry.
- Ensure a variety of foods in the diet.

Health workers should be informed if a mother is breastfeeding while unwell, so they may prescribe the appropriate medicines.
Note: Some medicines have side effects for breastfeeding mothers, who should check labels and/or consult a health worker. Pregnant women can continue to breastfeed.

AT SIX MONTHS

1. Introduce the infant to foods in addition to breast milk at six months (complimentary feeding).

The infant is ONLY ready for foods and drinks in addition to breast milk at six months. If foods and drinks are introduced before:

- The infant can get diseases such as diarrhoea and pneumonia.
- The infant's physical and mental growth may be delayed.

If the mother does not know the infant's age, the following signs will help determine whether the infant is ready for "complementary foods:"
- The child can sit up.
- The child can grasp and shake objects.
- The child explores objects with his/her hands and mouth.

One new food should be introduced at a time to allow the child to get used to it and for the mother to see if the child is eating without any problems. Animal milk is not an appropriate substitute for breast milk because it does not contain enough minerals and vitamins.

2. Provide sufficient and appropriate complementary foods from six months up to at least two years alongside continued breastfeeding

"Complementary feeding" means that the mother continues to breastfeed on demand while also introducing appropriate foods. In other words, appropriate foods should be introduced in addition to breast milk from six months of age. There are a number of key principles to observe for young children to achieve good physical and mental growth:

Sufficient food: Young children need the **right amount** of food at the right time for their growing bodies. They need to eat more often than older children and adults (several small meals or healthy "snacks" in between family meals)

Appropriate food: Young children need the **right kinds** of foods as they are learning to swallow and chew and as their bodies adapt to family foods and a varied diet**.** It is important to ensure that the texture or thickness of the food matches the young child's ability to chew and swallow, especially in the early stages. A varied diet providing enough energy and other nutrients is also critical. Introducing foods with different textures and tastes and with enough energy and nutrients is recommended. A mix of staple foods or adding vegetables, fruits, nuts or meat/animal products to porridges is more nutritious for young children than giving those staple foods alone.

- **Feeding practices:** How children are fed is also important. Active feeding practices such as giving them their own plate or cup and setting aside portions for later if they are not ready to eat can help caregivers ensure that young children are eating enough. Holding infants and young children, talking and singing to them and other playful interaction is also important around feeding and other times. This can encourage them to eat and stimulates their mental growth. The following tables give an overview of a child's complementary feeding needs. Below each principle (frequency, amount, etc.), specific messages are listed appropriate to the child's age. When talking about complementary feeding, a distinction is made between:

- **Complementary foods**, such as porridge, and hot meals based on staple foods.

- **Snacks** such as "finger foods" (small food items), which can be given in between meals. Examples of snacks include bananas, ripe mangos and papayas, boiled carrots, bread, tortillas, chapattis, yoghurt and slices of cheese (where available). Salty, spicy and sugary foods are not healthy for young children.

Figure 25: Complementary feeding
Source: International Federation of Red Cross and Red Crescent Societies. Nutrition guidelines

3. Ensure the child gets adequate iron, vitamin A and iodine in the diet

A child needs **iron** to develop physically and mentally and to prevent anaemia (lack of enough blood). Foods rich in iron are dark green leafy vegetables, meat, liver and kidney. Yellow/orange fruits and vegetables are called “iron helpers” as they help the body use the iron. A child needs **vitamin A** to fight diseases and prevent eye problems. Foods rich in vitamin A are dark green leafy vegetables, yellow/orange fruits and vegetables, liver and kidney. A child needs **iodine** to develop physically and mentally and to prevent learning and growth problems. Try to add very small amounts of iodized salt to porridge or to every meal.

Some commercial products such as flour and/or vegetable oil have vitamins and minerals added. These are called “fortified foods” and they are marked with a special logo to help recognize them. They can be used to prepare the porridge.

Micronutrient powders may be available in small packets for easy addition to porridge or other foods, especially for young children between 6 and 12 months.

Figure 26: Micronutrient powders
Source: International Federation of Red Cross and Red Crescent Societies. Nutrition guidelines

Figure 27: Active feeding
Source: International Federation of Red Cross and Red Crescent Societies. Nutrition guidelines

A child needs to get used to eating complementary foods in addition to breast milk. Patience and time are required for active feeding:

- If a spoon is used, the mother can wait for the child to open his/her mouth when offering food.
- Children should be allowed to touch and smell their food, as this is part of their learning.
- Talking and interacting with the child during feeding will help the development of speaking and learning.

Singing songs, using games or telling stories can make eating more enjoyable. If the child refuses many foods, it is good to experiment

with different food combinations, tastes and textures rather than insist on the same foods. If the child has a small appetite, it is best to offer favourite foods and encourage him/ her to eat rather than force the child to eat what he/she does not like. A child should be fed directly up to 12 months of age. After this, mothers still need to be present to help the child eat. A young child should not be left alone while eating to ensure the right amount of food is taken and to prevent the risk of choking. If a child does not finish his/her portion, it should be set aside to be eaten later, rather than finished by other family members.

4.0 CONCLUSION

Promotion of breastfeeding and improved weaning practices are considered to be effective and feasible interventions in the reduction of childhood morbidity and mortality. In addition to providing adequate nutrients and calories to the child breastmilk has some anti-infective and anti-allergic properties.

5.0 SUMMARY

In this unit, you have been acquainted with the reason why good nutrition matters in the first two years of life. We have described adequate diet for Infants and young children nutrition, optimal breastfeeding practices and complementary feeding.

6.0 TUTOR-MARKED ASSIGNMENT

1. Discuss exclusive breastfeeding and its importance
2. Discuss in detail the steps to successful breastfeeding
3. Discuss in detail the importance of complementary feeding to a young infant

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UNIT 5 HEALTH AND NUTRITION SERVICES

CONTENTS

1.0 INTRODUCTION

The availability of health and nutrition services may vary from one country (or even district) to the next depending on existing policies and programs. Many of these services may be available free of charge for children up to five years. The term "supplementation" refers to the provision of additional vitamins and minerals (often in tablet form) to balance the diet

2.0 OBJECTIVES

At the end of this Unit, you will be able to:

- Describe Health and Nutrition Services
- Describe common diseases in children under five years of age
- Describe Good caring practices for children under five years of age

3.0 MAIN CONTENT

3.1 Health and Nutrition Services

1. CHILDREN UP TO SIX MONTHS

Clinic or home birth counseling on newborn care

To ensure the infant's survival in the first critical hours and days after birth, counseling is often provided on clean cord-cutting and care, washing infants in warm water, immediate breastfeeding, and keeping infants warm. Some programs promote early and exclusive breastfeeding and discourage distribution and use of breast milk substitutes.

Postnatal care (after birth)
The following services are directly linked to nutritional benefits:

Immunization should be provided routinely within the first six months of birth (and according to National Schedules.

Growth monitoring and promotion consists of monthly weighing at health-facility or community level and checking for adequate growth. These programs also include the promotion of exclusive breastfeeding, the detection of warning signs for baby/mother, and timely referral for the treatment of acute malnutrition. Counseling of mothers on breastfeeding and caring practices should also be provided.

2. CHILDREN FROM SIX MONTHS TO FIVE YEARS

Measles immunization
Routine measles immunization with two doses should be provided when the child is 9–18 months of age. Measles campaigns for catch-up immunization are provided where there are outbreaks of the disease or not enough children are immunized. Immunization of all children less than 12 years of age may be advised during an emergency caused by a disaster or conflict.

Supplementation of vitamin A
Routine supplementation of vitamin A should normally be provided every six months. During special supplementation campaigns (usually conducted alongside other services), vitamin A is provided on "as-needed" basis, where not enough children have received it routinely. Immediate vitamin A supplementation is provided when a child has measles.

De-worming (children from two years)
Routine de-worming every six months is often carried out for children from two years of age. Bi-annual de-worming campaigns (usually conducted alongside other services) may be provided when routine coverage is low.

Supplementation of iron and folic acid
Preventive supplementation, with crushed tablets, may be provided for infants and young children with low birth weight.

Growth monitoring and promotion
Growth monitoring and promotion consist of monthly weighing at health-facility or community level and checking for adequate growth. Included for this age group is counselling on exclusive breastfeeding and good complementary feeding and childcare practices.

Behaviour change and nutrition education messages
Community health workers and/or volunteers reinforce messages and explore challenges faced by mothers to support the adoption of best family and infant and young child dietary and feeding practices. Common communication techniques include support groups for mothers at the community level. Radio stations and theatre groups deliver messages on better nutrition practices, and mobile networks may even be used to send nutrition-related text messages.

3.2 Prevention of diseases

For infants and young children, even more than for adults, illness or disease combined with a poor diet can result in malnutrition. Addressing health issues common to infants and young children is therefore very important.

Common diseases in children under five years of age and prevention

1. Malaria

Malaria is the most widespread of the parasitic diseases in the tropics. It is caused by plasmodium parasite, which are introduced into human blood by the bite of a female anopheles mosquito. There are 5 species of plasmodium parasite that cause malaria. These are p. falciparum (the most common), p. vivax, p. ovale, p. malariae and p. knowlesi. Children under the age of 5 years in the tropics are at high risk of developing severe form of malaria and this can result in death if not treated promptly.

Features of uncomplicated malaria include sudden fever, head ache, body pains, vomiting. In children with severe malaria, they may present with excessive vomiting, extreme weakness with inability to stand or sit (prostration), severe anemia (lack of blood), repeated convulsions and loss of consciousness (cerebral malaria). These children must be treated urgently to prevent death.

Malaria burns up energy and the child loses a lot of fluids from the body through sweating, high fever and vomiting. For this reason:

- Infants up to six months need to be breastfed frequently and exclusively.
- Children from six months need to be given extra foods and drinks in addition to breast milk. Frequent malaria infections can slow growth and brain development and cause anaemia. Hence, a child who has had malaria several times should be checked for anaemia by a trained health worker and treated accordingly.

Diagnosis:
Malaria might be suspected if anyone in the family has a fever or if the child refuses to eat, vomits frequently, is sleepy or has convulsions However, it is important to always confirm the presence of the parasite by microscopy test or by rapid diagnostic test.

Treatment:
Any fever in areas where malaria is endemic should be treated immediately, within 24 hours of onset, with medicines provided by health centre staff. It is recommended that test (microscopy or rapid diagnostic test) should be done as much as possible to confirm the diagnosis, before treatment is commenced. When given the treatment by a health worker, the child needs to take the full amount of prescribed medicines, even if the fever disappears. If the treatment is not completed, the medicine to treat the malaria might work less well. The malaria may then become more severe and difficult to treat. Medicines should be taken with safeThe recommended first line treatment for uncomplicated malaria is artemisinin- based combination therapy (ACT) such as artemeter- lumefantrin (Coartem) taken by mouth; while the recommended first line treatment for severe malaria is artesunate. Prevention of malaria:

- The best ways to prevent mosquito bites are:
- Sleeping with the child under insecticide-treated mosquito nets (which should be dipped in insecticide every six months). The net is covered in a substance that repels or kills mosquitoes on contact with the net.
- Dressing the child in clothes that cover as much of the body as possible, especially between sunset and sunrise. Other control measures aimed at reducing breeding of mosquito such as larviciding and indoor residual spraying.

Figure 28: A child sleeping under a bed net
Source: International Federation of Red Cross and Red Crescent Societies. Nutrition guidelines

2. **Diarrhea**

Germs cause diarrhoea. Germs are small organisms often found in human and animal excrement that usually spread through contaminated water. Germs can also be spread by food, fingers and flies. For the first six months, exclusive breastfeeding is the best way to protect the child against diarrhoea. Simple ways to keep the environment clean and ensure good hygiene include:

- Washing hands with water and soap or ash after touching stools and before breastfeeding, preparing foods and feeding the child and after toilet use.
- Washing the child's hands with water and soap or ash often and keeping the child's play area and toys clean at all times.
- Feeding the child with a clean, open cup. Feeding bottles are difficult to clean.
- Protecting food and drinking water from flies.
- Never eating leftovers of cooked foods after two hours, unless they are kept in a refrigerator.
- Keeping the child's finger nails short.

If a young child gets diarrhoea, the child should immediately be given extra fluids, especially breast milk. Oral Rehydration Salts (ORS) properly mixed with safe water is the best treatment for diarrhoea. ORS packets are commonly available from local health facilities. A health worker may also provide zinc supplements to the child for 14 days to help the child recover faster and prevent episodes of diarrhea in the next three months. Diarrhoea usually stops after three to four days. If not, the child should be taken back to the local health facility for advice. The life of a child is in danger if there are several watery stools and vomiting within an hour or if there is blood in the stools. Other warning signs include fever, loss of appetite, sunken eyes, extreme thirst, lethargy, and diarrhoea lasting more than one week. ORS replenish a child's loss of salts and fluids caused by diarrhoea. If packets of ready-made ORS are not available, they can be made with six level teaspoons of sugar and half a level teaspoon of salt dissolved in one litre of safe water and/ or soup. Too much sugar can make the diarrhoea worse and too much salt can be harmful to the child.

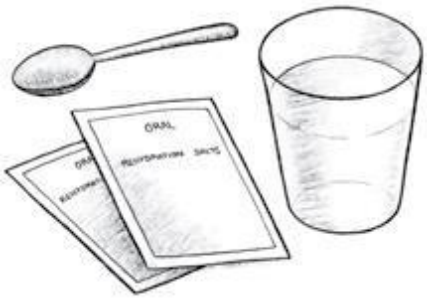

Figure 29: Oral Rehydration Salts (ORS)
Source: International Federation of Red Cross and Red Crescent Societies. Nutrition guidelines

3. Intestinal worms

Intestinal worms can enter the body through the mouth when eating with dirty hands or when consuming food or water containing worms or worm eggs. Intestinal worms can also enter the body through skin contact with soil containing worms or worm eggs. There are different types of intestinal worms that can affect children such as hookworm, pin worm etc. They can cause malnutrition, abdominal pain, anemia from chronic blood loss in stool (hookworm) and itching around the anus (pin worm).

Prevention:
Young children put their hands in their mouths constantly so it is best to wash their hands with water and soap or ash often. Keep the child's finger nails short. It is best to keep the child's play area and toys clean at all times. Fruit and vegetables should be washed with safe water (from protected sources, boiled or purified) or peeled or cooked with a little water. Meat should be well cooked. Since intestinal worms can also enter the body through the skin, children should avoid walking bare-footed and should be encouraged to wear shoes especially while going to farms.

Figure 30: Proper Hand washing
Source: International Federation of Red Cross and Red Crescent Societies. Nutrition guidelines

4. **Pneumonia**

This is inflammation of the lungs caused by infections with germs (especially bacteria). Droplets released into the air by coughing or sneezing transmits the germs that cause pneumonia. It should be suspected when a child presents with fast breathing associated with cough and fever.

Prevention:
Covering one's mouth and nose (for example with one's shoulder) when coughing or sneezing can prevent the spread of germs. Ensure that infants and young children receive all recommended immunizations, have good nutrition and live in a smoke-

free environment. This can protect the child against pneumonia. A child with a cough needs to be kept warm but should be taken to the health facility immediately if breathing becomes fast or difficult. Other warning signs include coughing continuously for more than two weeks, inability to drink or breastfeed and frequent vomiting. If medicines such as antibiotics are given, they need to be taken for as long as the trained health worker prescribes them, even if the child looks better.

Good caring practices
Caring practices for infants and young children can be influenced by local customs, traditions and beliefs. Some caring practices have been shown to help give infants and young children the best chances for good growth, health and learning. A loving and caring family environment, along with special attention during times of illness, and practices that help the mental development of infants and young children are all important. If a child is not growing well and gaining weight rapidly, he/she may be affected by a cycle of infection (or illness) and malnutrition. To break or reverse the cycle, children need to be well fed, and mothers need to take preventive health measures.

Infants and young children normally grow and develop quickly. Good infant and young child feeding and caring practices are critical for child growth and weight gain. These can be promoted with messages, but discussion and advice on feeding practices and follow-up by community health workers or volunteers are also important, as are referral and treatment if the child is ill. To monitor whether growth is in the normal range, it is usual to weigh a child monthly. Weighing can be conducted at the local health facility or sometimes in the community.

Monthly weighing helps identify if a child is:

- Not gaining weight
- losing weight
- Underweight or severely underweight.

Growth promotion counseling, especially if the child's growth has faltered (slowed less than typical for the age), is important. During illness, an infant needs frequent breastfeeding to help recover and to avoid losing too much weight. During illness, an infant loses a lot of water and minerals through stools or sweating and is at risk of "drying out" or "dehydration". This can be prevented by continuing to breastfeed as often and as long as possible. Breast milk is the only food and drink an infant need to recover. Giving water or other fluids can make the illness worse. During illness, it is normal for an infant to lose weight. After illness, the infant will need to breastfeed more and for longer to fully regain the lost weight. During illness, especially diarrhoea or measles, it is common for a child to lose appetite and not use food effectively. Several illnesses in a year can slow or interrupt a child's growth. Continuation of breastfeeding and complementary foods can help the child to fight illness, increase strength and reduce weight loss. Breastfeeding is the best way to prevent dehydration. Additional fluids can be given after breastfeeding. After illness, the child will need at least one extra meal every day for at least two weeks to fully regain health and weight:

- Nutritious foods that the child likes can be offered in small portions and as often as possible, especially if the child has lost appetite.
- The food can be enriched with a little oil or butter to increase energy.
- Mashed or soft foods are good for when the child cannot swallow.
- Soups, watery porridge or foods made thinner with water are not good during and after illness because they fill the stomach but do not provide enough energy and nutrients.

4.0 CONCLUSION

Young children are especially vulnerable to illness and malnutrition, particularly those under the age of two, since growth and good health are so important at this time. Common illnesses, such as those caused by malaria, diarrhoea, intestinal worms and severe coughs or breathing difficulty, can cause vulnerability to malnutrition or make malnutrition worse. These illnesses should be treated by health workers. Use of mosquito bed nets and hand washing with soap or ash are simple but effective preventive measures. Infants or young children with diarrhoea

should drink plenty of breast milk, and older children should drink extra fluids, such as safe water. Oral rehydration salts may be advised for use by a health worker. Serious colds and coughs may develop into pneumonia; the advice of a health worker should be sought if a young child has difficulty breathing or is coughing for more than two weeks.

5.0 SUMMARY

In this unit, you have been acquainted with the relationship between health and nutrition services for children under five years of age. We also described the common diseases in children under five years of age and its prevention and good caring practices for children under five years of age.

6.0 TUTOR-MARKED ASSIGNMENT

1. Outline and briefly explain the common diseases and its prevention in children less than five years.
2. Discuss good caring practices for children under five years of age.
3. Discuss the relationship between health and nutrition Services for children under five years of age

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MODULE 4 VACCINE-PREVENTABLE DISEASES ANDIMMUNIZATION PROGRAMS

UNIT 1 VACCINE PREVENTABLE DISEASES

CONTENTS

1.0 INTRODUCTION

Vaccination is the administration of a vaccine to stimulate a protective immune response that will prevent disease in the vaccinated person if contact with the corresponding infectious agent occurs subsequently. Thus vaccination, if successful, results in immunization: the vaccinated person has been rendered immune to disease caused by the infectious pathogen. In practice, the terms “vaccination” and “immunization” are often used interchangeably. Vaccination is a highly effective method of preventing certain infectious diseases. For the individual, and for society in terms of public health, prevention is better and more cost-effective than cure. Vaccines are generally very safe and serious adverse reactions are uncommon. Routine immunization programs protect most of the world’s children from a number of infectious diseases that previously claimed millions of lives each year. For travellers, vaccination offers the possibility of avoiding a number of dangerous diseases that may be encountered abroad. However, vaccines have not yet been developed against several of the most life threatening infections, including malaria and HIV/AIDS.

2.0 OBJECTIVES

At the end of this Unit, you will be able to:

- Understand Immunization Background and Epidemiology
- Discuss major vaccine-preventable diseases prevalent in developing countries
- Discuss other vaccine-preventable diseases and vaccines

3.0 MAIN CONTENT

3.1 Immunization Background and Epidemiology

Vaccine-preventable diseases responsible for nearly 20% of the 8.8 million deaths/year among children under five years. In 1974, <5% of children were immunized in their first year against 6 targeted diseases. World Health Organization launched Expanded Programs on Immunization (EPI) in 1974 to develop and expand immunization programs around the world. As a result, by 2005, 80% of children immunized in their first year against 6 targeted diseases. EPI efforts prevent an estimated 3 million deaths/year. The Expanded Program on Immunization (EPI) was established in 1974 through a World Health Assembly resolution (resolution WHA27.57) to build on the success of the global smallpox eradication program, and to ensure that all children in all countries benefited from life-saving vaccines.

The first diseases targeted by the EPI were diphtheria, whooping cough, tetanus, measles, poliomyelitis and tuberculosis. The Expanded Program on Immunization remains committed to its goal of universal access to all relevant vaccines for all at risk. The program aims to expand the targeted groups to include older children, adolescents and adults and work in synergy with other public health programs in order to control disease and achieve better health for all populations, particularly the underserved populations. (Global Immunization Data - March 2012 --http://www.who.int/immunization_delivery/en/ Keja K et al. Expanded programme on immunization. World Health Stat Q. 1988;41(2):59-63).

- Vaccinations are one of the most successful and cost-effective public health investments – 1980, global smallpox eradication achieved.

