MATERNAL CHILD HEALTH

STUDENT BOOK SENIOR 6
ASSOCIATE NURSING PROGRAM

First Edition

FORWARD

Dear Student,

Rwanda Basic Education Board is honoured to present to you this Maternal child health Textbook for Senior Four for Associate Nursing program which serves as a guide to competence-based teaching and learning to ensure consistency and coherence in the learning of Maternal child health subject.

The Rwandan educational philosophy is to ensure that you achieve full potential at every level of education which will prepare you to be well integrated in society and exploit employment opportunities. The government of Rwanda emphasizes the importance of aligning teaching and learning materials with the syllabus to facilitate your learning process. Many factors influence what you learn, how well you learn and the competences you acquire. Those factors include the instructional materials available among others.

Special attention was paid to the activities that facilitate the learning process in which you can develop your ideas and make new discoveries during concrete activities carried out individually or with peers.

In competence-based curriculum, learning is considered as a process of active building and developing knowledge and meanings by the learner where concepts are mainly introduced by an activity, a situation or a scenario that helps the learner to construct knowledge, develop skills and acquire positive attitudes and values. For effective use of this textbook,your role is to:

- Work on given activities including application activities which lead to the
- development of skills;
- Share relevant information with other learners through presentations, discussions,
- group work and other active learning techniques such as role play, case studies,
- investigation and research in the library, from the internet or from your community;
- Participate and take responsibility for your own learning;
- Draw conclusions based on the findings from the learning activities.

I wish to sincerely extend my appreciation to the people who contributed towards the development of this book, the Ministry of Health, Human Resource for Health Secretariat (HRHS), University of Rwanda, School of Nursing and Midwifery, Higher Learning Institutions and Rwanda Basic Education Board. Special gratitude goes to University faculty, Nurses, Midwives, Teachers, illustrators, designers. HRH Secretariat Staff and REB Staff who diligently worked to successful completion of this book.

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Director General of Rwanda Basic Education Board

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Head of Curriculum, Teaching and Learning Resources Department / REB

Table of Contents

UNIT 1 NATURAL FAMILY PLANNING

Key unit competence

Provide natural family planning services

Introductory activity 1

Family A

Family B

a. What can you suggest for Family B to do in order to achieve sustainable development and wellbeing?

b. Do you know the methods that can be used for family planning?

c. According to you, what are the methods that can be used easily without visiting the health facilities?

1.1 Introduction to family planning

Learning activity 1.1

a) What do you understand by family planning and contraception?

b) Why do you think family planning is important?

1.1.1 Concepts of family planning

Family planning refers to individual's or couple's' conscious and informed decision to decide when to become or not to become pregnant throughout the reproductive years.

Contraception is defined to the intentional use of artificial methods and/or other techniques to prevent pregnancy as a result of doing sexual intercourse.

Natural family planning This refers to the methods of contraception which do not use hormones and devices. Natural family planning includes abstinence, coitus interruptus, lactation amenorrhea, and fertility awareness methods.

Modern family planning refers to all products and/ or medical procedures that interfere with reproduction whenever there is coital activity. Some of the products act by preventing ovulation from occurring and others may inhibit sperms from fertilising the matured egg.

1.1.2 Benefits of family planning

Family planning can lead to sustainable development. It enables women and couples to avoid **unwanted pregnancies, attain the desired number of births, and control the intervals between births.** Family planning can contribute to delaying pregnancy in young girls who may at increased risk of health problems from early childbearing, and further reduces the rates of unsafe abortions and HIV transmission. Family planning can benefit the education of girls and lead to women's empowerment within the community. In addition, family planning may prevent pregnancies among older women who can be at increased risk of pregnancy related complications.

Self-assessment 1.1

i. With examples, explain the following terms:

   a.Family planning

   b.Contraception

ii. Discuss the role of family planning for women in their reproductive age?

iii. What can be the role of family planning for young adolescents?

Homework 1.1

Go to the computer lab and read about principles of family planning.

1.2 Principles of family planning

Learning activity 1.2

In your own understanding, what are the principles of family planning that can be considered in providing quality services to the clients?

Introduction

Smaller families and increased child spacing contributes to reducing rates of infant and child mortality. Family planning further improve the social and economic conditions of women and their families, and improve maternal health. Whilst providing family planning services, individuals' and couples' rights and preferences have to be followed. This is achieved by following the principles of families that are discussed in the next sections.

Autonomy

Providers should enable the women and individual couples to exercise free and informed decision-making whilst choosing among a full range of safe, effective, and possible family planning methods.

Accessibility

Family planning providers need to ensure that women and couples have the ability to access accurate, clear and readily understood information about a variety of family planning methods and how they are used. Health care facilities have to ensure that contraceptive methods, trained providers, and contraceptive methods are accessible to women and couples.

Acceptability

By acceptability, health care facilities, trained providers, and available family planning options must be acceptable by women and couples. They must also meet the medical standards, and individual preferences. Services provided and available family planning methods must be sensitive to gender, life-cycle requirements, dignity, and culture.

Equity and non-discrimination

Quality family planning services should be provided to women and couples free from any form of discrimination such as age, gender, language, ethnicity, religion, sexual orientation, income, and race. Women and couples must not be coerced and/or violated when they seek family planning services from a healthcare provider.

Quality

Services and information provided to women and couples should be of good quality, and should be based on the best available evidence. Quality encompasses a full range of choices including quality contraceptive methods, accurate information, and presence of technically competent providers, client-provider interactions that respect the clients', confidentiality, and preferences.

Availability

By availability, family planning enabling environment with the following is ensured:

a) Health care facilities,

b) trained providers;

c) Counselling information

d) contraceptive methods are available to ensure that individuals can exercise full choice from a full range of contraceptive methods

e) Availability of follow-up and removal services for implants whenever necessary and needed.

Empowerment

Women and individual couples are empowered as principal actors and agents to decide on their family planning needs. They are also empowered to implement these decisions through seeking information about family planning, seeking services, and choosing a family planning method suitable for them.

Informed consent

When providing family planning services, the provider needs to always seek the woman's and/or the couple's informed consent and offer her comprehensive information about the services provided as shown below.

Table 1.1: Informed consent applied to family planning services

- Benefits: information about advantages and success rates
- Risks: information about disadvantages and failure rates
- Alternatives: information about other available methods
- Inquiries: opportunity to ask questions
- Decisions: opportunity to decide or to change her mind
- Explanations: information about method and how it is used
- Documentation: information given and client's understanding

Self-assessment 1.4

Read the following case study and answer the questions below:

A mother X comes to the family planning service. She has low social economic status. She has recently had three repetitive abortions in the previous 12 months. She no longer wishes to be pregnant again.

i) Based on the principles of family planning, discuss how you can help Mother X to choose a contraceptive suitable for her?

1.3 Natural Family planning methods

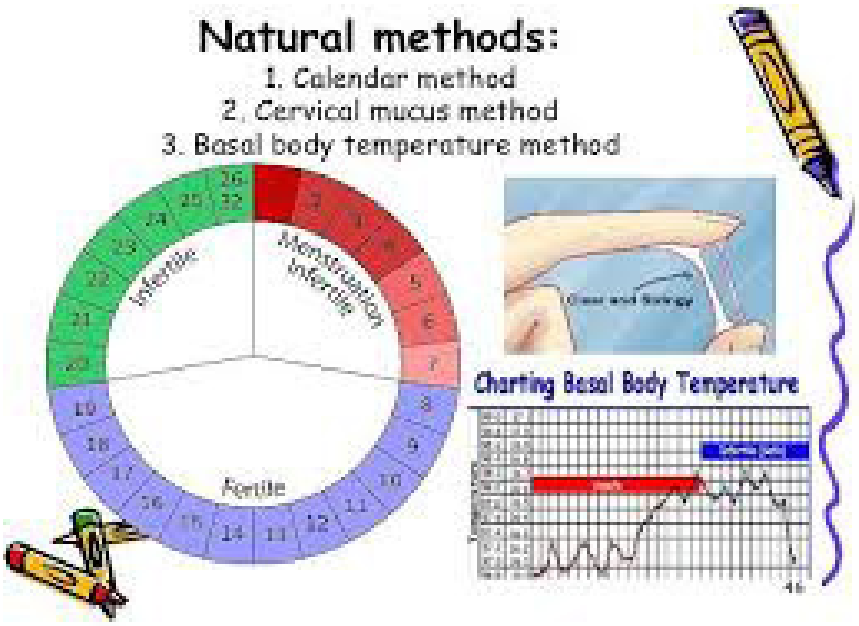


Figure 1.1: Natural family planning methods

1.3.1 Fertility awareness and calendar methods

Learning activity 1.3.1

Students watch a YouTube video titled 'How I Use Natural Family Planning To Prevent Pregnancy' about fertility awareness methods: https://www.youtube.com/watch?v=ICsuefLt9eA&t=45s

1. What do you understand by fertility awareness as a family planning method?
2. With examples, explain different methods of fertility awareness that can be used to prevent unwanted pregnancy?

a. Fertility awareness method

Fertility awareness methods (FAM) also known as the rhythm method, encompass all methods that are used based on the fertile and infertile phases of a woman's menstrual cycle.

b. Calendar method

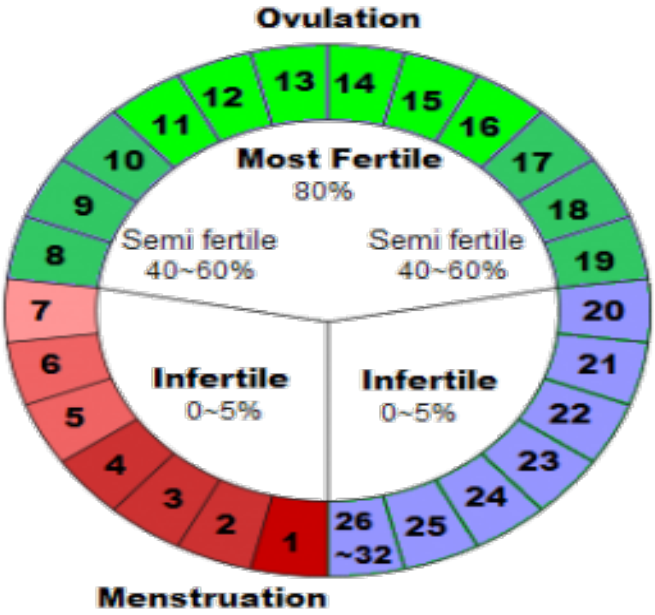


Figure 1.2: Fertile period

The fertile days are determined by correctly charting the span of the menstruation cycle over a period of six months.

The calendar method has indications, contraindications and mode of action as follows:

i) Indication

- To all women in reproductive age and with regular menstrual cycle.
- To all women who are capable of reading and able to chart properly.
- To all women who are capable of abstaining from sexual intercourse during the fertile period.
- To all couples ready to use calendar method along with method with barrier method during the fertile period to make it more effective.

ii) Contraindication

- Calendar method is not allowed to psychotic women.
- Calendar method is not allowed to non-cooperative couples.
- Calendar method cannot be used by a couple who is not ready to abstain from sex during the woman's fertile period.
- Calendar method is contraindicated to women who have irregular menstrual cycle.

iii) Mode of action

Using a calendar, the woman monitors her menstrual cycle to track down her fertility days starting from the first day of her menstrual period. The commencement of the fertile period is determined by deducting or subtracting 18 days from the length of the shortest cycles. The termination of the fertile days is determined by subtracting 11 days from the extent of the longest cycle (see figure 2 below).

Table 1.2: Formula used to calculate fertility days using the calendar method

A woman keeps track of the length of her menstrual cycles for at least 6 months. Then she calculates her fertile window by subtracting 18 days from her shortest cycle and 11 days from her longest cycle. For a woman whose shortest cycle is 24 days and longest cycle is 28 days, the calculation would be as follows: Shortest cycle 24 -18 =6 Longest cycle 28 -11 =17 Based on this calculation, the woman's fertile window would be days from 6th to 17th day of her menstrual cycle. During these days, the woman and her male partner should abstain from sexual intercourse or else use a condom to avoid pregnancy in this period.

Self-assessment 1.3.1

i) How do you calculate the calendar family planning method?

ii) When is the woman most likely to become pregnant if she is using calendar method?

iii) What precautions should be taken by the couple when they are using calendar method?

1.3.2. Basal body temperature method

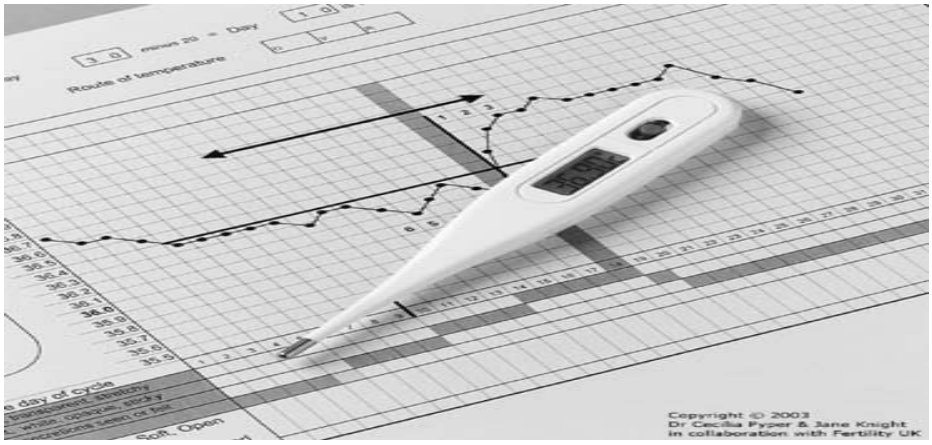


Figure 1.3: Recordings of body temperature

Learning activity 1.3.2

i) With the image above what do you understand by term 'basal body temperature'?

ii) What factors do you think can affect basal body temperature?

Introduction

The basal body temperature is the lowest normal temperature of a well person, measured immediately after waking up and earlier after getting out of the bed. The basal body temperature depends on the woman's recognising the shift in her body temperature around the time of ovulation. The BBT normally ranges from 36.2°C to 36.2°C during menses, and for about 5 to 7 days after. At about the time of ovulation, a slight drop in temperature may occur, followed by a slight rise (approximately 0.4°C–0.4°C) after ovulation, in response to increasing progesterone levels. This temperature elevation may last between 2 and 4 days before menstruation.

The basal body temperature drops to the lower levels recorded during the previous cycle, unless pregnancy occurs.

i) Indication

- To all women who are capable of reading the thermometer measurements.
- To all women who are capable to know that their temperature has risen from their normal temperature.
- To all women with no infection.

ii) Contra-indication

- The women who cannot read measurements on the thermometer.
- To all women with infection. e.g. vaginitis, malaria etc.
- To all women who are not using warm blankets.

iii) Mode of action

This method works effectively if the woman has a temperature which does not change. Hence, if a woman has a condition that may increase or lower her temperature such as infection, fatigue, and anxiety, the method does not work.

Self-assessment 1.3.2

i) Describe how the woman's basal body temperature changes across her monthly cycle.
ii) When is the basal body temperature likely to rise and why?
iii) At what temperature can a couple using basal body temperature avoid unprotected sexual intercourse?

1.3.3. Cervical mucus method

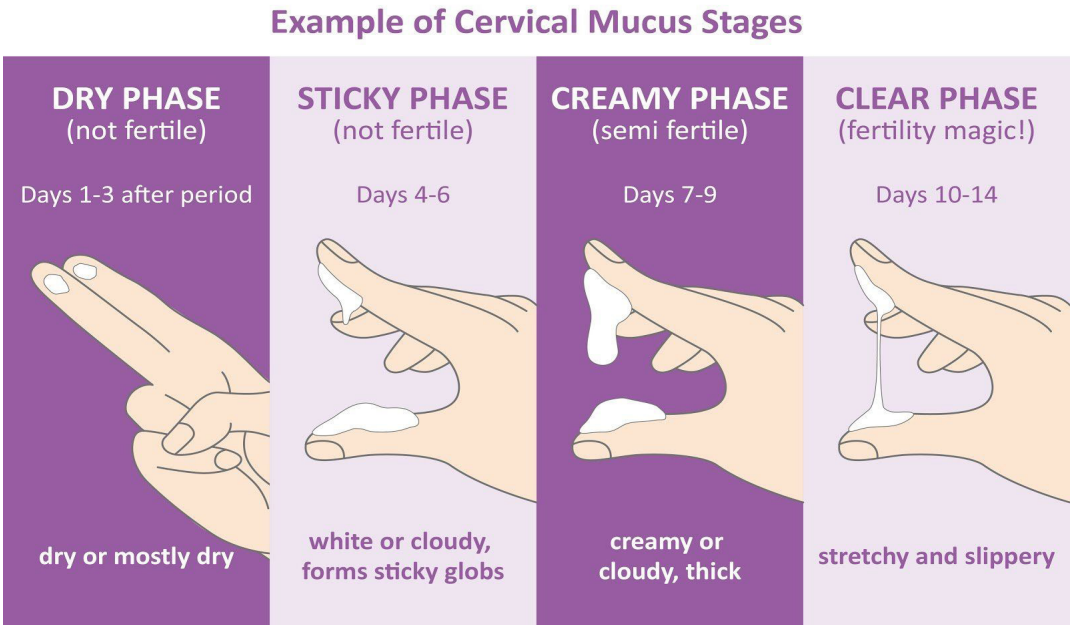


Figure 1.4: Cervical mucus stages

Learning activity 1.3.3

i) How does cervical mucus test can help the woman to predict the time of her ovulation?

Introduction

The cervical mucus method refers to the recognition and interpretation of changes in the amount and consistency of cervical mucus through the menstrual cycle. Before ovulation, cervical mucus is thick and does not stretch easily. During the fertility days, the cervical mucus becomes more abundant and thinner with an elastic quality. After ovulation, cervical mucus becomes thick or may disappear completely. This quality inhibits sperm from entering in the cervix. The change of cervical mucus occurs to facilitate the viability and motility of sperm and allowing the sperm to survive in the female reproductive tract until ovulation.

i) Indicatio

- To women who are capable of abstaining from coitus during ovulation.
- To all couples who are capable of recognising the changes in appearance of cervical mucus during the fertile period.
- To all couples who are capable of being cooperative during the ovulation time.

ii) Contra-indication

- This method is contraindicated to all women who feel uncomfortable touching their genitals.
- The method is not allowed to all women with vaginal infections, sexual transmitted infections, and hormonal imbalances should also not use cervical mucus method.

iii) Mode of action

When a woman is using cervical mucus method, she is supposed to check her vaginal discharge every day for consistency and recognition of the change in appearance of her cervical mucus to determine her fertile period.

Self-assessment 1.3.3

i) Who should not use cervical mucus method in family planning?

ii) When should a woman be cautious while determining her fertile period using cervical mucus method?

1.3.4. Standard Days Method

Learning activity 1.3.4

Mrs. Lina have had a regular menstrual cycle of 30 days for six months. On 31st July, she noticed that she had seen her menstrual bleeding. She is currently using a cycle bead as a family planning method.

i) Which days will be safe for Mrs. Lina to do sexual intercourses with her partner?

ii) Which days will Mrs. Lina cannot do unprotected sexual intercourses?

Introduction

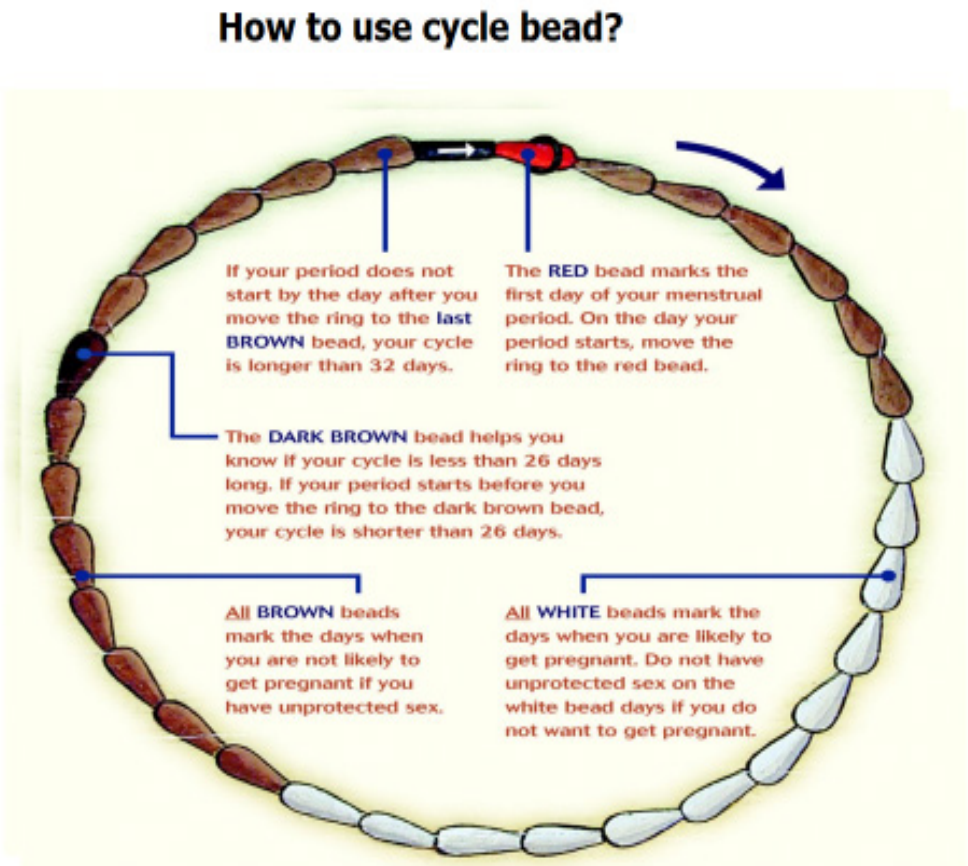


Figure 1.5: Cycle bead

Standards Days Methods is another fertility awareness in which women and couple use a cycle beads necklace to track their cycles (see the picture above). The cycle beads have 32 beads, each representing a day in the woman's menstrual cycle.

i) Indication

- To all women with regular menstrual cycle.
- To all women who have had 3 menstrual cycles after child birth, with the last one recording 26 to 32 days.

ii) Contra-indication

- To avoid unprotected sexual intercourse from 8th day to 19th day of every cycle.
- Uncooperative couples should not use SDM.

iii) Mode of action

The woman moves a rubber ring onto one bead each day based on her monthly cycle. The red bead marks the first day of her period. Brown beads correspond to safe days; that days when she may not likely become pregnant if she does sexual intercourse. From the brown beads, the woman moves the rubber ring onto the white beads. These white beads represent the when she is likely to get pregnant and are labelled “unsafe” times to have unprotected vaginal intercourse.

Self-assessment 1.3.4

1. Mrs. Dana has given birth one month ago. As she is not breastfeeding regularly, she has seen her menstrual bleeding on 15 June. She wants to use the cycle beads as a method of family planning.

i) At what date would you advise to explore the use of Standard Days Method?

ii) What would Mrs. Dana take into consideration before deciding to use a cycle bead as a preferred family planning method?

Homework

Read the book ‘Family Planning: A Global Handbook for Providers’, Chapter 19; Lactational Amenorrhoea, Page 257

1.3.5 Lactational amenorrhoea

Figure 1.6: a breastfeeding mother

Learning activity 1.3.5

i) Explain how breastfeeding can delay ovulation after the birth of the baby?
ii) Who can use Lactational amenorrhea and why?

Introduction

Lactational Amenorrhea Method is a type of natural family planning which depends on the woman's breastfeeding regularly (every two to three hours) without interruption in the first six months after delivery. When the woman breastfeeds consistently, prolactin levels become elevated and suppress ovulation.

a. Indication

- This method can be operational within 6 months after delivery.
- If the mother has not had menstruation since the time of birth.
- When the mother is able to breastfeed her baby at least every 2 to 3 hours regularly without stopping within six months.

b. Contra-indication

- Not to be practiced after 6 months post birth.
- Not to be used when the mother has had the return of menstrual period.
- Not to be used by mothers who are not available to breastfeed their babies regularly.

c. Mode of action

For this method to be more effective, LAM requires constant breastfeeding. Breast feeding stimulates prolactin hormone which is responsible for breast milk production. This hormone further hinders gonadotropin hormone which is responsible for ovulation to be produced. Thus, when the woman does sexual intercourse, she will not likely become pregnant.

Self-assessment 1.3.5

i) If the couple is using Lactational amenorrhea, what do they have to care of to prevent the woman from becoming pregnant?
ii) Discuss the factors that can influence the use Lactational Amenorrhea Method.

1.3.6 Coitus Interruptus or withdrawal method

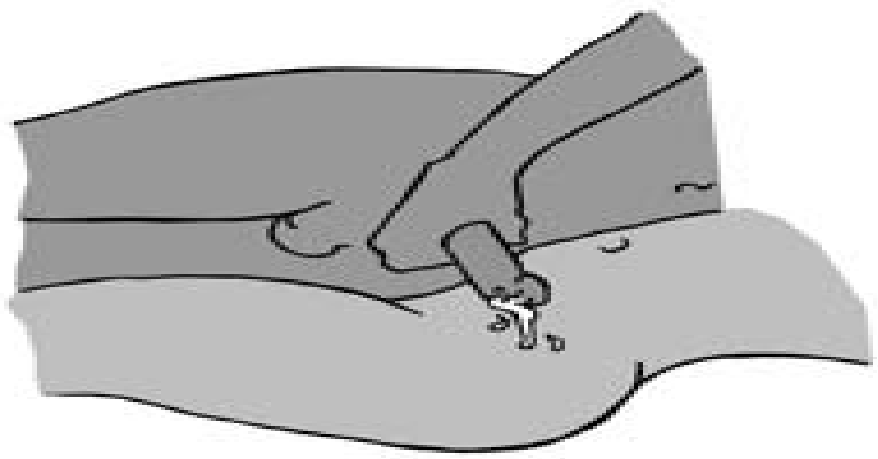


Figure1.7: Coitus interruptus

Learning activity 1.3.6

Read the book titled 'Family planning: A global Handbook for Providers' (2018 Edition), Chapter 18 and answer the following questions:

i) What happens when a couple practises withdrawal method?

ii) Whom can you likely recommend to practice coitus interruptus and why?

iii) In your own opinion would you recommend coitus interruptus as a first choice of family planning method?

Introduction

The male partner pulls his penis out of the vagina before ejaculation occurs to avoid depositing sperm in or near the vagina. In so doing, he must keep his semen away from the female partner's external genitalia.

i) Indication

- All men in their reproductive age can use withdrawal method.
- It is indicated if there is no other family planning method available for partners to use.
- This method requires much attention during the sexual act because at times the man may reach climax and releases the pre-ejaculate fluid which may contain sperm before withdrawing his penis to ejaculate outside the vagina.
- This method might be appropriate for couples who are highly motivated

and able to use it without failing.

- It can also be used by couples with religious or philosophical reasons for not using other methods of contraception.
- Coitus interruptus can be used by couples who are waiting to get another alternative method immediately but find themselves in need of sexual intercourse without having obtained that method.
- Couples who need a temporary method while they wait the start of another method may choose to use coitus interruptus.
- Couples who do sex infrequently can choose coitus interruptus method.

ii) Contra-indication

- Coitus interruptus must not be the method of choice if a man has premature ejaculation issues.
- The method is also not appropriate for women with conditions that make pregnancy an unacceptable risk because of the relatively high risk of failure of coitus interruptus.
- This method is not allowed to couples who are not cooperative.

iii) Mode of action

When the man feels close to ejaculating, he must immediately remove his penis from his female partner's vagina to ejaculate outside and keeping his semen away from her vulva. If man has ejaculated recently, before penetrating the female partner again, he must urinate and clean the tip of his penis to remove any sperm that may be remaining on his penis. The man should feel confident he can use withdrawal correctly whenever he is engaged in the act of sex with his partner.

Self-assessment 1.3.6

i) How does coitus interruptus method work?

ii) Who would you recommend to not use coitus interruptus and why?

iii) Describe how a male partner may pull out his penis from the vagina if the couple is using coitus interruptus.

Table 1.3: Summary of natural family planning methods

Types	Method used	Effectiveness	Advantages	Disadvantages
NATURAL FAMILY PLANNING METHODS	Fertility awareness methods	Fertility awareness methods are about 76-88% effective: that means 12-24 out of 100 couples who use FAMs will get pregnant each year	Fertility awareness helps women and men better understand when the fertile period is, how contraceptives affect menstrual cycles and ovulation (e.g., hormonal contraceptive-induced amenorrhea), and the effects of contraception on other aspects of health, and to be better able to recognize changes that may indicate.	High failure rate if not used consistently and correctly. Fewer “safe” days to have intercourse each month. Training is essential. Breast feeding, illness and other factors can obscure fertility signs. No protection from STIs. If periods are not regular, may not be as effective.
	Calendar method	calendar rhythm method is 86% effective	Calendar do not cause side effects; They do not require any special devices or procedures and do not cost anything; Women become more knowledgeable about their menstrual cycle when they use the method.	Many women are not all that regular, and even those who are regular sometimes have irregular months. When that happens, an unintended pregnancy can result.

	Basal body temperature method	99% effective in the first year of use.	It does not cause side effects; Women become more knowledgeable about their body changes which occur during their menstrual cycle when they use the method; Correctly used, it provides highly effective contraceptive protection.	The basal body temperature method may not accurately predict ovulation in all women, including those with irregular menstrual cycles. It offers no protection from sexually transmitted diseases.
	Cervical mucus method	23 out of 100 women practicing the cervical mucus method for birth control will get pregnant in the first year of typical use	Cervical mucus monitoring is free and safe and does not require a visit to the doctor's office. There are no side effects. You are not taking any medicine or doing anything that your body would not normally do.	The cervical mucus method is the patience required to really know your cycle. It may take more than a few months of consistent record keeping. The users have to use backup forms of birth control, such as a condom, to protect yourself from conceiving a child.
	Standard Days Method	standard days method is 88% effective	The Standard Days Method® is an effective modern FABM that is easy to teach and learn. It is low cost and has no side effects. In addition, the method helps women learn about their menstrual cycle and involves men in family planning, as the couple must discuss and decide how to manage the fertile days.	As with most family planning methods, Standard Days Method® does not provide protection against STDs. Standard Days Method® requires abstinence during fertile days.

	Lactational amenorrhea	98% effective against pregnancy for the first 6 months after giving birth.	Universally available. Begins immediately postpartum. Health benefits for mother and infant. No commodities/supplies required. Bridge to other contraceptives. Builds on established cultural and religious practices. Improves breastfeeding and weaning patterns.	Full or nearly full breastfeeding may be difficult for some women to maintain due to social circumstances. There is no protection against sexually-transmitted diseases, including HIV infection.
	Coitus Interruptus or withdrawal method	78% effective against pregnancy	Immediate availability, no devices, no cost, no chemical involvement.	It takes a lot of control for the man to pull out before ejaculation. The woman has no control over it at all. You may feel that it gets in the way of sexual pleasure. Even if they pee before sex, the man can still release fluid before they ejaculate.

End unit assessment

1. Explain briefly the principles of family planning?
2. What are the signs that can make a woman to be conscious that is in her fertile period with the help of cervical mucus?
3. Discuss any factors that may affect Mrs. Lina's use of cycle bead successfully.
4. Discuss the factors that can influence the use Lactational Amenorrhea Method.
5. How does coitus interruptus method work?
6. The couple X have chosen to use Standard Days Method as their preferred family planning method. The woman's cycle in the last three months had been between 28 and 32 days. The woman had seen her periods on 5th April.

Draw a cycle bead and guide this couple on how they can use this method to avoid unplanned pregnancy.

7. You are sent to the community and meet a group of women on Umuganda day. The village head requests you to offer an educational session about natural family planning.

Explain how you will educate the above group on different methods of natural family planning focusing on different methods' mode of action, indications, and contraindications.

UNIT 2 MODERN FAMILY PLANNING

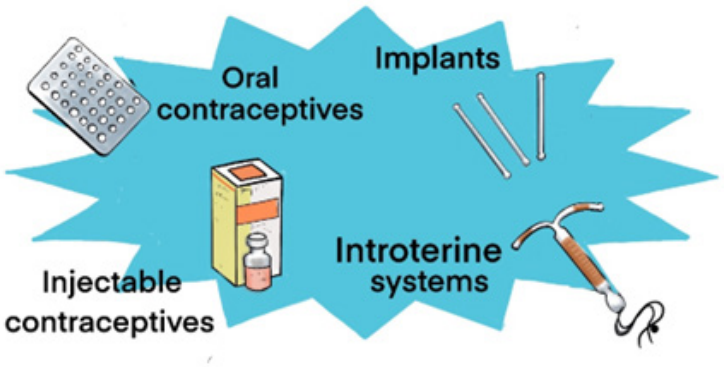
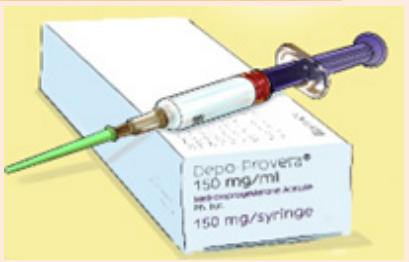


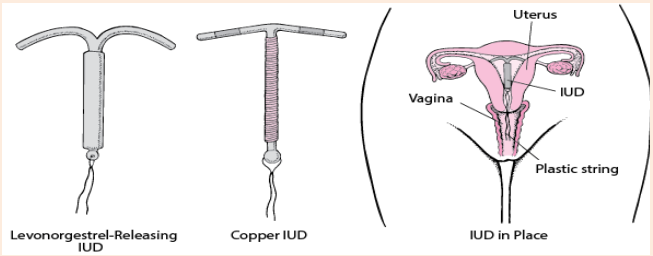
Figure 2.1: Modern family planning methods

2.1 Key unit competence

Provide modern family planning services

Introductory activity 2





i) What do you know about the above images?

ii) What would you consider if a woman and/or a couple seeks your assistance in choosing any of the above family planning methods?

Introduction to modern family planning methods

Individuals and couples have to be informed about different options of available birth control methods so that they make an informed choice on which one to use to plan for pregnancy. Individuals' and couples' preferences can be influenced by a number of factors such as beliefs, medical eligibility criteria, demographic factors, parity, ease of use, duration of use, frequency of sexual intercourse, reliability, and the side effects. In the previous unit, different methods of natural family planning were discussed. In order to optimise the individuals' and couples' choice of contraception suitable to them, Unit two proceeds with the discussion of different methods of modern family planning namely oral contraceptives (pills), injectables, Implants and IUDs.

2.1. Oral contraceptive methods

2.1.1 Introduction to oral contraceptive

Learning activity 2.1.1

Students watch the video about birth control pills found on this link: https://www.youtube.com/watch?v=Gu11uty__OY

i) Mention the oral contraception methods of family planning methods you know.

ii) Choose one of the methods you have mentioned above and explain its mode of action.

iii) Briefly explain what progestin only pills are and who is eligible to use them?

Figure 2.2: Oral contraceptive pills

Oral contraceptive methods are pills that a woman can use to prevent pregnancy. These pills contain hormones that are similar to those of the woman's reproductive hormones which act by changing the woman's body hormone balance and this prevents the ovaries from releasing an egg each month (ovulation). The pill also thickens the mucus in the neck of the womb and makes difficult for sperm to penetrate the womb to reach the ovum. Oral contraceptive methods include progestin only pills, combined oral contraceptive pills (oestrogen and progestin combined pills), and emergency contraceptive pills.

Self-assessment 2.1.1

i. How does oral contraceptive methods work?
ii. List oral contraceptive methods.

2.1.2 Progestin only pills

Figure 2.3: Progestin-only pills

Learning activity 2.1.2

Using internet and library (Read chapter two of the 'Family Planning: A Global Handbook for Providers, edition 2018'); answer the following questions.

i) Explain how the progestin-only pills work?
ii) Which clients can you advise not to take progestin-only pills as a contraceptive method?

Introduction

The progestin only pills contain a low dose of a progestin similar to the natural hormone progesterone in a woman's body. These pills do not contain oestrogen hormones. The pills come in packs of 28 pills and women take one every day. One pill is taken daily at approximately the same time (hour) without breaks between packs. In order for these pills to ensure efficacy of progestin-only pills, the woman has to avoid leaving an interval of 24 hours between pills.

The woman needs to be advised that once she initiates the use of these pills, she is not protected from pregnancy prevention in the first seven days. For this reason, the health provider needs to recommend her using an alternative method of birth control along with progestin-only pills during the first week. If a woman misses a tablet, she has to take the missed tablet as soon as she remembers and further progress taking the next tablet at the usual time (taking two tables in one day). If the woman misses two tablets in a row in the first or second week, she should take two tablets the day she remembers and two tablets the next day, then she resumes one tablet per day.

i) Indication

- A woman can start using the progestin only pills (POPs) any time she knows that she is not pregnant.
- A woman can use progestin-only pills if she is breastfeeding.
- Women with or without children are eligible to use progestin-only pills.
- Progestin-only pills can also be the method of choice for even adolescent girls who may need to use contraception to prevent unwanted pregnancies.

ii) Contraindication

- Progestin-only pills can be contraindicated in the following cases:
- Women with pre-existing breast cancer, cervical cancer, endometrial cancer, ovarian cancer, uterine cancer, and vaginal cancer,
- Women with uncontrolled hypertension
- Women who smoke
- Women with pre-existing anaemia or who had anaemia in the past,
- Women who have varicose veins,
- Women living with HIV, whether or not on antiretroviral therapy.

iii) Mode of action

Progestin-only pills act by inhibiting follicular development and preventing ovulation. Progesterone negative feedback signals the hypothalamus to decrease the pulse frequency of gonadotropin releasing hormone, which in turn decrease the secretion of follicle-stimulating hormone (FSH) and the secretion of Luteinizing Hormone (LH). When the follicle is not developing, the oestradiol levels increase. When there is no

development of the follicle and no LH work, the ovulation is prevented. The pill also thickens cervical mucus (this blocks sperm from meeting an egg). As the woman keeps taking progestin-only pills regularly as prescribed, they cause menstrual cycle change and this prevents the release of eggs from the ovaries (ovulation).

iv) Advantages of using progestin-only pills

Some advantages of using the progestin only pills include the following:

- The pill is more effective for lactating mothers and can be 99% effective if used correctly and consistently by breastfeeding mothers.
- Do not interfere with breastfeeding and they are safe for breastfeeding women and their babies because they do not affect milk production.
- The user can stop using progestin-only pills at any time without any help of the provider.
- Do not interfere with sexual intercourse;
- Progestin-only pills use is controlled by the woman;
- Progestin-only pills cannot cause women infertile;
- Progestin-only pills do not cause diarrhoea in breastfeeding babies

v) Side effects

Some women taking progestin-only pills may develop some side effects such as breast tenderness and breast enlargement, mood changes, headache and migraine, nausea and vomiting.

Self-assessment 2.1.2

i. How does progestin-only pills work?
ii. What are the advantages of using progestin only pills?
iii. What do you know about indication of progestin only pills?

2.1.3 Combined oral contraceptive pills (COPs)

Learning activity 2.1.3

Using internet and books ("Introduction to Maternity and Paediatric Nursing", Page 111-112 about combined oral contraceptive pills), answer the following questions:

i) What do you know about combined oral contraceptive pills?
ii) A woman who has forgotten to take 2 combined oral pills in the second week of her last menstrual period comes to your health post for help. What would you advise her to do?

Introduction to Combined oral contraceptive pills

Combined oral contraceptive pills contain both estrogen and progesterone hormones. Those hormones are similar to the natural hormones produced by a woman's body. These pills come in packs of 21 or 28 pills. A user takes one pill every day at the same hour. For greatest effectiveness a woman must take pills daily, start each new pack of pills on time, and take any missed pill as soon as possible.

Like the progestin-only pills, when a woman starts taking combined oral pills, she may likely become pregnant in the first seven days if she does unprotected sexual intercourses. To minimize the risk of pregnancy, an alternative method of birth control is recommended along with combined oral pills for women who do sexual intercourses frequently. When a woman misses a tablet, she has to take the missed table as soon as she remembers and she has to take the next tablet at the usual time (taking two tablets in one day). If woman misses two tablets in a row in the first or second week, she has to take two tablets the day she remembers and two tablets the next day, then after continues with her usual dose of one tablet per day.

i) Indication

The following are indications of using combined oral contraceptives pills:

- Have or have not had children
- Are married or are not married
- Are of any age, including adolescents and women over 40-year-old
- After childbirth and during breastfeeding after 6 months

ii) Contraindication

The contraindications to COPs are indicated in the following situations:

- Women with breast cancer,
- Women with a history of deep venous thrombosis or pulmonary embolism, active liver disease, use of rifampicin, familial hyperlipidaemia, previous arterial thrombosis, epilepsy, diabetes, and sickle cell disease,
- Women who are pregnant,
- Smoking,
- Women with advanced age (over 35 years),
- Women with hypertensive disorders,
- Women who are currently breastfeeding before 6 months,
- Women with irregular spontaneous menstrual cycle.

iii) Mode of action

The combined oral contraceptive pill works by stopping the ovaries from releasing an egg each month (ovulation). It also thickens the mucus from the cervix which makes it difficult for sperm to move through it and reach a matured egg. It also makes the lining of the uterus (womb) thinner; it is less likely to accept a fertilized egg.

iv) Advantages of combined oral pills

The following are the advantages of combined oral contraceptive:

- Women have control over their use and they can be stopped at any time without a provider's help.
- Do not interfere with sex and this method is easy to use. Reduce also the risk of having anaemia.
- Combined oral pills may protect against pelvic inflammatory disease,
- Combined oral pills may protect against endometrial cancer and can also reduce symptoms of premenstrual syndrome (PMS).
- Combined oral pills can reduce the risk of cancer of the ovaries, womb and colon for women.
- Combined oral pills can be used in the post-abortion and postpartum period by woman who desire a fast return to fertility.

Side Effects

Combined oral pills can lead to changes in bleeding patterns (lighter bleeding and fewer days of bleeding, irregular bleeding, infrequent bleeding or no monthly bleeding among some women. In other cases, women taking combined oral pills may develop headaches, dizziness, nausea, breast tenderness, weight change, and mood changes.

In rare cases, women taking combined oral pills may develop these side effects:

- Severe headache
- Bad pains in the chest
- Leg swelling
- Breathing difficulty
- Sudden problems with sight or speech
- Numbness in an arm or leg.

Self-assessment 2.1.3

i. How does combined oral contraceptive pills works?
ii. What are the advantages of using combined oral contraceptive pills?

2.1.4 Emergency contraceptive pills

Learning activity 2.1.4

What do you know about this medication on the above picture?

Introduction to emergency contraceptive pill

Emergency Contraceptive Pills (ECPs) also called “morning after” pills or “postcoital contraceptives” prevent the release of an egg from the ovary or can act by delaying its release by 5 to 7 days. If ovulation has occurred and the egg is fertilised, the Emergency Contraceptive Pills cannot prevent implantation or disrupt an already established pregnancy.

i) Indication

The following are indications of emergency contraceptives pills:

1. It is recommended for women who experience sexual assault
2. When current contraceptive method has failed (for example when the condom breaks).
3. Unprotected sexual intercourse
4. Missed or late doses of hormonal contraceptives

ii) Contraindication

Emergency Contraceptive Pills are not advised for use among women with the following cases:

- A history of thrombosis,
- Current severe liver disease,
- Focal migraine at the time of presentation
- Breastfeeding women.

iii) Mode of action

The emergency contraceptive pill works by preventing or delaying ovulation. It also inhibits an egg from being released from the ovary when taken before ovulation .it thickens the cervical mucus making it not to allow the sperm to meet the egg.

iv) Advantages of emergency contraceptive pills

Emergency contraceptive pills (ECPs) help a woman to avoid pregnancy after she has had sex without contraception.

Emergency contraceptive pills also prevents pregnancy when taken up to 5 days after unprotected vaginal sex.

v) Side Effects

The use of emergency contraceptive pills may be associated with the following side effects:

- Changes in bleeding patterns (Slight irregular bleeding for 1–2 days after taking emergency contraceptive pills,
- Monthly bleeding that starts earlier or later than expected especially in the first several days after taking the pills
- Nausea,
- vomiting,
- Fatigue,
- Abdominal pain,
- Headache,
- Dizziness,
- Breast tenderness.

Self-assessment 2.1.4

i. How does emergency contraceptive pills work?
ii. What are the indications and contraindications of emergency contraceptive pills?

Reading activity

Read about injectable family planning methods found on this link: https://www.open.edu/openlearncreate/mod/oucontent/view.php?id=141&printable=1#maincontent. You are going to present the information you read before the start of the next lesson.

2.2 Injectable contraceptive methods

Figure 2.4: Depo-provera

Learning activity 2.2

i) Explain what you know about progestin-only injectables?
ii) List the progestin-only injectables you know and how they work.
iii) How long can a woman use progestin-only injectable method of family planning?

Introduction to injectable contraceptive methods

Injectable contraceptive methods constitute of the intramuscular injection administration into the muscle of the arm or buttock. This injection provides to the body sufficient levels of hormones to provide contraception for one to three months. Injectable contraceptive methods consist of progesterone-only preparations. The most used progestin-only injectables are Depo-Provera and Noristerat. A woman

can have the progesterone-only injection at any time during her menstrual cycle as long as she is not pregnant. Depo-Provera is given every three months whereas Noristerat is given every two months.

i) Indication

Nearly all women fulfilling the following conditions can take Depo-Provera:

- No pregnancy
- No history of breast cancer in the family
- Absence of diabetes
- Absence of high blood cholesterol.

ii) Contraindication

- Depo-Provera should not be the method of choice if a woman has the following conditions:
- Breast cancer or family history of breast cancer
- Diabetes or with history of diabetes in family
- Excessive high cholesterol levels in the blood
- Depression
- High blood pressure.

iii) Mode of action

This injection once administered to the woman, it slowly releases hormone progesterone into the bloodstream which prevents ovulation from taking place each month. It also thickens the cervical mucus, which makes difficult for sperm to sail through the cervix. Depo-Provera further thins the lining of the womb to prevent a fertilised egg from implanting to the uterus.

iv) Advantages

Depo-Provera has a number of advantages including the following:

- Does not require daily action
- Does not affect breastfeeding
- Does not interfere with sex
- Protects the woman's privacy
- May protect against the risk of cancer of the lining of the uterus
- Protects against the uterine fibroids
- May help against symptomatic pelvic inflammatory disease
- Protects against iron-deficiency anaemia
- Reduces symptoms of endometriosis.

v) Side-effects

Depo-Provera may cause side effects among women using it including the following:

- Changes in the woman's monthly bleeding from irregular to no monthly bleeding;
- Weight gain
- Headaches
- Dizziness
- Abdominal bloating and discomfort
- Mood changes

Self-assessment 2.2

i) If a woman does not have monthly bleeding while using progestin-only injectables, what advice can be given to this client?

ii) What are the side effects of progestin-only injectables?

2.3 Implants

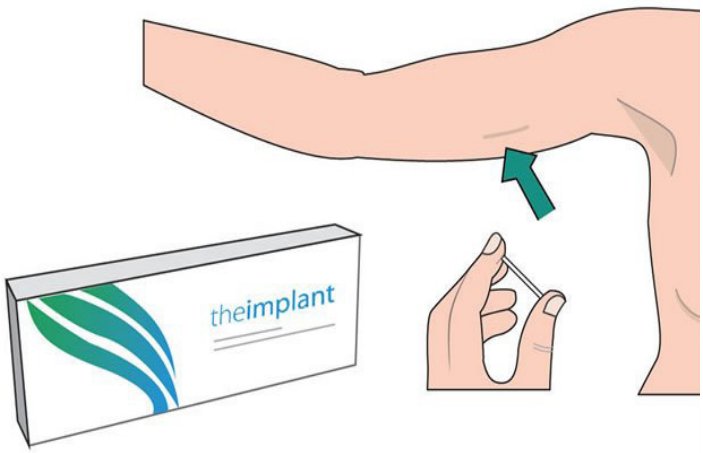


Figure 2.5: Implanon

Learning activity 2.3

Students watch a YouTube video about implants (https://www.youtube.com/watch?v=XXRLSndJ-x4) and answer these questions:

i) Explain to the clients what an implant is and how it works?

ii) In your own understanding would you please briefly mention the advantages of implants as modern family planning?

Introduction to implants

Implants are modern family planning that has progestin hormone. Implants are plastic rods that are small, flexible about as size of match stick. The health professional inserts the rod using local anaesthesia just under the skin on the inside of the upper arm. Insertion takes place approximately one minute. Removal requires a small incision and takes about three minutes. They are two types of Implants in modern family planning which are currently known but one is short-term acting (Implanon) and another is long-term acting (Jadelle). They are both hormonal methods of modern family planning. The implant should be removed after 3 or 5 years depending on the type.

i) Indication

These are some of the indications of implants in modern family planning:

- Women with normal menstrual bleeding cycle.
- Women with no breast cancer and with no history of breast cancer in their family.
- Women with no history of allergic reactions to implants.
- Women with no high blood pressure.
- Women with no liver disease or tumour.

ii) Contraindication

- These are some of contraindications of implants in modern family planning:
- Women with excessive weight.
- Women with heavy menstrual bleeding.
- Women with breast cancer or history of breast cancer in the family.
- Women with liver diseases e.g., liver tumour.
- Allergy to implants.
- Mood swings and depression.

iii) Mode of action

The implants work by releasing slowly amount of progestin hormone which suppresses ovulation and it thickens the cervical mucus which stops sperms from penetrating through to reach the mature egg to be fertilised. It also prevents pregnancy to take place by thinning the endometrium which makes the implantation not to take place.

iv) Advantages

Provide long-term pregnancy protection. Very effective for up to 5 years, depending on the type of implant. Immediately reversible.

v) Side effects

The side effects of implants include the following:

- It increases weight gain
- Irregular bleeding pattern
- They can cause vaginitis, breast pain, acne, headaches and pharyngitis.
- The implant does not provide protection against sexually transmitted infections.

Self-assessment 2.3

i) Give explanations on how implants work to prevent pregnancy?
ii) Explain the indications and contra indications about implants?
iii) If a client comes to you seeking advice on the implants, outline the key points you will consider as beneficial to her.

Reading activity for the next lesson

Read the book titled 'Introduction to Maternity and Paediatric Nursing', page 82-83 about IUDs

2.4 Intra uterine devices (IUDs)

2.4.1 Non-hormonal intra uterine device (Copper IUD, T-shaped)

Learning activity 2.4.1

i) What do you know about intra uterine devices?
ii) What important message have you noticed that can help the population regarding the usage of IUDs?

Introduction

Intra-uterine device, also known as intrauterine contraceptive device or coil, is a small, often T-shaped birth control device that is inserted into the uterus to prevent pregnancy. IUDs are one form of long-acting reversible birth control. These intrauterine devices are in two types, hormonal and non-hormonal.

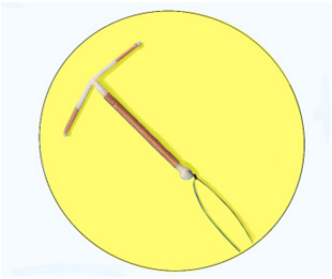


Figure 2.6: Copper Intra-uterine device

Introduction to copper Intrauterine Device

The Copper IUD is the most used as non-hormonal Intrauterine Device for women who need long term pregnancy protection (normally between 5 to 12 years). The copper IUD is a small, flexible plastic frame with copper sleeves or wire around it. This device is inserted into the woman's uterus through her vagina and cervix. Its strings hand through the cervix into the vagina.

i) Indication

Copper IUDs can be used by women fulfilling the following conditions:

- Have or have not had children,
- Are married or are not married,
- Are of any age, including adolescents and women over 40 years old,
- Have just had an abortion or miscarriage,
- Are breastfeeding

ii) Contraindication

- Copper IUD can be contraindicated in the following conditions:
- History of pelvic inflammatory disease (PID),
- When pregnancy is suspected,
- History of ectopic pregnancy,
- Having uterine abnormalities or benign tumour in the uterus,
- Gynaecologic bleeding disorders,
- Having suspected cancer of the genital tract
- Known current cervical, endometrial, or ovarian cancer; gestational trophoblastic disease; pelvic tuberculosis
- Women who are diagnosed with sexually transmitted infections, they should not have an IUD inserted.

iii) Mode of action

Copper IUDs do not contain hormones. They work by using the properties of copper to affect sperm motility and egg survival. The copper IUD causes a chemical change that damages sperm and egg before they can meet to fertilise.