- 1988, polio targeted for global eradication with infections falling by 99%

Success with the eradication of smallpox has prompted discussion of feasibility of the eradication of various other diseases and polio is no exception. There has been a massive attempt to eliminate it from the Americas, and it appears to have paid off, with no case of flaccid paralysis since 1991. Like smallpox, polio is limited to the human host - there is no animal reservoir. Also, there are no long-term carriers.

Effective vaccines are cheap and readily available. Unlike smallpox, however, 95 -99% of infections are asymptomatic which renders containment much more difficult (as does its ease of transmission).

Smallpox eradication used as a strategy, mop up around cases, i.e. vaccination of contacts. In the case of polio this is much more difficult, since the spread is much larger and mop up would have to include very large areas. Significant progress has been made towards global eradication of poliomyelitis. More than 125 countries were endemic for polio in 1988; by 2006, only 4 countries – Afghanistan, India, Nigeria and Pakistan, where wild poliovirus transmission has never been interrupted – remained endemic. Until all countries have stopped wild poliovirus transmission, all areas remain at high risk of importations and even of the re-establishment of endemic transmission. Before the advent of polio vaccines, an estimated 600000 new cases of paralytic polio occurred worldwide every year. Paralytic polio leads to lifelong disability, and the sequelae of past diseases has left between 10 and 20 million youth and adults disabled today. In contrast to its significance as a cause of disability, the contribution of polio to mortality of children under five is relatively modest; an estimate in Senegal suggests a contribution to mortality of < 2-5 per 1000 live births, or about 1% of all deaths of under five children. The significant effect of poliomyelitis is its morbidity rather than its mortality

3.2 Major Vaccine-Preventable Diseases

DIPHTHERIA Disease

Diphtheria is a bacterial disease caused by *Corynebacterium diphtheriae*. The infection commonly affects the throat and may lead to obstruction of the airways and death. Exotoxin-induced damage occurs to organs such as the heart. Nasal diphtheria may be mild, and chronic carriage of the organism frequently occurs; asymptomatic infections are common. Transmission is from person to person, through droplets and close physical contact, and is increased in overcrowded and poor socioeconomic conditions. A cutaneous form of diphtheria is common in tropical countries and may be important in transmission of the infection.

Occurrence
Diphtheria is found worldwide, although it is not common in industrialized countries because of long-standing routine use of DTP vaccine. Large epidemics occurred in several east European countries in the 1990s.

Vaccine
Protects against *Corynebacterium diphtheriae*

- Vaccine consists of diphtheria toxoid proteins that induce immunity
- Usually combined with tetanus toxoid and whole cell or acellular pertussis vaccines (DTP or DTaP) for children
- Intramuscular injection in outer mid-thigh for infants and outer upper arm for children and adults
- Combined with tetanus vaccine (Td) as booster depending on national immunization programs.

TETANUS Disease
Tetanus is acquired through environmental exposure to the spores of *Clostridium tetani*, which are present in soil worldwide. The disease is caused by the action of a potent neurotoxin produced by the bacterium in dead tissue (e.g. dirty wounds). Clinical symptoms of tetanus are muscle spasms, initially of the muscles of mastication causing trismus or "lockjaw", which results in a characteristic facial expression – risus sardonicus. Trismus can be followed by sustained spasm of the back muscles (opisthotonus) and by spasms of other muscles. Finally, mild external stimuli may trigger generalized, tetanic seizures, which contribute to the serious complications of tetanus (dysphagia, aspiration pneumonia) and lead to death unless intense supportive treatment is rapidly initiated.

Occurrence
Dirty wounds can become infected with the spores of *Clostridium tetani* anywhere in the world.

Vaccine
Administered by intramuscular injection

- Three doses to infants at 6, 10, and 14 weeks of age.
- Normally given to infants in combination with diphtheria and pertussis vaccines (TDP), but can be given with diphtheria alone (TD).

PERTUSSIS Disease

Pertussis (whooping cough) is a highly contagious acute bacterial disease involving the respiratory tract and caused by *Bordetella pertussis*. It is transmitted by direct contact with airborne discharges from the respiratory mucous membranes of infected persons. It causes a severe cough of several weeks' duration with a characteristic whoop, often with cyanosis and vomiting. In young infants, the cough may be absent and disease may manifest with spells of apnoea (cessation of breath). Although pertussis can occur at any age, most serious cases and fatalities are observed in early infancy and mainly in developing countries. Major complications include pneumonia, encephalitis and malnutrition (due to repeated vomiting and poor intake). Vaccination is the most rational approach to pertussis control.

Occurrence

Recent estimates from WHO suggest that about 17.6 million cases of pertussis occurred worldwide in 2003, 90% of which were in developing countries, and that some 279 000 patients died from this disease.

Vaccine

Vaccine available in two forms:

Whole-cell killed pertussis bacteria (greater risk for neurological complications)

Acellular purified immunogenic components of the bacteria (more recent, reduced risk for neurological complications)

Either vaccine requires three doses to elicit strong immune response.

TUBERCULOSIS Disease

It is caused by the germ ***Mycobacterium tuberculosis***. It affects the lungs, and other parts of the body: bones, joints and brain. Tuberculosis is one of the top 10 causes of death worldwide. 60% of deaths due to tuberculosis are from 6 countries including Nigeria. In 2015, one million children fell ill with TB.

Pulmonary (lung) tuberculosis manifests with chronic cough and weight loss. If not treated, complications such as pneumonia and pleural effusion (fluid accumulation in the lungs) may occur.

Treatment –Use of two or more anti-tuberculosis drugs for at least 6 months

Vaccine

All versions of the BCG vaccine are based on live, attenuated mycobacterial strains descended from the original, attenuated bacillus Calmette-Guérin. The vaccine is administered intradermally and can be given simultaneously with other childhood vaccines. BCG vaccine is contraindicated for persons with severely impaired immunity, including individuals with HIV infection. In countries with high TB prevalence, infants are generally immunized with a single dose of BCG as soon after birth as possible. Children who are known to be HIV-infected, even if asymptomatic, should not be immunized with BCG vaccine. Other protective benefits of the vaccine are uncertain. BCG should be considered for infants travelling from an area of low incidence to one of high incidence. Many industrialized countries with a low incidence of TB have ceased giving BCG routinely to neonates. First used in 1921 as freeze-dried ("lyophilized") live attenuated vaccine of *Mycobacterium bovis*

- In areas with high TB burden, all newborns should receive single dose at birth
- In areas with low TB burden, countries may choose to limit vaccination to high risk groups
- Most effective in preventing TB meningitis and miliary TB (disseminated) in infants
- Good evidence for also protecting against *Mycobacterium leprae* (leprosy).

  BCG Vaccine does not prevent primary infection with TB or reactivation of latent pulmonary infection

- Often causes a scar at the injection site
- May distort reading tuberculin skin test (PPD), one of the primary methods for screening for latent TB
- Concern for use in immune compromised people (HIV/AIDS) since live attenuated vaccine could reactivate and cause infection BCG vaccine has limited ability to reduce transmission of TB, so controlling spread of TB will rely on diagnosis and treatment.

Current challenges for TB lie in treatment of multidrug-resistant TB, with just 16% of patients receiving correct treatment.(WHO GlobalTuberculosisControlReport2010(www.who.int/tb/publications/2010/factsheet_tb_2010.pdf)

HEPATITIS B Disease
Caused by ***Hepatitis B virus***

- Causes inflammation of the liver

- Infected people usually recover, but some continue to carry the virus for many years (*chronic carriers*) and can spread the infection. The infection is transmitted in the following ways:
  a. During sexual intercourse through contact with blood or other body fluids
  b. Contact through sharing/using infected needles/razors, cuts or scratches,
  c. mother to child transmission during the birth process (vertical transmission)

Affected people may present with yellowness of the eyes (jaundice), abdominal pain and even features of liver cirrhosis and liver failure (late in the course of the disease).

Treatment is supportive. Antiretroviral (ARV) drug can be used.

Vaccine
Hepatitis B vaccine produced both from plasma and by recombinant DNA technology (usually in yeast) is available; the two types are equally safe and effective.

Three doses of vaccine constitute the complete series; the first two doses are usually given one month apart, with the third dose 1–12 months later.

MEASLES Disease
Measles is a highly contagious infection. Before vaccines became available, this disease affected most people by the time of adolescence. In 2005, measles still affected nearly 21 million persons, and the number of global measles deaths was estimated to be 345 000.

Transmission, which is primarily by large respiratory droplets, increases during the late winter and early spring in temperate climates, and after the rainy season in tropical climates.

Occurrence
Measles occurs worldwide in a seasonal pattern. However, following the introduction of large-scale measles immunization, far fewer cases now occur in industrialized countries and indigenous transmission has virtually stopped in the Americas. Epidemics may still occur every 2 or 3 years in areas where there is low vaccine coverage. In countries

where measles has been largely eliminated, cases imported from other countries remain an important continuing source of infection.

The infection starts with high fever, coryza (catarrh), cough and conjunctivitis (redness of the eyes). This is followed by eruption of skin rashes that typically start behind the ears and hair lines of the forehead, then spread to the whole face, neck and trunk, upper extremity, buttocks and lower extremities. Typically, the rash begins to clear by the 3rd or 4th day after its appearance. Common complications that may occur include middle-ear infection and pneumonia, hoarse voice (croup), malnutrition and eye changes (corneal dryness or ulceration and blindness).

Vaccine

The measles/mumps/rubella triple (MMR) or measles/rubella (MR) vaccine is given in many countries instead of monovalent measles vaccine. In industrialized countries, measles vaccination is usually given at the age of 12–15 months, when seroconversion rates in excess of 90% are expected. In most developing countries, high attack rates and serious disease among infants necessitate early vaccination, usually at 9 months of age, despite the relatively low (80–85%) seroconversion rates following vaccination in this age group. To ensure optimum population immunity, all children should be given a second opportunity for measles immunization. Although generally administered at school entry (age 4–6 years), the second dose may be given as early as one month following the first dose, depending on the local programmatic and epidemiological situation.

POLIOMYELITIS Disease

Poliomyelitis is a disease of the central nervous system caused by three closely related enteroviruses, poliovirus types 1, 2 and 3. The virus is spread predominantly by the faecal– oral route, although rare outbreaks caused by contaminated food or water have occurred. After the virus enters the mouth, the primary site of infection is the intestine, although the virus can also be found in the pharynx. Poliomyelitis is also known as “infantile paralysis” because it most frequently caused paralysis in infants and young children in the pre-vaccine era in industrialized countries. In developing countries, 60–70% of cases currently occur in children under 3 years of age and 90% in children under 5 years of age. The resulting paralysis is permanent, although some recovery of function is possible. There is no cure.

Occurrence

Significant progress has been made towards global eradication of poliomyelitis. More than 125 countries were endemic for polio in 1988; as of 2007, there are only four endemic countries where wild poliovirus transmission has never been interrupted: Afghanistan,

India, Nigeria and Pakistan (see map). Wild poliovirus importations from the four endemic countries into previously polio-free countries continue to occur, with some resulting in new outbreaks. As of mid-2007, imported wild poliovirus was circulating in six previously polio-free countries: Angola, Chad, Democratic Republic of the Congo, Myanmar and Niger. Until wild poliovirus transmission has been stopped globally, all polio-free countries and areas remain at risk of importation and of renewed outbreaks.

Vaccine

There are two types of vaccine: inactivated (IPV), which is given by injection and oral (OPV). OPV is composed of the three types of live attenuated polioviruses. Because of the low cost and ease of administration of the vaccine and its superiority in conferring intestinal immunity, OPV has been the vaccine of choice for controlling epidemic poliomyelitis in many countries. On very rare occasions (2–4 cases per million births per year) OPV causes vaccine-associated paralytic poliomyelitis (VAPP). The risk of VAPP is higher with the first dose of OPV than with subsequent doses. VAPP is more common in individuals, who are immune-compromised, for whom IPV is the vaccine of choice.

Most industrialized countries now use IPV, either as the sole vaccine against poliomyelitis or in schedules combined with OPV. Although IPV suppresses pharyngeal excretion of wild poliovirus, this vaccine has only limited effects in reducing intestinal excretion of poliovirus. Following the first dose, unvaccinated older children and adults receive the second dose, given 1–2 months, and the third dose 6–12 months, after the first dose. A booster dose is recommended after 4–6 years. IPV is also the vaccine of choice to protect travellers with no history of OPV use, as well as for immune-compromised individuals and their contacts and family members.

Yellow Fever Occurrence

- 45 countries considered at risk (31 Africa, 2 Eastern-Mediterranean, 12 America) –35 of 45 have introduced vaccine in routine schedule
- Global annual mortality estimated at 30,000, 50% occurred among age <5 years, in 2002
- 9% of target population vaccinated among developing countries in 2005. (World Health Organization. WHO vaccine-preventable diseases: monitoring system. WHO/IVB/200)

Vaccine

The 17D vaccine, which is based on a live, attenuated viral strain, is the only commercially available yellow fever vaccine. It is given as a

single subcutaneous (or intramuscular) injection. Yellow fever vaccine is highly effective (approaching 100%), while the disease may be fatal in adults who are not immune. With few exceptions (see below), vaccination is recommended for all travelers to countries or areas where there is a risk of yellow fever transmission.

3.3 Other Vaccine-Preventable Diseases Haemophilus influenzae type b (Hib) Disease

Haemophilus influenzae type b (Hib) is a common cause of bacterial pneumonia and meningitis and of a number of other serious and potentially life-threatening conditions, including epiglottitis, osteomyelitis, septic arthritis and sepsis in infants and older children.

Occurrence
Hib is estimated to cause at least 3 million cases of serious disease and hundreds of thousands of deaths annually, worldwide. Rarely occurring in infants under 3 months or after the age of 6 years, the disease burden is highest between 4 and 18 months of age. Hib is the dominant cause of sporadic (non-epidemic) bacterial meningitis in this age group, and is frequently associated with severe neurological sequelae despite prompt and adequate antibiotic treatment. In developing countries, it is estimated that 2–3 million cases of Hib pneumonia occur each year. The disease has practically disappeared in countries where routine vaccination of children is carried out.

Vaccine
All children who are not up to date with this vaccine should be offered it. Conjugate Hib vaccines have dramatically reduced the incidence of Hib meningitis in infants and of nasopharyngeal colonization by Hib. The vaccine is often given as a combined preparation with DTP or poliomyelitis vaccine in routine immunization programs, but is available as a single antigen preparation for use in children who did not receive the vaccine as part of routine immunization. Hib vaccine is not yet used routinely in many developing countries where there is continuing high prevalence of the disease.

HUMAN PAPILLOMAVIRUS (HPV) Disease
Human papillomavirus (HPV) is a family of viruses that are very common all over the world. Although most HPV infections cause no symptoms and are self-limited, persistent genital HPV infection can cause cervical cancer in women (as well as other types of anogenital cancers, head and neck cancers, and genital warts in both men and women).

HPV is common worldwide and estimated to cause more than half a

million new cancers every year and 274 000 deaths (2002 estimate), most of which affect women in developing countries.

Vaccine
Detection is by early screening

- Advanced cancer treatment involves surgery, radiotherapy and chemotherapy
- **Primary prevention** is by vaccination of girls 9 -13 years of age with HPV vaccine
- **Secondary prevention** in women aged 30 -49 years is by 'screen and treat' approach
- HPV vaccine is currently available as:
- A bivalent vaccine Cervarix®--this protects against HPV types 16 and 18,
- A quadrivalent Gardasil® - this protects against four HPV types 6, 11, 16 and 18

MUMPS Disease
Mumps, or parotitis epidemica, is a viral infection that primarily affects the salivary glands. Although mumps is mostly a mild childhood disease, the virus may also affect adults, in whom complications such as meningitis and orchitis are relatively common. Encephalitis and permanent neurological sequelae are rare complications of mumps.

In most parts of the world, annual mumps incidence is in the range of 100–1000 per 100 000 population, with epidemic peaks every 2–5 years. Peak incidence is found among children aged 5–9 years. Natural infection with mumps virus is thought to confer lifelong protection.

Vaccine
The mumps vaccine is usually given in combination with measles and rubella vaccine (MMR). Different attenuated strains of the mumps virus are used for the production of live mumps vaccines, all of which are considered safe and efficacious, except for the Rubini strain. In order to avoid possible interference with persistent maternal antibodies, the recommended one dose of the vaccine is usually given at 12–18 months of age. A single dose of mumps vaccine, either as single antigen or in combination, has a protective efficacy of 90–96%, and the second dose given in some countries at age 4–6 years provides protection to most individuals who do not respond to the first.

RUBELLA Disease
Rubella occurs worldwide and is normally a mild childhood disease. However, infection during early pregnancy may cause fetal death or

congenital rubella syndrome (CRS) which is characterized by multiple defects, particularly of the brain, heart, eyes and ears. CRS is an important cause of hearing and visual impairment and mental retardation in countries where acquired rubella infection has not been controlled or eliminated.

Occurrence
Although the worldwide burden of CRS is not well characterized, it is estimated that more than 100 000 cases occur each year in developing countries alone.

Vaccine
The internationally licensed rubella vaccines, based on live attenuated RA 27/3 strain of the rubella virus and propagated in human diploid cells, have proved to be safe and efficacious. Following well designed and implemented programs using such vaccines, rubella and CRS have almost disappeared from many countries. Other attenuated vaccine strains are available in Japan and China. Rubella vaccine is commercially available in a monovalent form, in a bivalent combination with either measles or mumps vaccine, and in the trivalent measles/ mumps/rubella (MMR) vaccine. Rubella vaccination of pregnant women should be avoided, and pregnancy should be avoided within one month of receiving the vaccine.

PNEUMOCOCCAL DISEASE
The term "pneumococcal disease" refers to a group of clinical conditions caused by the bacterium *Streptococcus pneumoniae*. Invasive pneumococcal infections include pneumonia, meningitis and febrile bacteraemia; the common non-invasive conditions include otitis media, sinusitis and bronchitis. Infection is acquired by direct person-to- person contact via respiratory droplets or oral contact. There are many healthy, asymptomatic carriers of the bacteria, but there is no animal reservoir or insect vector.

Several chronic conditions predispose to serious pneumococcal disease. Increasing pneumococcal resistance to antibiotics underlines the importance of vaccination.

Occurrence
Pneumococcal diseases are a worldwide public health problem. *S. pneumoniae* is the leading cause of severe pneumonia in children under 5 years of age, causing more than 700 000 deaths each year, mainly in developing countries. In industrialized countries, most pneumococcal disease occurs in the elderly.

Vaccine

The current 23-valent polysaccharide vaccine represents pneumococcal serotypes that are responsible for 90% of pneumococcal infections and is immunogenic in those over 2 years of age. Children under 2 years of age and immuno-compromised individuals do not respond well to the vaccine. Vaccination provides a relative protection against invasive pneumococcal disease in healthy elderly individuals. Pneumococcal polysaccharide vaccine is recommended for selected groups, over the age of 2 years, at increased risk of pneumococcal disease. In some countries, such as the USA, routine vaccination is recommended for everyone aged over 65 years. A conjugate vaccine containing seven serotypes of the pneumococcus is now available and is safe and immunogenic also in infants and children under 2 years. This vaccine is recommended by WHO as part of routine immunization in infants and has been introduced in some countries. It is advisable that children be up to date with immunization, as per the national recommendations, before undertaking travel.

ROTAVIRUS Disease

Rotavirus causes an acute gastroenteritis in infants and young children and is associated with profuse watery diarrhoea, projectile vomiting and fever. Rapid dehydration can occur, especially in very young infants, requiring rehydration therapy. The virus is transmitted via the faecal–oral route and by direct person to-person spread, although a respiratory mode of transmission has been proposed also. It replicates in the enterocytes of the small intestine, causing extensive damage to the microvilli that results in mal absorption and loss of fluids and electrolytes.

Occurrence

Rotavirus is found worldwide. The virus is ubiquitous, infecting a large proportion of young children by their second or third birthday. Re-infection of older children and adults is common, although the infection is usually sub-clinical.

Vaccine

Two live, attenuated, oral rotavirus vaccines are internationally licensed and routine childhood vaccination has been initiated in a number of countries. To date, the clinical efficacy of the rotavirus vaccines has been demonstrated mainly in the Americas and in Europe. WHO recommends the inclusion of rotavirus vaccination into the national immunization programs of regions where vaccine efficacy data suggest a significant public health impact. Vaccination is not currently recommended for travellers or older children outside the routine childhood immunization schedule.

VARICELLA Disease and occurence

The causative pathogen is the varicella zoster virus (VZV). Varicella (chickenpox) is an acute, highly contagious disease with worldwide distribution. In temperate climates most cases occur before the age of 10 years. Transmission is via droplets, aerosol or direct contact, and patients are usually contagious from a few days before rash onset until the rash has crusted over. While mostly a mild disorder in childhood, varicella tends to be more severe in adults. It is characterized by an itchy, vesicular rash, usually starting on the scalp and face, and initially accompanied by fever and malaise. As the rash gradually spreads to the trunk and extremities, the first vesicles dry out. It normally takes about 7–10 days for all crusts to disappear. The disease may be fatal, especially in neonates and immunocompromised persons. Complications include VZV- induced pneumonitis or encephalitis and invasive group A streptococcal infections. Following infection, the virus remains latent in neural ganglia; upon subsequent reactivation, VZV may cause zoster (shingles), a disease affecting mainly immunocompromised persons and the elderly.

Vaccine

Various formulations of the live attenuated vaccine, based on the so-called Oka strain of VZV, are in use. Some formulations are approved for use at 9 months of age and older. Following a single dose, seroconversion occurs in about 95% of healthy children. Contraindications to varicella vaccine are pregnancy (because of a theoretical risk to the fetus; pregnancy should be avoided for 4 weeks following vaccination), ongoing severe illness, a history of anaphylactic reactions to any component of the vaccine, and immunosuppression.