Other actions of Copper IUD include inhibiting the sperm ability to swim through the uterine cavity and further inhibit the transport of the ovum. When the uterus is exposed to a foreign body, a sterile inflammatory reaction occurs, which is toxic to sperm and ovum and this impairs implantation.

iv) Advantages

Copper IUD has several advantages including:

- It is a long-term method used for 6 to 12 years.

- It is safe to use this method if the woman is breastfeeding.
- Prevents pregnancy very effectively.
- Has no further costs after the IUD is inserted.

v) Side effects

During the first days after insertion of copper IUD some women may have periodic cramping that usually settles after a few days. Some users can report other side effects like breast tenderness, headache, mood changes, and the period can be changed. Spotting or frequent bleeding may manifest a side effect in the first three to six months. For women who already have low iron blood stores before insertion, the copper IUD can contribute to anaemia. In rare cases, the copper IUD can lead to Pelvic inflammatory diseases especially if the woman has sexually transmitted infections at the time of insertion.

Self-assessment 2.4.1

i) What are the advantages to the population using copper intra uterine devices?

ii) Would you please mention the indications and contraindication of using copper intra uterine device?

2.4.2Hormonal Intrauterine device

Learning activity 2.4.2

Read the book titled 'Introduction to Maternity and Paediatric Nursing', page 82-83 about IUDs.

i) What do you understand by hormonal intra uterine device?

i) Briefly explain the advantages of hormonal intrauterine devices (Mirena)?

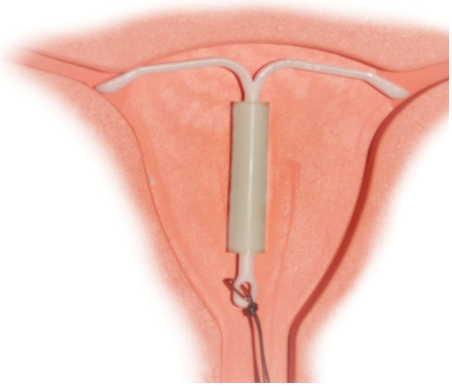


Figure 2.7: Hormonal IUD in uterus (mannequin)

Introduction to hormonal intra uterine device (Mirena)

Intra uterine device (Mirena) is a hormonal intrauterine device (IUD) that can provide long-term birth control (contraception). The device is a T-shaped plastic frame that's inserted into the uterus.

i) Indication

Mirena Can be inserted any time if the woman is certain that she is not pregnant. However, she will need to a backup method for the first seven days after insertion.

Is indicated to women with heavy menstrual bleeding.

ii) Contraindication

Mirena can be contraindicated for a woman with the following medical conditions:

- Breast cancer,
- Liver disease,
- Uterine or cervical cancer,
- Uterine abnormalities (fibroids),
- Pelvic infection or current pelvic inflammatory disease.
- Blood clots.

iii) Mode of action

This type of IUD contains hormones which slowly releases a progesterone hormone resembling that produced by the ovaries. This IUD works primarily by suppressing the growth of the lining of the uterus to disrupt ovulation. It stays in the woman's uterus up for five years of use. It thickens mucus in the cervix to stop sperm from reaching or fertilizing an egg.

iv) Advantages

Mirena helps protect against the risk of pregnancy, and iron deficiency anaemia. It can also help protect against pelvic inflammatory disease and can reduce menstrual cramps and symptoms of endometriosis. Mirena does not delay fertility return if a woman stops using it. Mirena can be used up to five years and it is safe for breastfeeding women.

v) Side effects

During the first days after insertion of Mirena, some users have periodic cramping that may usually settle after a few days. Some users may report other side effects including:

- Headaches,
- Mood changes
- Breast tenderness or pain
- Nausea

- Dizziness
- Ovarian cysts

Self-assessment 2.4.2

i) According to your opinion, who is eligible to use hormonal intra uterine device (Mirena)?

ii) Can you mention some of the side effects of hormonal IUD (Mirena) that you know?

Table 2.1: Summary of modern family planning methods

Types	Method used	Effectiveness	Advantages	Disadvantages
	ORAL CONTRACEPTIVE METHODS			
MODERN FAMILY PLANNING METHODS	Progestin only pills	99 of every 100 women will not become pregnant.	It does not interrupt sex. you can use it when breastfeeding	May cause irregular bleeding, headaches and mood changes
	Combined oral contraceptive pills (COPs)	93 of every 100 women using COCs will not become pregnant	It usually makes your bleeds regular, lighter and less painful. it reduces your risk of cancer of the ovaries, womb and colon. It can reduce symptoms of PMS (premenstrual syndrome) it can sometimes reduce acne.	A nausea, breast tenderness, breakthrough bleeding, amenorrhea, and headaches. Oral contraceptives do not provide protection from STDs. Daily administration is necessary, and inconsistent use may increase the failure rate.
	Emergency contraceptive pills	If all 100 women used progestin-only ECPs, one woman would likely become pregnant. If all 100 women used combined oestrogen and progestin ECPs, 2 women would likely become pregnant.	Morning-after pills can help prevent pregnancy if you've had unprotected sex — either because you didn't use birth control, you missed a birth control pill, you were sexually assaulted or your method of birth control failed. Morning-after pills do not end a pregnancy that has implanted.	Nausea and emesis, minor changes in menses, breast tenderness, fatigue, headache, abdominal pain, and dizziness. See above for disadvantages related to obesity and levonorgestrel only.

	Injectables	About 4 pregnancies per 100 women using progestin-only injectables over the first year. 96 of every 100 women using injectables will not become pregnant. When women have injections on time, less than 1 pregnancy per 100 women using progestin-only injectables over the first year (2 per 1,000 women)	It's a highly effective and reversible prescription birth control option. The user doesn't have the hassle of a daily birth control method like the pill. The user only has to get Depo-Provera injections four times a year, then you don't need to think about birth control for months.	Disadvantages: your periods may change and become irregular, heavier, shorter. It can carry on for some months after you stop the injections. It does not protect you against STIs. There can be a delay of up to 1 year before your periods return to normal and you can become pregnant.
	Implants	99 of every 100 women using implants will not become pregnant.	High effectiveness of up to 99 percent within seven days of implant insertion. Very inexpensive method of long-term contraception, comparable to intrauterine devices. Safe in the majority of women. Efficacy for three years without further intervention.	Disadvantages for implants include: Infection delayed bone healing, nerve damage, prolonged bleeding
	Copper IUD, T-shaped)	More than 99% effective.	They are more than 99% effective in preventing pregnancy. They last for a long time – Mirena can last for 5 years, and the copper IUD can last for 10 years. They are safe to use if you are breastfeeding. No medications stop them from working.	Heavier periods: Some people experience heavier periods with a copper IUD. Therefore, these IUDs may not be a good choice for people who have painful periods or endometriosis.

	Hormonal Intrauterine device (Mirena)	More than 99% effective.	They are more than 99% effective in preventing pregnancy. They last for a long time – Mirena can last for 5 years, and the copper IUD can last for 10 years. They are safe to use if you are breastfeeding. No medications stop them from working.	Heavier periods: Some people experience heavier periods with a copper IUD. Therefore, these IUDs may not be a good choice for people who have painful periods or endometriosis.

End unit assessment

1. What do you understand by the term ‘modern family planning?’
2. Discuss the major difference between progestin-only and combined oral contraceptive pills?
3. Briefly discuss some of the factors you may consider to advise a couple on which modern family planning they can use in the next two years.
4. What do you know about indication of oral contraceptive method the methods you have listed above?
5. Mention the advantages and side effects for someone who use emergency contraceptive pills?
6. What is the mechanism of action of copper intra uterine device and its side effects?
7. What can advise the woman who would like to use monthly injectable contraceptive as her preferred family planning method?
8. Discuss how you can help families to have knowledge on implants as modern family planning methods.
9. What is the difference between modern family planning and natural family planning methods?

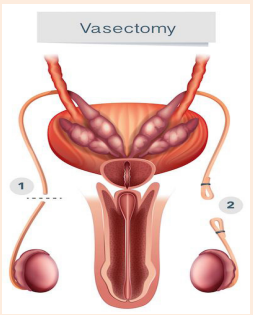
UNIT 3

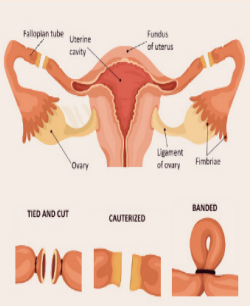
BARRIER AND PERMANENT FAMILY PLANNING

Key Unit Competence

Provide barrier and permanent family planning services

Introductory activity 3





Analyze the pictures above, and answer the questions below:

a) What are the messages conveyed by these pictures above?

b) What have you heard about the methods of family planning shown by the above pictures?

c) In your opinion, under what circumstances should the family planning methods shown in the above pictures can be indicated?

3.1 Introduction to barrier family planning methods

Learning activity 3.1

i. What do you know about barrier methods?
ii. What are the types of barrier methods?

Barrier methods include either physical devices that prevent sperm from reaching an egg or chemicals that kill or damage sperm in the vaginal canal. Barrier methods' success is highly dependent on people's ability to use them correctly every time they do sexual intercourses. When used correctly, barrier methods can prevent women from becoming pregnant and can also protect both the female and male partners against sexually transmitted infections including HIV.

Barrier contraceptives are classified into two main types: mechanical barriers and chemical barriers.

Mechanical barriers

They are devices that provide a physical barrier between the sperm and the egg. Examples of mechanical barriers include the male condom, female condom, diaphragm, cervical cap, and sponge.

Chemical barriers

Chemical barriers or spermicides are sperm-killing substances, available as foams, creams, gels, films or suppositories, which are often used in female contraception in conjunction with mechanical barriers and other devices.

Self-assessment 3.1

i) How do barrier methods of family planning act?
ii) With examples, explain the two types of barrier family planning methods.
iii) To what extent are barrier methods of family planning successful?

3.1.1 Male condom

Learning activity 3.1.1

i) What do you know about the male condom?
ii. In what situations can you advise individuals and couples to use male condom?
iii. Enumerate advantages and disadvantages of male Condom?

Introduction

A male condom is a covering that unrolls over a man's erect penis and is usually made of thin latex rubber. It keeps a man's sperm from getting into a woman's vaginal canal. It can also prevent the partner from becoming infected with the microorganisms that cause various Sexually Transmitted diseases (STIs) and Human Immune Deficiency Virus (HIV).

a) How to use a male condom

Watch the video demonstration on how to wear a male condom found on this link: https://www.youtube.com/watch?v=jzwSQrDIQg4

For each sex act, one new condom must be used. Before using a condom, the package must be checked to see if the condom is not torn or damaged. Expired condom should not be used. Other directions on the use of the condom are outlined in the box below.

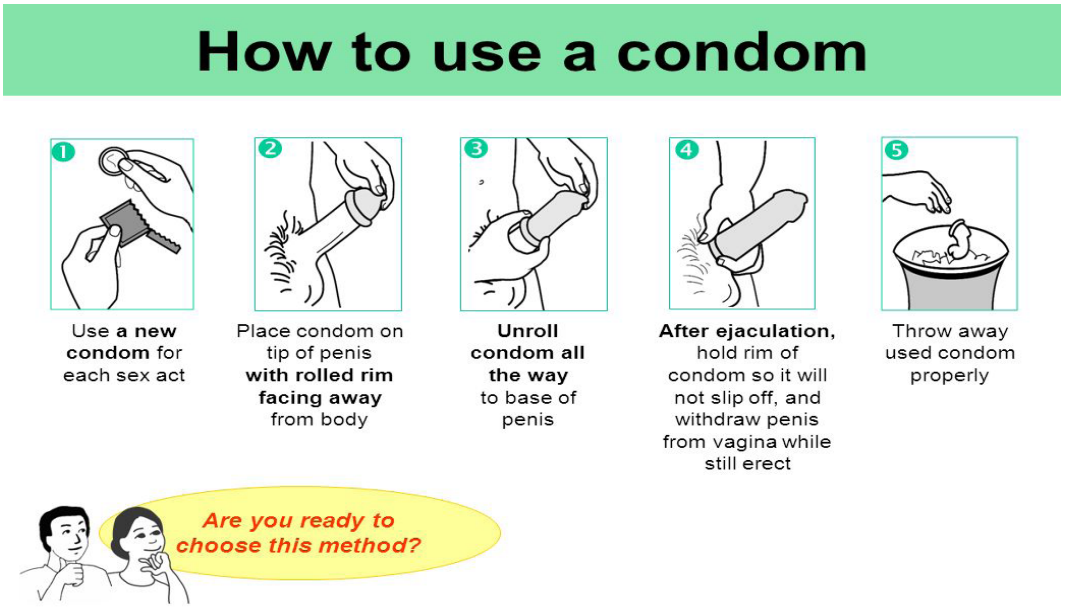


Figure 3.1: how to use a male condom

b) Indication

The male condom should be indicated as a family planning method of choice in the following cases

- If the couple chooses that as their preferred,
- If an individual man or woman engages in occasional sexual intercourse,
- discordant couples,
- If a man has premature ejaculation problems.

c) Contraindications

The male condom should not be the family planning method of choice in the following cases:

- If the individual male partner is allergic to latex manifested through swelling or difficulty breathing,
- If the individual male partner cannot maintain erection,
- For some people (both male and female) who may develop a mild, local irritation or a rash after using a male condom.

d) Effectiveness

When used correctly on every act of sexual intercourse, male condoms are 98% effective in protecting the woman from getting pregnant. This means that only 2 out of 100 people will become pregnant in 1 year when male condoms are used as contraception.

e) Advantages and disadvantages of male Condom use

Advantages	Disadvantages
• No medical prescription • Cheap • Easy to teach/use • Can be used while waiting to use another method • Encourages male participation in FP program • No systematic side effects • Does not interfere with breastfeeding • The only reversible method for men	• Require partner motivation • Possibility of condom damage • Must immediately be available) • Possibility of allergy on latex • The couple may stop use it or forget

Table 3.1: Advantages and disadvantages of a male condom

Self-assessment 3.1.1

i) Who should use a male condom as a family planning method?
ii) Who should not use male condom as a family planning method?
iii) Explain step by step how a condom is used.

3.1.2 Female condom

Figure 3.2: A female condom

Learning activity 3.1.2

a) What do you know about the female condom?

b) Who should use the female condom as a family planning method?

c) Who should not use female condom in family planning method?

A female condom is a lubricated pouch made of thin, soft plastic that fits loosely inside vagina used during sexual intercourse to reduce the probability of pregnancy and/or sexually transmitted infections. A female condom can be put into the vagina before sex, but make sure the penis does not come into contact with the vagina before the condom has been inserted. Semen can still come out of the penis even before a man has had an orgasm (fully ejaculated).

a) How to use a female condom

For each sex act, one new condom must be used. Before using a condom, the package must be checked to see if the condom is not torn or damaged. Expired condom should not be used.

- Open the packet and remove the female condom, taking care not to tear it.
- Squeeze the smaller ring at the closed end of the condom and put it into the vagina.
- Make sure the large ring at the open end of the condom covers the area around the opening of the vagina.
- Make sure the penis goes in the female condom, not between the condom and the side of the vagina.

- After sex, remove the female condom immediately by gently pulling it out. You can twist the large ring to prevent semen leaking out.
- Throw away the condom in a bin, not the toilet.

b) Mode of Action

Female condom act by forming a barrier that keeps sperm out of the vagina, preventing pregnancy.

c) Indications

Some indications of using female condom include the following:

- Individual's or couple's choice
- If an individual engages in occasional sexual intercourse,
- If the couple is discordant,
- Genital tract infection, including active sexually transmitted infection including vaginitis under treatment,
- If the female partner desires assurance that semen was not released into her vagina,

d) Contraindication

A female condom is contraindicated for females in the following cases:

- Being allergic to latex,
- When it is impossible for the female partner to maintain erection,
- Cannot be used as a replacement for the long-term methods of contraception,
- Women who have sex three or more times a week.

e) Effectiveness

If used correctly, female condoms are 95% effective to protect women against pregnancy and being infected by sexually transmitted infections.

f) Advantages and disadvantages of female condom

Advantages	Disadvantages
Prevent HIV/STIs and pregnancy No side effects (only when damaged or poor hygiene)	Expensive (around 1 USD) Cultural BARRIER Must be immediately available Uncomfortable when inserting the female condom Some women may not reach orgasm Misused: side effects (STIs, Pregnancy)

Table 3.2: Advantages and disadvantages of a female condom

Self-assessment 3.1.2

a) Briefly explain the female condom as a barrier family planning.

b) Describe step by step how the female condom is used.

Homework 3.1

Go to the internet and search for diaphragm contraceptive and write down notes that will be discussed in the classroom.

3.1.3 Diaphragm

Figure 3.3:Diaphragm

Learning activity 3.1.3

a) Based on the information you have gathered on the internet, answer the following questions:

b) What is a diaphragm?

c) What are advantages of diaphragm as a barrier method of family planning?

Diaphragm is a dome-shaped bowl made of thin, flexible silicone that sits over the cervix, it covers the cervix before sex and left in place of at least six hours after sex and prevents sperm passing through the cervix so sperm can't get in and fertilize an egg. It is better to use it with a gel that kills sperm (spermicide) that's why it is a barrier method of birth control.

a) Indications

The use of diaphragm may be an appropriate method of contraception for women who prefer an intercourse-related non-hormonal method of contraception and desire a barrier method that can provide continuous protection for up to 24 hours.

b) Contraindications

Some contraindications to diaphragm use include of the following: allergy to rubber or latex, repeated urinary tract infections, lack of personnel trained in fitting diaphragms or of time for proper fitting and instruction, some physical abnormalities, inability to understand the technique.

c) Advantages and disadvantages

There are the advantages of using diaphragm like when the user like only need to use a diaphragm when she wants to have sex. She can put it in at a convenient time before having sex (use extra spermicide if you have it in for more than 3 hours) there are usually no serious associated health risks or side effects.

As for the disadvantages, the diaphragm use has been criticized for the following deficits:

- Not as effective as other types of contraception as it depends on how the person using it remembers to use it and using it correctly.
- Does not provide reliable protection against STIs.
- It can also take a time to learn how to use it.

d) Possible side effects

There are some side effects that have been reported by the users including the following:

- Irritation of the vagina and surrounding skin or an allergic reaction,
- strong odors or vaginal discharge if the diaphragm is left in too long,
- an allergic reaction to the material in the diaphragm,
- a higher risk for urinary tract infections (UTIs),
- Risk of toxic shock syndrome if the diaphragm is left in too long.

Self-assessment 3.1.3

a) Who should not use the diaphragm?

b) What are the side effects associated with the use of diaphragm?

c) Mention at least two disadvantages of using diaphragm as a barrier method?

3.1.4 Cervical caps

Figure 3.4: Cervical caps

Learning activity 3.1.4

Watch the video on this link: https://www.youtube.com/watch?v=DaCZ2JGYxXk and answer these questions:

a) What is a cervical cap?

b) Under what circumstances should a cervical cap may not be used as a contraceptive method?

The cervical cap is a one of the temporary birth controls (contraceptive) devices that prevents sperm from entering the uterus. The cervical cap is a reusable, deep silicone cap that is inserted into the vagina and fits tightly over the cervix. The cervical cap is held in place by suction and has a tie to help with removal. It can insert the cap ahead of time or just before sex and the cap should be left in place for 6 hours after sex. The cervical cap is effective at preventing pregnancy only when used with spermicide.

c) Tips to inserting the cervical cap in the vagina

Before you use the cervical cap for the first time, practice inserting the cap and checking its placement.

To use a cervical cap, a woman must:

- **Check the position of her cervix before inserting the cervical cap.** To find the cervix, a woman inserts her finger deep into her vagina. The cervix feels like the tip of your nose. Its position will vary according to the time of the month and the woman's body position.

- **Apply spermicide.** Fill the cervical cap's bowl with about 1/4 teaspoon (1.25 milliliters) of spermicide. Spread a thin layer of spermicide on the brim of the cervical cap that faces the cervix. Place 1/2 teaspoon (2.5 milliliters) of spermicide in the groove between the rim and the dome of the cervical cap. The woman should avoid removing the cap for at least six hours after the last time she had sex.
- **Insert the cervical cap.** Insert the cervical cap into the vagina before sexual arousal to ensure proper placement. Find a comfortable position, such as squatting. Separate the labia with one hand. With the other hand, hold the cervical cap with the bowl facing upward and squeeze the rim of the cervical cap between your thumb and index finger.
- Slide the cervical cap into the vagina — making sure the taller brim of the cervical cap enters the vagina first. Push the cervical cap along the rear wall of the vagina as far as it will go. Use finger to locate the cervix and press the rim of the cervical cap around the cervix until it is completely covered.
- **Always check the cervical cap's position before sex.** Squat, bear down, insert your finger into your vagina and press upward on the dome to make sure your cervix is covered. If the cervical cap is not covering your cervix completely, either push it onto the cervix or remove it and reinsert it.
- **Gently remove the cervical cap.** After sex, leave the cervical cap in place for at least six hours and up to two days. To remove the cervical cap, squat, bear down and rotate the cap. Relax your muscles and push up on the dome of the cervical cap to break the seal.
- **Grasp the removal strap and gently pull.** Be careful not to scratch your vagina. After removal, wash the cervical cap with mild soap and warm water and let it air-dry. Store the cervical cap in its provided container.

b) Indication

Any woman without current pelvic or cervical infections can use cervical cap.

c) Contraindication

The care provider can discourage the use of cervical cap if the woman has the following conditions:

- Current history of pelvic, cervical, vaginal, or urinary traction infection;
- intermenstrual bleeding;
- medical procedures to the cervix;
- breast feeding;
- Recently gave birth or had a miscarriage or an abortion
- Recently had cervical surgery
- Have a history of pelvic inflammatory disease, toxic shock syndrome, cervical

cancer, third-degree uterine prolapse, uterine tract infections, or vaginal or cervical tissue tears

- Have vaginal or cervical abnormalities that interfere with the fit, placement or retention of the cervical cap
- Are at high risk of pregnancy (women younger than age 30; women who have sex three or more times a week; women who have had previous contraceptive failure with vaginal barrier methods; or women who are not likely to consistently use the cervical cap)
- Are allergic to spermicide or silicone.

d) Advantages and disadvantages

The advantages of using the cervical are the following, it does not affect future fertility for either the woman or the man. It is used only at the time of sexual intercourse. It is safe to use while breastfeeding. It is less expensive than hormonal methods of birth control.

The cervical cap is more difficult for women to learn to insert and remove than the diaphragm. If worn for more than two days (48 hours), you run the risk of toxic shock syndrome or unpleasant vaginal odor and discharge.

e) Effectiveness

The cap is 80.4% effective according to the Pearl Index and 89% of the women are satisfied with using the cap. There is a 51% continuation rate over a 1-year period. The cervical cap appears to have a satisfactory rate of contraception when compared with other barrier methods and women are adept at its use.

f) Side effects

The possible side effects may include: from the spermicide, irritation of the vagina and surrounding skin or an allergic reaction, strong odors or vaginal discharge if the cap is left in too long, an allergic reaction to the material in the cap and changes in the cervix because of irritation.

Self-assessment 3.1.4

a) Describe how a cervical cap is removed from the woman's vagina after sexual intercourse.

b) What are the possible side effects associated with using a cervical cap as a contraceptive method?

3.2 Permanent contraceptive methods

Learning activity 3.2.1

a) Enumerate the types of permanent methods of family planning you know.

b) What is vasectomy as a permanent contraceptive method?

Permanent contraception involves making a person incapable of reproduction. Disrupting the tubes that carry sperm or the egg ends the ability to reproduce. This form of contraception should always be considered permanent, although the procedures can sometimes be reversed. Normally, permanent contraceptive methods can only be chosen for individuals and/or couples who have had children and have decided that their family is complete. Permanent contraceptive methods encompass vasectomy and tubal ligation. In the next sub-sections, each method is discussed in details.

3.2.1 VASECTOMY

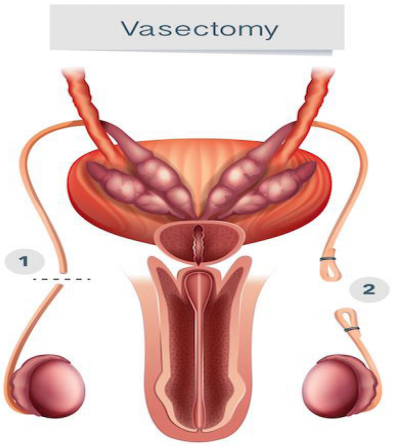


Figure 3.5: Vasectomy

A vasectomy also called male sterilization or male surgical contraception, it is a permanent family planning method which is irreversible, it is a simple surgery done by a doctor in a hospital or clinic. The small tubes in the scrotum that carry sperm are cut or blocked off, so sperm can't leave the body and cause pregnancy. The procedure is very quick, and the client can go home the same day.

a) Mode of action

A vasectomy blocks or cuts each vas deferens tube, keeping sperm out of the semen. Sperm cells stay in the testicles and are absorbed by the body. Starting

about 3 months after a vasectomy, the semen won't contain any sperm, so it can't cause pregnancy. But a men will still have the same amount of semen that he did before.

b) Indications

Some indications are: for men who do not want more children, transection and occlusion of the vas deferens, no interference with sexual performance

c) Contraindications

There are some contra indications for vasectomy like active STIs, swollen and tender testes, scrotal skin infection, and bilateral un-descended testes.

d) Advantages of Vasectomy

The following are the advantages of using vasectomy like Safer and more effective than tubal ligation, Vasectomies don't change the way having an orgasm or ejaculating (cumming) feels, Failure is less than 1%.

e) Disadvantages of Vasectomy

The following are some of the disadvantages,

- Does not protect against sexually transmitted infections
- Need use of other contraceptives for 8-12weeks after operation.
- Does not use general Anesthesia.
- It's non-reversible.

Reason for failure can be:

Unprotected intercourse soon (before azoospermia is documented – approx. 3 months)
Failure to occlude the vas (technical errors)
Recanalization

f) Effectiveness

A vasectomy is one of the most effective kinds of birth control. It's almost 100% effective at preventing pregnancy, it takes about 3 months for the semen to become sperm free.
Although a man can have intercourse two to three days following the procedure, the vasectomy does not work right away. It takes roughly 3 months for semen to

be entirely clear of sperm. A man or his partner should use another type of family planning, such as condoms, throughout these three months. Alternatively, if a woman was already using a family planning method before her partner's vasectomy, she can keep using it for another three months before stopping it. A vasectomy is considered effective after three months.