HEPATITIS A Disease and occurrence

Although hepatitis A is rarely fatal in children and young adults, most infected adults and some older children become ill and are unable to work for several weeks or months. The case-fatality rate exceeds 2% among those over 40 years of age and may be 4% for those aged 60 years or more.

Vaccine

Current hepatitis A vaccines, all of which based on inactivated (killed) virus, are safe and highly effective. Anti-HAV antibodies are detectable by 2 weeks after administration of the first dose of vaccine. The second dose – given at least 6 months, and usually 6–24 months, after the first dose – is necessary to promote long-term protection.

N. MENINGITIDIS (MENINGOCOCCAL VACCINE)

Internationally marketed meningococcal polysaccharide vaccines are either bivalent (A and C) or tetravalent (A, C, Y and W-135). The vaccines are purified, heat-stable, lyophilized capsular polysaccharides from meningococci of the respective serogroups. Both group A and group C vaccines have documented short-term efficacy levels of 85–100% in older children and adults. However, group C vaccines do not prevent disease in children under 2 years of age, and the efficacy of group A vaccine in children under 1 year of age is unclear. Group Y and W-135 polysaccharides have been shown to be immunogenic only in children over 2 years of age. A protective antibody response occurs within 10 days of vaccination. In schoolchildren and adults, the bivalent and tetravalent polysaccharide vaccines appear to provide protection for at least 3 years, but in children below four years the levels of specific antibodies decline rapidly after 2–3 years. (World Health Organization. WHO vaccine-preventable diseases: monitoring system. WHO/IVB/2006. 8823 DALYs (Global Burden of Disease, World Health Organization, 2008).

4.0 CONCLUSION

Vaccination is one of the most successful and cost-effective public health investments available. There are many global efforts to increase usage, improve existing vaccines, and to develop new vaccines.

5.0 SUMMARY

In this unit we have learnt about immunization background and epidemiology, discussed major vaccine-preventable diseases prevalent in developing countries and some of the vaccines available for prevention.

6.0 TUTOR-MARKED ASSIGNMENT

1. Explain the concept of vaccine and vaccination
2. Discuss with examples the importance of vaccination in children under five years old
3. List ten vaccine preventable diseases and the vaccines

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UNIT 2 IMMUNIZATION SCHEDULE IN NIGERIA

CONTENTS

1.0 INTRODUCTION

Vaccination is the administration of a vaccine to stimulate a protective immune response that will prevent disease in the vaccinated person if contact with the corresponding infectious agent occurs subsequently. Thus, vaccination, if successful, results in immunization: the vaccinated person has been rendered immune to disease caused by the infectious pathogen. In practice, the terms "vaccination" and "immunization" are often used interchangeably. Each year more than a third of a million children die from immunizable diseases and diarrhoea. The eight childhood diseases preventable by immunization (neonatal tetanus, measles, poliomyelitis, tuberculosis, pertussis, diphtheria, Hemophilus Influenza type B and hepatitis B viruse) are responsible for a considerable proportion of the high morbidity, mortality and disability among children.

2.0 OBJECTIVES

At the end of this Unit, you will be able to:

- Describe the national immunization policy and National Immunization Schedule
- Define routine immunization
- Describe what comprises the routine immunization services and the supporting elements

3.0 MAIN CONTENT

3.1 National Immunization Policy (revised 2009)

- Policy to provide potent vaccines free to all population at risk of

VPDs

- Immunization is a collaborative venture between Government and Partners (The government should be in the "driver's seat" while partners are to support routine immunization activities)

National Targets

1. Improve and sustain routine immunization coverage of all antigens to 90% by the year 2020 in line with the National Vision.
2. Achieve through quality supplemental activities, interruption of polio transmission by the end of 2009 and total eradication by the end of 2013)
3. Eliminate maternal and neo-natal tetanus by the end of 2010

Eligible Target Groups

1. Eligible children 0–11 months (Routine vaccines against killer diseases)
2. Eligible children 0-59 months (OPV vaccination for Polio Eradication)
3. Women of child bearing age 15–49 years (TT vaccination)
4. Other at-risk groups especially in out-break situations and those travelling to endemic areas.
5. International travellers –yellow fever (YF) and cerebrospinal meningitis (CSM) vaccinations

3.2 Routine Immunization

- The sum of human and logistical activities to ensure the "regular delivery" of vaccines

  with the ultimate goal of providing the needed vaccines to all eligible children and women of child bearing age.
- "Regular delivery" implies that there is

  – a known vaccination schedule of EPI vaccines
  – a known service delivery schedule - Fixed posts &/or outreach
  – Part of a larger plan

This is the foundation of eradication policy. By 1990, 80% of the children born in that year had received a basic course of immunization against polio, diphtheria, pertussis, tetanus, measles and tuberculosis by the age of one year. Eighty-three percent had received a basic course of three doses of OPV. However, it has been shown that routine immunization

in developing countries will not result in eradication. Outbreaks have occurred in countries where coverage is higher than 90% due to the accumulation of unimmunized children in localized areas of poor immunization services.

Basic components of an immunization system

- There are 5 basic components;
  - Immunization service delivery
  - Communication and community links
  - Vaccine Supply and Quality
  - Cold chain and logistics
  - Surveillance

- **The basic elements are supported by**;
  - Planning and management
  - Human resources and capacity building
  - Finance
  - Monitoring and using data for action (Feedback)

Table 4: World Health Organization (WHO) Immunization Schedule in Nigeria

Vaccine	**Age of Vaccination**
BCG (Tuberculosis)	Birth
DPT (Pertussis / Whooping Cough)	6, 10, 14 weeks
Hepatitis B	Birth; 10, 14 weeks
Measles	9 months
Meningitis	High-risk groups
OPV (Polio)	Birth; 6, 10, 14 weeks
Yellow Fever	9 months

Table 5: Nigerian National Routine Immunization Schedule

AGE	ANTIGEN (VACCINE) GIVEN
Birth	BCG, OPV0*, Hep B0*
6 Weeks	OPV1, Pentavalent 1, PCV1, Rota 1+
10 Weeks	OPV2, Pentavalent 2, PCV2, Rota 2+
14 Weeks	OPV3, Pentavalent 3, PCV3,
9 Months	Measles, Yellow Fever, Meningococcal+

*must be given within two weeks of birth

+ To be introduced soon
PCV = pneumococcal conjugate vaccine, Rota = Rota virus vaccine, OPV = oral polio vaccine, Hep B = Hepatitis vaccine.
Pentavalent vaccine contains vaccines against diphtheria, pertussis, tetanus, hepatitis B, and haemophilus influenza type B.

Table 5: Tetanus Toxoid Immunization for Women

Dose	**Schedule**	**Protection**	
		Percent	**Duration**
TT1	first contact	Nil	None
TT2	> 4 weeks after TT1	80	3 years
TT3	> 6 months after TT2	95	5 years
TT4	> 1 year after TT3	99	10 years
TT5	> 1 year after TT4	99	30 years

WHO's recommendation for the antitetanus immunization of women and infants is five doses of antitetanus vaccine at regular intervals. The level of antibodies present in the mother guarantees protection of the mother and baby, as the antitetanus antibody is easily passed from the mother to the fetus through the placenta. Tetanus toxoid can safely be administered from the first month of pregnancy.

Immunization services and the supporting elements

(1) Service delivery

This includes the strategies and activities involved in giving vaccinations at the service- delivery level.

- Fixed immunization session
- Outreach immunization sessions
- Mobile immunization Services
- Accelerated Routine immunization activities like IPDs, MNCHW etc

The vaccination points should be planned so that every child in every ward receives the service.

(2) Communication and community links

This includes:
- Political advocacy and mobilization
- Information, Education and Communication (IEC) including the production and distribution of IEC materials, use of the media etc
- Interpersonal communication
- Social mobilization
- Community participation (WDCs etc)

(3) Vaccine supply & quality

This involves;
- forecasting the vaccine needs for the planned immunization sessions;
- ensuring that adequate vaccines are available during the immunization sessions;
- Monitoring vaccine quality – vaccines kept at right temperatures and monitoring the vaccine vial monitor (VVM)
- Monitoring vaccine utilization.

(4) Cold Chain and Logistics

This includes:
- Receiving, storing and distribution of vaccines, injection materials and other supplies.
- Plan for preventive maintenance of the cold chain equipment
- Transport – maintenance and servicing vehicles
- Ensuring proper waste disposal

(5) Surveillance

- Active case search – Acute flaccid paralysis (AFP), measles, neonatal tetanus (NNT), yellow fever, meningitis (CSM) and other integrated disease surveillance response (IDSR) diseases
- Outbreak Investigation and response
- Collection, storage, transportation of specimen and feedback
- Production and distribution of data collection tools
- Routine data collection, compilation, analysis, interpretation and Feedback/dissemination

Supportive Components
The Immunisation operations are sustained through the following supportive components:

- Management –strategic –policy planning, supervision, monitoring/evaluation

- Sustainable Financing
- Human and institutional resources strengthening.
- Coordinating and working with partners
- Building alliance with key stakeholders

Major Reasons of Poor RI Performance

- Poor funding and accountability
- Poorly planned Supply chain and logistics
- Problems with Human resources component
- Poor Demand creation
- Poor Data Quality

4.0 CONCLUSION

Vaccine preventable diseases account for approximately 22% of child deaths in Nigeria, amounting to over 200,000 deaths per year. International donor communities have recognized the need for control of childhood illnesses and polio eradication, creating an opportune time to control vaccine preventable illnesses in the region. Routine immunization aims at providing the needed vaccines to all eligible children and women of child bearing age. To achieve this, each of the 5 basic components and the supportive elements of the routine immunization system have to be adequately planned for and implemented.

5.0 SUMMARY

In this unit we have described the national immunization policy and National Immunization Schedule, defined what routine immunization is, and described what comprises the routine immunization services and the supporting elements.

6.0 TUTOR-MARKED ASSIGNMENT

1. Describe the national immunization policy and immunization schedule
2. Define routine immunization
3. Describe what comprises the routine immunization services and the supporting elements.

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UNIT 3 EPI PLUS AND VITAMIN A DEFICIENCY

CONTENTS

1.0 INTRODUCTION

Immunization programs provide an opportunity to deliver other essential health services such as vitamin A supplementation, de-worming, malaria prevention with insecticide- treated nets and Integrated Management of Childhood Illness. These additional services are part of EPI Plus programs

2.0 OBJECTIVES

At the end of this Unit, you will be able to:

- Discuss Vitamin A deficiency
- Discuss Vitamin A supplementation
- Discuss the link between Vitamin A and routine immunization

3.0 MAIN CONTENT

3.1 What is vitamin A?

Vitamin A is a substance that is required by the human body. It occurs in nature in four chemical forms: retinol (vitamin A alcohol), retinal (vitamin A aldehyde), retinoic acid (vitamin A acid) and retinyl ester (vitamin A ester). In the diet, retinol is the main form of vitamin A.

Vitamin A has several functions in the body. It strengthens resistance to infection, increases a child's chances of surviving an infection, promotes growth and protects the cornea (the transparent part of the eye). It is responsible for the synthesis of rhodopsin and iodopsin that are essential for night vision. Lack of vitamin A, or vitamin A deficiency, can result in poor vision in dim light. Vitamin A

also participates in spermatogenesis (synthesis of sperm). The human body cannot make vitamin A. So all the vitamin A it needs must come from food intake. Vitamin A is present in the following foods:

- Breast milk
- Liver, eggs, meat, fish liver oil
- Milk, cheese and other dairy products
- Yellow and orange fruits, such as mangoes and papayas
- Yellow and orange vegetables, such as pumpkins and carrots
- Dark green, leafy vegetables
- Red palm oil.

Vitamin A can be added to such foods as sugar, vegetable oil and wheat flour during processing. This is called food fortification.

3.2 Vitamin A deficiency

When does vitamin A deficiency occur?
Vitamin A deficiency occurs when a person does not eat enough food containing vitamin A or when the body uses it up too fast. This often happens during illness, during pregnancy and lactation, and when children's growth is most rapid – from six months to five years of age.

Symptoms and signs of vitamin A deficiency
Vitamin A deficiency (VAD) reduces resistance to infections, leading to more severe and prolonged illnesses and increasing the risk of death. It can cause eye damage, such as corneal lesions and, when severe, can cause blindness. Generally, the first clinical sign of vitamin A deficiency is night blindness (impaired vision in dim light). Because vitamin A deficiency reduces the body's resistance to infection, it is a threat even before any direct signs become apparent. Children suffering from vitamin A deficiency are more likely to get infections, such as measles, as well as diarrhoea and fevers. These infections are more likely to be severe, sometimes resulting in death. Vitamin A deficiency can also leads to sterility, anaemia and growth retardation.

3.3 Vitamin A supplementation

When diets do not contain food with enough vitamin A, it is possible to increase vitamin A levels in the body by periodically taking a concentrated dose in the form of a capsule. This is called supplementation. When given to children, vitamin A capsules are cut open and the drops of liquid inside are squeezed into the mouth. Vitamin A supplementation can be combined with immunization services for children when health officials know or suspect that vitamin A deficiency is present in an area or among a certain population. In

addition, vitamin A supplements are also given for the treatment of measles and xerophthalmia (dryness of the eyes that can lead to corneal damage and blindness).

Table 6: Linking vitamin A and routine immunization

Target for vitamin A	Immunization contact	Vitamin A dose
Infants 6–11 months	Measles/yellow fever Polio NIDs	100 000 IU
Children 12 months and older	Other EPI campaigns Boosters	200 000 IU
Children 12–59 months	Booster doses Delayed primary immunization	200 000 IU

The optimal interval between doses of vitamin A is four to six months. The minimum recommended safe interval between doses is one month. The interval between doses can be reduced to treat clinical vitamin A deficiency and measles cases. Vitamin A given orally on day 1,2 and 14 is usually effective. Children under 6 months should be given 50,000 iu; between 6-12 months -100,000 iu; and above 12 months-200000 iu. National guidelines should be followed for the appropriate measles treatment schedule.

4.0 CONCLUSION

Any immunization contact is an opportunity to screen infants and young children for eligibility to receive vitamin A, particularly if vaccinations have been delayed and the child is six months or older.

5.0 SUMMARY

In this unit we have defined Vitamin A and discussed Vitamin A deficiency and supplementation. We also discussed how vitamin A supplementation can be linked with routine immunization.

6.0 TUTOR-MARKED ASSIGNMENT

1. What is vitamin A supplementation?
2. Discuss the link of Vitamin A with routine immunization
3. Discuss how Vitamin A deficiency can be corrected?

7.0 REFERENCES/FURTHER READING

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UNIT 4 VACCINE AND COLD CHAIN MANAGEMENT

CONTENTS

1.0 INTRODUCTION

Vaccines are sensitive to heat and must be kept at recommended temperature ranges. The purpose of the vaccine "cold chain" is to maintain product quality from the time of manufacture until the point of administration by ensuring that vaccines are stored and transported within WHO-recommended temperature ranges.

2.0 OBJECTIVES

At the end of this unit, you will be able to:

- Describe the cold chain system
- Understand the health facility cold chain equipments
- Describe temperature monitoring devices

3.0 MAIN CONTENT

3.1 The cold chain

The system used for storing vaccines in good condition is called the cold chain. It is sometimes referred to as the vaccine supply chain, or the immunization supply chain. The
cold chain consists of a series of links that are designed to keep vaccines within WHO recommended temperature ranges, from the point of manufacture to the point of administration. It is a system of maintaining the potency of the vaccines at an appropriate temperature from the site of manufacturer to the end point (Mother and child)

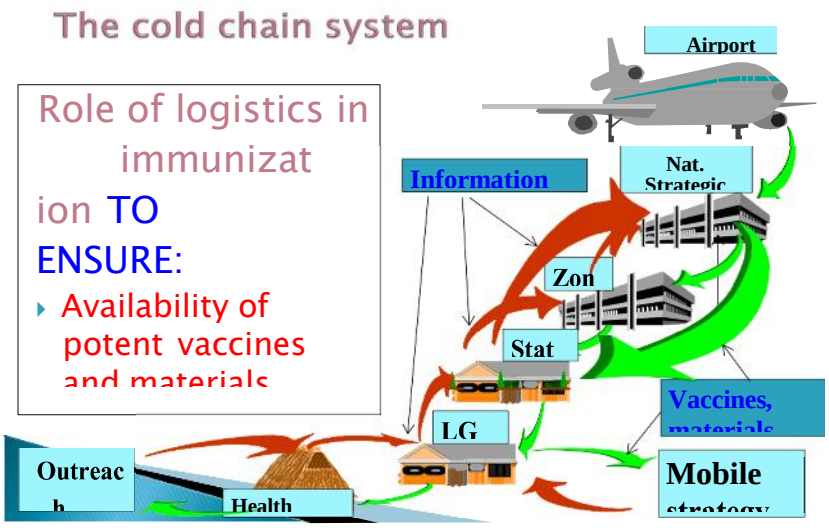

Figure 31: The cold chain system
Source: World Health Organization documents (**WHO:** http://www.who.int/immunization_monitoring/ data/en/

In order to maintain a reliable vaccine cold chain at the peripheral level, the following key procedures must be observed: Store vaccines and diluents within the required temperature range at all sites pack and transport vaccines to and from outreach sites according to recommended procedures keep vaccines and diluents within recommended cold chain conditions during immunization sessions.

Temperature requirements for vaccines
Vaccines are sensitive biological products. Some vaccines are sensitive to freezing, some to heat and others to light. Vaccine potency, meaning its ability to adequately protect the vaccinated patient, can diminish when the vaccine is exposed to inappropriate temperatures. Once lost, vaccine potency cannot be regained. To maintain quality, vaccines must be protected from temperature extremes. Vaccine quality is maintained using a cold chain that meets specific temperature requirements. It is essential that all those who handle vaccines and diluents know the temperature sensitivities and the recommended storage temperatures for all the vaccines in the national schedule.

<table>
<tr><th>Vaccines</th><th>National
Up to 6 months, (Electricity)</th><th>Sub National
Up to 3 months, (Electricity)</th><th>Peripheral
Up to 1 month</th></tr>
<tr><td>OPV</td><td colspan="2">– 15^0 C to – 25^0 C</td><td rowspan="2">+ 2^0 C to + 8^0 C</td></tr>
<tr><td>Measles
BCG, YF</td><td colspan="2">– 15^0 C to – 25^0 C or + 2^0 C to + 8^0 C</td></tr>
<tr><td>Penta, Td, Hep B, PCV, IPV</td><td colspan="3">+ 2^0 C to + 8^0 C</td></tr>
<tr><td>Diluents</td><td>Room Temperature</td><td colspan="2">Room Temp. Cool to same temp as vaccines a day before use</td></tr>
</table>

Figure 32: Recommended vaccine storage temperatures Note:
Diluents should never be frozen. If diluents are packaged with the vaccine, the product should be stored at +2 °C to +8 °C. Bundled lyophilized-liquid combination vaccines should never be frozen and should be stored at +2 °C to +8 °C.

3.2 Health facility cold chain equipment

Different levels within the national cold chain system require different types of equipment for transporting and storing vaccines and diluents within the required temperature range. **Primary level (national):** Depending on the capacity required, the primary level generally uses cold or freezer rooms, freezers, refrigerators, cold boxes and, in some cases, refrigerated trucks for transportation.

Intermediate level (province or district): Depending on the capacity required, intermediate level generally uses cold and freezer rooms and/or freezers, refrigerators and cold boxes and, in some cases, refrigerated trucks for transportation.

Peripheral level (health centre /facility or health post): Depending on the capacity required, health facilities generally need refrigerators (in certain instances with water pack freezing/cooling compartments), cold boxes and vaccine carriers. In some countries, cold boxes alone may be used for monthly or weekly immunization sessions.

To ensure optimal performance, cold chain equipment used for immunization programs at any level must comply with relevant technical specifications, as defined under WHO prequalification standards or as determined by national regulatory authorities.

Refrigerators

Health facility refrigerators may be powered by electricity, solar energy or gas (or kerosene). A health facility refrigerator should be chosen based on the most reliable power supply available and the combined capacity needed for vaccine and water pack storage.

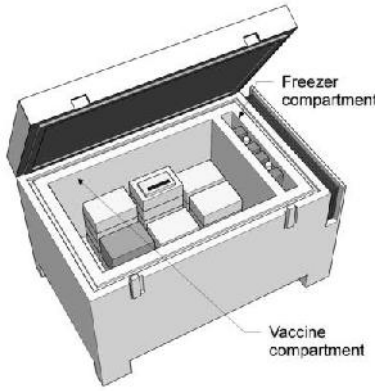

Figure 33: Top opening ice-lined mains electric, solar-battery or solar direct-drive

Source: WHO (2015) Immunization in practice: A practical guide for health staff

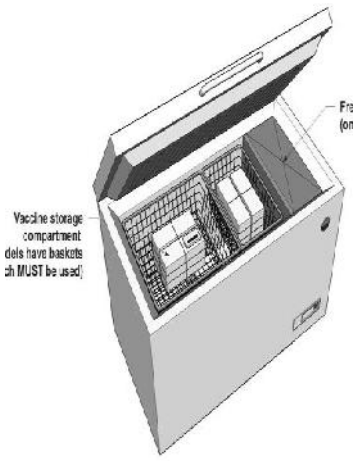

Figure 34: Top opening gas or kerosene
Source: WHO (2015) Immunization in practice: A practical guide for health staff

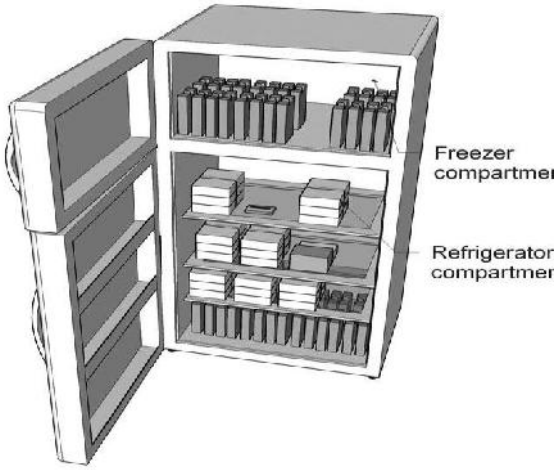

Figure 35: Front opening gas, kerosene or domestic mains electric model

Source: WHO (2015) Immunization in practice: A practical guide for health staff

Cold boxes

A cold box is an insulated container that can be lined with water packs to keep vaccines and diluents in the required temperature range during transport or short-term storage. Depending on the model, cold boxes can be used to store vaccines for periods of up to two days or more when there is no electricity available, when the health facility refrigerator is out of order, or when a passive container is needed while the refrigerator is being defrosted. Once packed, cold boxes should not be opened until the vaccine is needed.

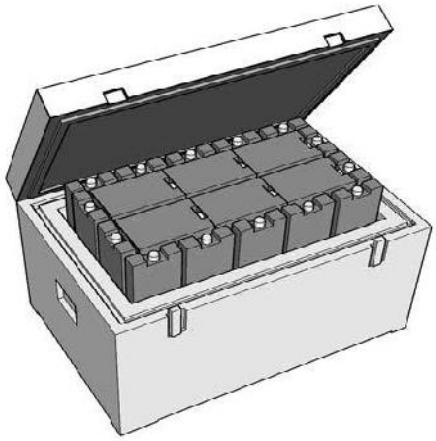

Figure 36: Vaccine cold box

Source: WHO (2015) Immunization in practice : A practical guide for health staff

Vaccine carriers

Vaccine carriers are smaller than cold boxes and easier to carry. Current prequalified vaccine carriers have a cold life with frozen ice packs of between 18 and 50 hours at +43 °C and a cool life with cool water packs of between three and 18 hours. Vaccine carriers are generally used for the following purposes: To transport vaccines and diluents to outreach sites and store them during health facility immunization sessions. To store vaccines temporarily when the health facility refrigerator is out of order or is being defrosted. To transport monthly vaccine supplies from the district store to small health facilities.

Vaccine carriers used at the health facility should be chosen based on the following factors: The type and quantity of vaccines and diluents to be transported, the cold or cool life needed for the longest planned journeys and the transport method used (for example, the requirements for a vaccine carrier that will be carried for short distances on foot are not the same as those for one that will be transported for long distances on the back of a motorcycle).

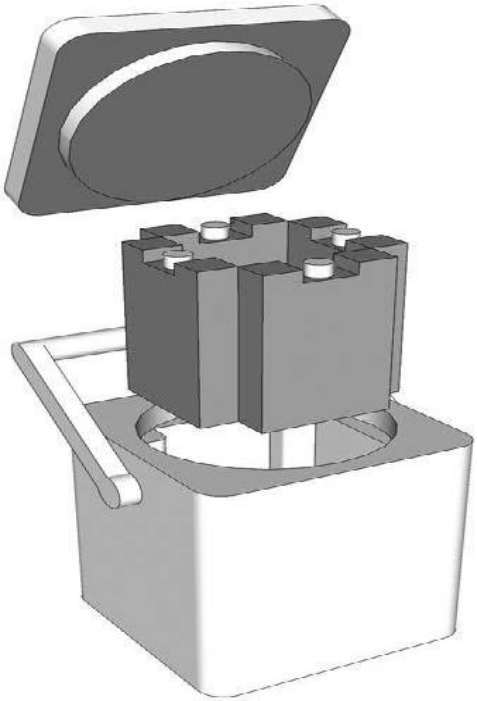

Figure 37: Vaccine carrier

Source: WHO (2015) Immunization in practice: A practical guide for health staff

Water packs

Water packs are flat, leak-proof plastic containers that can be filled with tap water. They are used to line the inside of the cold box or vaccine carrier. Water packs are used to keep vaccines at the required temperature range inside cold boxes and vaccine carriers. In order to protect the vaccines it is important to use the correct number and size of water packs and to follow the instructions printed inside the lid of the container. WHO recommends the use of pre-qualified water packs; health facilities must have a minimum of two complete sets of water packs for each of their cold boxes and vaccine carriers so that one set can be frozen or cooled in the freezer/refrigerator while the other set is being used in the cold box or vaccine carrier. The appropriate temperature of the water pack will depend on the type(s) of vaccines being transported, the ambient temperatures to which the cold box or vaccine carrier will be exposed, and the duration of transport. Water packs can be used in any of the following ways:

Frozen ice packs, taken directly from a freezer at temperatures between −10 °C and −25 °C **Conditioned ice packs** containing a mixture of water and ice at an initial temperature of about 0 °C

Cool water packs, containing liquid water at an initial temperature of +5 °C or less

Warm water packs, containing liquid water, initially at room temperature, between +18

°C and +24 °C.

The appropriate water pack strategy to use at health facility level, for transport or outreach operations is guided by national policy and practice.

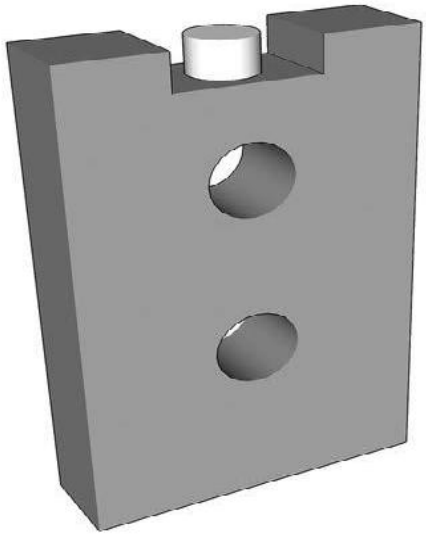

Figure 38: Water pack

Source: WHO (2015) Immunization in practice: A practical guide for health staff

Foam pads

A foam pad is a piece of soft sponge-like material that fits precisely on top of the water packs inside a vaccine carrier while still permitting the lid of the vaccine carrier to fully close. The foam pad is provided by the manufacturer of the vaccine carrier. The foam pad usually has slits in which vaccine vials can be inserted snugly and protected. The foam pad should be used during an immunization session as a temporary lid to securely hold opened vials, while protecting unopened vials in the cool chamber below inside the carrier.

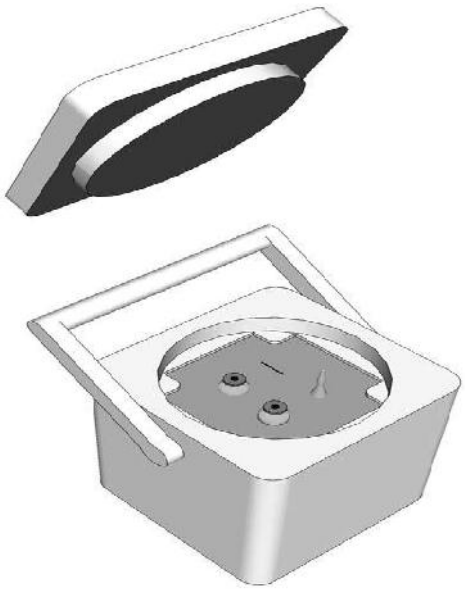

Figure 39: Foam pad in use
Source: WHO (2015) Immunization in practice: A practical guide for health staff

3.3 Temperature monitoring devices

It is essential to monitor and record the temperature of vaccines throughout the supply chain. This is the only way to prove that vaccines have been kept at the right temperature during storage and transport. Temperature monitoring also shows up any problems with equipment and procedures.

Vaccine vial monitors (VVMs)
The VVM start colour of the inner square is never pure-white, it is always slightly purple and lighter in colour than the outer circle. From this point forward, the inner square starts to darken in colour, until the temperature and/ or duration of heat reaches a level which degrades the vaccine, at which time the VVM's discard point will be evident.

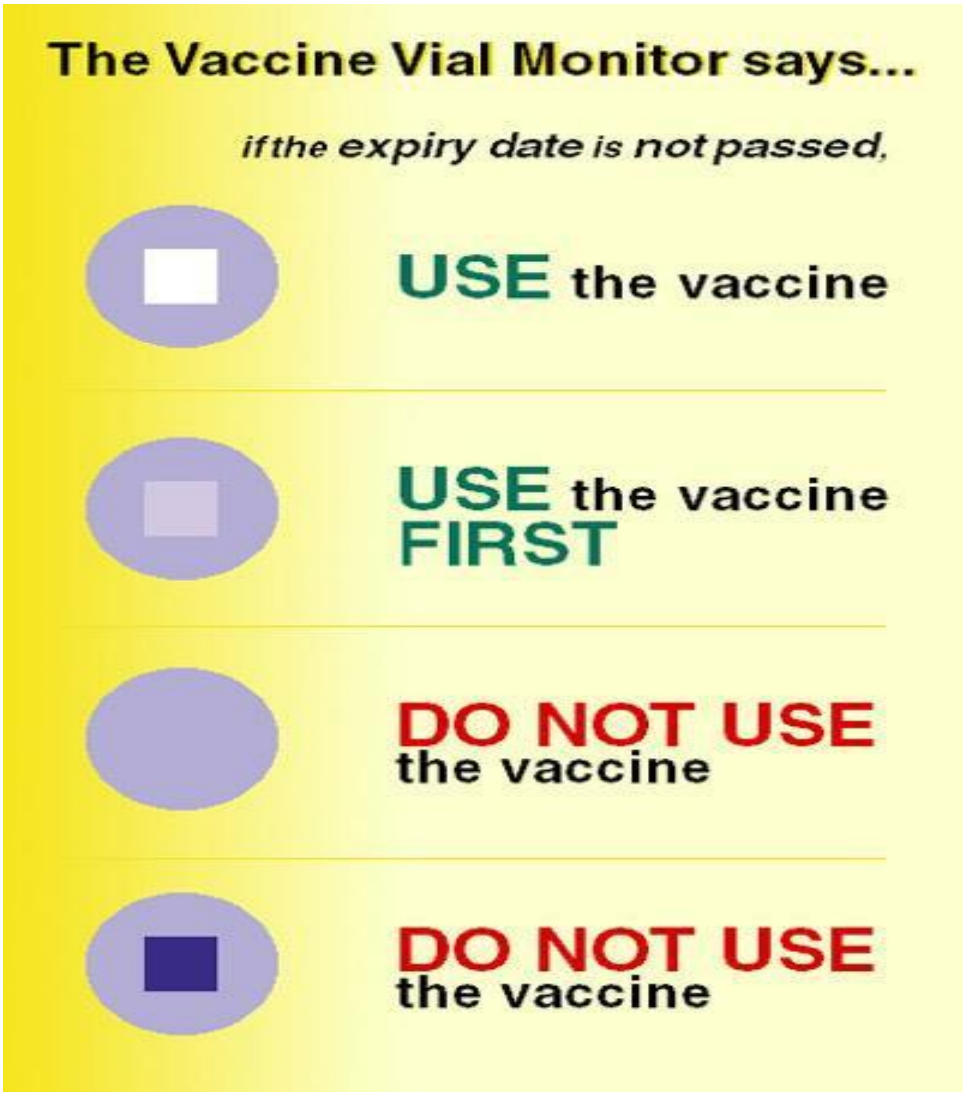

Figure 40: Vaccine Vial Monitor
Source: WHO (2015) Immunization in practice: A practical guide for health staff

VVM of liquid vaccines is visible on the vial sticker
The VVM ofreconstituted vaccines is present on the cap (Measles, BCG, YF, several formulations of Hib)

How does it work?

VVM shows cumulated exposure to heat

VVM helps to:

- avoid using damaged vaccine
- reduce vaccine losses
- manage storage of vaccines
- facilitate advanced strategy of immunization

Figure 41: Location of VVMs on ampoules and vials
Source: WHO (2015) Immunization in practice: A practical guide for health staff

30- day electronic temperature loggers (30 DTR)
These devices are placed with the vaccine load in a vaccine refrigerator. They record the refrigerator temperature at no more than 10-minute intervals and show the temperature history for any day in the last 30 days. They also record and display a 30-day history of any heat and freeze alarms that have occurred. Alarms are triggered if the temperature of the refrigerator drops to −0.5 °C or below for 60 minutes or if it exceeds +10 °C for a continuous period of 10 hours.

Figure 42: 30-day electronic temperature loggers
Source: WHO (2015) Immunization in practice: A practical guide for health staff

Electronic freeze indicators

These are small digital devices that are placed with freeze-sensitive vaccines during transport or storage. The devices have a visual indicator that shows whether the vaccine has been exposed to freezing temperatures. Once the alarm indicator is triggered, the device is no longer usable and should be discarded. Otherwise the device can be used until the built-in battery expires.

FreezeAlert™ Q-Tag® Quad

Figure 43: Electronic freeze indicators
Source: WHO (2015) Immunization in practice : A practical guide for health staff

Integrated digital thermometers

Current prequalified vaccine refrigerators and freezers are equipped with devices. An internal temperature sensor monitors the storage compartment and an instantaneous temperature reading is displayed on the unit's control panel. Solar direct-drive refrigerators typically have a device powered by an integrated photovoltaic cell; these do not work at night or in dim light and may have to be activated by shining a torch onto the display.

Figure 44: Integrated digital thermometer

Source: WHO (2015) Immunization in practice: A practical guide for health staff

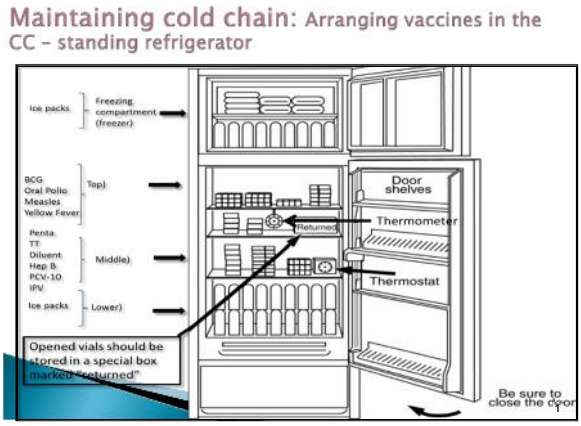

Figure 45: Arrangement of vaccines in standing refrigerator
Source: WHO (2015) Immunization in practice: A practical guide for health staff

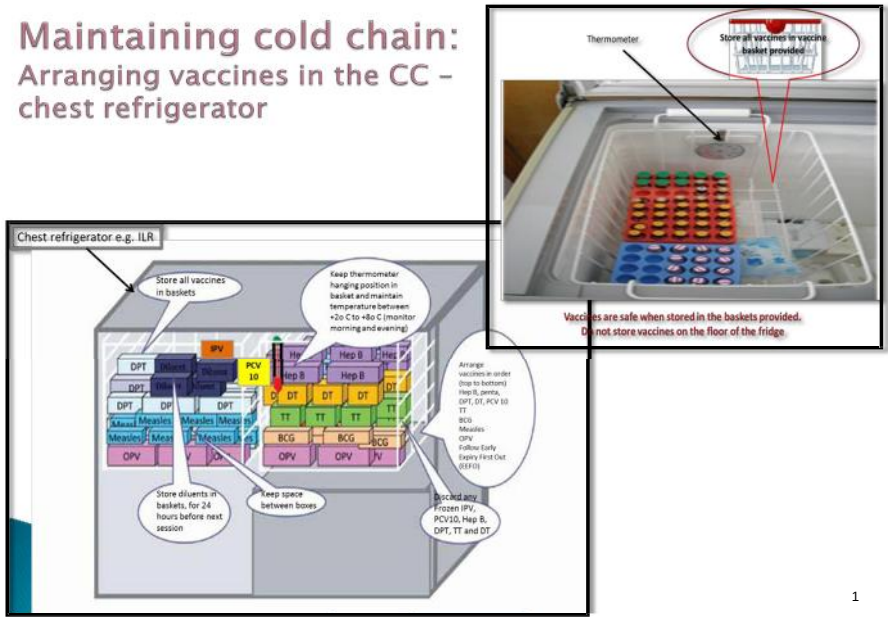

Figure 46: Arrangement of vaccines in a chest refrigerator
Source: Immunization in practice: A practical guide for health staff

Ensuring quality of vaccine storage

- Keep freeze-sensitive vaccines >20cm from base.
- Store vaccines in the basket provided (with freeze sensitive vaccines at the top)

  Ensure air flow inside equipment

Do not keep expired vaccine inside the cold chain
Mark opened vials to be used first
Do not open the cold chain if not necessary, close it as soon as possible when opened
Include an identification note on each equipment to list their content to facilitate identification
Refrigerators are strictly designed for vaccine storage!
Correct thermostat setting

Be pragmatic. Set the temperature at 8°C at noon (or the hottest time of the day) so as not to fall below zero at night, which would not require a policy change

Maintaining cold chain: Vaccine management during transport

Organise vaccines according to their sensitivity to freezing (avoid sensitive vaccines being in contact with frozen ice pack)
Use frozen ice packs to transport BCG, OPV, YF and Measles vaccines only
Use conditioned ice packs or chilled water packs to transport freeze sensitive vaccines (Td, HepB, Pentavalent, PCV, IPV, Rota, etc)
When transporting a combination of freeze sensitive vaccines and OPV/Lyophilized vaccines use only conditioned ice packs or chilled water packs

Avoiding freezing: Conditioning of ice packs

CONDITIONING

Lay out ice packs, preferably in single rows but never in more than two rows.

Wait until there is a small amount of liquid water inside the ice packs. This will take up to one hour at +20°C and rather less at higher temperatures. Shake one of the ice packs every few minutes. The ice is conditioned as soon as it begins to move about slightly inside its container.

4.0 CONCLUSION

The “Cold Chain” is a term used for the distribution of food under refrigeration. It was adopted in the 1970’s to refer to the distribution of vaccines which, at that time was much neglected. Thus, for EPI, the cold chain is a system to ensure the potency and safety of vaccines during distribution to the point of use. Since then, considerable efforts have been made by countries to establish and maintain the cold chain system for vaccines.

5.0 SUMMARY

In this unit we have described the cold chain system, the health facility cold chain equipments and temperature monitoring devices.

6.0 TUTOR-MARKED ASSIGNMENT

1. Describe the cold chain system, with reference to recommended temperature
2. Discuss Vaccine vial monitors
3. Discuss with examples cold chain equipments.

7.0 REFERENCES/FURTHER READING

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UNIT 5 SHAKE TEST

CONTENTS

1.0 INTRODUCTION

Most liquid vaccines are damaged by freezing, so we should avoid freezing them. To check if a liquid vaccine has been frozen, perform the "shake" test as described below

2.0 OBJECTIVES

At the end of this Unit, you will be able to:

- Describe the shake test
- Understand what shake test is used for
- Describe the procedure of conducting shake test

3.0 MAIN CONTENT

3.1 Meaning of shake test

Shake test is used to check whether freeze-sensitive vaccines have been damaged by exposure to temperatures below 0 °C. After it has thawed, a vial of vaccine that has been frozen no longer has the appearance of a cloudy liquid, but tends to form flakes that settle at the bottom of the vial. Shake test requires two vials of the same vaccine from the same manufacture and with the same batch number. One of these is a vial that you suspect has been frozen and the other is a vial that you have deliberately frozen solid overnight. Allow the frozen test vial to melt completely, shake the two vials in the same hand, place them side-by-side and watch the contents settle. If the suspect vial settles at the same speed as the frozen vial you know that it has been frozen. If it settles more slowly, it has not been frozen.

3.2 When to conduct shake test

If a freeze indicator is activated, or temperature recordings show negative temperatures, freeze-sensitive vaccines may have been damaged. If this occurs, notify your supervisor. If they decide to proceed, carry out the Shake Test on a sample of the freeze-sensitive vaccines.

3.3 Procedure of shake test

The test procedure described below should be repeated with all suspect batches. In the case of international arrivals, the shake test should be conducted on a random sample of vaccine. However, if there is more than one lot in the shipment, the random sample must include a vial taken from each and every lot.

1. Take a vial of vaccine of the same type and batch number as the vaccine you want to test, and made by the same manufacturer.
2. Clearly mark the vial as "FROZEN."
3. Freeze the vial in a freezer or the freezing compartment of a refrigerator until the contents are completely solid.
4. Let it thaw. Do **NOT** heat it!
5. Take your "TEST" vial from the batch that you suspect has been frozen.
6. Hold the "FROZEN" vial and the "TEST" vial together in one hand.
7. Shake both vials vigorously for 10–15 seconds.
8. Place both vials on a flat surface side-by-side and start continuous observation of the vials until the test is finished.

Use an adequate source of light to compare the sedimentation rates between vials.

IF, the test vial sediments slower than the FROZEN vial, **THEN,** Use the vaccine batch. IF, Sedimentation is similar in both vials **OR t**he test vial sediments faster than the FROZEN vial **THEN**, **vaccine** is damaged: Notify the supervisor. Set aside all affected vaccine in a container marked "DAMAGED VACCINE FOR DISPOSAL – DO NOT USE'' Discard all affected vaccine once you have received permission to do so.

12. Fill in the Loss/Adjustment Form.

Shake Test

•Most liquid vaccines are damaged by freezing, so we should avoid freezing them.