Self-assessment 3.2.1

a) How vasectomy works as a permanent contraceptive method?

b) What are indication and contra indication of using the vasectomy?

c) What are advantages of vasectomy?

3.2.2 TUBAL LIGATION

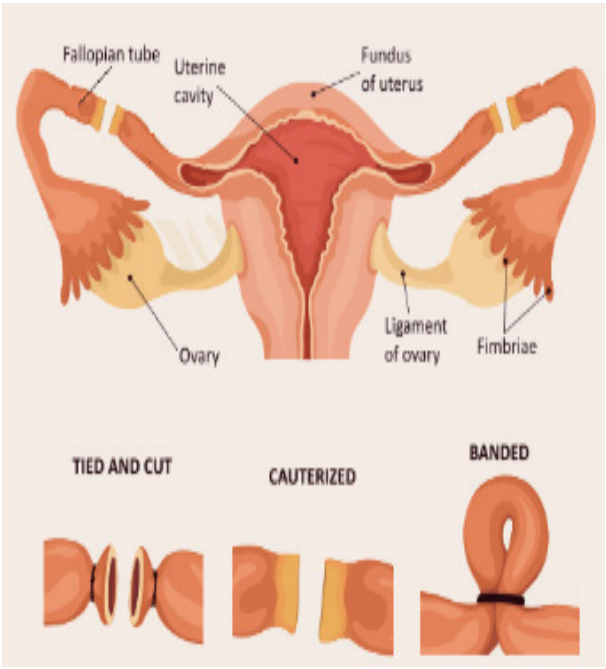


Figure 3.6: Tubal ligation

Learning activity 3.2.2

a) What is a tubal ligation as a permanent contraceptive method?

b) Who should use the tubal ligation?

c) What are advantages of tubal ligation?

A tubal ligation (also known as 'having your tubes tied') is a procedure to close both fallopian tubes which means that sperm cannot get to an egg to fertilize it.

a) Indication

The tubal ligation is indicated for women who want a permanent method of contraception and are free of any gynaecologic pathology that would otherwise dictate an alternate procedure. It is also indicated for women in whom a pregnancy could represent a significant clinical and medical risk.

b) Contra indication

Contraindications include indecisive patients, very young age, incapable of making a medical decision, the presence of gynecological malignancy, and morbidly obese patient.

c) Side effects

Some women may experience long-term side effects like regret After Sterilization, Sterilization Failure & Ectopic Pregnancy, Menstrual Cycle Changes, there is also **Post Tubal Ligation Syndrome** (hot flashes, chronic fatigue, irregular or heavier periods, loss of libido, increased depression and/or anxiety, achy, sore joints and/or muscles, weight gain and memory lapse)

d) Advantages

Tubal ligation' advantages are the following: permanently prevents pregnancy, so she no longer need any type of birth control and it does not protect against sexually transmitted infections. Tubal ligation may also decrease the risk of ovarian cancer, especially if the fallopian tubes are removed.

e) Disadvantage

Some disadvantages of tubal ligation are the following; it is a permanent and irreversible method, some people regret having it, especially if their circumstances change. Tubal ligation does not protect against STIs. Using condoms is the best way to prevent STIs.

f) The Benefits

Some benefits of tubal ligation are: It works immediately and can be performed after childbirth, it doesn't cause hormonal imbalance like other contraceptives, Eliminates the need to monitor schedules for pills or cycles and it may lower the risk of ovarian cancer.

Self-assessment 3.2.2

a) How does tubal ligation work as a permanent contraceptive method?

b) Who should not use the tubal ligation?

c) What are the disadvantages of tubal ligation

End unit assessment 3

I. True (T) or false (F) questions

1. Barrier methods exist only for males.
2. Condoms should be worn after ejaculation.
3. Barrier methods are safe and have no systemic effects.

II. Multiple-choice questions

Choose the correct answer

1. Which methods of birth control needs a prescription?

A. Birth control pill
B. Contraceptive patch
C. Cervical cap
D. all of the above

2. What do male condoms offer that other forms of birth control do not?

A. Least chance of failure
B. Best protection against STIs
C. Cheapest to use
D. All of the above

3. Which type of intrauterine device (IUD) IS available?

A. Copper
B. Titanium
C. Hormonal
D. A and C

4. Which of these methods of sterilization is permanent?

A. Tubal sterilization
B. Implants
C. Vasectomy
D. . A and C

III. Open questions

1. Who should use the male condom as a family planning method?
2. Enumerate advantages and disadvantages of male Condom?
3. Who should not use female condom in family planning method?
4. Enumerate advantages and disadvantages of female Condom?
5. What is diaphragm as barrier method?

UNIT 4 PROMOTION OF HEALTH IN CHILDREN

Key Unit competence

Provide promotional activities for the wellbeing of a child

Introductory activity 4

At health center, a nurse receives a 24 months old child brought by his mother, after he fell down from the bed this morning when he was crawling on the bed.

The mother told the nurse that when the child wakes up, he doesn't pull himself to standing position and crawls. The mother said that his child is the last born in the family and she has other 2 children with 9 and 5 years respectively. The child was born with 1.8kgs at 35 weeks of gestational age and delayed to cry for about 15 min that led him to be admitted in neonatology for 42 days. The child was fed with cow's milk from the second day of life as the mother was unable to breast feed. The nurse examined the child to see if there was no broken bone. While the child was on the examination table, his head was supported by his mother as he was unable to sit alone without being supported. The nurse only noticed ecchymosis on the right arm but there was no broken bone.

Based on your knowledge, discuss the growth and development in gross motor of the child in the scenario above.

Health promotion in children aims to keep children healthy with a focus on early interventions and implementing programs for the youngest children. The early years of a child's life lay the foundation for future physical, cognitive, emotional, and social development.

Children's health and well-being is influenced by a variety of factors, including family characteristics, community dynamics, and other social determinants of health (SDOH). These include systems, policies, and environmental conditions in which children are born and grow up.

4.1 Key Concepts used in child health

Learning activity 4.1

Using different sources of information discuss the following concepts:

- Pediatric
- Child
- Adolescent

4.1.1 Pediatric

Branch of medicine that deals specifically with children, their development, childhood diseases and their treatment.

4.1.2 Pediatric nursing

This is the art and science of giving nursing care to children from birth through adolescent with emphasis on the physical growth, mental, emotional and psychosocial and spiritual development of the child. It focuses on providing holistic care to infants, children and adolescent.

4.1.3 Child

Biologically, a child is a human being between the stages of birth and puberty, or between the developmental period of infancy and puberty. The United Nations Convention on the Rights of the Child (UNCRC) defines a child as **everyone under 18 years old.**

4.1.4 Childhood

The period of life of the human being considered to extend from infancy to puberty.

4.1.5 Infant

Infant is defined as **a child under the age of 1 year.**

4.1.6 Toddler

A toddler is a child approximately 12 to 36 months old, though definitions vary; the toddler years are a time of great cognitive, emotional and social development. The word is derived from “to toddle”, which means to walk unsteadily, like a child of this age.

4.1.7 Child health care

Specialized branch of medicine that promotes child health, prevent child illness, care of the ill, disabled and dying child from birth through adolescent to maintain physical, emotional and social wellbeing of that individual or child.

4.1.8 Adolescent

Adolescence is a transitional stage of physical and psychological development that generally occurs during the period from puberty to legal adulthood. Adolescence is the phase of life between childhood and adulthood, from ages 10 to 19. It is a unique stage of human development and an important time for laying the foundations of good health.

4.1.9 Health

Health, according to the World Health Organization, is “a state of complete physical, mental and social well-being and not merely the absence of disease and infirmity.”

4.1.10 Family centered care

Family-centered care is **a way of providing services that assures the health and well-being of children and their families through respectful family/ professional partnerships.** It honors the strengths, cultures, traditions, and expertise that families and professionals bring to this relationship.

4.1.11 Atraumatic care

Atraumatic care is **the philosophy of providing therapeutic care through the use of interventions that eliminate or minimize the psychological and physical distress experienced by children** and families.

4.1.12 Health promotion

Health promotion is the process of enabling people to increase control over, and to improve, their health. It moves beyond a focus on individual behavior towards a wide range of social and environmental interventions.

Self-assessment 4.1

- Identify the differences between pediatrics and pediatric nursing.
- Describe infant, toddler and adolescent periods.

4.2 Monitoring of growth and development

Growth monitoring is a process of following the growth of a child compared with a standard by periodic frequent anthropometric measurements and assessments.

Growth monitoring and promotion is a preventive and promotional activity. It facilitates communication and interaction between health care providers and care givers so as to encourage appropriate timely intervention to promote optimal child development and growth.

The main purpose of growth monitoring is to assess growth adequacy and identify changes at early stages before the child reaches the status of under nutrition.

Weight gain is the most important sign that a child is healthy and is growing and developing well. Also, a health check-up can detect if a child is gaining weight too fast or too slow in comparison to his/her age.

4.2.1 Steps involved in growth monitoring

5 major steps in growth monitoring are:

Step 1: Determining correct age of the child

Step 2: Accurate weighing of the child

Step 3: Plotting the weight accurately on a growth chart of appropriate gender

Step 4: Interpreting the direction of the growth curve and recognizing if the child is growing properly.

Step 5: Discussing the child's growth and follow up action needed with the mother.

4.2.2 Growth charts:

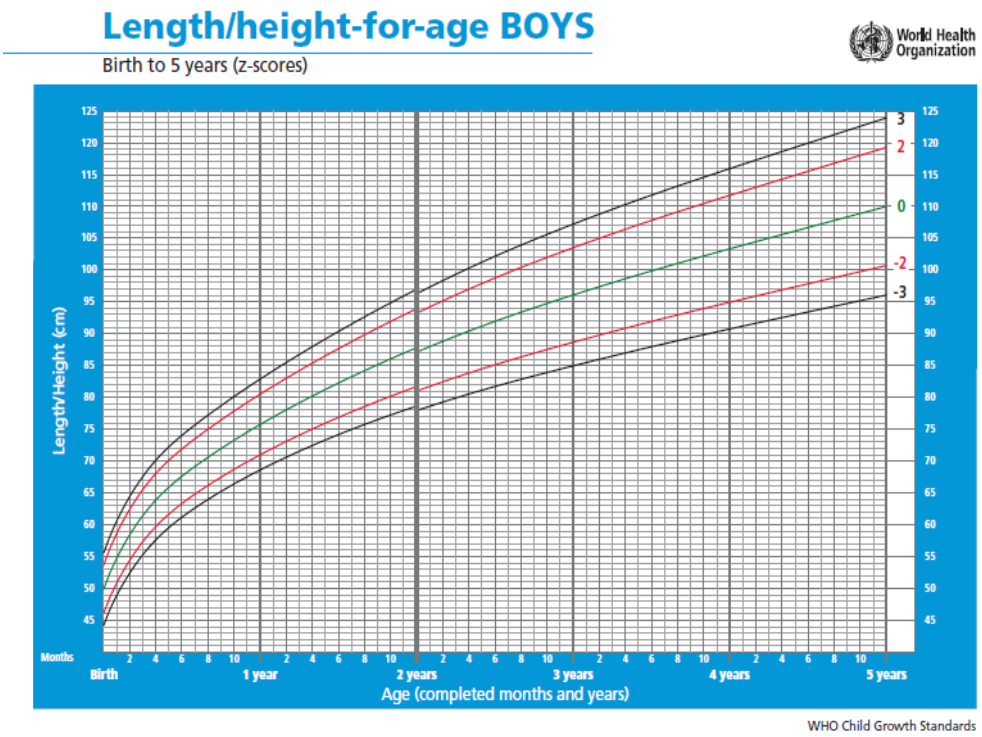


Figure 4.1: Height for age chart for boys

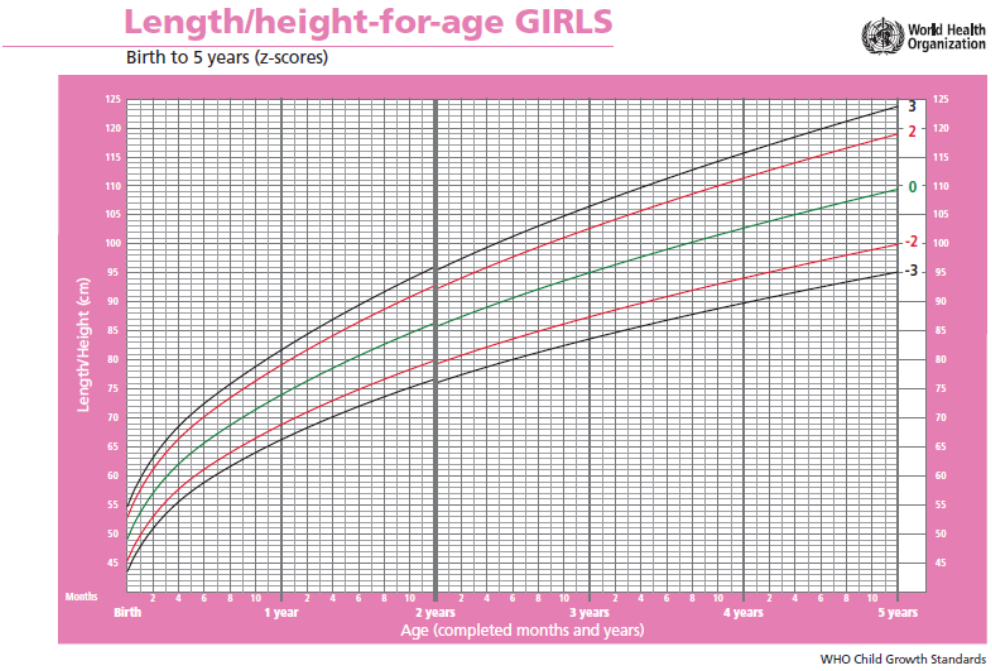


Figure 4.2: Height for age chart for girls

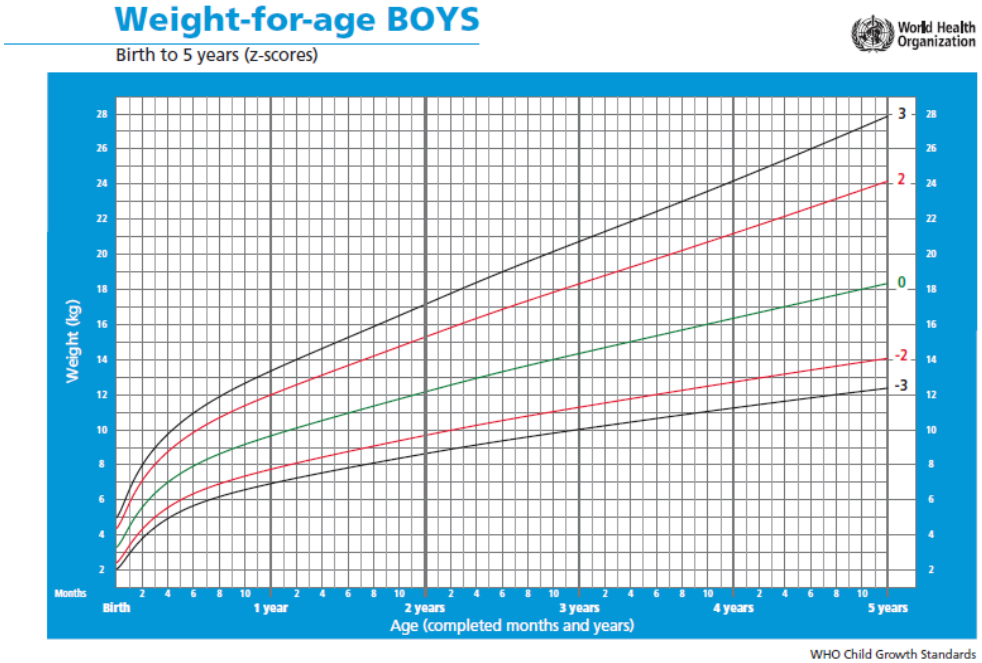


Figure 4.3: Weight for age Chart for boys

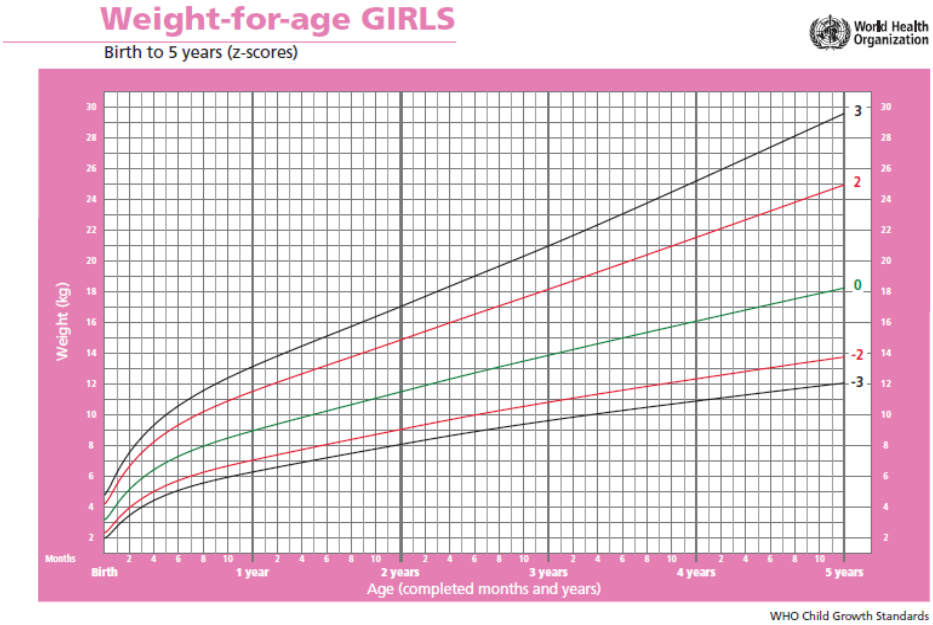


Figure 4.4: Weight for age chart for girls

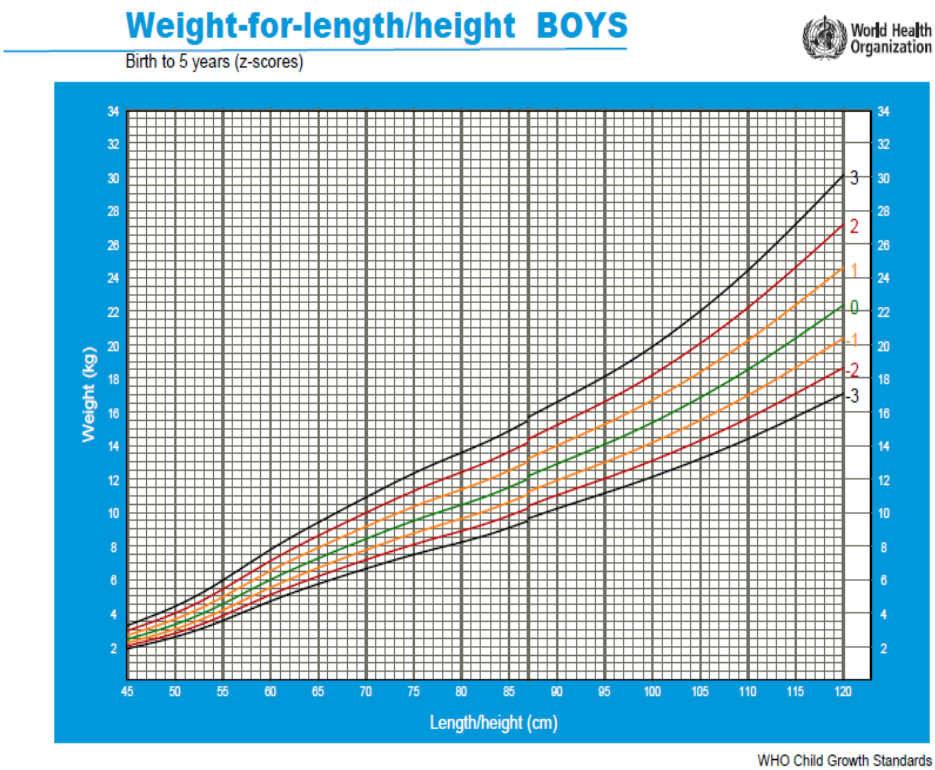


Figure 4.5: Weight for height chart for boys

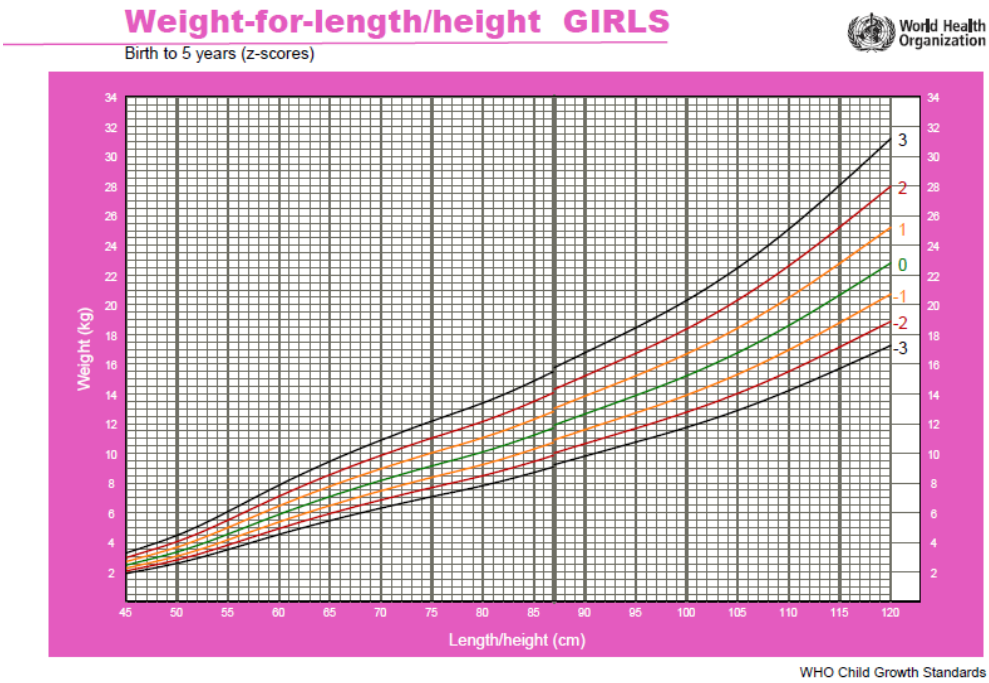


Figure 4.6: Weight for height chart for girls

Stages of child development (developmental milestones)

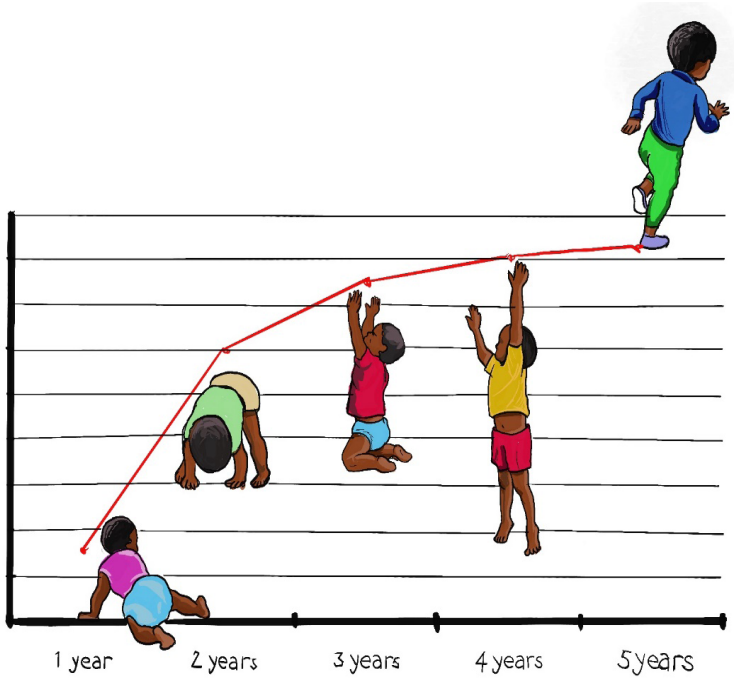


Figure 4.7: Stages of child development

Children undergo various changes in terms of physical, speech, intellectual and cognitive development gradually until adolescence. Specific changes occur at specific ages of life. Known as developmental milestones, these changes can help to identify if the child is developing at the correct pace. Failure to reach these milestones may indicate developmental disorders or genetic conditions.

Developmental milestones are behaviors or physical skills seen in infants and children as they grow and develop. Rolling over, crawling, walking, and talking are all considered as milestones. The milestones are different for each age range.