•To check if a liquid vaccine has been frozen, perform the "shake" test as follows

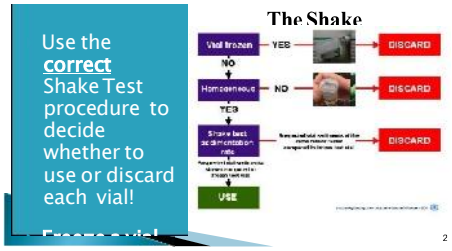

Figure 47: Procedure for Shake test
Source: Immunization in practice : A practical guide for health staff

4.0 CONCLUSION

Shake test is done when you suspect freezing of Td, HepB, PCV or Pentavalent Vaccines! Shake test is not to be conducted for IPV. Discard If freezing is suspected for IPV.

5.0 SUMMARY

In this unit we have described the shake test, the importance and the process of conducting shake test.

6.0 TUTOR-MARKED ASSIGNMENT

1. What is shake test
2. Describe the process of conducting shake test
3. List the vaccine(s) on which shake test can be conducted

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MODULE 5 CONCEPT OF INTEGRATED MANAGEMENT OF CHILDHOOD ILLNESS (IMCI)

UNIT 1 INTRODUCTION TO THE INTEGRATED MANAGEMENT OF NEWBORN AND CHILDHOOD ILLNESS (IMNCI)

CONTENTS

1.0 INTRODUCTION

Every year about 9 million children in developing countries die before they reach their fifth birthday, many of them during the first year of life. Ethiopia has one of the highest under- five mortality rates with more than 321,000 children under the age of five dying every year. More than 70% of these child deaths are due to five diseases, namely pneumonia, diarrhoea, malaria, measles and malnutrition, and often to a combination of these conditions.

These diseases are also the reasons for seeking care for at least three out of four children who come to health facilities. As children usually present with more than one of these conditions, it was recognised that there was a need for an integrated approach in order to manage the child in a **holistic** manner (taking into account all of the child's problems including the major childhood illnesses in the assessment and treatment of illness). This led to the development of the **Integrated Management of Newborn and Childhood Illness** (**IMNCI**) strategy.

2.0 OBJECTIVES

At the end of this unit, you will be able to:

- Define the importance and objectives of the IMNCI strategy
- Summarize the main steps of the IMNCI assessment
- Describe the general danger signs

3.0 MAIN CONTENT

3.1 The IMNCI strategy

IMNCI is a strategy that integrates all available measures for health promotion, prevention and integrated management of childhood diseases through their early detection and effective treatment, and promotion of healthy habits within the family and community.

3.1.1 Importance and objectives of the IMNCI strategy

The importance of having an Integrated Management of Newborn and Childhood Illness strategy is that it enables a consistent and standardized approach that addresses the major causes of under-five morbidity and mortality which are responsible for more than 90% of the mortality in this age group. The major causes of under-five mortality have been estimated as follows: pneumonia 28%, neonatal problems 25%, malaria 20%, diarrhoea 20%, measles 4%, AIDS 1% and other causes 2%.

3.1.2 Objectives and advantages of IMNCI

The objectives of the IMNCI strategy are:

- To reduce mortality and morbidity associated with the major causes of disease in children less than five years of age, and
- To contribute to the healthy growth and development of children.

The IMNCI guidelines are designed for the management of sick children from birth up to five years old. The core of the IMNCI strategy is integrated case management of the most common childhood problems, with a focus on the most important causes of death. The clinical guidelines are designed for the management of sick children aged from birth up to five years. They include methods for assessing signs that indicate severe disease; assessing a child's nutrition, immunization and feeding; teaching parents how to care for a child at home; counselling parents to solve feeding problems; and advising parents about when to

return to a health facility. The guidelines also include recommendations for checking the parents' understanding of the advice given and for showing them how to administer the first dose of treatment.

- As a health worker, IMNCI will enable you to help reduce the number of babies and children in your community who become ill or die. It will also help you to promote the healthy growth and development of babies and children in the community.

When correctly applied, IMNCI has the following advantages:

- Promotes the accurate identification of childhood illnesses in out-patient settings
- Ensures appropriate combined treatment of all major childhood illnesses
- Strengthens the counseling of mothers or caregivers
- Strengthens the provision of preventive services
- Speeds up the referral of severely ill children
- Aims to improve the quality of care of sick children at the referral level.

3.2 The IMNCI assessment

When you are assessing a sick child, a combination of individual signs leads to one or more **classifications**, rather than to a diagnosis. IMNCI classifications are action-oriented illness categories which enable a healthcare provider to determine if a child should be urgently referred to a health centre, if the child can be treated at the health post (e.g. with oral antibiotic, antimalarial, ORS, etc.), or if the child can be safely managed at home. The IMNCI guidelines describe how you should care for a child who is brought to your health post with an illness, or for a scheduled follow-up visit to check the child's progress. The guidelines give instructions for how to routinely assess a child for general danger signs (or possible bacterial infection in a young infant), common illnesses, malnutrition and anaemia, and to look for other problems. In addition to treatment, the guidelines incorporate basic activities for illness prevention.

3.2.1 IMNCI case management

Case management can only be effective to the extent that families bring their sick children to a trained health worker such as you for care in a timely way. If a family waits to bring a child to a health facility until the child is extremely sick, or takes the child to an untrained provider, the child is more likely to die from the illness. Therefore, teaching families when to seek care for a sick child is an important part of the case

management process and is a crucial part of your role as a Health worker.

3.2.2 Assessment

Assess a child by checking first for general danger signs (or possible bacterial infection in a young infant), asking questions about common conditions, examining the child, and checking nutrition and immunization status. Assessment includes checking the child for other health problems.

3.2.3 Classification

Classify a child's illnesses using a colour-coded classification system. Because many children have more than one condition, each illness is classified according to whether it requires:

- Urgent pre-referral treatment and referral (pink), or
- Specific medical treatment and advice (yellow), or
- Simple advice on home management (green).

3.2.4 Identify treatment and treat

- After classifying all conditions, **identify** specific treatments for the child. If a child requires urgent referral, give essential treatment before the patient is transferred. If a child needs treatment at home, develop an integrated treatment plan for the child and give the first dose of drugs in the clinic. If a child should be immunized, give immunizations.
- Provide practical **treatment** instructions, including teaching the caregiver how to give oral drugs, how to feed and give fluids during illness, and how to treat local infections at home. Ask the caregiver to return for follow-up on a specific date, and teach her how to recognize signs that indicate the child should return immediately to the health post.
- Assess feeding, including assessment of breastfeeding practices, and counsel to solve any feeding problems found. Then counsel the mother about her own health.

3.2.5 Follow-up care

When a child is brought back to the health post as requested, give follow-up care and, if necessary, reassess the child for new problems. Whenever a sick baby or child under five comes to your health post you should use the IMNCI chart booklet to help you know how to assess, classify and treat the child. The IMNCI guidelines address most, but not

all, of the major reasons a sick child is brought to a health facility. A child returning with chronic problems or less common illnesses may require special care which is not described in this Module. For example, the guidelines do not describe the management of trauma or other acute emergencies due to accidents or injuries. You are now going to look at the case management process in more detail.

3.2.6 The IMNCI case management process

You need to know the age of the child in order to select the appropriate chart and begin the assessment process. The IMNCI case management process is presented on two different sets of charts: one for managing **sick young infants** aged from birth up to two months and a separate one for managing **sick children** aged from two months up to five years. First decide which chart to use depending on the age of the child. **Up to five years** means the child has not yet had his or her fifth birthday. If the child is not yet two months of age, the child is considered a young infant. A child who is two months old would be in the group two months up to five years, not in the group birth up to two months. When you look the IMNCI chart booklet you will see the different charts for the two age groups. Since management of the young infant aged from birth up to two months is somewhat different from the management of older infants and children, it is described on a different chart:

- Assess, classify and treat the sick young infant.

The case management process for sick children aged two months up to five years is presented on three charts:

- Assess and classify the sick child
- Treat the child
- Counsel the mother.

If this is the child's first visit for this episode of an illness or problem, then this is an **initial** visit. If the child was seen a few days before for the same illness, this is a **follow-up** visit. A follow-up visit has a different purpose from an initial visit. You will learn more about follow-up visits in all of the study sessions in this Module. Whether it is an initial or follow- up visit, the mother may well be feeling anxious and it is important that you put her at her ease. This will increase the likelihood of you being able to obtain important information about her child.

For each visit, when you see the mother, or the child's caregiver, with the sick child:

- Greet the mother appropriately and ask about the child
- Take the child's weight and temperature and record the measurements
- Ask the mother what the child's problems are
- Determine if this is an initial or follow-up visit for this problem.
- Which IMNCI process should you follow when a mother visits your health post with her sick child?
- There are two sets of charts, one for babies up to the age of two months and one set of three charts for babies and children from two months to five years. Therefore, you should find out the age of the child from the mother or from a record chart if this is a follow-up visit and there is already information available to you. This will tell you which chart you should use to assess, classify and determine the correct treatment and follow-up care.

You need to know what the general danger signs are in sick infants and children. You are going to learn about these next.

3.3 General danger signs (GDS)

Since IMNCI takes a holistic approach to assessing, classifying and treating childhood illnesses it is important to look for general danger signs as well as symptoms and signs of specific childhood illnesses.

The general danger signs are signs of serious illness that are seen in children aged two months up to five years and will need immediate action to save the life of the child. There are five general danger signs and these are set out in Box 1.2 below Any infant or child with any danger sign should be referred after receiving urgent pre-referral treatment. For **ALL** children ask the mother about the child's problem then, check for general danger signs

CHECK FOR GENERAL DANGER SIGNS

Ask:

- Is the child able to drink or breastfeed?
- Does the child vomit everything?
- Has the child had convulsions?

Look:

- See if the child is lethargic or unconscious.
- Is the child convulsing now?

A child with any general danger sign needs URGENT attention; complete the assessment and any pre-referral treatment immediately so referral is not delayed.

A child with a general danger sign has a serious problem. Most children with a general danger sign need urgent referral to hospital. They may need lifesaving treatment with injectable antibiotics, oxygen or other treatments that may not be available in the health post. You should complete the rest of the assessment immediately and give urgent pre- referral treatments before sending the patient to the next facility. You will learn more about this later in this study session.

You are first going to look in more detail how you check for general danger signs.

3.3.1 ASK: Is the child able to drink or breastfeed?

A child has the sign 'not able to drink or breastfeed' if the child is not able to suck or swallow when offered a drink or breastmilk.

When you ask the mother if the child is able to drink, make sure that she understands the question. If the mother replies that the child is not able to drink or breastfeed, ask her to describe what happens when she offers the child something to drink. For example, is the child able to take fluid into his mouth and swallow it?

If you are not sure about the mother's answer, ask her to offer the child breastmilk or a drink of clean water. Look to see if the child is swallowing the breastmilk or water.

A child who is breastfed may have difficulty sucking when his nose is blocked. If the child's nose is blocked, clear it. If the child can breastfeed after the nose is cleared, the child does not have the danger sign, 'not able to drink or breastfeed'.

3.3.2 ASK: Does the child vomit everything?

A child who is not able to hold anything down at all has the sign 'vomits everything'. A child who vomits everything will not be able to hold down food, fluids or oral drugs. A child who vomits several times but can hold down some fluids does not have this general danger sign.
When you ask the question, use words the mother understands. Give her time to answer. If the mother is not sure if the child is vomiting everything, help her to make her answer clear. For example, ask the mother how often the child vomits. Also ask if each time the child swallows food or fluids, does the child vomit? If you are not sure of the mother's answers, ask her to offer the child a drink. See if the child vomits.

3.3.3 ASK: Has the child had convulsions?

During a convulsion, the child's arms and legs stiffen because the muscles are contracting or if the child has repeated abnormal movements. The child may lose consciousness or not be able to respond to spoken directions. Ask the mother if the child has had convulsions during this current illness. Use words the mother understands. For example, the mother may know convulsions as 'fits' or 'spasms'. See also if the child is convulsing now.

3.3.4 LOOK to see if the child is lethargic or unconscious

A lethargic child is not awake and alert when he should be. The child is drowsy and does not show interest in what is happening around him. Often the lethargic child does not look at his mother or watch your face when you talk. The child may stare blankly and appear not to notice what is going on around him. An unconscious child cannot be wakened. He does not respond when he is touched, shaken or spoken to.

Ask the mother if the child seems unusually sleepy or if she cannot wake the child. Look to see if the child wakens when the mother talks or shakes the child or when you clap your hands. However, if the child is sleeping and has cough or signs of difficulty breathing, you must count the number of breaths first before you try to wake the child because it is easier to count the exact breathing rate when the child is calm.

When you have completed the above steps, you should record what you have found on the sick child case recording form. You must circle any general danger signs that are found, and check (✓) against the appropriate answer (yes or no) in the classify column.

4.0 CONCLUSION

This study session has introduced you to the IMNCI case management process and outlined the importance of this in helping to reduce death, illness and disability for babies and children in your community. You have seen that you have an important role to play in this respect.

5.0 SUMMARY

In this unit we have learnt that IMNCI aims to reduce death, illness and disability, and to promote improved growth and development among children under five years of age. The strategy addresses the major causes of under-five morbidity and mortality which are responsible for more than 90% of the mortality, namely pneumonia, neonatal problems, diarrhoea, malaria, measles and malnutrition. Case

management process involves a stepwise approach consisting of the following elements: assessment, classification, treatment, counselling and follow-up. All children aged two months up to five years should be checked first for the five general danger signs: inability to drink or breastfeed, vomiting everything, history of convulsions during the current illness, lethargy or unconsciousness and convulsions now. Any child with any general danger sign should be referred urgently after receiving urgent pre-referral treatment.

6.0 TUTOR-MARKED ASSIGNMENT

- Discuss the importance of IMNCI strategy
- Explain details the four main steps to take when a sick child is brought to you
- Discuss the general danger signs in a child that needs immediate attention.

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UNIT 2 THE CONCEPT OF IMNCI

CONTENTS

1.0 INTRODUCTION

Every year, nearly 11 million children die before reaching their fifth birthday. In response to this challenge, WHO and UNICEF in the early 1990s developed Integrated Management of Childhood Illness (IMCI), a strategy designed to reduce child mortality and morbidity in developing countries. The approach focuses on the major causes of deaths in children through improving case management skills of health workers, strengthening the health system, and addressing family and community practices.

2.0 OBJECTIVES

At the end of this unit, you will be able to:

- Understand the rationale for the development of IMNCI
- Describe the objectives and components of IMNCI
- Describe the strategies and principles of IMNCI

3.0 MAIN CONTENT

3.1 Rationale for an Evidence-based Syndromic Approach to Case Management

Many well-known prevention and treatment strategies have already proven effective for saving young lives. Childhood vaccinations have successfully reduced deaths due to measles. Oral rehydration therapy has contributed to a major reduction in diarrhea deaths. Effective antibiotics have saved millions of children with pneumonia. Prompt treatment of malaria has allowed more children to recover and lead

healthy lives. Even modest improvements in breastfeeding practices have reduced childhood deaths. While each of these interventions has shown great success, accumulating evidence suggests that a more integrated approach to managing sick children is needed to achieve better outcomes. Child health programmes need to move beyond single disease to addressing the overall health and well-being of the child. Because many children present with overlapping signs and symptoms of diseases, a single diagnosis can be difficult, and may not be feasible or appropriate. This is especially true for first-level health facilities where examinations involve few instruments, little or no laboratory tests, and no X-ray.

During the mid-1990s, the World Health Organization (WHO), in collaboration with UNICEF and many other agencies, institutions and individuals, responded to this challenge By developing a strategy known as the Integrated Management of Childhood Illness (IMCI). Although the major reason for developing the IMCI strategy stemmed from the needs for curative care, the strategy also addresses aspects of nutrition, immunization, and other important elements of disease prevention and health promotion. The objectives of the strategy are to reduce death and the frequency and severity of illness and disability, and to contribute to improved growth and development.

IMNCI has become a main child survival strategy in almost all countries in the African region, creating a unique opportunity to scale up newborn health interventions using IMCI as a vehicle. Incorporating newborn algorithms in IMCI and strengthening the components of the strategy related to the health system and community will directly impact newborn health. Some of this work has already begun as generic IMCI guidelines and training materials have been revised to include the first week of life. Many countries in Africa are planning to adapt IMCI to include the missing aspects of newborn care.

One million children under five years old die each year in less developed countries. Just five diseases (pneumonia, diarrhea, malaria, measles and dengue hemorrhagic fever) account for nearly half of these deaths and malnutrition is often the underlying condition. Effective and affordable interventions to address these common conditions exist but they do not yet reach the populations most in need, the young and the impoverished. The Integrated Management of Childhood Illness strategy has been introduced in an increasing number of countries in the region since 1995. IMCI is a major strategy for child survival, healthy growth and development and is based on the combined delivery of essential interventions at community, health facility and health systems levels. IMCI includes elements of prevention as well as curative services; and addresses the most common conditions that affect young children.

Objectives of IMCI

- Reduce death and frequency and severity of illness and disability, and
- Contribute to improved growth and development

Components of IMCI

- Improving case management skills of health workers
- Improving over-all health systems
- Improving family and community health practices

Rationale for an integrated approach in the management of sick children
Majority of these deaths are caused by 5 preventable and treatable conditions namely: pneumonia, diarrhea, malaria, measles and malnutrition. Three (3) out of four (4) episodes of childhood illness are caused by these five conditions. Most children have more than one illness at one time. This overlap means that a single diagnosis may not be possible or appropriate.

Who are the children covered by the IMCI protocol?

- Sick children birth up to 2 months (Sick Young Infant)
- Sick children 2 months up to 5 years old (Sick child)

3.2 Strategies/Principles of IMCI

- **All sick children aged 2 months up to 5 years** are examined for **GENERAL DANGER signs** and all Sick Young Infants from Birth up to 2 months are examined for **VERY SEVERE DISEASE AND LOCAL BACTERIAL INFECTION.** These signs indicate the need for immediate referral or admission to hospital
- The children and infants **are then assessed for main symptoms. For sick children**, the main symptoms include: cough or difficulty breathing, diarrhea, fever and ear infection. **For sick young infants,** local bacterial infection, diarrhea and jaundice. **All sick children are routinely assessed for nutritional, immunization and deworming status and for other problems**
- Only a limited number of clinical signs are used
- A combination of individual signs leads to a **child's classification** within one or more symptom groups rather than a diagnosis.
- IMCI management procedures use limited number of essential drugs and encourage active participation of caretakers in the treatment of children

- Counseling of caretakers on home care, correct feeding and giving of fluids, and when to return to clinic is an essential component of IMCI

The child's illness is classified based on a **color-coded triage system:**
PINK- indicates urgent hospital referral or admission
YELLOW- indicates initiation of specific Outpatient Treatment
GREEN – indicates supportive home care
Steps of the IMCI Case Management Process

The following is the flow of the IMCI process. At the out-patient health facility, the health worker should routinely do basic demographic data collection, vital signs taking, and asking the mother about the child's problems. Determine whether this is an initial or a follow-up visit. The health worker then proceeds with the IMCI process by checking for general danger signs, assessing the main symptoms and other processes indicated. Take note that for the pink box, referral facility includes district, provincial and tertiary hospitals. Once admitted, the hospital protocol is used in the management of the sick child.

3.3 The Problem/Current intervention

The health of children is closely linked to the health and care of their mothers. As the newborn grows into a child, healthy home behaviours and care of illnesses are crucial to save lives. Lack of care, or poor-quality care, has effects for newborns and children:

Effects on newborns: Every year 1.16 million African babies die in the first month of life and the leading cause is infections. The majority of the estimated 325,000 babies who die from neonatal sepsis and pneumonia could be saved with simple preventive practices such as clean skin and cord care, breastfeeding and warmth, and better management of those who are sick, especially using antibiotics. Most newborn deaths are among low birth weight (LBW) babies, or babies weighing less than 2500 grams at birth. Simple care of all small babies and early treatment of complications would save many newborn lives. However, neither home care practices nor care of small babies, or even treatment of newborn infections have been systematically addressed by child health programmes at scale, including Integrated Management of Childhood Illness (IMCI).

Effects on children: Lack of health promotion and services for babies has an impact on older children too. Severe illness during the first month of life can result in long term disability and poor school performance but there is little concrete data available on these serious newborn illnesses and their long-term effects on health. The first weeks

of life are crucial for establishing healthy behaviours, such as breastfeeding – in Africa only one third of babies less than 6 months of age are exclusively breastfed.

Table 7: Current interventions involved in the IMCI strategy

LEVEL TYPES OF INTERVENTION

	Illnessprevention and growth promotion	**Response to illness (curative**
Home and community	Community/home-based promotion of appropriate infant feeding practices; peer counselling for breastfeeding and complementary feeding • Use of insecticide treated bednets • Appropriate infection control practices	Early recognition and home management of illness • Appropriate care seeking • Adherence to treatment recommendations
Health Services	• Vaccinations • Micronutrient supplementation • Health worker counselling for breastfeeding and appropriate complementary feeding	• Case management of acute respiratory infection diarrhoea, measles, malaria, malnutrition, and other serious infections • Counselling on feeding problems • Iron for treatment
	• Antihelminthic treatment	

4.0 CONCLUSION

IMCI combines prevention and care, focusing on the child and not only on the individual diseases. The types of interventions currently in the IMCI strategy are shown in the table above.

5.0 SUMMARY

In this unit, you have learnt about the rationale for the development of IMCI. The objectives and components of IMCI, the strategies and principles of IMCI have been described. Also, you have understood the problem and the current interventions for IMCI.