Newborn: birth to 1 month

Gross Motor	Fine Motor	Sensory/Language/Play
Birth to 1 month	Birth to 1 month	Birth to 1 month
Reflexes present	Hands predominately closed	Touch: first sense to develop
Absence of head control, but can momentarily hold the head in midline	Strong grasp reflex	Smell: Recognizes mother and has a taste preference for sweets
Head lag when the newborn is pulled from a lying to a sitting position		Hearing well developed: Becomes quiet when hears a familiar voice
Assumes flexed position When supine assumes tonic neck flex position		Limited visual acuity 20/100, fascinated with faces, follows moving objects, contrasting colors (black and white)
Kicks legs and waves arms		Language: Cries and smiles during sleep
Rounded back when sitting		Play: Interaction with parents and caregivers
Rolls over accidently		

Table 4.1: Newborn developmental milestones from birth- 1month

Infant: 1 to 2 months

Gross Motor	Fine Motor	Sensory/Language/Play
1-2 months	1-2 months	1-2 months
Less head lag when pulled to sitting position	Holds hands open	When supine follows dangling toys
When prone can slightly lift head off of floor	Grasp reflex absent	Visually searches for sounds
Improved head control, turns and lifts head from side to side when prone	Can pull at clothes and blanket, bats at objects	Turns head to sound Language: Coos, has social smile
		Play: Interaction with parents and caregivers, through pross and fine motor skills and senses

Table 4.2: Infant developmental milestone from 1-2 months

Infant: 3 to 6 months

Gross Motor	Fine Motor	Sensory/Language/ Play
3-6 months	3-6 months	3-6 months
Can hold head more erect when sitting, still some bobbing, by 6 months sturdy head control	Plays with toes	Follows object 180o
Only slight head lag, by 6 months no head lag	Clutches own hands, inspects and plays with hands	Good vision
Raises head to 45o- 90 o off of floor	Pulls blanket over face	Locates sound by turning head
In sitting position (tripod) back is straight and balances head well, sits alone by 8 months	Rakes objects	Beginning eye-hand coordination
When held in a standing position can bear some weight, by 8 months readily bears weight	Grasps objects with both hands (palmer grasp)	Pursues dropped object visually
Rolls from back to side and then abdomen to back	Shakes rattle and holds bottle	Sees small objects
When supine puts feet to mouth	Eventually able to put objects in container and bang them together	Responds to name
Begins to creep on hands and knees	Carries objects to mouth	Language: Coos and babbles
	Transfers objects from hand to hand Reaches and bangs toys on table	Play: Interaction with parents and caregivers through gross and fine motors skills and senses
	Likes mirror images	

Table 4.3: Infant developmental milestone from 3-6 months

Infant: 9 to 12 months

Gross Motor	Fine Motor	Sensory/Language/ Play
9-12 months	9-12 months	9-12 months
Creeps on hands and knees	Uses pincer grasp	Increasing depth perception
Pulls self to standing position	Hand dominance now evident	Moves toward sound
Stands while holding onto furniture and begins to cruise	Releases and rescues an object	Thoroughly explores and experiences objects

Stands alone	When sitting, purposely reaches around back to retrieve object	Points to simple objects
Changes from prone to sitting position	Can randomly turn pages in a book	Language: Says “mama” and “dada”.
Can reach backwards while sitting	Can make a simple mark on paper	Play: solidarity play (play alone), and continued interaction with parents and caregivers, through gross and fine motor skills and senses
Can sit down from standing position alone	Waves bye-bye and plays pat-a-cake	
Begins to walk holding hand and then independently, takes first step	Begins to feed self-finger foods	

Table 4.4: Infant developmental milestone 9-12 months

Toddler: 1 to 3 years

Gross Motor	Fine Motor	Sensory/Language/Play
Stands without support	Holds a pencil or a large crayon	Well-developed vision
Walks independently	Makes artwork that is more representative of the object	Can identify geometric objects
Creeps upstairs	Copies a circle	Intense interest in book’s pictures
Pulls toys while walking	Knows colors	Distinguishes food preferences based on senses
Runs with wide stance	Feeds self with a spoon and drinks from a cup	Language: Single words and simple phrases, “I do” or “Want drink.” By 15 months knows 15 words.
Jumps in place with both feet	Constantly throws objects on floor	Play: Parallel play (play alongside another child)
Climbs	Builds tower of 3-4 cubes eventually building tower of 7-8 cubes	
Begins to stand on one foot momentarily	Screws/unscrews	
Can walk up and down stairs with alternate feet.	Turns pages in a book one page at a time	
	Turn knobs	
	Removes shoes and socks, learn to undress self	

Table 4.5: Toddler developmental milestone from 1-3 years

Early Childhood (Preschooler): 3 to 6 years

Gross Motor	Fine Motor	Sensory/Language/Play
Dresses self	Moves around in a more balanced fashion	Well-developed senses
Throws and catches ball	Builds tower of 9-10 cubes	Preferences based on the use of senses
Kicks ball forward	Draws stick figure with 6 parts	Language: Vocabulary has increased, from 1500 to 2000 words, eventually speaks in complete sentences
Stands on one foot for 5-10 seconds	Uses scissors to cut outline of picture	Play: Cooperative play (play with peers), make believe, dramatic play
Skips and hops on one foot	Copies and traces geometric patterns	
Walks down steps with alternate feet	Ties shoe laces	
Jumps from bottom step	Uses fork, spoon and knife with supervision	
Balances on alternate feet with eyes closed	Colors, print letters	
	Mostly independent toileting	

Table 4.6: Child's developmental milestone from 3-6 years

School-age child: 6 to 12 years

Gross Motor	Fine Motor	Sensory/Language/Play
Gradual increase in dexterity and becomes limber	Good eye-hand coordination	20/20 Visual acuity
Improves coordination and balance, rhythm	Can sew, draw, make arts and crafts, build models, play video games	Color discrimination fully developed
Climbs, bikes, skips, jumps rope and swings	Prints and writes	Mature sense of smell
Learns to swim, dance, do somersaults and skate	Likes activities that promote dexterity such as playing a musical instrument	Hearing deficits may be discovered as language develops
		Language: Accelerated, vocabulary expands to 8000-15,000 words
		Play: Cooperative play (play with peers), solidarity activities and active play (e.g: dance or karate)

Table 4.7: Child's developmental milestone from 6-12 years

Adolescent: 12 to 19 years

Gross Motor	Fine Motor	Sensory/Language/Play
Begin to develop endurance	Manipulates complicated objects	Increased concentration so can follow complicated instructions
Speed and coordination	High skill level playing video games and computer	Senses tied into body image
Focuses skills on interest area	Good finger dexterity for writing and other intricate tasks	Develops adult preferences based on senses
	Precise eye-hand coordination	Language: continues to develop and refine with increased vocabulary up to 50,000 words.Improved communication skills
		"Play": Peer groups, team sports, solitary time, school or community activities, dating

Table 4.8: Child's developmental milestone from 12-19 years

4.2.3 Child development theories

Child development theories focus on explaining how children change and grow over the course of childhood. Such theories center on various aspects of development including social, emotional, and cognitive growth.

a. Freud's Psychosexual Developmental Theory

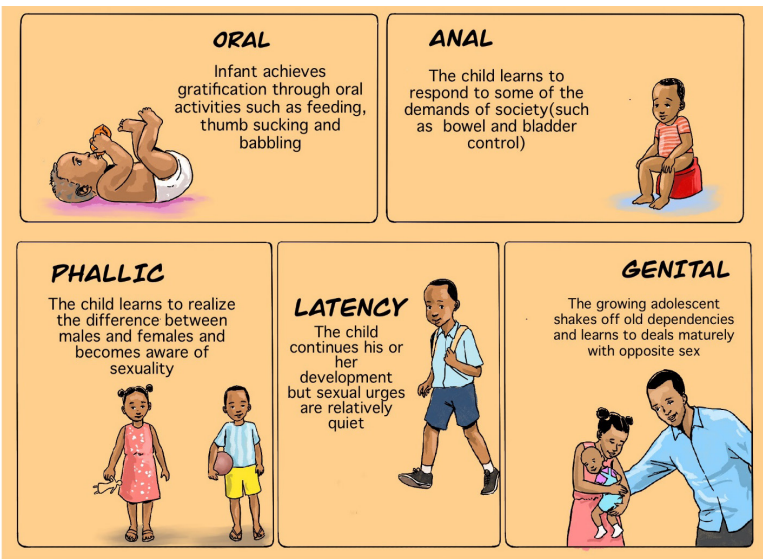


Figure 4.8: Freud's psychosexual developmental theory

Psychoanalytic theory originated with the work of Sigmund Freud. Through his clinical work with patients suffering from mental illness, Freud came to believe that childhood experiences and unconscious desires influenced behavior.

According to Freud, conflicts that occur during each of developmental stages can have a lifelong influence on personality and behavior. The child development occurs in a series of stages focused on different pleasure areas of the body. During each stage, the child encounters conflicts that play a significant role in the course of development.

His theory suggested that the energy of the libido was focused on different erogenous zones at specific stages. Failure to progress through a stage can result in fixation at that point in development, which Freud believed could have an influence on adult behavior. While some other child development theories suggest 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.

Stage	Age	Erogenous Zone	Characteristics
I: Oral stage	**0-1 year**	**Mouth**	The infant is fixated on oral curiosity (whatever he can put in the mouth). The infant derives pleasure from and relieves anxiety through oral sensations; for example, the infant sucks on his mother's breast or his bottle and is fed and pleasured. The infant puts his first in his mouth, or uses a teething ring. Children at this stage often use pacifiers or thumbs to decrease anxiety and increase comfort.
II: Anal stage	**1-3 years**	**Bowel and bladder control**	By the time the child reaches this stage; the child is ready to control elimination. Some children readily use the "big kid" potty; others resist. This is a time of increasing control in other areas of the life of the child. The child recognizes that this newfound control can run a collision course with the world, hence the term "the terrible twos." For example, the child explores, asserts, and learns boundaries about where to play safely. The child may struggle against these boundaries by escaping the backyard and running down the block.

III: Phallic stage	**3-6 years**	**Genitals**	By early childhood, sexual difference is discovered. The child begins to compare both the male and female bodies simply out of curiosity. For example, the child notices that girls are physically different from boys. During this time, a girl child wants to push mommy aside and marry daddy or vice versa.
IV: Latent stage	6 - 12 years	Dormant sexual feelings	Freud believed that the child "takes a break" psychosexually during this period of development. This allows the child to focus more intently on other aspects of growth and learning. For example, the child spends time with his same-gender friends, excelling in sports or video games. At this age, the child presumably has little interest in issues of sexuality.
V: Genital stage	13-18 years	Mature sexual feelings/ interests	By the time the child reaches puberty, sexuality and relationships are the focus. For example, this is a time for exploring relationships and of developing a sense of romanticism.

Table 4.9: Freud's psychosexual developmental theory

b. Erikson's Psychosocial Developmental Theory

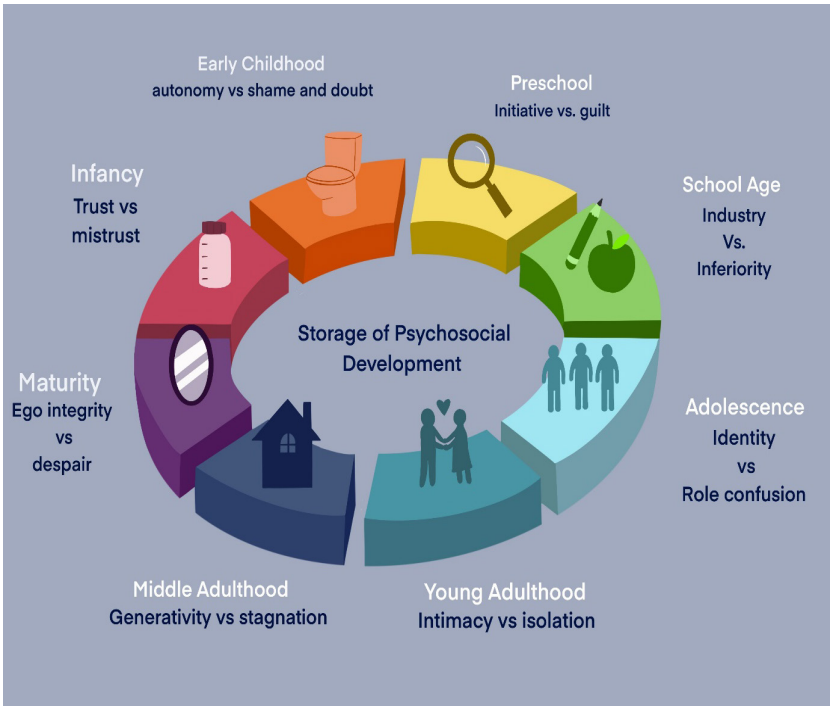


Figure 4.9: Erikson's psychosocial developmental theory

Erikson's eight-stage theory of psychosocial development describes growth and change throughout life, focusing on social interaction and conflicts that arise during different stages of development.

His eight-stage theory of human development described this process from infancy through death. There are 5 stages in childhood until adolescence as stages are based on the age. During each stage, people are faced with a developmental conflict that impacts later functioning and further growth. At each stage, children face a developmental crisis that serves as a major turning point:

A. Trust versus Mistrust

Trust versus mistrust occurs between birth and 1 year. The task of this stage is for the baby to recognize that there are people in his life, generally parents that can be trusted to take care of basic needs. The baby's struggle becomes evidenced in the recognition that not everyone or every situation is "safe." Through trust the baby learns to have confidence in personal worth and well-being along with connectedness to others. Failure to master this stage leaves a sense of hopelessness and disconnectedness.

B. Autonomy versus Shame and Doubt

Autonomy versus Shame and Doubt occurs between 1 and 3 years. The task of this stage is for the child to balance independence and self-sufficiency against the predictable sense of uncertainty and misgiving when placed in life's situations. It is the time for the child to establish willpower, determination, and a can-do attitude about self. An example of this stage happens when the toddler wants to choose clothing and dress independently. The struggle happens when the parents allow the child to make personal choices yet expect the choices to be socially acceptable.

C. Initiative versus Guilt

Initiative versus guilt occurs between 3 and 6 years. The child's task during this stage is to develop the resourcefulness to achieve and learn new things without receiving self-reproach. It is difficult for a young child to resolve the conflict between wanting to be independent and needing to stay attached to parents. The child's writing plays or new songs, games, or jokes are good examples of initiative.

The child feels confident to try new ideas. It is important that parents and teachers encourage this initiative to help the child develop a sense of purpose. If initiative is discouraged or ignored, the child may feel guilt and lack of resourcefulness.

D. Industry versus Inferiority

Industry versus inferiority occurs between the ages of 6 and 12. In this stage, the child develops a sense of confidence through mastery of tasks. This sense of accomplishment can be counterbalanced by a sense of inadequacy or inferiority

that comes from not succeeding. The realization that the child is competent is one of the important building blocks in the development of self-esteem. Industry is evident when the child is able to do homework independently and regulate social behavior. Performing the prescribed tasks at school or home also show industry. If the child cannot accomplish realistic expected tasks, the feeling of inferiority may result.

E. Identity versus Role Confusion

Identity versus role confusion occurs between the ages of 12 and 18. This is a time of forging ahead and acquiring a clear sense of self as an individual in the face of new and at times conflicting demands or desires. During this stage the adolescent wants to define "what to be when I grow up." She begins to concentrate on goals and life plans separate from those of peers and family. At this point, the child has the ability to think about self as well as others and proceeds accordingly.

c. Attachment Theories

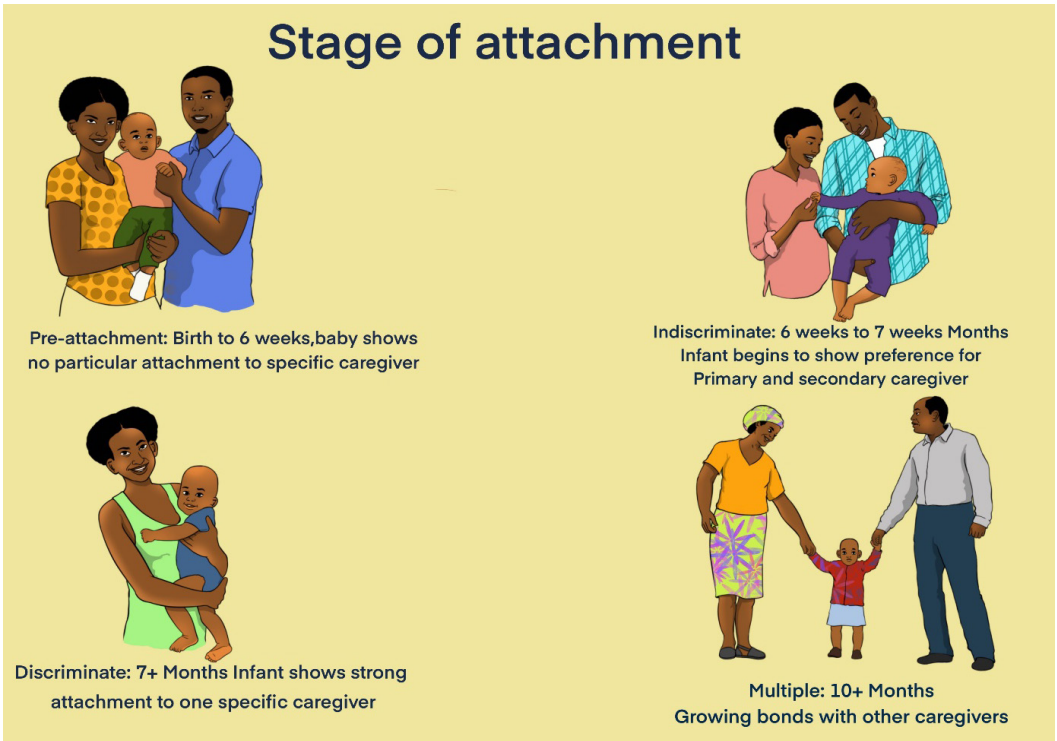


Figure 4.10: Attachment theories

Attachment refers to the bond or emotional and physical connection that develops between an infant and caregiver that tends to endure. Early theorists associated attachment with the mother who met the infant's innate drive to be fed and nurtured. Other examples of attachment behaviors are dressing, bathing, diapering, cuddling, loving, playing, and comforting.

Both the infant and the caregiver rely on the quality of the interaction between them. In other words, a healthy infant–mother relationship is contingent on the characteristic value of the communication between them.

Table 4.10: Phases of attachment

Phase	Bowlby (1978)	Ainsworth (1978)	Manifestation
Phase I (birth-2 months)	Orientation and signals without discrimination of figure	The initial pre-attachment phase	The infant responds to everyone in his environment without discrimination
Phase II (8-12 weeks)	Orientation and signals directed toward one or more discriminated figures	Attachment-in-the making phase	The infant responds most to those significant caretakers in his life
Phase III (6-7 months)	Maintenance of proximity to a discriminated figure by locomotion and signals.	Clear-cut attachment	The baby attaches to his caretaker crawling toward the caregiver, reaching for or cooing at the caregiver
Phase IV (around age 3)	Implications of the partnership for the organization of attachment behavior during the preschool years	Goal-corrected partnership	The preschool child begins to develop an understanding of the caregiver's goals. The child knows that a tantrum might get the mother to fulfill demands.

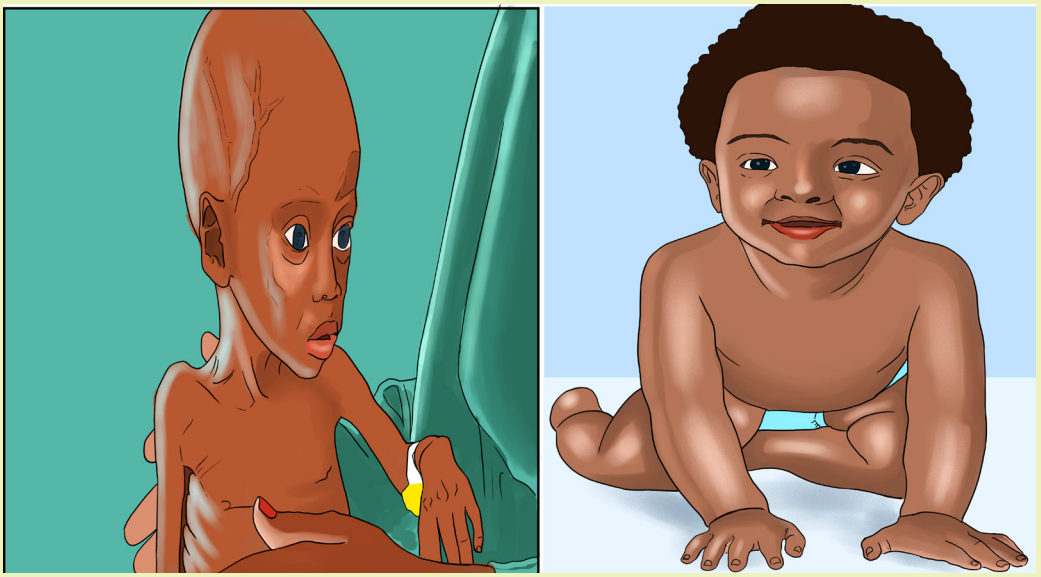
Self-assessment 4.2

1. Enumerate the steps involved in growth monitoring.
2. Describe the oral stage of Freud's psychosexual developmental theory.
3. Discuss any 2 stages of Erikson's psychosocial developmental theory.

4.3 Nutrition in children

Learning activity 4.3

Identify the differences between the two babies on the picture below.



The questions a healthcare provider asks regarding nutrition are based on the child's age. If the infant is breastfed, information is gathered as to how often and for how long the child is fed at each feeding, and how many wet diapers are changed in the course of one day. With sufficient breast milk intake, the infant will have six or more wet diapers and gain weight. Newborns often lose 10% of their birth weight. This weight loss is usually by the 12th day of life.

For the infant who is receiving formula, information is gathered as to the type of formula, the amount taken at each feeding, and the number of feedings per day. It is also important to note if and when juices or solid foods have been started, and whether supplements or vitamins have been prescribed.

When assessing children and adolescents, a 24-hour recall elicits the food items eaten in a typical day and reflects sociocultural trends. The nurse can document the amount and type of milk, juices, and all other liquids. In addition, the healthcare provider must document food allergies for all children. Analysis of the food intake is compared to the foods suggested in the Food Guide Pyramid for Young Children.

4.3.1 Importance of nutrition in children

Proper nutrition supports normal growth, development and aging. It also helps to maintain a healthy body weight and reduces the risk of chronic diseases.

For children, adequate nutrition is one of the most important factors influencing

growth and immunity. A balanced diet must contain the proper amount of protein, carbohydrate, fats, calcium, iron, vitamins and fiber. The foundation for lifelong health is largely set during the first 1,000 days (this is the most critical developmental period of brain growth and function). It is widely recognized as a time of enormous vulnerability but also a time of tremendous potential to impact the long-term health of the child. Due to the specific nutritional requirements during this rapid period of growth, even small nutritional deficits may negatively impact growth, neurodevelopment and adult health.

4.3.2 Nutrition screening and assessment

Nutrition screening is a rapid and simple identification of children who may be malnourished or at risk of malnutrition and need more detailed nutrition assessment. Nutrition screening requires standardized training in line with national and local health policy.

Nutrition assessment includes taking anthropometric measurements and collecting information about a child's medical history, clinical and biochemical characteristics, dietary practices, current treatment and food security situation.

Importance of nutrition assessment is to:

1. Identify children at risk of malnutrition for early intervention or referral before they become malnourished.
2. Identify malnourished children for treatment- malnourished children who are not treated early have longer hospital stay, slower recovery from infection and complications and higher mobility and mortality.
3. Track child growth.
4. Identify medical complications that affect the body's ability to digest food and utilize nutrients.
5. Detect practices that increase the risks of malnutrition and infections.
6. Inform nutrition education and counselling.
7. Establish appropriate nutrition care plan.

Nutrition assessment should be done in:

- **Infants 0 to <6 months of age:** at birth and on every scheduled postnatal visit
- **Infants 6 to 59 months of age:** during monthly growth monitoring sections for children under 2 and every 3 months for older children.
- **Children of 5 years and above:** on every clinic visit.
- **Adolescents:** on every clinic visit.

4.3.3 Types of nutrition assessment

Types of nutrition assessment are remembered with mnemonics ABCD:

A: Anthropometric is the measurement of the size, weight and proportion of the body. Common anthropometric measurement include weight, height, MUAC (Mid Upper Arm Circumference), head circumference and skin folds. Body mass index (BMI) and weight-for-height are anthropometric measurements presented as indexes.

B: Biochemical means checking level of nutrients in a child's blood, urine or stools. Lab tests results can give useful information about medical problems that may affect appetite or nutritional status.

C: Clinical assessment includes checking for visible signs of nutritional deficiencies such as bilateral pitting edema, emaciation (a sign of wasting, which is a loss of muscle and fat tissue as a result of low energy intake and/or nutrients loss from infection), hair loss, and change in hair color. It also includes taking a medical history to identify co-morbidities with nutritional implications, opportunistic infections, other medical complications, usage of medications with nutritional related side effects, food and drug interactions and risk factors for disease, inability to suck and ineffective breastfeeding.

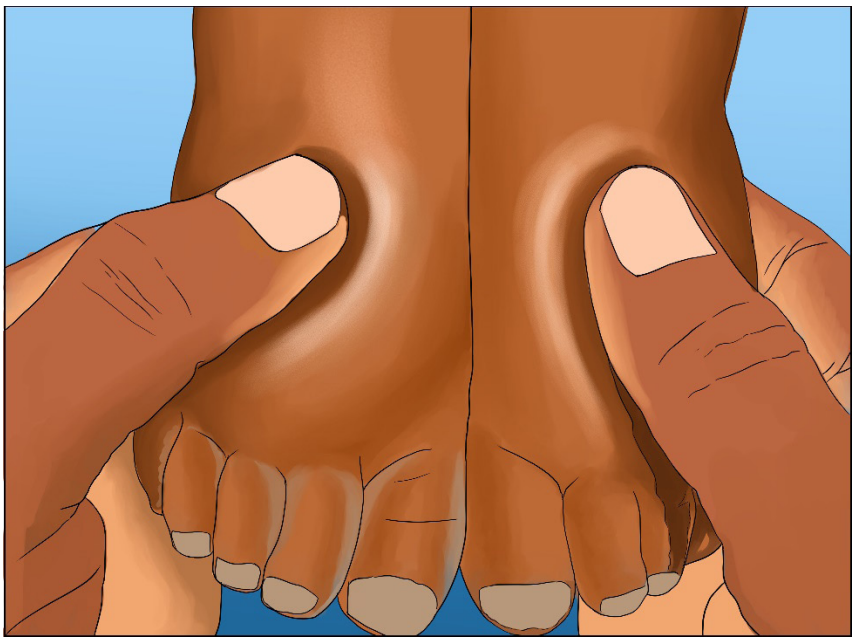


Figure 4.11: Pitting edema on feet

Bilateral pitting edema also called nutritional edema is a swelling in both feet or legs (bilateral) caused by accumulation of excess fluid under the skin in the spaces within tissues. It is a sign of severe malnutrition on its own regardless of

the results of anthropometric assessment. Any child with severe bilateral pitting edema (grade+++), even with appetite and no medical complications should be admitted for inpatient management. A child with bilateral pitting edema Grade+ or ++ with appetite and no medical complications should be treated for severe acute malnutrition.

D: Dietary: assessing food and fluid intake is an essential part of nutrition assessment. It provides information on dietary quantity and quality, changes in appetite, food allergies and intolerance, and reasons for inadequate food intake during and after illness. To counsel the parents how to improve their diet to prevent malnutrition or treat conditions affected by food intake and nutritional status example cardiovascular disease, cancer, obesity, diabetes and hyperlipidemia.