6.0 TUTOR-MARKED ASSIGNMENT

1. Give a concise account of the problem and current intervention for IMCI
2. Describe the strategy and principles of IMCI
3. Discuss the rationale for IMCI

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UNIT 3 IMCI PACKAGE

CONTENTS

1.0 INTRODUCTION

The Integrated Management of Childhood Illness (IMCI) strategy is central to the achievement of child survival and development, a key principle of the Convention on the Rights of the Child. The strategy is based on human rights that guarantee health care to all children, no matter where they live, and is implemented by addressing the gaps in knowledge, skill, and community practices regarding children's health, recognition of illness, home management of the sick child, and appropriate care seeking behaviour.

2.0 OBJECTIVES

At the end of this unit, you will be able to:

- Describe the three components of IMCI for child survival
- Discuss why IMCI is better than single condition approaches
- Discuss the Key family and community practices.

3.0 MAIN CONTENT

3.1 Three components of IMCI for child survival

The IMCI strategy includes three important components:

1. Integrated management of ill children in facilities and health centres
2. Health system strengthening, particularly drugs and logistics support
3. Community IMCI, or promotion of key family and community practices

The three components of the IMCI strategy are most effective when they are implemented simultaneously. The combination of community and health facility approaches resulted in substantial increases in the use of services. The figure below illustrates the effect on survival of interventions in the three IMCI components.

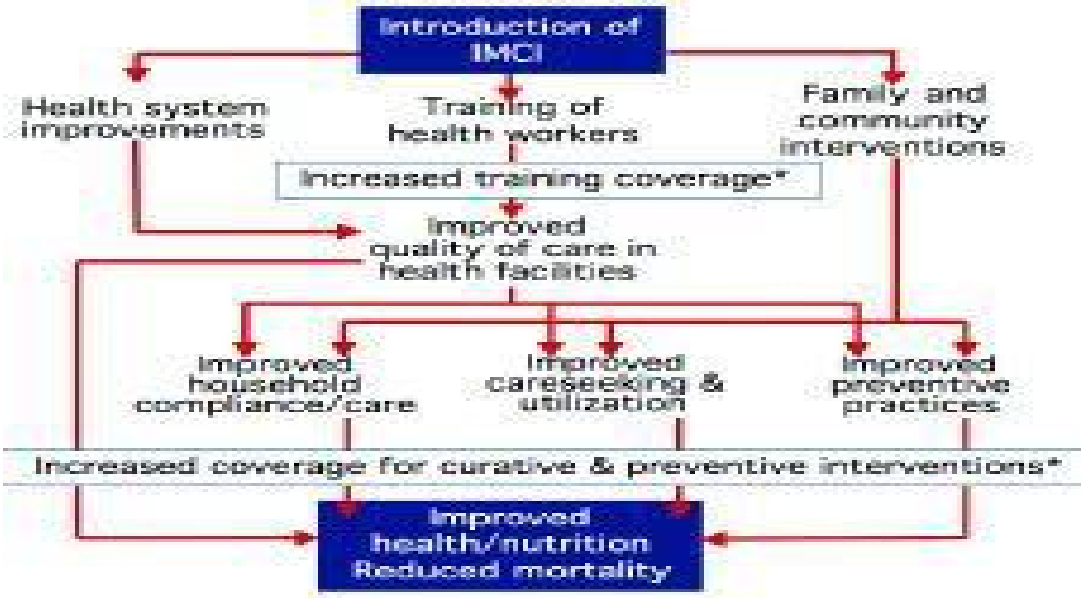

Figure 48: Improving child survival through the three components of IMCI

3.2 Why is IMCI better than single-condition approaches?

IMCI is an integrated approach to child health that focuses on the well-being of the whole child. IMCI aims to reduce death, illness and disability, and to promote growth and development among children under five years of age. IMCI includes both preventive and curative elements that are implemented by families and communities as well as by health facilities. Children brought for medical treatment in the developing world are often suffering from more than one condition, making a single diagnosis impossible. IMCI is an integrated strategy, which takes into account the variety of factors that put children at serious risk. It ensures the combined treatment of the major childhood illnesses, emphasizing prevention of disease through immunization and improved nutrition. In health facilities, the IMCI strategy promotes the accurate identification of childhood illnesses in outpatient settings, ensures appropriate combined treatment of all major illnesses, strengthens the counselling of caretakers, and speeds up the referral of severely ill children. In the home setting, it promotes appropriate care seeking behaviours, improved nutrition and preventative care, and the correct implementation of prescribed care.

3.2.1 How is IMCI implemented?

Introducing and implementing the IMCI strategy in a country is a phased process that requires a great deal of coordination among existing health programmes and services. It involves working closely with local governments and ministries of health to plan and adapt the principles of the approach to local circumstances. The main steps are:

- Adopting an integrated approach to child health and development in the national health policy.
- Adapting the standard IMCI clinical guidelines to the country's needs, available drugs, policies, and to the local foods and language used by the population.
- Upgrading care in local clinics by training health workers in new methods to examine and treat children, and to effectively counsel parents.
- Making upgraded care possible by ensuring that enough of the right low-cost medicines and simple equipment are available.
- Strengthening care in hospitals for those children too sick to be treated in an outpatient clinic.
- Developing support mechanisms within communities for preventing disease, for helping families to care for sick children, and for getting children to clinics or hospitals when needed.

IMCI has already been introduced in more than 75 countries around the world.

3.2.2 What has been done to evaluate the IMCI strategy?

The impact, cost and effectiveness of the IMCI strategy has been evaluated. The results support planning and advocacy for child health interventions by ministries of health in developing countries, and by national and international partners in development. The results of the evaluation indicate that:

- IMCI improves health worker performance and their quality of care;
- IMCI can reduce under-five mortality and improve nutritional status, if implemented well;
- IMCI is worth the investment, as it costs up to six times less per child correctly managed than current care;
- Child survival programmes require more attention to activities that improve family and community behaviour;
- The implementation of child survival interventions needs to be

complemented by activities that strengthen system support;
- A significant reduction in under-five mortality will not be attained unless large-scale intervention coverage is achieved.

3.3 Key family and community practices

Reducing child mortality requires a partnership between health workers and families, with support from communities. Health workers need to connect with families and communities to ensure that families can provide adequate home care to support the healthy growth and development of their children. Families should be able to respond appropriately when their children are sick, recognizing the problems or signs of illness in its early stages, seeking appropriate and timely assistance when children need additional care, and giving recommended treatments.

Growth Promotion and Development

- Exclusively breastfeed for 6 months
- Introduce appropriate complementary feeding from 6 months while continuing breastfeeding up to 24 months
- Provide adequate micronutrients through diet or supplementation
- Promote mental and psychosocial development

Care Seeking and Compliance

- Take child to complete full course of immunization before first birthday
- Recognize when child needs treatment outside the home and take to health worker
- Follow health worker's advice about treatment, follow-up and referral
- Ensure that all pregnant women have adequate antenatal care and tetanus toxoid vaccination during pregnancy
- Encourage active participation of men in child care and reproductive health activities

Home Management

- Continue to feed and offer more food and fluids when child sick
- Give child appropriate home treatment for illness
- Take appropriate actions to prevent and manage child injuries and accidents

Disease Prevention

- Carry out proper disposal of faeces, washing hands after defecation, before preparing meals, and before feeding the child
- Ensure that children sleep under insecticide treated bed nets
- Ensure prevention and care of persons infected and affected with HIV/AIDS
- Prevent child abuse/neglect and take appropriate action when it occurs

4.0 CONCLUSION

IMCI, already in place in almost all countries in sub- Saharan Africa, provides a unique opportunity to rapidly scale up newborn health interventions, especially care of serious infections. Strengthening the newborn component of IMCI implemented at the community, first level health facility, and referral level has contributed to improved newborn survival in Africa.

5.0 SUMMARY

In this unit we have described the three components of IMCI for child survival, and highlighted why IMCI is better than single condition approaches. Key family and community practices as regards to IMCI were also discussed.

6.0 TUTOR-MARKED ASSIGNMENT

1. Discuss in detail why IMCI is better than single condition approaches
2. What are the key families and community practices as regards to IMCI.
3. List the three components of IMCI

7.0 REFERENCES/FURTHER READING

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Blazer PG. (2008) Difference between IMCI and IMNCI.

UNIT 4 ADAPTATION OF IMCI TO IMNCI

CONTENTS

1.0 INTRODUCTION

It is strongly recommended that IMCI includes management of neonates during the first week of life. In other words, the young infant section of IMCI should outline management of babies after birth and up to 2 months old. The generic, revised IMCI does not include care at the time of birth

2.0 OBJECTIVES

At the end of this Unit, you will be able to:

- Discuss the adaptation of IMCI to IMNCI
- Explain the Kangaroo mother care
- Discuss the challenges of IMCI

3.0 MAIN CONTENT

3.1 Adaptation of IMCI to IMNCI

A large proportion of neonatal deaths occur in the first week of life. Adapting IMCI to strengthen newborn care requires organizing or revitalizing a national committee of technical experts and stakeholders to discuss the specifics of the new IMCI package. The committee should take into account the current status of neonatal health as well as the status of maternal and child health programmes. It is strongly recommended that IMCI include management of neonates during the first week of life. In other words, the young infant section of IMCI should outline management of babies after birth and up to 2 months old. In all settings, IMCI material should address severe disease in babies (serious infections, asphyxia, and complications of preterm birth),

diarrhoea, feeding problems, and care of LBW infants. In the generic version of IMCI, training starts with management of a child of 2 months to 5 years, followed by the young infant. Some countries have reversed the training sequence in order to increase the emphasis on newborn health.

3.1.1 Goals of IMNCI

- Standardized case management of sick newborns and children
- Focus on the most common causes of mortality
- Nutrition assessment and counseling for all sick infants and children
- Home care for newborns to:
- promote exclusive breastfeeding
- prevent hypothermia
- improve illness recognition & timely care seeking

3.1.2 Major Adaptations

- The entire 0-5-year period covered including the first week of life
- 50% of training time for management of young infants (0-2 months)
- The order of training reversed; now begins with management of young infants
- Reduced training duration (8 days), separate training materials for physicians & health workers
- Home-based care of young infants by health workers added

3.1.3 Potential of the adapted IMNCI Package

- Accelerating the reduction in infant and child mortality in both rural and urban areas, particularly by its impact on neonatal mortality through home and facility-based care
- Lower burden on hospitals, particularly in urban areas where access to care is not a limiting factor
- The package has been organized in a way that states with low post-neonatal infant mortality can use 0-2-month training material only

3.1.4 Home visits for young infants

- Promote & support exclusive breastfeeding
- Teach the mother how to keep the young infant warm
- Teach the mother to recognize signs of illness for which to seek care
- Identify illness at visit and facilitate referral
- Give advice on cord care and hand washing

3.1.5 Difference between IMCI and IMNCI

- IMNCI (Integrated Management of Neonatal and Childhood Infections) is the adaptation of IMCI (Integrated Management of Childhood Infections)
- IMNCI differs from IMCI in the following ways:
- Includes management of neonates (0-7 days of age)
- Incorporates national guidelines on malaria, immunization, anemia and Vitamin A supplementation
- Training of health staff starts with sick young infants (0-2 months of age)
- Equal time devoted for sick young infants and sick young children
- Skill based

3.2 Kangaroo mother care

Kangaroo care or kangaroo mother care (KMC), sometimes called skin-to-skin care, is a technique of newborn care where babies are kept skin-to-skin with a parent, typically their mother. Kangaroo care, named for the similarity to how certain marsupials carry their young, was initially developed in the 1970s to care for preterm infants in countries where incubators were either unavailable or unreliable. It is most commonly used for low birth-weight preterm babies, who are more likely to suffer from hypothermia, while admitted to a neonatal unit. It helps to keep the baby warm and support early breastfeeding.

Kangaroo mother care (KMC) is an effective way to care for a small baby weighing between 1,000 and 2,000 grams who has no major illness. KMC enables warmth breast feeding, protection from infection, stimulation, and love. The baby is undressed except for cap, nappy, and socks and is placed upright between the mother's breasts, with head turned to one side. The baby is then tied to the mother's chest with a cloth and covered with the mother's clothes. If the mother is not available, the father or any adult can provide skin-to-skin care. This care is continued until the infant no longer accepts it, usually when the weight exceeds 2,000 grams. KMC is safe to continue at home.

Research has shown that for preterm babies, KMC is at least as effective as incubator care. Small babies receiving KMC experience a shorter average stay in hospital compared to conventional care, have fewer infections, and gain weight more quickly. This can help in saving the hospital money and time and also saving the family additional suffering. KMC has been shown to decrease mortality and morbidity in preterm and low birth weight infants by providing

protection from infection; regulating temperature, breathing, and brain activity; and encouraging mother-baby bonding.

Figure 49: Kangaroo mother care

Source: Integrated Management of Childhood Illness (IMCI): Opportunities for Africa's Newborns

3.2.1 Three parts of KMC

Skin-to-skin contact between the baby's front and the mother's chest. The more skin-to-

skin contact, the better. For comfort a small nappy is fine, and for warmth a cap may be used. Skin-to-skin contact should ideally start at birth, but is helpful at any time. It should ideally be continuous day and night, but even shorter periods are still helpful.

Exclusive breastfeeding means that for an average mother, direct suckling by the baby

from the breasts is all that is needed. For very premature babies, expressing milk and addition of some essential nutrients may be needed.

Support to the dyad means that whatever is needed for the medical, emotional, psychological and physical wellbeing of mother and baby is provided to them, without separating them. This might mean adding ultramodern equipment if available, or purely intense psychological support in contexts with no resources. It can even mean going home very early.

3.2.2 KMC implementation

The World Health Organization recommends KMC for the routine care of newborns weighing 2000 grams or less at birth. However,

country-level adoption and implementation have been limited, and only a very small proportion of newborns that could benefit from KMC receive it. Barriers to KMC implementation include inadequate knowledge and skills for KMC, misperception of KMC as a "second-best" alternative to incubator care, cultural norms that make practice of skin-to-skin care difficult, poor data availability for KMC practice, and inadequate policy and professional commitment to KMC.

3.3 Challenges of IMCI

IMCI creates a major opportunity for scaling up newborn care, but there are challenges to rolling out IMCI effectively and for strengthening newborn interventions and care within IMCI. These include:

- **Supply of services**
  Adaptation of materials and training/retraining of health workers: Adaptation of materials is an intensive process requiring time, resources, and coordination as well as involving all the various stakeholders at country level. Retraining IMCI-trained health workers according to newly adapted materials has resource implications in terms of direct costs and also opportunity costs for workers taking time away from service provision.

- **Inadequate human and financial resources**
  One of the challenges to scaling up IMCI in countries has been reaching a large number of health workers through use of a time-intensive and costly course. To accelerate scaling up, some countries have adopted short IMCI courses that reach many health workers.

- **Inadequate quality of care at community level**
  There may be legal hurdles involved, whereby government policies and professional bodies do not allow community health workers to be responsible for the treatment of sick babies, even where access to care at facilities is low.

- **Health manpower crisis:** As reported in the World Health Report 2006 and the World Health Statistics 2012, there is global health manpower crisis. Some of the reasons for the crisis are insufficient numbers of trained health workers, brain drain within and outside the country, lack of staff motivation/commitment, unwillingness of health workers to work in certain areas- e.g. rural areas and ineffective/lack of supportive supervision, monitoring and evaluation of health workers' services.

- **Other health system related challenges:** These include fragmented implementation of Child survival programmes, weak and poorly functional health system, inequity in service distribution and multiplicity of single interventions-e.g. HIV/AIDS, Malaria Control Programme, Lassa fever Control Programme etc, which detract from the major issues related to child survival. There is also the politicization of health care in the country.

3.3.1 The way forward

- **Ensure equitable access to quality health care service:**

  The governments at all levels must ensure equitable access by all Nigerians to quality health care through the implementation of the National Health Policy, and other policies, guidelines and strategies adopted at different international and national meetings.

- **Provision of good governance and leadership**: There must be good governance and accountability at all levels of the government.

- **Inter-sectoral/multi-sectoral collaboration**: This involves harnessing the resources of other departments and faculties to promote child health. Different levels of government and sectors must collaborate to improve service delivery and address the distant, intermediate and proximate causes of child deaths-e.g. the Ministries of Environment and Water Resources must ensure there is safe environment- no environmental pollution, flooding, etc.

- **Funding of health programmes**

- **Creation of awareness about Child survival Interventions:** This can be achieved through the different Celebrations-Maternal, Newborn and Child Health Week, Immunization Plus Days, World Breastfeeding Week, World AIDS Day, Africa Malaria Day, etc

- **Advocacy on different issues related to child health**-e.g. improved funding of health services, immunization, antenatal care, delivery by skilled attendant, free service delivery for under-fives and their mothers, 6 months paid maternity leave, child abuse and trafficking, etc.

- **Involvement of Development partners and Non-Governmental Organizations, Professional associations and the private sector.**

- Improved data collection and analysis to ensure timely availability of relevant information for appropriate policy and decision-making may be needed to significantly improve current strategies aimed at reducing U5MR.

- Continuous and appropriate training for health workers and their strategic placement after training is needed in order to optimize their performance

- There is a need to articulate the roles and responsibilities of the federal, state and local governments as regards reduction of under-five mortality (U5MR).

4.0 CONCLUSION

The progress of any country depends on how healthy the children are. Therefore, such children should have access to basic health care, nutritious food and a protective environment. Kangaroo care, named for the similarity to how certain marsupials carry their young, was initially developed in the 1970s to care for preterm infants in countries where incubators were either unavailable or unreliable. There is evidence that it is effective in reducing both infant mortality and the risk of hospital-acquired infection, and increasing rates of breastfeeding and weight gain.

5.0 SUMMARY

In this unit, you have learnt about the adaptation of IMCI to IMNCI, Kangaroo mother care has been described and the challenges of IMCI with way forward discussed.

6.0 TUTOR-MARKED ASSIGNMENT

1. Describe the Kangaroo mother care and its importance in LBW/Preterm babies
2. Discuss the challenges of IMCI and the way forward
3. What are the differences between IMCI and IMNCI

7.0 REFERENCES/FURTHER READING

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Blazer PG. (2008) Difference between IMCI and IMNCI

UNIT 5 GROWTH MONITORING

CONTENTS

1.0 INTRODUCTION

Growth is a continuous process from conception to physical maturity. There is always normal growth whenever nutrition and environment are good for Age. When these conditions are satisfie, growth rate is the same for well nourished & healthy. When children are growing, they become

- Taller, fatter, heavier,
- "Grow out of their clothes"

2.0 OBJECTIVES

At the end of this unit you will be able to:

- To discuss growth monitoring
- List the factors influencing growth
- Discuss the Importance of growth monitoring
- Discuss growth chart and growth curve
- Discuss the different Methods of Assessing Nutritional Status
- Discuss School Health Services (SHS)

3.0 MAIN CONTENT

3.1 Concept of growth monitoring Factors influencing growth

- Family genes: determine childhood growth patterns and Adult heights
- Adequate nutrition

- Infections/diseases
- Endocrine: hormones such as growth hormone deficiency or disease of pituitary
- Systemic diseases: diabetes mellitus
- Stress
- Abuse etc.-

Effects of race / ethnicity / genetics *Vs* nutrition /attitude/ environment

- International reference populations
- Local Reference
- One-time measure Vs dynamic measurements

Importance of growth monitoring
Why do we give so much emphasis for *g*rowth monitoring? *Because*

- Growth is a very sensitive measure of health
- Weight gain is a very sensitive measure of growth
- Growth faltering is the best indicator for early detection of health problems, such as nutritional and infectious. It can identify steady growth, which is a best indicator of a child's health.
- It is important for follow up of children
- It tells the nutritional status in a given community.
- If it is done right malnutrition can be identified **before it affects the BRAIN. When is the best time to start growth monitoring?**

The first 5 years are a crucial period in the development of a child.

Brain development is almost wholly completed by age 2 and malnutrition peaks at around 24 months of age. This implies the need for early interventions of health, nutrition, cognitive stimulation, and socialization programs etc.

Do children grow at a normal rate?
We have to measure their length to know how tall and thickness to know how fat they are. As growth is an increase in size and weight one has to measure their weight and to be certain measure has to be taken regularly. To know the steady growth in regular measurement one has to use Growth Charts. Growth Charts are extremely important and central in growth monitoring.

Growth chart
A Growth chart is a very important record which is used as a personal growth chart for the child and has record of the child's illnesses and progress and has notes about nutrition advice given to mother. Growth

Chart:
- Tells direction of growth
- Reveals significant change in growth pattern.
- Helps in early detection of growth failure.

How?
Through regular measurement & recording one can have and plot

Growth Curve
Always remember that:

- Weighing the child is not a problem. But regular & accurate plotting!!!
- Growth chart is essential for every child as ANC card is for every pregnant Mother!!!
- An important part of health education is to teach mothers to keep growth charts carefully!!!

3.2 Methods of Assessing Nutritional Status

1. Clinical history and examination
2. Nutritional Anthropometry
3. Biomedical and laboratory tests

Anthropometric Measurements
Anthropometric Measurements are useful for growing children to detect growth failure. There are two methods depending on whether the child's age is known or not.

- When age is known

Weight and height for age

- When age is unknown
  - Mid arm circumference and
  - Head - chest circumference ratio
  - **Weight for age**
- Measures Acute and chronic malnutrition.

Weight for height

- Measures acute malnutrition - wasting
- Useful for nutrition surveys on older children.