4.3.4 Various forms of malnutrition

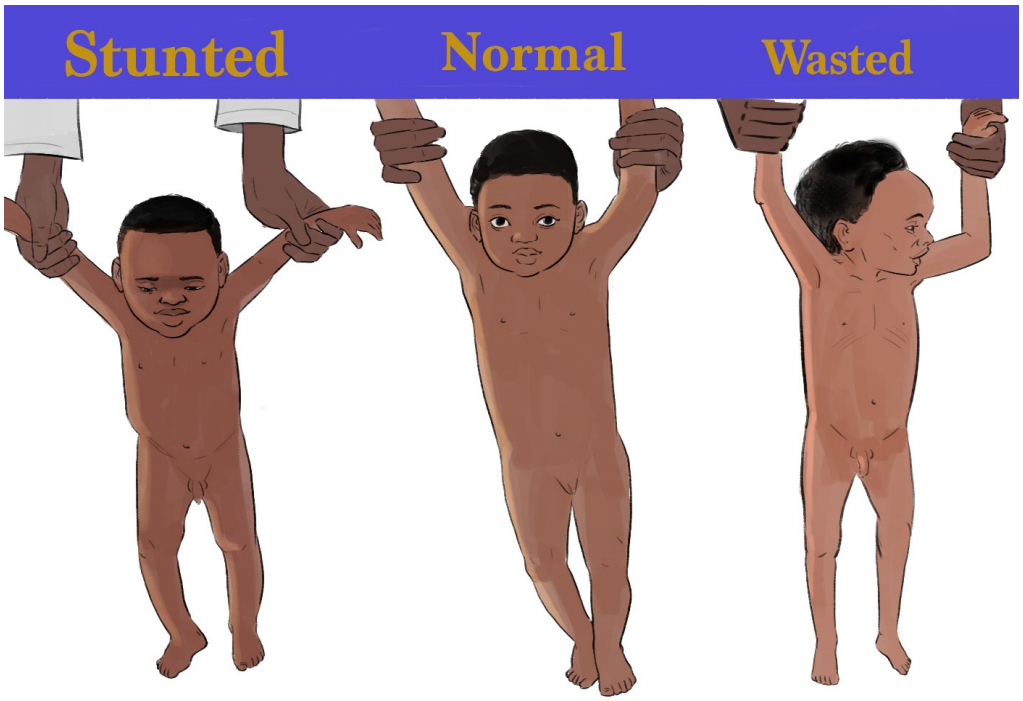


Figure 4.12: Various forms of malnutrition

a. Undernutrition

There are 4 broad sub-forms of undernutrition: Wasting, stunting, underweight and deficiencies in vitamins and minerals. Undernutrition makes children in particular much more vulnerable to disease and death.

Low weight-for-height is known as **wasting**. It indicates recent and severe weight loss because the child has not had enough food to eat and/or they have had an infectious disease such as diarrhea which has caused them to lose weight and this may lead this to increase risk of death but treatment is possible.

Low height-for-age is known **as stunting.** It is the result of chronic reoccurrence undernutrition usually associated with poor socioeconomic conditions, poor maternal health and nutrition, frequent illness and/or inappropriate infant and young child feeding and care in early life. Stunting holds children back from reaching their physical and cognitive potential.

Children with **low weight-for-age** are known as **underweight**. A child who is underweight may be stunted, wasted or both.

b. Micronutrient related malnutrition

Micronutrients enable the body to produce enzymes, hormones and other substances that are essential for proper growth and development. Iodine, vitamin A and iron are the most important and their deficiency represents a major threat to the health and development of the children.

c. Overweight and obesity

Figure 4.13: a child with obesity

Overweight and obesity result from an imbalance between energy consumed (too much) and energy expended (too little). Body mass index is an index of weight-for-height commonly used to classify overweight and obesity. It is defined as a person's weight in kilograms divided by the square of his/her height in meters (kg/m2).

Body Mass Index in children (BMI)

- A BMI-for-age plotted below the 5th percentile indicates a child who is underweight;
- A BMI-for-age between the 5th and 85th percentile is considered a healthy weight;
- Children with a BMI-for-age between the 85th and 95th percentile are considered at risk for obesity;
- Children with a BMI-for age _95% are considered obese.

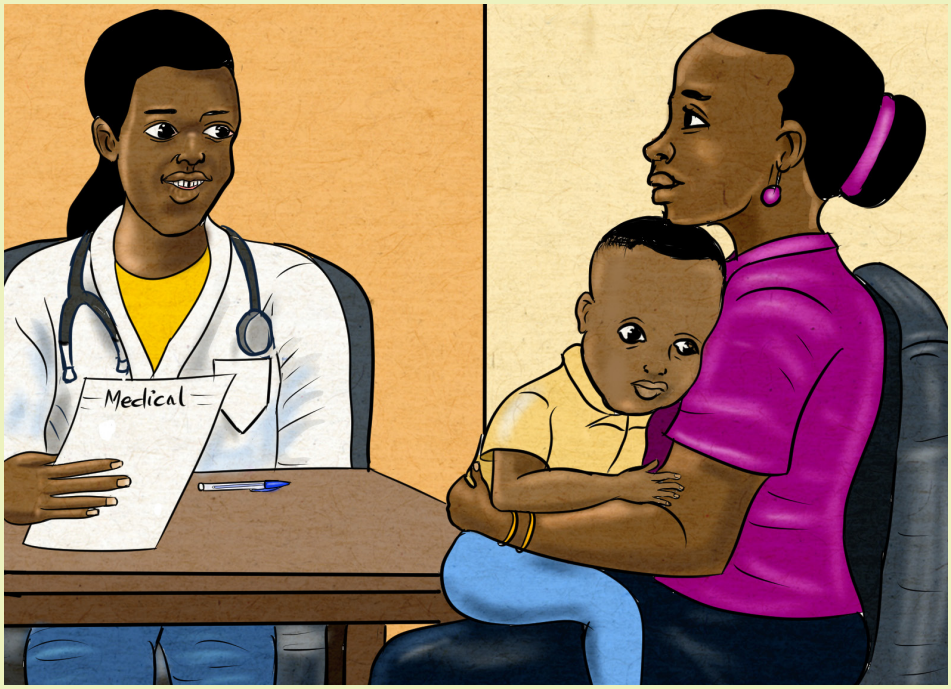
Self-assessment 4.3

1. Discuss various forms of malnutrition.
2. What are the elements of nutritional clinical assessment?

4.4 Assessment of a child: History taking

Learning activity 4.4

Describe what you are seeing on the chart



Children are not small adults. Taking a history with children differs from adults and comes with a set of unique challenges. Symptoms are typically reported by a parent or guardian, who may not be able to accurately transmit the information from the child to the examiner and characterize the child's concerns. To fill in the gaps, a health care provider must have good communication skills and the ability to develop a rapport with children as well as their families.

Taking a history from a patient is a skill necessary for examinations. It tests both your communication skills as well as your knowledge about what to ask. Specific questions vary depending on what type of history you are taking.

The basics components of a pediatric history

- **Introduce yourself,** identify your patient and gain consent from the parents to speak with them. Should you wish to take notes as you proceed, ask the patients permission to do so.
- **Chief Complaint:** brief statement of primary problem (including duration) that caused family to seek medical attention.
- **History of present illness:** similar to history taking in adult population, the history of present illness in pediatric history is to explore the patient's primary concerns, and must be tailored to the individual presenting complaint. Generally, you will want to try to characterize the symptoms of concern and get a sense of the onset, timing, aggravating and alleviating factors, associated symptoms, and if anything, similar has happened to the patient before.
- **Past History:** The past history establishes a complete picture of the child's health to date, and should cover events from the prenatal period until the child's current presentation. The prenatal history includes inquiring about maternal age, and number of previous pregnancies and the outcomes of those pregnancies. It may be relevant to ask if the child is a product of natural conception or if assistive reproductive technology was required. Ask about whether prenatal care was accessed, medications used, substances and toxins and if there were any abnormal results or concerns identified on routine screening for infections and chronic diseases or ultrasounds. Additional exposures that may be relevant include the mother's occupation.
- **Pregnancy and birth history:**
  - Maternal health during pregnancy: ask about bleeding, trauma, hypertension, fevers, infectious illnesses, medications, drugs, alcohol, smoking, rupture of membranes
  - Gestational age at delivery
  - Labor and delivery: length of labor, fetal distress, type of delivery (vaginal, cesarean section), use of forceps, anesthesia, breech delivery

- Neonatal period: APGAR scores, breathing problems, use of oxygen, need for intensive care, hyperbilirubinemia, birth injuries, feeding problems, length of stay, birth weight.

- **Growth History:** Growth history is an important part of the pediatric history as prolonged illness or chronic conditions may impact the child's growth and result in deviations from an established growth. When asking about growth history, the pattern of growth, not just the child's measurement at the present is key as alterations in pattern of growth are often early signs of pathology. Plot the child's growth on a growth chart, and look at both numbers (z-scores) and percentiles. It may be helpful to ask regarding growth and size of family members, as marked deviations in a child's growth from what is expected from family trends could help in distinguishing constitutional or familial variants from a pathologic growth pattern. Healthy children should achieve a minimum growth velocity of 5 cm per year.
- **Developmental History:** Developmental history consists of the 5 domains of child development: **gross motor, fine motor, speech & language, cognitive, and social/emotional development**
  - Ages at which milestones were achieved and current developmental abilities - smiling, rolling, sitting alone, crawling, walking, running, 1st word, toilet training, riding tricycle, etc
  - School: present grade, specific problems, interaction with peers
  - Behavior: enuresis, temper tantrums, thumb sucking, pica, nightmares etc.
- **Medical History:**
  - Previous hospital admissions with dates and diagnoses
  - Major medical illnesses: cardiac disease, hypertension, stroke, diabetes, cancer, abnormal bleeding, allergy and asthma, epilepsy.
  - Major surgical illnesses, Trauma-fractures, lacerations, list operations and dates
  - Medication History: Medication history includes both prescription and non-prescription medications such as over the counter medications, vitamins and supplements. One commonly overlooked group of medications is inhalers, so it might be helpful to ask specifically if the child uses any inhalers. It is also important to ask specifically about herbal or homeopathic remedies, as parents may not report this unless directly asked. Additionally, do not forget to ask about allergies to any drugs, foods or environmental triggers.
- Immunization History: Immunization history is an essential part of the pediatric history. Ask if the child has received all of his/her routine immunizations, as well as if the child has received any additional vaccines such as the seasonal influenza vaccine or travel immunizations. It may be relevant to ask when the

child last received a vaccination for various presentations including febrile seizures or fever.

- **Feeding History:**
- Breast or bottle fed, types of formula, frequency and amount, reasons for any changes in formula
- Solids: when introduced, problems created by specific types
- **Family History:** Family history may begin with clarifying ethnicity when relevant, and then establishing if any medical conditions have occurred in the family that may relate to the child's current presentation. It may be helpful to draw out a pedigree to better understand the health and relationships between individuals in the family. Again, many items in this component of the pediatric history may be sensitive, and it is important to approach these topics in an open and non-judgmental manner. Mental retardation, congenital anomalies, chromosomal problems, growth problems, etc.
- **Social History:** The social history includes parental employment status, any financial issues, health coverage and drug plans, and family composition. This part of the history may lead to discussion about the impact of the child's illness on both the child and the family, and can allow the care team to better support the family.

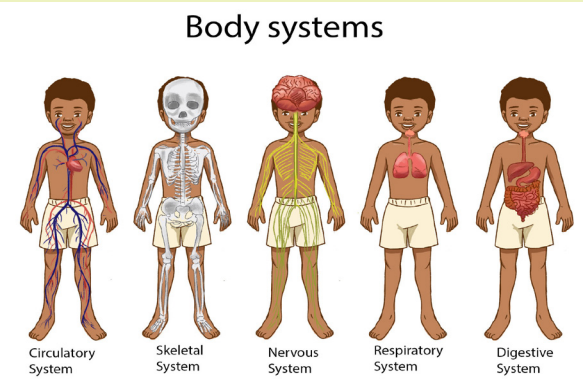
Self-assessment 4.4

- Identify elements to include in pediatric history taking
- Why do we need to know prenatal history of pediatric patients?

4.5 Assessment of a child: Review of systems

Learning activity 4.5.1

Observe the following picture and identify different human body system illustrated



A review of systems Much like the physical examination, the review of systems is best conducted with a "head-to-toe" approach, starting with a general question regarding each body system. It can also be conducted by asking questions during the physical examination.

It is a technique used by healthcare providers for eliciting a medical history from a patient and often structured as a component of an admission note covering the organ systems, with a focus upon the subjective symptoms perceived by the patient (as opposed to the objective signs perceived by the clinician). Along with the physical examination, it can be particularly useful in identifying conditions that do not have precise diagnostic tests. The review of systems serves as a guide to help identify potential or underlying illnesses or disease states subjectively, thus allowing the health care provider to prioritize system for follow up and objective examination. This will also help to obtain information about the chief concern as well as the history of present illness.

Whatever system a specific condition may seem restricted to, it may be reasonable to review all the other systems in a comprehensive history.

Review of systems includes the following areas:

a. General: usual weight, change in weight, weakness, fatigue, fever or allergies.

b. Head, Eyes, Ears, Nose, Throat (HEENT): injury to head, headaches, dizziness; eye infections, itching or watering eyes, behaviors indicating change in visual acuity, use of glasses, date of last eye exam; ear infections, behaviors indicating change in hearing; nose bleeds, colds, hay fever, sinus infections; sore throats, tonsils, dentition, caries.

c. Neck: neck pain, enlarged lymph glands, neck range of motion

d. Skin and Lymph: rashes, adenopathy, lumps, bruising and bleeding, pigmentation changes

e. Cardiac: cyanosis and dyspnea, heart murmurs, exercise tolerance, squatting, chest pain, palpitations

f. Respiratory: pneumonia, bronchiolitis, wheezing, chronic cough, sputum, hemoptysis, Tuberculosis

g. Gastro-Intestinal: stool color and character, diarrhea, constipation, vomiting, hematemesis, jaundice, abdominal pain, colic, appetite

h. Genito-Urinary: frequency, dysuria, hematuria, discharge, abdominal pains, quality of urinary stream, polyuria, previous infections, facial edema

i. Musculoskeletal: joint pains or swelling, fevers, scoliosis, myalgia or weakness, injuries, gait changes

j. Pubertal: secondary sexual characteristics, menses and menstrual problems, pregnancies, sexual activity

k. Allergy: urticaria, hay fever, allergic rhinitis, asthma, eczema, drug reactions

l. Neurological: seizures, tics, psychiatric diseases, anxiety, depression

m. Endocrine: history or symptoms of thyroid disease or diabetes or diseases that affect normal growth.

Self-assessment 4.5

1. Describe the constitutional symptoms in the review of systems.
2. Explain any 4 systems that can be reviewed during history taking.

4.6 Assessment of a child: Physical examination

Learning activity 4.6

1. What should be done during pediatric physical examination?
2. Why is it relevant to perform pediatric physical examination?

In physical examination, medical examination or clinical examination, a medical practitioner examines a patient for any possible medical signs or symptoms of a medical condition. It generally consists of a series of questions about the patient's medical history followed by an examination based on the reported symptoms. Together, the medical history and the physical examination help to determine a diagnosis and devise the treatment plan. These data then become part of the medical record.

Differences in Performing a Pediatric Physical Examination Compared to an Adult:

I. General Approach

a. Gather as much data as possible by observation first

b. Position of child: parent's lap vs. exam table

c. Stay at the child's level as much as possible. Do not tower!!

d. Order of exam: least distressing to most distressing

e. Rapport with child:

- Include child - explain to the child's level
- Distraction is a valuable tool

f. Examine painful area last-get general impression of overall attitude

g. Be honest. If something is going to hurt, tell them that in a calm fashion. Don't lie or you lose credibility!

h. Understand developmental stages' impact on child's response. For example, stranger anxiety is a normal stage of development, which tends to make examining a previously cooperative child more difficult.

II. Vital signs

a. Normal differ from adults, and vary according to age

b. Temperature: Tympanic, oral, axillary and rectal

c. Heart rate: In infants, auscultate or palpate apical pulse or palpate femoral pulse. In older children, palpate antecubital or radial pulse

d. Respiratory rate: Observe for a minute. Infants normally have periodic breathing so that observing for only 15 seconds will result in a skewed number.

e. Blood pressure: Appropriate size cuff - 2/3 width of upper arm

f. Growth parameters: must plot on appropriate growth curve (Weight, Height/length, Occipital Frontal Circumference: Across frontal-occipital prominence so greatest diameter).

Age group	HR	RR	BP systolic	BP Diastolic
Infant	80-150	25-55	65-100	45-65
Toddler	70-110	20-30	90-105	55-70
Pre-schooler	65-110	20-25	95-110	60-75
School-age	60-95	14-22	100-120	60-75
Adolescent	55-85	12-18	110-125	65-85

Table 4.11: Normal ranges of vital signs in different age

Types of readings	0-2 years	3-10 years
Oral	95.9–99.5°F (35.5–37.5°C)	95.9–99.5°F (35.5–37.5°C)
Rectal	97.9–100.4°F (36.6–38°C)	97.9–100.4°F (36.6–38°C)
Arm pit	94.5–99.1°F (34.7–37.3°C)	96.6–98.0°F (35.9–36.7°C)
Ear	97.5–100.4°F (36.4–38°C)	97.0–100.0°F (36.1–37.8°C)

Table 4.12: Average range for pediatric vital signs

III. Unique findings in pediatric patients (See outline below)

Outline of a Pediatric Physical Examination

I. Vitals - see above

II. General

a. Statement about striking and/or important features. Nutritional status, level of consciousness, toxic or distressed, cyanosis, cooperation, hydration, dysmorphology, mental state

b. Obtain accurate weight, height and OFC

III. Skin and Lymphatics

a. Birthmarks - nevi, hemangiomas, mongolian spots etc

b. Rashes, petechiae, desquamation, pigmentation, jaundice, texture, turgor

c. Lymph node enlargement, location, mobility, consistency

d. Scars or injuries, especially in patterns suggestive of abuse

IV. Head

a. Size and shape

b. Fontanelle(s): determine its Size in a calm environment and in the sitting up position

c. Sutures - overriding

d. Scalp and hair

e. Eyes

- General: Strabismus, Slant of palpebral fissures, Hypertelorism or telecanthus

  - EOM
  - Pupils
  - Conjunctiva, sclera, cornea
  - Plugging of nasolacrimal ducts
  - Red reflex
  - Visual fields - gross exam

f. Ears

- Position of ears: Observe from front and draw line from inner canthi to occiput
- Tympanic membranes

- Hearing - Gross assessment only usually

g. Nose

- Nasal septum
- Mucosa (color, polyps)
- Sinus tenderness
- Discharge

h. Mouth and Throat

- Lips (colors, fissures)
- Buccal mucosa (color, vesicles, moist or dry)
- Tongue (color, papillae, position, tremors)
- Teeth and gums (number, condition)
- Palate (intact, arch)
- Tonsils (size, color, exudates)
- Posterior pharyngeal wall (color, lymph hyperplasia, bulging)
- Gag reflex

i. Neck

- Thyroid
- Trachea position
- Masses (cysts, nodes)
- Presence or absence of nuchal rigidity

j. Lungs/Thorax

- **Inspection**
  - Pattern of breathing

Abdominal breathing is normal in infants

Period breathing is normal in infants (pause < 15 seconds)

  - Respiratory rate
  - Use of accessory muscles: retraction location, degree/flaring
  - Chest wall configuration
- **Auscultation**
  - Equality of breath sounds
  - Rales, wheezes, rhonchi
  - Upper airway noise
- **Percussion and palpation often not possible and rarely helpful**

k. Cardiovascular

- Auscultation
  - Rhythm
  - Murmurs
  - Quality of heart sounds
- Pulses
  - Quality in upper and lower extremities

L. Abdomen

- Inspection
  - Shape

Infants usually have protuberant abdomens

Becomes more scaphoid as child matures

  - Umbilicus (infection, hernias)
  - Muscular integrity (diasthasis recti)
- **Auscultation**
- **Palpation**
  - Tenderness - avoid tender area until end of exam
  - Liver, spleen, kidneys: May be palpable in normal newborn
  - Rebound, guarding: Have child blow up belly to touch your hand

M. Musculoskeletal

- **Back**
  - Sacral dimple
  - Kyphosis, lordosis or scoliosis
- **Joints (motion, stability, swelling, tenderness)**
- **Muscles**
- **Extremities: Deformity, Symmetry, Edema and Clubbing**
- **Gait**
  - In-toeing, out-toeing
  - Bow legs, knock knee: “Physiologic” bowing is frequently seen under 2 years of age and will spontaneously resolve
  - Limp
- **Hips: Ortolani’s and Barlow’s signs**

N. Neurologic - most accomplished through observation alone

- **Cranial nerves**
- **Sensation**

- **Cerebellum**
- **Muscle tone and strength**
- **Reflexes: Deep Tendon Reflex, Superficial (abdominal and cremasteric), Neonatal primitive**

O. GU

- **External genitalia**
- **Hernias and Hydrocoeles**
  - Almost all hernias are indirect
  - Can gently palpate; do not poke finger into the inguinal canal
- **Cryptorchidism**
  - Distinguish from hyper-retractile testis
  - Most will spontaneously descend by several months of life
- **Tanner staging in adolescents**
- **Rectal and pelvic exam not done routinely**

Self-assessment 4.5

- Enumerate sites for measuring body temperature.
- Describe any 3 differences in physical examination of a child and adult.

4.7 Beliefs that affect Child health

Learning activity 4.7

Discuss different beliefs in your community that may affect the child health

It is observed that traditional healthcare practices and cultural beliefs have a significant place and are widely used in all societies. Traditional cultural practices reflect values and beliefs held by members of a community for periods often spanning generations. Every social grouping in the world has specific traditional cultural practices and beliefs, some of which are beneficial to all members, while others are harmful to a specific group, such as children and pregnant women.

Health beliefs are what people believe about their health, what they think constitute their health, what they consider the cause of their illness, and ways to overcome their illness. These beliefs are culturally determined and all come together to form larger health belief systems.

A. Cultural practices affect children's and families' conceptions of health, as well as children social development, attitudes towards health problems they experience,

conception of illness, reactions to illness and therapy.

Children learn their beliefs, values, capabilities, knowledge and skills from their families and their culture. Furthermore, culture plays an important role in socialization and development of children. Cultural background holds a significant place in children's social and emotional development, as well as improvement of their motor and cognitive skills.

B. Religion

Along with cultural values, concepts of religion and spirituality hold a significant place in lives of the individual and society. Although the terms 'spirituality' and ''religion' are often used alternately, spirituality is inclusive of the concept of religion. Religion is a factor that affects life style of the society and conception of health and illness.

Religion is a concept that may affect individuals' and society's philosophy of life, conceptions of health and illness, types of food consumed, rituals of birth and death, and healthcare practices. Societies are found to use various religious practices in care and treatment. Religious practices may have various effects on children's social and moral development. Healthcare practices based on religious and spiritual values may play a significant role in shaping children's and family's lifestyle and may have a great impact on children's health. Various religions and sects are able to affect children's health and care practices, nutrition, and medical practices.

Concepts affected by culture

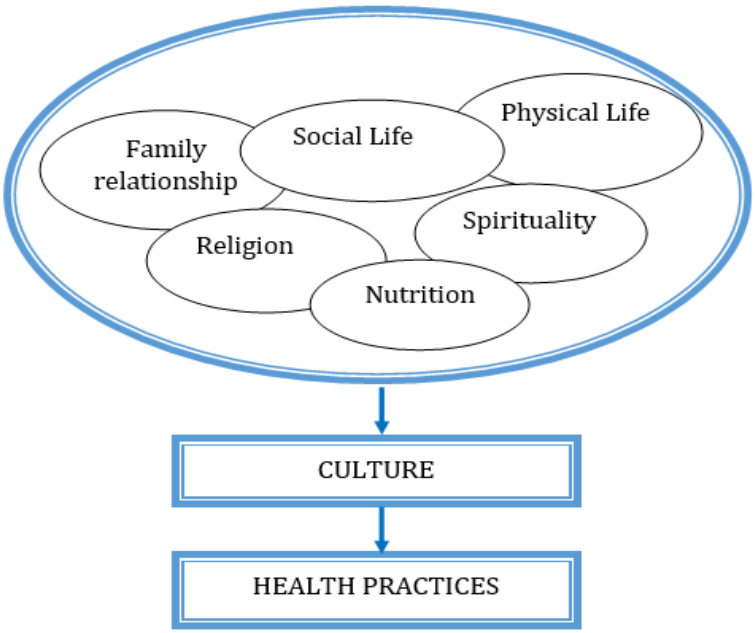


Figure: concepts affected by culture

C. Geographical region

Child's and family's cultural values, as well as their environment of habitation result in various differences in their conception and expression of health, illness, pain, and their reflection to healthcare practices.

For example, it was observed in some rural areas in Africa that food items such as eggs and meat were limited due to the fear that children may turn to thieves, witches or sorcerers. It was detected that, in certain societies, there are differences in individuals' conception and attribution of meaning to verbal and non-verbal communication.

Self-assessment 4.7

Discuss 2 concepts of culture and the way they can affect child's health.

4.8 Practices that affect Child health

Learning activity 4.8

1. Describe what you are seeing on the above picture and discuss different traditional practices that affect child health in your community
2. What is the impact of those practices to the child health?

Traditional practices

It is observed that individuals resort to traditional healthcare practices before professional practices of care. It is noted that, in certain cultures the patients are treated by individuals who are named traditional physicians or medicine man and who are believed to possess divine Powers to cure illnesses.

It is observed that traditional healthcare practices and cultural beliefs have a significant place and are widely used in all societies. According to current medical knowledge, traditional methods applied to the child may be classified as practices that adversely affect the child's health and practices that have no adverse effect on the child's health. Among practices that may adversely affect the child's health are attitudes such as delaying breastfeeding for a certain time after childbirth, not feeding the newborn with colostrum, coating the newborn with salt, placing soil under the baby, and wrapping the baby tightly to make its legs grow straight. On the other hand, practices such as placing a yellow kerchief on the baby's face to prevent newborn jaundice, to dress the baby with red-colored clothing, praying, placing an evil eye talisman in the baby's room are characterized as having no adverse effect on the child's health but may nevertheless be efficient in comforting the family.

Health is influenced by culture which is a dynamic factor as well as biological and environmental factors. Health practices are the outcome of health beliefs generally originated from the culture of individual. Cultural practices of families are directly related with the child health. Cultural practices affect children's and families' conceptions of health, as well as children's social development, attitudes towards health problems they experience, conception of illness, reaction to illness and therapy. There exist different practices that affect the child health. These are named differently in Rwanda depending on the region. These includes Milk teeth extraction ***(gukura ibyinyo)***, Uvulectomy ***(guca ikirimi),*** Tonsilectomy ***(guca ibirato),*** Extracting millet ***(gukura uburo)***.

Milk teeth extraction (Gukura ibyinyo)

Normally the development of deciduous teeth begins while the baby is in utero and about sixth weeks gestation, the first buds of primary teeth appear in the baby's jaw. The lower teeth are formed first followed by the upper anterior teeth. At birth the baby has a full set of 20 primary teeth (10 in upper jaw, 10 in lower jaw) hidden within the gums. Crown formation of the milk canine tooth in the upper jaw (maxilla) is complete 9 months and the crown formation of a deciduous canine tooth in the lower jaw (mandible)is complete between 8 and 9 months after birth.

Milk teeth extraction is a process of gouging out an infant's healthy baby canine buds imbedded underneath the gums, using unsterile tools such as a hot or sharpened nail, a bicycle spoke or knitting needle, with no anesthesia. It is a dangerous and sometimes fatal traditional practice. Milk teeth extraction believed to cure a tooth disease known as ***Ibyinyo***. In reality, this so-called disease is the natural teething stage that all babies go through, beginning at around 6 months of age. Teething in babies causes mouth pain, fever and sometimes even vomiting or diarrhea, prematurely extracting the teeth is not a cure, and causes serious permanent damage of the child.

Uvulectomy (Guca ikirimi)

Uvulectomy consists of cutting the uvula which has a function of blocking the passage into the nasal cavity when swallowing so that the foods or fluids do not enter the nasal passages. The uvula also involves in articulation of voice to form sounds of speech. When uvulectomy is performed, there is likelihood of an infant developing the conditions of hypernasal speech known as velopharyngeal insufficiency (VPI) and/or nasal regurgitation (entering of food into the nasal cavity).

Tonsilectomy (gukata ibirato)

It consists of cutting the baby's tonsils.

Extracting millet (gukura uburo)

It consists of skin cuts that are performed on chest wall of some children claimed to be the remedy for chest infections in infants.

A. Complications of traditional practices

All of those mentioned above traditional practices have different complications such as loss of blood that may lead to shock later on Anaemia, blood infections, tetanus, HIV/AIDS (because the materials used are not sterilized), facial disfigurement and can be fatal. The underlying permanent tooth buds can be damaged or eradicated, causing malformations and long-term crowding in the anterior region of the maxilla and mandible.

B. Prevention

The prevention of traditional practices involves a multidisciplinary team. This goes beyond changing particular beliefs and behaviors within communities and societies: it is about fundamental social change. There is need of increased, access especially for poor and vulnerable people, to all essential services, including health and education, social welfare and legal services. The community needs a sound understanding of the importance of religion, faith and other belief systems: how they can support work to end traditional practices that are harmful to children.

Conclusion

Nurses should be cautious about the children's and families' cultural beliefs' and practices' reflections on the child's health. In this context, the individual should be conceived in spiritual and psychosocial aspects from birth to death and holistic care should be provided

Self-assessment 4.8

1. Discuss the complications of traditional practices that affect child health.
2. What is your role in the prevention of traditional practices that affect the child health?

End unit assessment 4

1. What is health Promotion?
2. Which children should you monitor growth?
3. What does the psychosexual development theory of Sigmund Freud say about the development of personality which is different from what was said by other theorists?
4. Describe different types of nutritional assessment
5. Describe the elements assessed during the pediatric physical assessment.

UNIT 5 PREVENTION OF DISEASES IN CHILDREN

Key unit competence: Provide disease prevention services to children.

Introductory activity 5

Observe the following images illustrating different measures used to prevent diseases in children.

A. 

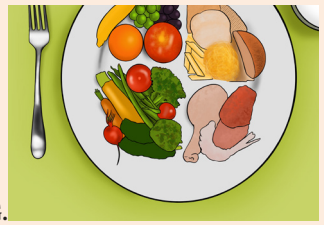
B. 

C. 

D. 

E. 

F. 

G. 

H. 

I. 

J. 

From the pictures shown above,

a) What do you think that the associate nurse from image A is doing to the child?

b) What have you observed from the image B?

c) What do you think that the child from image C is doing?

d) What do you think to be the use of image D?

e) What do you think as the advantages of performing that activity from image E?

f) What do you think that the children from image F are doing?

g) What have you observed from the image G?

h) What do you observe from the image H?

i) What do you oberved from image I ?

j) What have you observed from image J?

5.1 Preventive measures for common childhood illnesses

Learning activity 5.1

A years ago, X District was one of the first to implement vaccination program in southern province, Rwanda. Health care providers, community health workers were trained and followed up for proper program implementation and, during follow-up visits, availability of vaccines and materials at the community level and health facilities were improved. But during monthly report from health facilities, they noticed increased cases of pneumonia and diarrhoea among children between 2 months -9months however no actions was taken on tracing dropouts for vaccination due to lack of clear guidelines. During the review meeting a month ago, the in charge of health canter reported that there is reduction in number of children attending vaccination service. Then, recommendations were made to start implementing the tracing of dropouts whenever possible in order to increase the impact of the strategy and decrease the incidence of the diseases. Some health facilities set up advanced strategy of vaccination to facilitate those who are far from health centres. District health management team leader who participated in the review meeting decided to start implementing tracing of children immunization dropout by engaging CHWs.

Read the case scenario described above and think about answers to the following questions:

a. What do you think can have been the cause of the incidence of increased cases of pneumonia and diarrhoea among children as mentioned in the scenario?

b. What intervention do you think that can be done to prevent the diseases mentioned in scenario?

c. What do you think to be the cause of different childhood illnesses?

Globally, infectious diseases, including pneumonia, diarrhea, malaria and sepsis remain the leading causes of death for children 1 month to 5 years of age. Access to basic lifesaving interventions such as adequate nutrition, vaccinations, and treatment for common childhood diseases can save many children's lives.

Disease prevention is an important part of maintaining the child's good health.

Disease prevention, understood as specific, population-based and individual-based interventions for prevention, aiming to minimize the burden of diseases and associated risk factors. While different childhood illnesses are caused by a variety of parasites, viruses, and bacteria, a lot of common childhood illnesses tend to spread.

It is the most cost-effective health intervention. A set of practice guidelines for different service levels were created by the World Health Organization (WHO), which include vaccination.

Vaccination is the term used for getting a vaccine that is, actually getting the injection or taking an oral vaccine dose. **Immunization** refers to the process of both getting the vaccine and becoming immune to the disease following vaccination.

Primary prevention refers to actions aimed at reducing the incidence of diseases in children; these actions include the provision of information on behavioural and medical health risks, nutritional and food supplementation; oral and dental hygiene education, clinical preventive services such as vaccination

Secondary prevention deals with early detection and treatment of diseases. This comprises activities such as evidence-based screening programs for early detection of diseases or for prevention of congenital malformations; preventive drug therapies of proven effectiveness when administered.

Different measures used to prevent the childhood illnesses:

- **Vaccinations:** All recommended childhood vaccines are scientifically proven to be safe and effective.
- **Washing hands regularly:** Getting children into the habit of washing their hands is one of the most powerful ways to prevent illness. Encourage them to wash their hands before and after eating, after using the washroom, and after coming home from playing outside or in a public area.
- **Covering mouth and noses when coughing and sneezing:** Teach children to help prevent the spread of illness by covering mouth and noses while coughing and sneezing with a tissue or elbow. Tell them to remember to wash hands after.
- **Disinfection of toys, electronics, and communal objects:** Bacteria and parasites can survive on some surfaces for many days. Use alcohol wipes or rubbing alcohol to clean favourite toys, tablets, phones, doorknobs, and any other commonly touched household object. Wash bath towels and bed sheets regularly.
- **Eating healthy and exercise regularly:** Following a healthy diet and exercising are powerful ways to boost the immune system
- **Starting good habits early:** Explain early and often why good hygiene matters. Integrate good hygiene habits into daily routines and don't forget to tell the children when they've done a good job.

Figure 5.1: Preventive measures in children

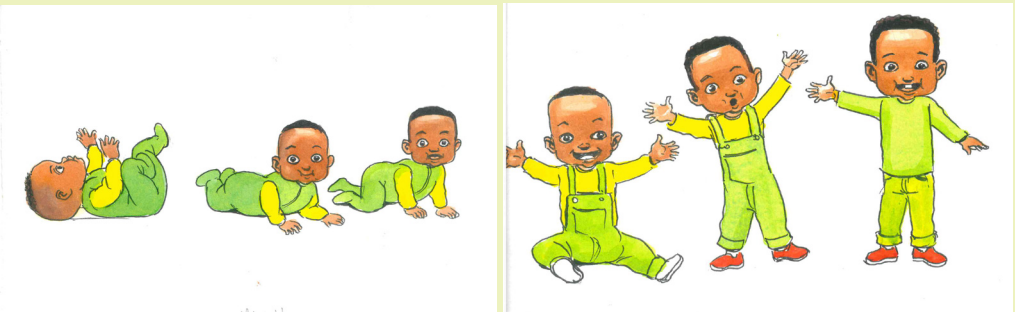
Self-assessment 5.1

1. Define the term vaccination?
2. Differentiate the word vaccination and immunisation?
3. What are the actions aimed at minimising the incidence of the diseases in children?

5.2 Principles of early child hood development

Learning activity 5.2

Observe the images illustrating the different child development.



After observing the above pictures,

a. How do you understand early childhood?

b. What do you understand with the term child development?

c. What do you understand by the term child growth?

Early Childhood development starts from conception until the age of 5 years which means that it starts when a woman conceives and the foetus starts growing in the womb. When the baby is born, there is specific needs for effective growth and development.

During this process a child progresses from dependency on their parents/guardians to increasing independence. Child development is strongly influenced by genetic factors (genes passed on from their parents) and events during prenatal life. It is also influenced by environmental facts and the child's learning capacity.

Child development can be actively enhanced through targeted therapeutic intervention and the 'just right' home-based practice, recommended by Occupational Therapists and Speech Therapists.

What does child development include?

Child development covers the full scope of skills that a child masters over their life span including development in:

- **Cognition:** The ability to learn and problem solve
- **Social interaction and emotional regulation:** Interacting with others and mastering self-control
- **Speech and Language:** Understanding and using language, reading and communicating
- **Physical skills:** The fine motor (finger) skills and gross motor (whole body) skills
- **Sensory awareness:** The registration of sensory information for use

Why is child development important?

Observing and monitoring child development is an important tool to ensure that children meet their 'developmental milestones'. Developmental milestones (a 'loose' list of developmental skills that believed to be mastered at roughly the same time for all children but that are far from exact) act as a useful guideline of ideal development.

By checking a child's developmental progress at particular age markers against these arbitrary time frames, it allows a 'check in' to ensure that the child is roughly 'on track' for their age. If not, this checking of developmental milestones can be helpful in the early detection of any hiccups in development. This 'check' is usually carried out through child/mother services and Pediatricians as infants and toddlers, and later through preschool and school term skills assessments.

The earliest possible detection (and early intervention treatment if appropriate) of developmental challenges can be helpful in minimizing the impact these developmental hiccups can have on a child's skill development and subsequently their confidence, or serve as an indicator of a possible future diagnosis.

Developmental milestone checklists or charts are used as a guide as to what is 'normal' for a particular age range and can be used to highlight any areas in

which a child might be delayed. However, it is important to be aware that while child development has a predictable sequence, all children are unique in their developmental journey and the times frames that they meet the many developmental milestones.

Problems in Child Development:

Problems in child development can arise due to: genetics, prenatal circumstances, the presence of a specific diagnosis or medical factors, and/or the lack of opportunity or exposure to helpful stimuli. Specific assessment by the best fit professional (which may initially be the general practitioner or Pediatrician, and then Occupational Therapist, Speech Therapist, Psychologist and/or Physiotherapist) can provide clarity about the developmental issues and extent of concern as well as can help to formulate a plan to overcome the challenge(s). As the process of child development involves multiple skills developing simultaneously, there may then be benefit in consulting multiple professionals.

Overcoming the developmental challenges is crucial to maximizing the ease and speed of development, minimizing the gap that occur between a child's ability and those of their same aged peers, the confidence of the child as well as the frustration that can be encountered by the child's parents and/or care-givers.

Principles of child development

1. **Child growth and development are interrelated**

In order to understand this principle, it is first necessary to distinguish between **"growth"** and **"development"**. All organisms including the humans increase in size as they grow older. Their responsive behaviors also increase in number as time passes on and life situations vary. This is an index of quantitative change and is called growth.

The term growth is used in purely physical sense. It generally refers to an increase in size, length, height and weight. Changes in the quantitative aspects come into the domain of growth.

Development implies improvement in functioning and behaviour and hence brings qualitative changes which are difficult to be measured directly. It indicates changes in the quality or character rather than in quantitative aspects. These qualitative changes accumulate to form a noticeable change of behaviour pattern a qualitative change from earlier to the present set of behaviour, which is termed development a noticeable difference in the pattern of the same behaviour will be marked at this stage.

The growth and developmental process starts at the prenatal stage when a single-celled organism at conception grows and develops to a highly complex body structure along with variety of functions. The process by which it takes place is

known as development. Growth continues after the baby is born up to maturational limit while development continues throughout life.

Examples of quantitative change would be **height, weight, or body temperature** (growth). For **Qualitative change** examples would be going from crawling to walking stage or beginning to talk using words from a babbling stage(development).

Types of child growth:

- Physical growth (Height, Weight, head & chest circumference)
- Physiological growth (vital signs).

2. Child development proceeds from General to specific:

As the child develops, his behaviour becomes more and more intricate and complex leading towards specificity. In the beginning his behaviour remains mass and undifferentiated a general response to all stimuli. But gradually they get differentiated and specific response is elicited to specific stimulus.

For example, the child at birth expresses only three kinds of behaviour. They lie and rest on the bed, they sleep and they cry when they are hungry. The baby again cries when he is uncomfortable due to bed-wetting or something else disturbing him. Gradually this crying response becomes time specific when he is hungry at intervals. His crying responses due to uncomfortable feeling becomes different from the earlier ones due to the presence of an unfamiliar face or remaining alone in the bed and so on, thus indicating this awareness of making different responses to different stimuli.

3. Child development proceeds directionally:

"The cephalo-caudal" principle refers to the fact that development (as well as growth) always proceeds directionally from head to foot. This principle demonstrated in physical growth simply by comparing the changes that take place in the comparative sizes of different parts of the body.

At birth baby's heads are large in comparison to the rest of their bodies. As children grow older, the rate of growth increases in the lower extremities of the body. As this occurs, the head gradually begins to look smaller in relation to the rest of the body.

4. Child development continues throughout life:

Development is more or less a continuous process with spurts at some stages. The changes that are controlled by the developmental process are orderly and tend to occur in an unvarying sequence. Therefore, the major changes are, more or less, predictable. Everybody can be expected to sit before standing, to stand before walking. Since development is continuous, what happens at one stage influences all subsequent stages. People change as a result of maturation and experience.

5. **Child development is individualised:** Each child is unique the most important principles of development are individual differences. There is no fixed rate of development. That all children will learn to walk is universal, but the time at which each child takes his/ her first step may vary.

Self-assessment 5.2

1) Outline the principles of child development.
2) Outline types of growth
3) Explain the term cephalo-caudal.

5.3 Types of child development

Learning activity 5.3

Read the case scenario below and answer questions below

Katia, a three-years-old little girl attends kindergarten where she has numerous friends. She usually sings to her mum songs that are taught by her teacher. Her weight is 17 kilograms. She is average size compared to the other children in her class and has very good posture (physically fit) compared to her colleagues. She is able to ride a bike with training wheels, loves jumping, likes playing with her friends, love to help self-bath, feeds herself with a small spoon and fork. She can zip, unzip and button her coat without assistance. She draws circle and heart shapes. She is able to twist and partially braid her doll's hair.

a. What do you think about Katia's memory?
b. According to your understanding what do you think about her motor skills?
c. What indicates Katia's social emotional skill from the scenario?

As infants grow and reach early childhood, they become more aware of how the world works and have a better understanding of what, where, how, and why through the following types of development:

1. **Cognitive and intellectual development in children:** It is the development of the skills and knowledge that help them understand their environment. It's the evolution of their thought process - how they process information, think, determine right from wrong, make decisions, solve problems, learn new things and how they perceive the world around them. Examples: t**hinking, remembering, counting or identifying shapes.**

Brain growth is part of cognitive development. The child's brain develops in infancy and early childhood so does their capacity to remember. The child memory plays a huge significant role in a child's socio-emotional and cognitive functioning.

The human brain is not fully developed at birth. That is the reason we can't remember being a baby, yet we can remember every line from our favourite teen movie or song. It is due to the way brain develops, and more specifically, how memory system develops from child hood, through adolescence and adulthood. While the development of memory (short & long-term) is most evident in the first 2-5 years of a children's life, their memory continues to develop well until adulthood. Moreover, not all parts of the brain develop at the same time. In fact, the brain isn't fully developed until age of 25.

There are many ways to help promote children's cognitive development. This can literally start immediately after birth. The more engagement and interaction with children, the more opportunities to them to develop the necessary cognitive skills and abilities. As with adults, every child is different. For example, some will have excellent memories; others may have weaker memory and skills but may show strength in logic and reasoning instead.

2. Gross motor skills

Gross Motor skills refer to the physical skills needed to make large body movements i.e. the large muscles, specifically **the head, neck, arms, and legs.** It's the movement of arms, legs or torso in a coordinated and controlled way.

The first example of a child developing gross motor skills is at around 3-4 months when he raises his head when pulled into a sitting position, followed by him rolling over. Examples are **crawling, jumping or running**.

Each stage of gross motor skill development leads to the next, as they strengthen the necessary muscles and bones to help them progress from rolling over to sitting, crawling, standing, walking, running, hopping, etc. Some gross motor skills also require **eye-hand coordination skills** such as **throwing, catching, kicking, riding a scooter or a bike.**

Children use our gross motor skills literally all the time, whether sitting down or standing up or lying in bed, every time of moving or change positions, it's by using gross motor movements. Balance, body strength and body awareness are all part of gross motor development. Here are a few other examples of everyday activities require gross motor skills

3. Fine motor skills

Fine motors refer to the **physical skills needed to make small movements** i.e. the small muscles, specifically **their hands and fingers**. Fine motor skills start developing **almost at birth as they grasp reflexively**, followed a few months later

when they place their fingers in their mouth, and by 6 months old, when they begin to grasp at objects.

Fine motor skills involve **more precision to perform than gross motor skills** and requires a number of independent skills **(like hand-eye coordination, hand control, body awareness, and patience)** to work together to perform the task at hand do things **like play with toys, dress themselves, feed themselves, draw and write** are examples of fine motor skills.

Young children need time to practice their fine motor movement every day. Whether they're picking up something to eat or trying to pull up the zipper on their jacket, it might be tempting (and far quicker) to take over and do it ourselves, especially when we're in a rush, but we must remember that these are all essential activities for fine motor development.

Fine motor skill development is an **originator to developing good handwriting skills.** The more opportunities a child has to pick up small objects (pincer grip), and manipulate and exercise the small muscles in the palm of his hand, the better control and strength he'll have later on, when colouring, cutting and forming letters.

4. Speech and language

The development of speech and language refers to the skills children use to understand and communicate with others. Language development helps a child to communicate what they want and how they feel. It is also crucial to their thought process; problem-solving, and forming relationships with others.

It is a critical part of child development and most of the foundations speech refers to the making of sounds that become words. At around **2 months, babies first start fussing, and at 6 months they generally start babbling** - this is them learning how to make the sounds which will eventually form words. It's the physical act of talking, even if we don't understand what they're saying.

Language, on the other hand, is the use of words (spoken or written), gestures to communicate and understand others. Language refers to any form of communication, be it verbal or nonverbal. Young children might not be forming full sentences yet, or even speaking coherently, but don't overlook their ability to communicate. They can communicate their emotions and feelings through **sound, facial expressions, gestures and actions**. Smiling, crying, shouting, laughing, throwing things, pointing, and even throwing bad temper are just a few ways they are attempting to communicate with you.

Language development is located down in the first 12 months of baby's life and develops at a rapid rate, especially between the ages of 2-5. Most children will have learned the basics by age 6.

5. Social and emotional skills

These refer to a child's **ability to interact with others, to understand and manage feelings and emotions.** Examples of socioemotional skills are **empathy, sympathy, recognizing and expressing feelings, and the ability to relate to others.**

These skills begin in early childhood – from birth, as they interact with their caregivers and form emotional attachments - and will continue growing throughout adulthood. Babies show signs of socioemotional growth by smiling when he/she sees you, waving goodbye when someone leaves, sharing his toys with his sibling, even showing anxiety around strangers (around 7-9 months) or tantrums (around age 2). The positive and negative reactions are all a normal part of their emotional growth.

Healthy socioemotional skills will help the child to form and maintain positive relationships, self-confidence, develop self-awareness and awareness of others and their feelings, manage stress and anxiety.

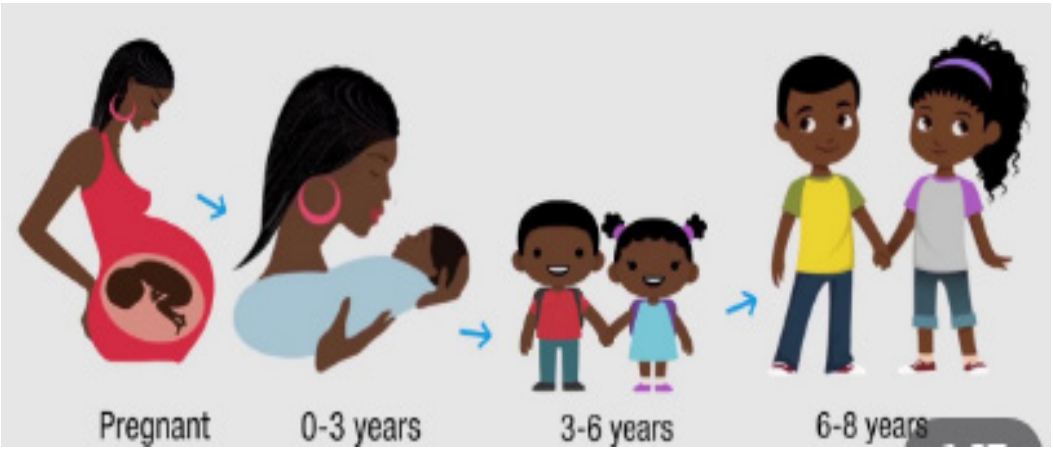


Figure 5.2: early childhood stages of development

Self-assessment 5.3

1. Outline types of child development.
2. Explain cognitive and intellectual development in children.
3. Explain by giving examples on social and emotional skills.

5.4 Factors influencing the child development

Learning activity 5.4

Read the case scenario and answer questions below

Kaliza is 4years old firstborn of her family living in village. Her mother is a housewife and her father is a farmer where they live in small house with 2 goats and 2 rabbits. The child Kaliza did not start the nursery school yet because she doesn't speak well, is not able to feed herself, and cannot dress or undress herself. She is fairly walking but can't run, she is physically unstable when looking at her. Her mother reported that community health worker measured her and said that the child is not growing well. She also says that Kaliza is just lazy as she is a girl. she added that her baby delayed even to sit and crawling just like her younger sister. She claimed that her child does not like eating vegetables and fruits. She does not like to play with other children (neighbours of her age) because they live far from them.

a. What do you think about Kaliza's condition?

b. What do you think that can cause the child in scenario delayed speaking, walking?

Child development refers to the sequence of physical, language, thought and emotional changes that occur in a child from birth to the beginning of adulthood. During this process a child progresses from dependency on their parents/guardians to increasing independence.

Child development is strongly influenced by a wide variety of factors throughout his/her life. These factors influence a child both in positive ways that can enhance their development and in negative ways that can compromise the child's developmental outcomes.

These factors include:

Genetics: children inherit much genetically aside from physical appearance, like eye and hair colour, skin tone, nose shape, as well as height and body build. They also inherit things like attitude an extent, inherit traits like intelligence, abilities, and

attitude. While all kids are special and have amazing potential, some children are also more naturally gifted or excel more than others at certain things. Whether it be at sports or academics, some kids pick things up much faster or more easily than others. Not everyone is destined to be a pro tennis player (in fact, few are). Not every child learns at the same pace or has the same capability to acquire or retain or understand information.

Health & nutrition: Health attributes are passed through the genes, some viruses, diseases, and disabilities can be developed as a result of external factors including (but not limited to) our environment. Good health can include access to quality healthcare, vaccinations, medicines, a toxin-free environment, clean water and air. Nutrition (balanced diet) plays a significant part in children's growth and development as it affects not just their health but also strength, growth, and energy levels, which can adversely affect learning. Providing children with a balanced diet from birth is essential for their growth and development. **When children face with health and nutrition issues can lead them to developmental delay.** Developmental delays can reduce a child's ability to communicate, learn, be mobile, live independently, make decisions and care for themselves.

Gender: A side from the biological differences between boys and girls, gender expectations and social norms can also influence a child's development. More often, without realizing it, the perceived gender roles can influence the way in which parenting children can have profound effects on their children's thoughts, behaviours, and actions.

Parents unwittingly expose their children to different environments or opportunities. For example, being roughhouse with boys, but be gentler with girls, and therefore potentially exposing boys more to the use of gross motor skills at an earlier age.

Environment: children's living physical and social environment also plays a big role in influencing their development positively or negatively. Access to suitable housing, health care, education and recreation facilities, clean air and water can influence a child directly through their own health well-being and opportunities afforded to them, as well as indirectly by affecting their caregivers' emotional and physical well-being.

It's important for the child to have access to and live in a stress-free environment. Children plays, toys, and interaction with others help stimulating both mental and physical aspects. The social relationships that children have can be hugely impactful. The quality of their interactions with others determines their intellectual, social, and emotional development.