Height for age

- Measures chronic malnutrition (stunting) **Mid upper arm circumference**
- Simple method
- Can be done by all health units, surveys
- For children above one year and under 5. Why between 1 and 5?

There is litter change in arm circumference between 1 and 5 years of age. Growth is in length and the upper arm does not get fatter
Mid upper arm circumference

- At birth is 11 cms
- At the first it becomes 16 cms and
- By the age of 5years it reaches 17 cms. Accordingly
- Healthy children above one year have mid- upper arm circumference of 16 cms.
- Undernourished children above 1 year have mid- upper arm circumference of 13.5 cms
- Malnourished children have mid- upper arm circumference of <12.5 cms
- Head - chest circumference Ratio:
  Over 6 months of age, the chest circumference is larger than the head and If it is the same or smaller after six months it shows that the child is undernourished.

Comparison of Anthropometric Indicators for Growth Monitoring

1. Weight-For-Age

Advantages

- Good basic indicator, combining acute and chronic malnutrition, for monitoring ongoing programs.
- Sensitive to small changes (although many variables influence small fluctuations in weight)
- Measure is objective and repeatable.
- Sole tool (scale) is portable and relatively inexpensive.
- Weighing is relatively easy for inexperienced health workers to manage, although it does require a literate worker.
- Measure is not time consuming.

Disadvantages

- Not sensitive to a stunted child who is growing well (below but parallel to a normal growth channel) or to the very tall child who may be malnourished.

- Relies on ago data, which are often subject to error. Age data for children below two years old have been found accurate, or, if in error, easily corrected, but it is difficult to accurately estimate unknown ages for children over two years.
- Mothers in some countries have objected to hanging of children from the scale during weighing.

2. Length/Height-for-Age

Advantages
- Good indicator of past nutrition problems.
- Measure is objective, repeatable, and has a low variability.
- A length and height board can be made locally for a minimum investment, and the boards are easily transported.

Rarely are mothers reluctant to have child measured because of appearance of the board.

Disadvantage
- In growth monitoring projects it should be supplemented by another indicator like weight- for-age or weight-for-height because changes in height occur relatively slowly.
- Requires two different techniques if programs include all preschoolers: recumbent (lying down) length (children 0-2 years) and standing height (children 3-5 years).
- More difficult for unskilled workers to learn to take accurate length/heights than to weigh a child with a simple scale.
- Requires two persons to take the measure.
- Relies on age data, which are often subject to error.

3. Weight-for-Length/Height

Advantage
- Good indicator to distinguish those who are well proportioned (weight/height) from those who are thin (or heavy) for their height.
- Indicator does not require age data, which are often inaccurate and difficult to obtain.
- Measures are objective and repeatable.

Disadvantage
- Depending on the cut-oft points chosen, weight-for-height can underestimate malnutrition by classifying those who are short and thin as normal.
- Requires taking two measures; therefore, problems of purchasing or making the instruments and transporting them are

compounded. Weighing and measuring height will require more training time and may be too complicated and time consuming for the inexperienced clinic worker.
- Some mothers may be reluctant to have their children weighed.
- Requires two persons to take length or height measure. Arm Circumference:

Advantage
- Indicator of severe current malnutrition, whether or not stunting is present
- While it may not detect changes as rapidly as weight monitoring, it will indicate changes in nutritional status over a short time.
- Measurement is taken with an inexpensive and portable arm tape, which can be made by project per. sonnet.
- Quick to use.
- Arm tape can be color coded for use by non-literate health workers (Shakir's strip).
- Indicator does not require age data, which can be inaccurate and difficult to obtain.
- No known objection by community to this measure.

Disadvantage

- It only identifies children with severe malnutrition. It is more difficult to determine who has borderline malnutrition.
- Variability is high on measurement. Field workers need practice of taking measurement, to ensure they do it accurately. Finding the mid-upper arm and placing the tape around the arm without compressing the tissue is difficult.

3.3 School Health Services (SHS)

School children, mostly, in the developing world, are one of the population groups who constitute the largest segment in population. By virtue of their number, children are entitled to a major share of the community health services. During this period, there are rapid physical, mental and emotional changes; hence there is a great need for health supervision and guidance. The school going child experiences group living outside the home, learns to adjust in the community and is exposed to hazards of infection in a mixed community.

Importance of School Health Services
- School children constitute a large segment of population in any country.

- Well-defined target group at one place, with the help of teachers so that their health status, growth and development can be monitored easily. Children learn healthy habits in school based on the health education received at school from teacher and other health professionals and thus spread the message of healthy living in the community where they live and grow.
- A child who is not well cannot derive the full advantage of the education imparted at school.
- Early detection of defects in growth and development, vision, hearing, speech, and behavioural problems; and timely intervention will help the child to overcome e handicap and thus contribute better to the community where he lives.

General Objectives of SHS

- Ensure achievement of children's potential to the fullest possible extent for effective physical, mental, intellectual, emotional and social living as adults.
- Enable children to achieve highest possible performance.
- Prepare children for smooth transition from childhood to adulthood with minimal health risk encountered through adolescence.
- Promote community health through parent-teacher-pupil interaction.

Specific Objectives

- Promotion of positive health by periodic medical inspection of school children.
- Early diagnosis and treatment of disease, institution of remedial measures to correct the defects observed during medical inspection.
- Control of communicable diseases by immunization.
- Ensuring proper environment, sanitation in school, including attention to housing facilities, protected water supply, drainage, and disposal of waste, hygienic environment where mid-day meals are prepared and served.
- Health education to impart knowledge and develop health attitude and habits to fight superstition, misconceptions, beliefs and facts, which are likely to affect health, and make maximum use of available health services.
- First aim and emergency care.
- Improvement of nutritional status of school children by way of health education, supplementary nutrition, mid-day meals, etc.
- Promotion of appropriate social and emotional behaviour and correction of behavioural problems with the help of child guidance clinics.
- Detection and proper guidance to physical and mentally

handicapped children.

- Awareness of health problems of national importance, ways and means of prevention and population-control education, nutritional, communicable diseases, immunisation, etc.

Components / activities of the SHS

Provision of Healthy School Environment

- Safety and sanitary conditions - includes safety and sanitation of play grounds, sewage system, recreation facilities, eating and drinking establishments, class room sanitation - lighting, ventilation and crowding,
- Traffic safety, substance abuse, supervision of motor vehicle accident preventive modalities by simulation
- Consideration of safe school day in terms of length, class size, classroom procedures (disciplines), etc.

Provision of Health services in the school

- Curative services - first aid care, treatment of minor illnesses such as injuries, examination and treatment at the school clinic, follow-up of special cases, etc.
- Preventive services - immunisation, growth monitoring, counseling services, periodic health checkup, health appraisal screening tests for hearing, vision, IQ tests, etc. Promotive services - these can be general or routine, i.e., hygiene, physical exercise and balanced diet.

Role of schoolteachers in SHS

- Recording height/weight/vision/hearing test at regular intervals.
- Daily observation of children with a view to spotting any deviations from normal health.
- To maintain health record of teachers and other health professionals and thus spread the message of healthy living in the community where they live and grow.
- A child who is not well cannot derive the full advantage of education imparted at school.
- Early detection of defects in growth and development, vision, hearing, speech, and behavioural problems; correction will help the child to overcome the handicap and thus contribute better to the community where he lives.

4.0 CONCLUSION

Health status of children of a nation is a highly reliable index of health of the population. What we do for our children today, especially at their younger age, will in large part determine the future of our country and its citizens.

5.0 SUMMARY

In this unit, we have discussed growth monitoring**,** List the factors influencing growth**,** discussed the importance of growth monitoring, growth chart and growth curve**,** the different Methods of Assessing Nutritional Status and School Health Services (SHS).

6.0 TUTOR-MARKED ASSIGNMENT

1. List the factors influencing growth
2. Discuss growth chart and growth curve
3. Discuss the different Methods of Assessing Nutritional Status
4. Discuss the role of teachers in School Health Services (SHS)

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MODULE 6 THE RIGHTS OF THE CHILD

UNIT 1 THE UNITED NATIONS CONVENTION ON THE RIGHTS OF THE CHILD

CONTENTS

1.0 INTRODUCTION

Convention on the Rights of the Child (CRC or the Convention) is an international treaty that aims to protect the rights of children worldwide. It defines a child as any human being under the age of 18, and calls on States Parties to take all appropriate measures to ensure that children's rights are protected—including the right to a name and nationality; freedom of speech and thought; access to healthcare and education; and freedom from exploitation, torture, and abuse. CRC came into force in September 1990, and has been ratified by 193 countries, making it the most widely ratified human rights treaty in the world. CRC addresses areas that are usually considered to be primarily or exclusively under the jurisdiction of state or local governments, including education, juvenile justice, and access to healthcare.

2.0 OBJECTIVES

At the end of this Unit, you will be able to:

- Discuss the evolution of the rights of child
- Explain the objective and structure of the rights of child
- Discuss about the Committee on the Rights of the Child

3.0 MAIN CONTENT

3.1 Evolution of the Convention

United nation (U.N) member states first collectively recognized the rights of children in the Universal Declaration of Human Rights, a non-binding resolution adopted by the U.N. General Assembly in 1948. The declaration states, "Motherhood and childhood are entitled to special care and assistance. All children, whether born in or out of wedlock, shall enjoy the same social protection." U.N. member states further enunciated children's rights by unanimously adopting the Declaration on the Rights of the Child in 1959. The declaration, which incorporates language from the Universal Declaration of Human Rights, calls on governments, families, and individuals to ensure that all children enjoy certain rights, including appropriate legal protections, a name and nationality, access to healthcare, and protection from abuse and exploitation. The international community also acknowledged the special rights of children in the International Covenant on Economic, Social, and Cultural Rights (CESCR) and the International Covenant on Civil and Political Rights (CCPR), which both entered into force in 1976. The possibility of a Convention on the Rights of the Child was first raised by the government of Poland in 1978 as U.N. member states planned activities and programs that would take place during the International Year of the Child in 1979. For the next decade, U.N. member states participated in a U.N. Commission on Human Rights (now the Human Rights Council) working group to draft the CRC text. The Convention was adopted by the U.N. General Assembly after a decade of negotiations on November 20, 1989, and came into force in September 2, 1990.

3.2 Objectives and Structure

CRC defines a child as "every human being below the age of eighteen years unless, under the law applicable to the child, majority is attained earlier." It states that the best interest of the child should be the primary consideration in all actions concerning children. Countries that are party to CRC agree to take all appropriate legislative, administrative, and other measures to ensure that all children in their jurisdiction have the rights set forth in the Convention. Such rights include life and development; name, nationality, and parental care; health and access to healthcare services; and education. They also include protection from abuse and neglect, and freedom of expression, religion, association, and peaceful assembly. CRC calls for the protection of children from economic, sexual, and other forms of exploitation; torture; and capital punishment for offenses committed before the age of 18. It also provides special protections for orphans,

refugees, and the disabled. Article 5 of CRC recognizes the role of parents, requiring that "States Parties shall respect the responsibilities; rights and duties of parents to provide appropriate direction and guidance in the exercise by the child of the rights recognized in the present Convention."

The Convention also states that children have the right to know and be cared for by their parents, and recognizes that the "rights and duties" of parents should be taken into account when States Parties seek to ensure a child's well-being.

3.3 Committee on the Rights of the Child

The Committee on the Rights of the Child (the Committee) was established under Article 43 of CRC to examine progress made by States Parties in meeting their obligations under the Convention. It is composed of 18 independent experts who serve four-year terms. Each State Party may nominate one candidate from among its nationals, and Committee members are elected by States Parties by an absolute majority, taking into account equitable geographic distribution. The Committee generally meets in Geneva, Switzerland, for three sessions per year—including a three-week plenary and a one-week pre-sessional working group. It may hold special sessions at the request of the Committee chairperson in consultation with other Committee members. Special sessions may also be convened at the request of a majority of Committee members or at the request of a State Party to the Convention Committee members elect a chairperson, three vice chairpersons, and a rapporteur to serve a two-year term. The chairperson directs Committee discussions and decision making and ensures that Committee rules are followed. The Committee submits a report on its activities to the U.N. General Assembly through the U.N. Economic and Social Council every two years. The Committee's primary responsibility is to monitor reports submitted by States Parties on national implementation of CRC. Countries are required to submit an initial report to the committee within two years of ratifying or acceding to CRC, followed by regular reports every five years.

The Committee's primary responsibility is to monitor reports submitted by States Parties on national implementation of CRC. Countries are required to submit an initial report to the committee within two years of ratifying or acceding to CRC, followed by regular reports every five years. According to the Convention, these reports should include any "factors and difficulties," affecting the fulfillment of the obligations under the Convention. States Parties present their reports at regular Committee meetings and engage in an open dialogue with committee members to address progress and challenges

to implementing CRC, as well as priorities and future goals. Committee members adopt concluding observations that include suggestions and observations, and may request further information from the reporting State Party as needed. The Committee also adopts general comments on articles, provisions, and themes of CRC to assist States Parties in fulfilling their obligations under the Convention. These comments address a range of issues— including juvenile justice, protection from corporal punishment and other forms of punishment, and HIV/AIDS prevention and treatment.

3.3.1 Children in Armed Conflict and the Sale of Children

The Convention has two optional protocols that provide specific protections for children:

(1) the Optional Protocol on the Involvement of Children in Armed Conflict; and (2) the Optional Protocol on the Sale of Children, Child Prostitution and Child Pornography. Though both Optional Protocols operate under CRC, they are independent multilateral agreements under international law. The Optional Protocol on Children in Armed Conflict limits the recruitment of children under the age of 18 for armed conflict and requires parties to provide children who have participated in armed conflict with appropriate physical and psychological rehabilitation. It came into force in February 12, 2002, and has been ratified by 151 countries. The Optional Protocol on the Sale of Children requires parties to criminalize child pornography and prostitution, close establishments that practice such activities, and seize any proceeds. It came into force in January 18, 2002, and has been ratified by 163 countries.

4.0 CONCLUSION

The unit discussed the basic principles of the United Nations and specific provisions of certain relevant human rights treaties and proclamations. It reaffirms the fact that children, because of their vulnerability, need special care and protection, and it places special emphasis on the primary caring and protective responsibility of the family. It also reaffirms the need for legal and other protections for the child before and after birth, the importance of respect for the cultural values of the child's community and the vital role of international cooperation in securing children's rights.

5.0 SUMMARY

This unit provides a brief history of the Convention and outlines its objectives and structure, including the role and responsibilities of

the treaty's monitoring body, the Committee on the Rights of the Child.

6.0 TUTOR-MARKED ASSIGNMENT

1. Discuss the evolution of the rights of child
2. Explain the objective and structure of the rights of chil

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UNIT 2 CONCEPT OF CONVENTION ON THE RIGHTS OF THE CHILD

CONTENTS

1.0 INTRODUCTION

The family is the fundamental group of society and the natural environment for the growth and well-being of all its members. Family members particularly children, should be afforded the necessary protection and assistance so that they can fully assume their responsibilities within the community. For the full and harmonious development of his or her personality, a child should grow up in a family environment, in an atmosphere of happiness, love and understanding. The child should be fully prepared to live an individual life in society, and brought up in the spirit of the ideals proclaimed in the Charter of the United Nations, and in particular in the spirit of peace, dignity, tolerance, freedom, equality and solidarity.

2.0 OBJECTIVES

At the end of this Unit, you will be able to:

- Define the Convention on the Rights of the Child
- Explain the legally binding text that protects the rights of children
- Discuss the Four Principles of Child Rights

3.0 MAIN CONTENT

3.1 What is the Convention on the Rights of the Child?

The Convention on the Rights of the Child is a United Nations agreement that spells out the range of rights that children everywhere

are entitled to. It sets basic standards for children's well-being at different stages of their development. Countries that ratify the Convention agree to be legally bound by its provisions. They report regularly to an expert Committee on the Rights of the Child as to steps they have taken to comply with the provisions of the Convention. The Convention is the first legally binding code of child rights in history. It brings together in one treaty all the relevant child rights issues, rather than having them scattered among a number of international treaties. The Convention on the Rights of the Child contains 54 articles, each of which entails a different type of right. These can be broken down into four broad categories:

Survival rights cover a child's right to life and the needs that are most basic to existence; these include an adequate living standard, shelter, nutrition and access to medical services. **Developmental rights** include those things that children require in order to reach their fullest potential. Examples are the right to education, play and leisure, cultural activities, access to information, and freedom of thought, conscience and religion.

Protection rights require that children be safeguarded against all forms of abuse, neglect and exploitation. They cover issues such as special care for refugee children, torture and abuses in the criminal justice system, involvement in armed conflict, child labour, drug abuse and sexual exploitation.

Participation rights allow children to take an active role in their communities and nations. These encompass the freedom to express opinions, to have a say in matters affecting their own lives, to join associations and to assemble peacefully. As their abilities develop, children are to have increasing opportunities to participate in the activities of their society, in preparation for responsible adulthood. Children can only exercise their rights if they know and learn about them.

3.2 The 1st legally binding text that protects the rights of children

The **Convention on the Rights of the Child** is part of the legally binding international instruments for the guarantee and the protection of Human Rights. Adopted in 1989, the Convention's objective is to protect the rights of all children in the world. T***he Convention is the first legally binding international instrument*** **of** Children's Rights protection. That means that it establishes an obligatory force to the body of all the rights it stipulates. That implies that the States that ratified the Convention are obligated to respect and to ensure that all rights it establishes in the name of children are respected.

This Convention represents the most comprehensive international text that exists in terms of children's rights protection. Even though other international instruments, such as the International Pacts, the ILO Conventions, and the international adoption Convention guarantee children's rights, ***the Convention is the only text to address all aspects of children's rights.***

The Convention comprises 54 articles that establish the body of all children's civil and political rights, as well as their economic, social and cultural rights.

It also advocates the protection and promotion of the rights of special needs children, of minority children and of refugee children. The Convention advocates, in part II, that its implementation be monitored by a committee of experts. It is the Committee on the Rights of the Child *which oversees that all participating States respect the Convention* as well as the two additional Protocols.

3.3 The Four Principles of Child Rights

When the UN Committee on the Rights of the Child met for its first formal session in September/October 1991, it discussed the very meaning of Children's Rights. The committee concluded that the Convention on the Rights of the Child was about human rights for children. In drafting guidelines on how government should write and structure their initial reports on the implementation of the convention, the committee highlighted the general principles that were to help in the interpretation of the convention as a whole and thereby guide its implementation. The formulation of the principles draws much from Articles 2, 3, 6 and 12 of the convention itself.

1. Non-Discrimination

One general principle as identified by the committee on the rights of the child is that all children should enjoy their rights and should never be subjected to any discrimination. The obligation to provide equality of opportunities among children is expressed in Article 2, the first paragraph of which reads: "States parties shall respect and ensure the rights set forth in the present convention to each child within their jurisdiction without discrimination of any kind, irrespective of the child's parents or legal guardian, race, colour, sex, language, religion, political or other opinion, national, ethnic or social origin, poverty, disability, birth or other status."

2. Best interests of the child

Children, especially when they are very young, are vulnerable and need special support to be able to enjoy their rights fully. How could children be granted equal rights and at the same time the necessary protection? Part of the answer lies in the principle of the best interest of the child, formulated in Article 3:1. "In all actions concerning children whether undertaken by public or private social welfare institution, courts of law, administrative authorities or legislative bodies, the best interest of the child shall be a primary consideration."

3. The right to survival and development

The principle most directly related to children's economic and social rights is formulated in the right to life article. The article goes further than just granting children the right not to be killed; it includes the right to survival and development which is formulated in Article 6:2 and states thus: "State parties shall ensure, to the maximum extent possible, the survival and development of the child."

4. The views of the child

A crucial dimension of the convention is expressed through another principle, the one about respecting the views of the child. In order to know what is actually in the interest of the child, it is logical to listen to him or her. The principle is formulated in Article 12:1 which states that "States parties shall assure to the child who is capable of forming his or her own views the rights to express those views freely in all matters affecting the child, the view of the child being given due weight in accordance with the age and maturity of the child.

These four principles contribute to a general attitude towards children and their rights. They are based on the notion that children too are equal as human beings. The affirmation of the rights to play underlines that childhood has a value in itself; these years are merely a training period for life as an adult. How do we grant children equal value and at the same time guarantee them the necessary protection? The answer lies in the implementations of the four general principles. Together they form nothing less than a new attitude toward children. They give an ethical and ideological dimension to the convention.

4.0 CONCLUSION

The Convention of the right of the child deals with the child-specific needs and rights. It requires that the "nations that ratify this convention are bound to it by international law". Ratifying states must act in the

best interests of the child. In all jurisdictions, implementing the Convention requires compliance with child custody and guardianship laws as that every child has basic rights, including the right to life, to their own name and identity, to be raised by their parents within a family or cultural grouping, and to have a relationship with both parents, even if they are separated. The Convention obliges states to allow parents to exercise their parental responsibilities. The Convention also acknowledges that children have the right to express their opinions and to have those opinions heard and acted upon when appropriate, to be protected from abuse or exploitation, and to have their privacy protected, and it requires that their lives not be subject to excessive interference.

5.0 SUMMARY

In this unit we have defined the Convention on the Rights of the Child, explained the legally binding text that protects the rights of children and discussed the four principles of child rights.

6.0 TUTOR-MARKED ASSIGNMENT

1. Define the Convention on the Rights of the Child
2. Explain the legally binding text that protects the rights of children
3. Discuss the Four Principles of Child Rights

7.0 REFERENCES/FURTHER READING

UN General Assembly, Convention on the Rights of the Child, 20 November 1989, United Nations, Treaty Series, vol. 1577, p. 3, available at: http://www.refworld.org/docid/3ae6b38f0.html [accessed 12 November 2018]

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UNIT 3 SUMMARY OF THE UN CONVENTION ON THE RIGHTS OF THE CHILD (1)

CONTENTS

1.0 INTRODUCTION

The Universal Declaration of Human Rights, the United Nations has proclaimed that childhood is entitled to special care and assistance. The Declaration of the Rights of the Child, "the child, by reason of his physical and mental immaturity, needs special safeguards and care, including appropriate legal protection, before as well as after birth".

2.0 OBJECTIVES

At the end of this unit you will be able to state and describe Article 1-30 of the Convention of the rights of child.

3.0 MAIN CONTENT

3.1 Article 1-10

Article 1 (Definition of the child): The Convention defines a 'child' as a person below the age of 18, unless the laws of a particular country set the legal age for adulthood younger. The Committee on the Rights of the Child, the monitoring body for the Convention, has encouraged States to review the age of majority if it is set below 18 and to increase the level of protection for all children under 18.

Article 2 (Non-discrimination): The Convention applies to all children, whatever their race, religion or abilities; whatever they think or say, whatever type of family they come from. It doesn't matter where children live, what language they speak, what their parents do, whether they are boys or girls, what their culture is, whether they have a disability or whether they are rich or poor. No child should be treated unfairly on any basis.

Article 3 (Best interests of the child): The best interests of children must be the primary concern in making decisions that may affect them. All adults should do what is best for children. When adults make decisions, they should think about how their decisions will affect children. This particularly applies to budget, policy and law makers.

Article 4 (Protection of rights): Governments have a responsibility to take all available measures to make sure children's rights are respected, protected and fulfilled. When countries ratify the Convention, they agree to review their laws relating to children. This involves assessing their social services, legal, health and educational systems, as well as levels of funding for these services. Governments are then obliged to take all necessary steps to ensure that the minimum standards set by the Convention in these areas are being met. They must help families protect children's rights and create an environment where they can grow and reach their potential. In some instances, this may involve changing existing laws or creating new ones. Such legislative changes are not imposed, but come about through the same process by which any law is created or reformed within a country. Article 41 of the Convention points out the when a country already has higher legal standards than those seen in the Convention, the higher standards always prevail.

Article 5 (Parental guidance): Governments should respect the rights and responsibilities of families to direct and guide their children so that, as they grow, they learn to use their rights properly. Helping children to understand their rights does not mean pushing them to make choices with consequences that they are too young to handle. Article 5 encourages parents to deal with rights issues "in a manner consistent with the evolving capacities of the child". The Convention does not take responsibility for children away from their parents and give more authority to governments. It does place on governments the responsibility to protect and assist families in fulfilling their essential role as nurturers of children.

Article 6 (Survival and development): Children have the right to live. Governments should ensure that children survive and develop healthily.

Article 7 (Registration, name, nationality, care): All children have the right to a legally registered name, officially recognised by the government. Children have the right to a nationality (to belong to a country). Children also have the right to know and, as far as possible, to be cared for by their parents.

Article 8 (Preservation of identity): Children have the right to an identity – an official record of who they are. Governments should respect children's right to a name, a nationality and family ties.

Article 9 (Separation from parents): Children have the right to live with their parent(s), unless it is bad for them. Children whose parents do not live together have the right to stay in contact with both parents, unless this might hurt the child.

Article 10 (Family reunification): Families whose members live in different countries should be allowed to move between those countries so that parents and children can stay in contact, or get back together as a family.

3.2 Article 11-20

Article 11 (Kidnapping): Governments should take steps to stop children being taken out of their own country illegally. This article is particularly concerned with parental abductions. The Convention's Optional Protocol on the sale of children, child prostitution and child pornography has a provision that concerns abduction for financial gain.

Article 12 (Respect for the views of the child): When adults are making decisions that affect children, children have the right to say what they think should happen and have their opinions taken into account.

This does not mean that children can now tell their parents what to do. This Convention encourages adults to listen to the opinions of children and involve them in decision-making - not give children authority over adults. Article 12 does not interfere with parents' right and responsibility to express their views on matters affecting their children. Moreover, the Convention recognizes that the level of a child's participation in decisions must be appropriate to the child's level of maturity. Children's ability to form and express their opinions develops with age and most adults will naturally give the views of teenagers greater weight than those of a preschooler, whether in family, legal or administrative decisions.

Article 12 (Respect for the views of the child): When adults are making decisions that affect children, children have the right to say what they think should happen and have their opinions taken into account.

Article 13 (Freedom of expression): Children have the right to get and share information, as long as the information is not damaging to them or others. In exercising the right to freedom of expression, children have the responsibility to also respect the rights, freedoms

and reputations of others. The freedom of expression includes the right to share information in any way they choose, including by talking, drawing or writing.

Article 14 (Freedom of thought, conscience and religion): Children have the right to think and believe what they want and to practise their religion, as long as they are not stopping other people from enjoying their rights. Parents should help guide their children in these matters. The Convention respects the rights and duties of parents in providing religious and moral guidance to their children. Religious groups around the world have expressed support for the Convention, which indicates that it in no way prevents parents from bringing their children up within a religious tradition. At the same time, the Convention recognizes that as children mature and are able to form their own views, some may question certain religious practices or cultural traditions. The Convention supports children's right to examine their beliefs, but it also states that their right to express their beliefs implies respect for the rights and freedoms of others.

Article 15 (Freedom of association): Children have the right to meet together and to join groups and organisations, as long as it does not stop other people from enjoying their rights. In exercising their rights, children have the responsibility to respect the rights, freedoms and reputations of others.

Article 16 (Right to privacy): Children have a right to privacy. The law should protect them from attacks against their way of life, their good name, their families and their homes. **Article 17 (Access to information; mass media):** Children have the right to get information that is important to their health and well-being. Governments should encourage mass media – radio, television, newspapers and Internet content sources – to provide information that children can understand and not promote materials that could harm children. Mass media should particularly be encouraged to supply information in languages that minority and indigenous children can understand. Children should also have access to children's books.

Article 18 (Parental responsibilities; state assistance): Both parents share responsibility for bringing up their children, and should always consider what is best for each child. Governments must respect the responsibility of parents for providing appropriate guidance to their children – the Convention does not take responsibility for children away from their parents and give more authority to governments. It places a responsibility on governments to provide support services to parents, especially if both parents work outside the home.

Article 19 (Protection from all forms of violence): Children have the right to be protected from being hurt and mistreated, physically or mentally. Governments should ensure that children are properly cared for and protect them from violence, abuse and neglect by their parents, or anyone else who looks after them. In terms of discipline, the Convention does not specify what forms of punishment parents should use. However any form of discipline involving violence is unacceptable. There are ways to discipline children that are effective in helping children learn about family and social expectations for their behaviour– ones that are non-violent, are appropriate to the child's level of development and take the best interests of the child into consideration. In most countries, laws already define what sorts of punishments are considered excessive or abusive. It is up to each government to review these laws in light of the Convention.

Article 20 (Children deprived of family environment): Children who cannot be looked after by their own family have a right to special care and must be looked after properly, by people who respect their ethnic group, religion, culture and language.

3.3 Article 21-30

Article 21 (Adoption): Children have the right to care and protection if they are adopted or in foster care. The first concern must be what is best for them. The same rules should apply whether they are adopted in the country where they were born, or if they are taken to live in another country.

Article 22 (Refugee children): Children have the right to special protection and help if they are refugees (if they have been forced to leave their home and live in another country), as well as all the rights in this Convention.

Article 23 (Children with disabilities): Children who have any kind of disability have the right to special care and support, as well as all the rights in the Convention, so that they can live full and independent lives.

Article 24 (Health and health services): Children have the right to good quality health care – the best health care possible – to safe drinking water, nutritious food, a clean and safe environment, and information to help them stay healthy. Rich countries should help poorer countries achieve this.

Article 25 (Review of treatment in care): Children who are looked after by their local authorities, rather than their parents, have the

right to have these living arrangements
looked at regularly to see if they are the most appropriate. Their care and treatment should always be based on "the best interests of the child".

Article 26 (Social security): Children – either through their guardians or directly – have the right to help from the government if they are poor or in need.

Article 27 (Adequate standard of living): Children have the right to a standard of living that is good enough to meet their physical and mental needs. Governments should help families and guardians who cannot afford to provide this, particularly with regard to food, clothing and housing.

Article 28: (Right to education): All children have the right to a primary education, which should be free. Wealthy countries should help poorer countries achieve this right. Discipline in schools should respect children's dignity. For children to benefit from education, schools must be run in an orderly way – without the use of violence. Any form of school discipline should take into account the child's human dignity. Therefore, governments must ensure that school administrators review their discipline policies and eliminate any discipline practices involving physical or mental violence, abuse or neglect. The Convention places a high value on education. Young people should be encouraged to reach the highest level of education of which they are capable.

Article 29 (Goals of education): Children's education should develop each child's personality, talents and abilities to the fullest. It should encourage children to respect others, human rights and their own and other cultures. It should also help them learn to live peacefully, protect the environment and respect other people. Children have a particular responsibility to respect the rights of their parents, and education should aim to develop respect for the values and culture of their parents. The Convention does not address such issues as school uniforms, dress codes, the singing of the national anthem or prayer in schools. It is up to governments and school officials in each country to determine whether, in the context of their society and existing laws, such matters infringe upon other rights protected by the Convention.

Article 30 (Children of minorities/indigenous groups): Minority or indigenous children have the right to learn about and practice their own culture, language and religion. The right to practice one's own culture, language and religion applies to everyone; the Convention here highlights this right in instances where the practices are not shared by the majority of people in the country.

4.0 CONCLUSION

The United Nations Convention on the Rights of the Child (commonly abbreviated as the CRC or UNCRC) is a human rights treaty which sets out the civil, political, economic, social, health and cultural rights of children. The Convention defines a child as any human being under the age of eighteen, unless the age of majority is attained earlier under national legislation. Nations that ratify this convention are bound to it by international law. Compliance is monitored by the UN Committee on the Rights of the Child, which is composed of members from countries around the world. Once a year, the Committee submits a report to the Third Committee of the United Nations General Assembly, which also hears a statement from the CRC Chair, and the Assembly adopts a Resolution on the Rights of the Child.

5.0 SUMMARY

In this unit we have described Article 1-30 of the Convention on the Rights of the Child.

6.0 TUTOR-MARKED ASSIGNMENT

1. List and describe any 10 of the articles on the Convention on the Rights of the Child.

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UNIT 4 SUMMARY OF THE UN CONVENTION ON THE RIGHTS OF THE CHILD (2)

CONTENTS

1.0 INTRODUCTION

The Universal Declaration of Human Rights, the United Nations has proclaimed that childhood is entitled to special care and assistance. The Declaration of the Rights of the Child, "the child, by reason of his physical and mental immaturity, needs special safeguards and care, including appropriate legal protection, before as well as after birth".

2.0 OBJECTIVES

At the end of this unit you will be able to state and describe Article 31-41, part 11 and part 111 of the Convention of the rights of child.

3.0 MAIN CONTENT

3.1 Article 31-41

Article 31 (Leisure, play and culture): Children have the right to relax and play, and to join in a wide range of cultural, artistic and other recreational activities.

Article 32 (Child labour): The government should protect children from work that is dangerous or might harm their health or their education. While the Convention protects children from harmful and exploitative work, there is nothing in it that prohibits parents from expecting their children to help out at home in ways that are safe and appropriate to their age. If children help out in a family farm or business, the tasks they do be safe and suited to their level of development and comply with national labour laws. Children's work should not jeopardize any of their other rights, including the right to education, or the right to relaxation and play.

Article 33 (Drug abuse): Governments should use all means possible to protect children from the use of harmful drugs and from being used in the drug trade.

Article 34 (Sexual exploitation): Governments should protect children from all forms of sexual exploitation and abuse. This provision in the Convention is augmented by the Optional Protocol on the sale of children, child prostitution and child pornography.

Article 35 (Abduction, sale and trafficking): The government should take all measures possible to make sure that children are not abducted, sold or trafficked. This provision in the Convention is augmented by the Optional Protocol on the sale of children, child prostitution and child pornography.

Article 36 (Other forms of exploitation): Children should be protected from any activity that takes advantage of them or could harm their welfare and development.

Article 37 (Detention and punishment): No one is allowed to punish children in a cruel or harmful way. Children who break the law should not be treated cruelly. They should not be put in prison with adults, should be able to keep in contact with their families, and should not be sentenced to death or life imprisonment without possibility of release.

Article 38 (War and armed conflicts): Governments must do everything they can to protect and care for children affected by war. Children under 15 should not be forced or recruited to take part in a war or join the armed forces. The Convention's Optional Protocol on the involvement of children in armed conflict further develops this right, raising the age for direct participation in armed conflict to 18 and establishing a ban on compulsory recruitment for children under 18.

Article 39 (Rehabilitation of child victims): Children who have been neglected, abused or exploited should receive special help to physically and psychologically recover and reintegrate into society. Particular attention should be paid to restoring the health, self-respect and dignity of the child.

Article 40 (Juvenile justice): Children who are accused of breaking the law have the right to legal help and fair treatment in a justice system that respects their rights. Governments are required to set a minimum age below which children cannot be held criminally responsible and to provide minimum guarantees for the fairness and quick resolution of judicial or alternative proceedings.

Article 41 (Respect for superior national standards): If the laws of a country provide better protection of children's rights than the articles in this Convention, those laws should apply.

3.2 Part II (Article 42-45)

Article 42
States Parties undertake to make the principles and provisions of the Convention widely known, by appropriate and active means, to adults and children alike.

Article 43
1. For the purpose of examining the progress made by States Parties in achieving the realization of the obligations undertaken in the present Convention, there shall be established a Committee on the Rights of the Child, which shall carry out the functions hereinafter provided.
2. The Committee shall consist of ten experts of high moral standing and recognized competence in the field covered by this Convention. The members of the Committee shall be elected by States Parties from among their nationals and shall serve in their personal capacity, consideration being given to equitable geographical distribution, as well as to the principal legal systems.
3. The members of the Committee shall be elected by secret ballot from a list of persons nominated by States Parties. Each State Party may nominate one person from among its own nationals.
4. The initial election to the Committee shall be held no later than six months after the date of the entry into force of the present Convention and thereafter every second year. At least four months before the date of each election, the Secretary-General of the United Nations shall address a letter to States Parties inviting them to submit their nominations within two months. The Secretary-General shall subsequently prepare a list in alphabetical order of all persons thus nominated, indicating States Parties which have nominated them, and shall submit it to the States Parties to the present Convention.
5. The elections shall be held at meetings of States Parties convened by the Secretary- General at United Nations Headquarters. At those meetings, for which two thirds of States Parties shall constitute a quorum, the persons elected to the Committee shall be those who obtain the largest number of votes and an absolute majority of the votes of the representatives of States Parties present and voting.
6. The members of the Committee shall be elected for a term of four years. They shall be eligible for re-election if renominated.

The term of five of the members elected at the first election shall expire at the end of two years; immediately after the first election, the names of these five members shall be chosen by lot by the Chairman of the meeting.

7. If a member of the Committee dies or resigns or declares that for any other cause he or she can no longer perform the duties of the Committee, the State Party which nominated the member shall appoint another expert from among its nationals to serve for the remainder of the term, subject to the approval of the Committee.
8. The Committee shall establish its own rules of procedure.
9. The Committee shall elect its officers for a period of two years.
10. The meetings of the Committee shall normally be held at United Nations Headquarters or at any other convenient place as determined by the Committee. The Committee shall normally meet annually. The duration of the meetings of the Committee shall be determined, and reviewed, if necessary, by a meeting of the States Parties to the present Convention, subject to the approval of the General Assembly.
11. The Secretary-General of the United Nations shall provide the necessary staff and facilities for the effective performance of the functions of the Committee under the present Convention.
12. With the approval of the General Assembly, the members of the Committee established under the present Convention shall receive emoluments from United Nations resources on such terms and conditions as the Assembly may decide.

Article 44

1. States Parties undertake to submit to the Committee, through the Secretary-General of the United Nations, reports on the measures they have adopted which give effect to the rights recognized herein and on the progress made on the enjoyment of those rights
   (a) Within two years of the entry into force of the Convention for the State Party concerned;
   (b) Thereafter every five years.

2. Reports made under the present article shall indicate factors and difficulties, if any, affecting the degree of fulfillment of the obligations under the present Convention. Reports shall also contain sufficient information to provide the Committee with a comprehensive understanding of the implementation of the Convention in the country concerned.
3. A State Party which has submitted a comprehensive initial report to the Committee need not, in its subsequent reports submitted in accordance with paragraph 1 (b) of the present article, repeat basic information previously provided.

4. The Committee may request from States Parties further information relevant to the implementation of the Convention.
5. The Committee shall submit to the General Assembly, through the Economic and Social Council, every two years, reports on its activities.
6. States Parties shall make their reports widely available to the public in their own countries.

Article 45

In order to foster the effective implementation of the Convention and to encourage international cooperation in the field covered by the Convention:

(a) The specialized agencies, the United Nations Children's Fund, and other United Nations organs shall be entitled to be represented at the consideration of the implementation of such provisions of the present Convention as fall within the scope of their mandate. The Committee may invite the specialized agencies, the United Nations Children's Fund and other competent bodies as it may consider appropriate to provide expert advice and submit reports on the implementation of the Convention in areas falling within the scope of their respective mandates.

(b) The Committee shall transmit, as it may consider appropriate, to the specialized agencies, the United Nations Children's Fund and other competent bodies, any reports from States Parties that contain a request, or indicate a need, for technical advice or assistance, along with the Committee's observations and suggestions, if any, on these requests or indications;

(c) The Committee may recommend to the General Assembly to request the Secretary- General to undertake on its behalf studies on specific issues relating to the rights of the child;

(d) The Committee may make suggestions and general recommendations based on information received pursuant to articles 44 and 45 of the present Convention. Such suggestions and general recommendations shall be transmitted to any State Party concerned and reported to the General Assembly, together with comments, if any, from States Parties.

3.3 PART III (Article 46-54) Article 46

The present Convention shall be open for signature by all States.

Article 47

The present Convention is subject to ratification. Instruments of ratification shall be deposited with the Secretary-General of the United Nations.

Article 48

The present Convention shall remain open for accession by any State. The instruments of accession shall be deposited with the Secretary-General of the United Nations.

Article 49

1. The present Convention shall enter into force on the thirtieth day following the date of deposit with the Secretary-General of the United Nations of the twentieth instrument of ratification or accession.
2. For each State ratifying or acceding to the Convention after the deposit of the twentieth instrument of ratification or accession, the Convention shall enter into force on the thirtieth day after the deposit by such State of its instrument of ratification or accession.

Article 50

1. Any State Party may propose an amendment and file it with the Secretary-General of the United Nations. The Secretary-General shall there upon communicate the proposed amendment to States Parties; with a request that they indicate whether they favour a conference of States Parties for the purpose of considering and voting upon the proposals. In the event that, within four months from the date of such communication, at least one third of the States Parties favour such a conference, the Secretary-General shall convene the conference under the auspices of the United Nations. Any amendment adopted by a majority of States Parties present and voting at the conference shall be submitted to the General Assembly for approval.
2. An amendment adopted in accordance with paragraph 1 of the present article shall enter into force when it has been approved by the General Assembly of the United Nations and accepted by a two thirds majority of States Parties.
3. When an amendment enters into force, it shall be binding on those States Parties which have accepted it, other States Parties still being bound by the provisions of the present Convention and any earlier amendments which they have accepted.

Article 51

1. The Secretary-General of the United Nations shall receive and circulate to all States the text of reservations made by States at

the time of ratification or accession.

2. A reservation incompatible with the object and purpose of the present Convention shall not be permitted.
3. Reservations may be withdrawn at any time by notification to that effect addressed to the Secretary-General of the United Nations, who shall then inform all States. Such notification shall take effect on the date on which it is received by the Secretary-General

Article 52

A State Party may denounce the present Convention by written notification to the Secretary-General of the United Nations. Denunciation becomes effective one year after the date of receipt of the notification by the Secretary-General.

Article 53

The Secretary-General of the United Nations is designated as the depositary of the present Convention.

Article 54

The original of the present Convention, of which the Arabic, Chinese, English, French, Russian and Spanish texts are equally authentic, shall be deposited with the Secretary- General of the United Nations. IN WITNESS THERE OF the undersigned plenipotentiaries, being duly authorized thereto by their respective governments, have signed the present Convention.

4.0 CONCLUSION

The Convention deals with the child-specific needs and rights. It requires that the "nations that ratify this convention are bound to it by international law". Ratifying states must act in the best interests of the child. In all jurisdictions implementing the Convention requires compliance with child custody and guardianship laws as that every child has basic rights, including the right to life, to their own name and identity, to be raised by their parents within a family or cultural grouping, and to have a relationship with both parents, even if they are separated. The Convention obliges states to allow parents to exercise their parental responsibilities. The Convention also acknowledges that children have the right to express their opinions and to have those opinions heard and acted upon when appropriate, to be protected from abuse or exploitation, and to have their privacy protected, and it requires that their lives not be subject to excessive interference. The Convention also obliges signatory states to provide separate legal representation for a child in any judicial dispute concerning their care and asks that the child's viewpoint be heard in such cases and it forbids capital punishment for children.

5.0 SUMMARY

In this unit we have described Article 31-54 of the Convention on the Rights of the Child.

6.0 TUTOR-MARKED ASSIGNMENT

1. List and describe any 10 of the articles on the Convention on the Rights of the Child.

7.0 REFERENCES/FURTHER READING

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