Family: Family is almost certainly the most important factor in child development. In early childhood especially, parents are the ones who spend the most time with their children and sometimes influence the way they act, think and behave. Children's

social, emotional, and even physical development are very dependent on familial related opportunities including the strength of familial bond.

The interaction with children (how often) can be hugely significant. Parents are important people in their little lives, and children depend on them for everything (nourishment, security, warmth, comfort, attention, stimulation, and, most importantly, love and affection). If children feel safe, they can take risks, ask questions, make mistakes, and learn to trust, share their feelings, and grow well.

Self-assessment 5.4

1. Explain how can genetic influence child's development?
2. List factors influencing child development, it can be positively or negatively.

5.5 Promotion of child health

Learning activity 5.5

Observe the images below and reflect to them.

a. How do you understand health promotion?

b. What do you think about image C and D?

c. What do you think about images A?

The World Health Organization defines health promotion as the process of enabling people to increase control over, and to improve, their health. Health promotion moves beyond a focus on individual behaviour towards a wide range of social and environmental interventions. Health promotion's purpose is to positively influence the healthy behaviour of people and societies as well as the living and working conditions that impact their health.

Health promotion focuses on improving and protecting the health of different populations and communities, including children and their families. Health promotion programs aim to reduce health disparities and improve health outcomes. Programs that focus on improving the health and well-being of children in early childhood may be implemented in homes, childcare settings, and other community-based settings.

Health in childhood determines health throughout life and into the next generation. "Ill health or harmful lifestyle choices in childhood can lead to ill health throughout life, which creates health, financial and social burdens for countries today and tomorrow"

The above quote illustrates just how important the promotion of children's health is. Child health promotion focuses upon the enhancement of children and young people's overall health and well-being.

Child health promotion tips

The child health promotion activities include but not limited to the following activities:

- Growth monitoring
- Immunization program.
- Promotion of access to and participation in school feeding (healthy foods and drinks at schools)
- Controlling food quantity and quality (foods and drinks) outside school feeding
- Offering leisure's and sport activities to children (celebrations and events).
- Providing and ensuring access to safe water.
- Education on nutrition in classes, school day, and in after-school programs for example, through school gardens and farm-to-school activities.

The center for disease control notes that programs that focus on influencing and modifying certain health behaviors and outcomes from an early age can greatly impact health outcomes later in life. Some of these programs include a focus on:

- Childhood obesity, especially programs in early childhood education settings
- Healthy food options and nutrition
- Physical activity like exercises
- Chronic disease in childhood prevention

- Oral health
- Healthy sleep habits
- Prevention of drug use among children
- Access to age-appropriate screening tests for development, hearing, and vision
- Childhood trauma and adverse childhood experiences (ACEs) prevention

Typical activities for health promotion, disease prevention, and wellness programs include:

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

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

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

Nursing roles in child health promotion

The backbone of the nursing profession has always been recognized as that of a caring profession and one that excels in disease prevention and health promotion. Nurses are strong advocates for patients because they direct the health care system.

The nursing roles in child health promotion and disease prevention are:

Health educator: Nurses spend the most time with the patients and provide anticipatory guidance about immunizations, nutrition, dietary, medications, and safety.

Nurses are consistently working to prevent illnesses such as heart disease, stroke, diabetes, and obstructive pulmonary disease; they do this through a variation of tactics that include education, risk factor prevention, and the monitoring of safety hazards either in the workplace, community, or home. Helping patients to potentially receive preventative services such as counselling, screenings, and precautionary procedures or medications. Nurses can impassion those to engage in healthy lifestyles through education, mentorship, and leadership.

Nurses are able to perform health promotion tasks by enhancing the quality of life for all people through assessment of individual and community needs, education,

identification of resources, evaluation and implementation of programs to help reduce premature deaths.

Nurses provide the practical guidance on everyday health issues such as preventing obesity, dental health, skin care and prevention of diseases and infections.

Nurses explore the best practice for nursing children with chronic illnesses such as asthma, cancer, diabetes and disabilities, and gives guidance on promoting the health of adolescents looking at issues of sexual health, smoking, drugs and alcohol. Each chapter discusses key health promotion messages, relevant government policy and health promotion.

Self-assessment 5.5

1. Briefly explain nursing roles in child health promotion.
2. Centre for disease control notes that programs that focus on influencing and modifying certain health behaviours among children for better health, list at least 5 programs.

5.6 Developmental monitoring and screening

Learning activity 5.6

During community outreach, an associate nurse student found in one of the visited families, a child called Cyiza who was dirty and lying in his bed. The neighbour told that his parents do not care for him because he is still lying down while other children of 3years of the same age can run and go to school. Cyiza cannot get up and just know to say da and articulate other strange sounds.

a) What do you think about the situation of Iriza?

b) What do you think about parents attitudes towards this child ?

c) What should the associate nurse and parents do to help their child?

d) According to the age of the child in wich category can you classify the child Cyiza?

Overview of child health development

Child health and development depends closely to experiences rooted from early years of child's life. Children including those with special health care needs, grow healthy when all skills are timely acquired and grow up where their social, emotional and educational needs are met. Positive parenting practices play an important role in child's healthy development. Therefore, parents should help their child stay healthy, be safe, and be successful in many areas such as emotional, behavioral,

cognitive, and social by responding to children in a predictable way, showing warmth and sensitivity, having routines and household rules, sharing books and talking with children, supporting health and safety, using appropriate discipline without harshness. Proper nutrition, exercise, and sleep have valuable impact on child development.

Monitoring of development is critical for two reasons: First, new circumstances (e.g., medical illness, family or environmental disruption, or injuries) may interfere with development. Second, as children develop, they gain new categories of skills that are difficult to assess at earlier stages (e.g., one cannot usually detect isolated language delays in children younger than 18 to 24 months, the period at which children begin to develop language skills). In 2006, the American Academy of Pediatrics (AAP) published guidelines recommending developmental surveillance at every child visit, as well as additional periodic developmental screening using a standardized test at the 9, 18, and 30 months old.

Stages of child development

a. **New-born** refers to the stage immediately after birth until 1 month.

b. **Infant** is a child in the period from 1 month until 12 months.

c. **Toddler stage** is from 12 months until approximately 3 years.

d. **Early childhood** or **Pre-schooler** are children in 3- to 6-year-olds.

e. **School-age children** are 6 to 12 years old.

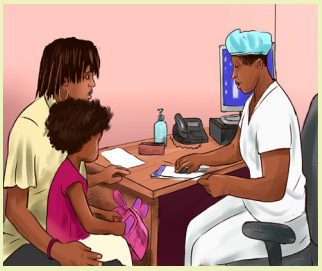
f. **Adolescence** begins around 12 or 13 to adulthood

Self-assessment 5.6

1. When can you argue that a child is growing or developing well?
2. What should do parents to help their child stay healthy, safe, and be successful in many areas regarding?
3. Monitoring of development is critical for two reasons. Why?

5.7. Developmental monitoring

Learning activity 1.4

A.  B.  C. 

These pictures are showing developmental monitoring of a child

a. Which domain do you think it explicates the A.

b. Which domain do you think it explicates the B.

c. Which domain do you think it explicates the C.

Developmental monitoring is checking whether a child reaches the skills and behaviours that are expected by his or her age or those of likelihood. It is something parents and other caregivers can do, on a regular and ongoing basis. Developmental monitoring provides important information about a child's developmental health. Using CDC's developmental milestone checklists makes the monitoring easy. The associate nurse, nurse and other child caretakers play a vital role in identifying children at risk for developmental disabilities and in referring them for appropriate early intervention services.

Physical developmental delays

Physical developmental delay is when a child is not able to do activities or basic movements such as rolling **over, sitting without support, or walking** that other children of their age are doing. Developmental delay can be a sign of a serious health condition and it's important to seek early care for adequate and timely interventions. Parents and other caregivers are the most important to identifying any deviation from normal basing on specific behavioral and skills features and termed as developmental milestones.

Figure 5.3: a child with getting up problems Child wit

All young children need both developmental monitoring and developmental screening to help parents and child's health care providers, teachers, and other care takers know if child's development is on normal progress.

Developmental monitoring involves using information obtained from the **history taking, physical examination, and developmental screening tests** to assess development on an ongoing basis.

History Taking

The following information should be elicited:

- **Parental concerns regarding the child's development.**

Parental concerns regarding the child's language development, articulation, fine motor skills, or global development are likely to be associated with true developmental delays.

Parental concerns about behavior or personal–social skills are associated with developmental delays in some cases.

- **Risk factors for developmental disabilities**

Prenatal

Maternal illness, infection, or malnutrition, maternal exposure to toxins, teratogens, alcohol, illicit drugs, anticonvulsants, antineoplastic, or anticoagulants drugs, decreased fetal movements, intrauterine growth retardation, family history of deafness, blindness, or mental retardation, chromosomal abnormalities

Perinatal: Asphyxia: Apgar scores of 0–3 at 5 min, prematurity, low birth weight, abnormal presentation.

Postnatal: Meningitis, encephalitis, seizure disorder, hyperbilirubinemia: bilirubin >25 mg/dl in full-term infant, severe chronic illness, central nervous system trauma, child abuse. and neglect

Family history

Consanguinity may cause chronic condition of the kidney may be associated with

Attainment of developmental milestones

Developmental milestones (how a child plays, learns, speaks, acts, or moves) are behaviours or skills most children can do by a certain age. All young children need both developmental monitoring and developmental screening to help parents, child's health care provider, teachers, and other providers to know if the child's development is on track

At 2 months

Social/emotional milestones

When spoken to or picked up, the child calms down and responds by looking at the face of the instructor, demonstrating happiness to someone who walk up to her or smile at her/him.

Language/communication milestones: Regarding this milestone, the infant only makes sounds other than crying or reacts to loud sounds

Cognitive milestones (learning, thinking, problem-solving: At 2 months, the child watches the movement of the person who is coming or going as and can observe a toy for several seconds.

Movement/physical development milestones: At this age the infant holds head up when on tummy, moves both arms and both legs and opens hands briefly

At 4months

Social/emotional milestones: At this age the child smiles on his own to get someone's attention or chuckles (not yet a full laugh) when you try to make her laugh; looks at you, moves, or makes sounds to get or keep your attention. Knows familiar people; likes to look at self in a mirror and laughs.

Language/communication milestones: Regarding language or communication, a 4months child makes sounds like **"oooo", "aahh"** (cooing). Makes sounds back to respond and turns the head towards the sound of a voice. Takes turns making sounds with you. Blows "raspberries" (sticks tongue out and blows) and makes squealing noises.

Cognitive milestones (learning, thinking, problem-solving: Learning, thinking and problem solving are observed when the child is hungry specific cues such as opening mouth when she sees breast or bottle. Also he or she looks at his hands attentively. Puts things in her mouth to explore them. Reaches to grab a toy he wants and Closes lips to show she doesn't want more food

Movement/physical development milestones: At this age, the child is able to hold his head steady without support. He can hold a toy put in his hand and uses arm to swing at toys. Brings hands to mouth and when lied in prone position, he / she is able to push up onto elbows/forearms. Rolls from tummy to back. Leans on hands to support himself when sitting

At 6 months

Social/emotional milestones: Social or emotional milestones are important cues that display the child development; an infant at this age will be able to recognize familiar people; Likes to look at self in a mirror and laughs

Language/communication milestones: Takes turns making sounds with you. Blows "raspberries" (sticks tongue out and blows) Makes squealing noises.

Cognitive milestones (learning, thinking, problem-solving: The child explores objects by his or her mouth. Reaches to grab a toy he wants and closes lips to show she or his no longer hungry or does not want

Movement/physical development milestones: Physical development by 6 months is characterized by active movement of the limb where the enfant rolls from the abdomen to back. Leans on hands to support himself when sitting

By 9 months

Social/emotional milestone: By this age most of babies are shy, clingy, or fearful around strangers; Recognize their name when called. They are able to express their emotions by facial expression (happy or unhappy)

Language/communication milestones: Child at 9 months' lifts arms up to show that she/he want to be picked up by a loved one and makes a lot of different sounds like "mamamama" and "babababa

Cognitive milestones (learning, thinking, problem-solving): The child shows learning process by trying to identify objects when dropped out of sight (like his spoon or toy). Bangs two things together

Movement/physical development milestones: The physical development occurs progressively; thus the baby first tries to get to a sitting position by herself and end by sitting without any support. This movement progress involves also the use of upper and lower limbs. Thus the child will move things from one hand to her other hand or uses fingers to "rake" food towards himself

By one year

Social/emotional milestones: The young infant has observed adult person doing and in the future he will try to help in adult activity (washing clothes and other activities)

Language/communication milestones: Communication skills are acquired progressively; from sounds other than crying observed early, the one-year-old baby can understand adult orders and respond accordingly. The infant will know to say good bye, should call a parent “mama” or “dada” or another special name, distinguish an order from adult person and responds accordingly ex: a no and the child ceases what he or she was doing!

Cognitive milestones (learning, thinking, problem-solving): The learning process is present at each state of child growing, we observed at the previous state from where the child tried to identify objects when dropped out of sight (like his spoon or toy) and bangs two things together thus by one year, the baby knows to put something in a container, like a bean in a cup. Looks for things he sees you hide, like a toy under a blanket

Movement/physical development milestones: Physical development involves also limbs and the baby manage to stand; walking, holding on to furniture drinks from a cup without a lid, as you hold it. For further progress, by one year the baby picks things up between thumb and pointer finger, like small bits of food.

BY 15 months

Social/emotional milestones: By 15 months the baby copies other children while playing, like taking toys out of a container when another child does, identify and shows her / his objet of choice. He/she is also able to express their emotion by clapping hand or he/she cuddles you.

Language/communication milestones: Language progresses as the baby grows up; two words besides “mama” or “dada,” are acquired like “ba” for ball or “da” for dog. Recognize a familiar object when you name it; Follows directions given with both a gesture and words. For example, he/she gives you a toy when you hold out your hand and say, “Give me the toy.” Points to ask for something or to get help

Cognitive milestones (learning, thinking, problem-solving): Learning at this stage is characterized by baby’s progress in identifying objects and tries its appropriate use. Phone to hear, cup put towards the mouth. Stacks at least two small objects, like blocks

Movement/physical development milestones: By this age the infant takes a few steps on his own and for taking some food the enfant feels easy to use fingers to feed herself

By 18 months

Social/emotional milestones: By 18 months walks away by his or her own but the immature child invents opportunities that make him closer to someone who should help in need by: a. Showing something interesting, b. Putting hands out to be washed, c. Reading with an adult, d. Helping in dressing him by pushing arm through sleeve or lifting up foot

Language/communication milestones: By 18 years the communication skills improve and besides "mama "or dada" three or more words are added. Responds appropriately when asked to give something"

Cognitive milestones (learning, thinking, problem-solving): Learning process at this age is characterized by baby's imitation adult activities. She/he wants to sweep and perform activity in in a simple and appropriate way or plays with toys, like pushing a toy car in a simple direction.

Movement/physical development milestones: The child gets to a sitting position by herself and without support. Upper limbs also progress and the infant is able to change objects from one hand to her other hand or use fingers to "rake" food towards himself

2 years

Social/emotional milestones: At 2 years the emotion of the child is characterized by a bit of empathy towards others. The baby identifies negative emotions from others. Such as when you are hurt or upset or pausing or looking sad when someone is crying. Looks at your face to see how to react in a new situation

Language/Communication milestones: Communication at this age improves and the baby is able to identify things in a book when you ask, like "where is the chair? Language also progresses and at least two words together, like "More milk" can be spelled. Some parts of the body are known and the infant can show at least two body parts. Uses more gestures than just waving and pointing, like blowing a kiss or nodding yes

Cognitive Milestones (learning, thinking, problem-solving): The process of learning is multi steps; by 2 years the baby holds something in one hand while using the other hand; for example, holding a container and taking the lid off, tries to use switches, knobs, or buttons on a toy, plays with more than one toy at the same time, like putting toy food on a toy plate.

Movement/Physical development milestones: By 2 years limbs structures have progressively developed, the child exhibits some advanced and strong movements such as kicking a ball, running after it and he or she is able to walk up a few stairs with or without help. Eats with a spoon

By 30 months

Social/emotional milestones: At this age, the child shows some cues of socialism and he/ she is interested by playing in group with other children. Wants his/her progress to be noticed by others by saying “Look at me!

Language/communication milestones: Language progress increases gradually and the child is now able to articulate about 50 words; says two or more words together, with one action word; knows to pick an object from a book when it is asked to show it or to name the object. Says words like “I,” “me,” or “we”

Cognitive milestones (learning, thinking, problem-solving): The infant has learned from his/ her caregivers and at this age he shows his maturity or problem solving by playing in nurturing his doll. When an object is left at a high level he will try to reach it by climbing or standing on a stool. Follows two-step instructions like “Put the toy down and close the door.” He is able to identify or pick a desired color at least one.

Movement/physical development milestones: Physical development increases with the age but also with a certain degree of maturity. Thus the child opens things by twisting them or turning doorknobs to open it or unscrewing lids. Can undress off alone, Jumps off with both feet. Open and turns off a book.

By 3 years

Social/emotional milestones: The child has familiarized with people around him and does not like to be left alone or with strange ones. Within ten minutes after you leave her, he has forgotten and will join others to play with.

Language/communication milestones: By 3 years, conversation is eased using at least two back-and-forth exchanges. Use why questions to discover an environment or a cibled one by asking “who,” “what,” “where,” or “why” questions, like “Where is mommy/daddy?”. The infant is able to interpret an action on a picture cg:” drawing”, “smiling.” Says first name, when asked. Wants other to appreciate him or her by good spelling of words

Cognitive milestones (learning, thinking, problem-solving): Learning by 3 years old is marked by correct imitation or strong compliance to adult orders or advices. Thus a 3 years old child is able imitate a work showed by a caretaker. Ex: Draws a circle, when you show him how. Fear of hot objects as told.

Movement/physical development mile stones: A 3 years old infant is able to tie thinks together and has acquired some self-care abilities such as dressing skills or eating by himself using appropriate kitchen utensils.

4 years

Social/emotional milestones: By 4 years old the child plays simulations that imitate a desired profession, playing as a teacher or barking like a dog to provoke fear in likelihood. However, he likes to be a helper comforting or protecting those in danger. The child identifies respectful areas for applicable behavior! (church, vs market)

Language/communication milestones: At this age the child is able to articulate sentences with four or more words from a song or a story. Talks about at least one thing that happened during his day, like "I played soccer." And Answers simple questions like "What is a coat for?" or "What is a crayon for?"

Cognitive milestones (learning, thinking, problem-solving): The child knows to draw a person and can name at least 3 parts. He /She is able to identify few colors. At this age he can tell a story in appropriate order.

Movement/physical development milestones: A 4 years old child catches a large ball most of the time or holds crayon or pencil between fingers and thumb (not a fist). Can unbutton some button. Finally serves food or pours water by him or herself. Unbuttons some buttons

5years

Social/Emotional Milestones: The child does continue adapting to the social environment; respects pre-established rules and can even take a role within a play. Sings, dances, or acts for you. Does simple chores at home, like matching socks or clearing the table after eating

Language/Communication Milestones: Development involve improved communication where the infant is able to tell a story she heard or made up with at least two events. For example, a cat was stuck in a tree and a firefighter saved it

- Answers simple questions about a book or story after you read or tell it to him
- Keeps a conversation going with more than three back-and-forth exchanges
- Uses or recognizes simple rhymes (bat-cat, ball-tall)

Cognitive milestones (learning, thinking, problem-solving): Counts to 10, Names some numbers between 1 and 5 when you point to them, uses words about time, like "yesterday," "tomorrow," "morning," or "night", Pays attention for 5 to 10 minutes during activities. For example, during story time or making arts and crafts (screen time does not count), Writes some letters in her name, names some letters when you point to them.

Movement/Physical Development Milestones: Buttons some buttons, Hops on one foot.

Physical examination

Head Circumference: A small head circumference may indicate abnormalities in brain growth that place a child at risk for developmental disabilities. A large head circumference may be a sign of hydrocephalus, a genetic syndrome, or a metabolic storage disease. However, before assuming pathology in a child, one should measure the head sizes of parents as a small or large head circumference may be a family trait.

Congenital anomalies or dysmorphic features: Congenital anomalies or dysmorphic features are associated with many genetic syndromes that may cause mental retardation or learning disabilities.

Dermal lesions of neuro-cutaneous Syndromes

Approximately 50% of patients with dermal lesions have mental retardation or are at risk for hearing loss and learning disabilities.

Muscle tone: Hypertonia may be a sign of cerebral palsy (CP), but in the first year of their life, children with isolated increases in muscle tone should not be diagnosed with CP as they may outgrow the problem. Hypertonia occurs in infants with neuromuscular disorders or injury to the brain or spinal cord. Rarely, hypertonia is the only sign of a metabolic disorder (e.g., peroxisomal disorders, acid maltase deficiency). Hypotonia also occurs in some chromosomal disorders, such as Down syndrome, so obtaining a karyotype should be considered if the child is dysmorphic and hypotonic

- **Primitive Reflexes**

Asymmetries of primitive reflexes may help identify hemiplegia or other nerve injuries. Persistence of primitive reflexes beyond the time of usual disappearance

or an obligate response may be signs of CP.

Self-assessment 5.7

a. What does mean developmental monitoring?

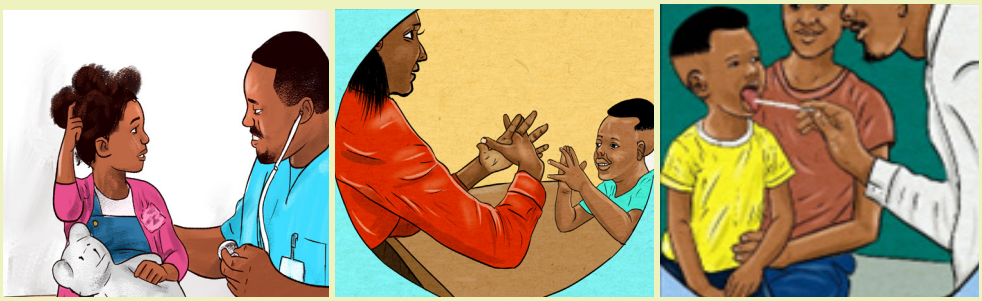
b. What elements do help in developmental monitoring?

c. What does mean developmental milestones?

5.8 Developmental screening

Learning activity 5.8

Observe the images below and respond questions asked below.



a. What do you think about developmental screening in children?

b. According to your understanding whom do you think can do developmental screening?

c. What do you think that could be the risk factors of hearing impairment in children?

Developmental screening refers to assessing the child development through exams and with using appropriate tools. For developmental and behavioral screening, it is done using formal questionnaires or checklists asking questions about a child's development, including language, movement, thinking, behavior, and emotions. **Developmental screening** can be done by skilled care providers such as a doctor or nurse, but also by other professionals in healthcare, early childhood education, community, or school settings. This screening is more formal than developmental monitoring but it is most of the time done only when there is a concern from parent or health care provider. According to AAP, periodic developmental screening should be a part of routine visits for all children even if there is not a known concern.

Importance of developmental screening

The first step to connecting young children with early intervention services is effective, periodic developmental screening. Children with special health care needs are more likely to have developmental delays and disabilities than their peers, therefore the child should be early assessed for developmental issues in order to provide timely and adequate intervention services. Appropriate and early interventions to infants and toddlers with developmental delays and disabilities must include their families for positive and sustainable results.

Screening includes also the use of parent reports and screening tools. Parental concerns are highly accurate in identifying developmental problems. In some studies, up to 80% of parental concerns have been found as accurate.

Signs of developmental delay

Age or timeframe	Concern
After independent walking for several months	• Persistent tiptoe walking • Failure to develop a mature walking pattern
By 18 months	• Not walking • Not speaking 15 words • Does not understand function of common household items
By 2 years	• Does not use two-word sentences • Does not imitate actions • Does not follow basic instructions • Cannot push a toy with wheels
By 3 years	• Difficulty with stairs • Frequent falling • Cannot build tower of more than four blocks • Difficulty manipulating small objects • Extreme difficulty in separation from parent or caregiver • Cannot copy a circle • Does not engage in make-believe play • Cannot communicate in short phrases • Does not understand simple instructions • Little interest in other children • Unclear speech, persistent drooling

Table 5.1: Signs of developmental delays

At every visit the following elements must be considered:

- Eliciting and addressing parents' concerns at each visit
- Viewing milestones at each visit
- Identifying and addressing psychosocial risk and resilience factors
- Using a general screen that is validated and accurate at 9, 18, 24 – 30 months and at each subsequent visit

Hearing assessment screening: Universal hearing screening during the newborn period is recommended because screening limited to infants with risk factors for hearing identifies only half of infants with significant hearing impairment.

Risk factors for hearing impairment: Family history of deafness, congenital TORCH infections: toxoplasmosis, other infections, rubella, cytomegalovirus, and herpes simplex, Congenital malformation of the head and neck, Prematurity (< 1,500 g at birth), Extended stay in neonatal intensive care unit (>48 hrs.), Hyperbilirubinemia requiring exchange transfusion, Meningitis or encephalitis, anoxia.

Vision assessment: The **detection of amblyopia** is the most important reason for early vision screening as early detection can prevent vision loss in the "neglected" eye. Newborns should be able to fixate on a face; by 1 to 2 months of age, infants should be able to follow an object horizontally across their visual field.

Development screening tests

General Development

Ages 0–5 Years: Ages and Stages Questionnaires: The Ages and Stages Questionnaires is a series of parent-completed questionnaires that assess the domains of communication, gross motor, fine motor, problem solving and personal adaptive skills.

Ages 0–8 Years: Parents' Evaluation of Developmental Status (PEDS): This parent-completed questionnaire elicits parental concerns about aspects of the child's development and behavior. Based on the response of the parents to questions, an algorithm guides the clinician in determining whether the child needs referral, additional screening, or continued surveillance. Additional information on this test is available at www.pedstest.com

Autism spectrum disorder (ASD) : The AAP(American association of paediatrician) recommends that all children should be screened for autism spectrum disorder (ASD) during regular well-child visits at 18 months, 24 months. Autism, or autism spectrum disorder (ASD), refers to a broad range of conditions characterized by challenges with social skills, repetitive behaviours, speech and nonverbal communication.

Common signs of autism: Avoiding eye contact. Delayed speech and communication skills. Reliance on rules and routines. Being upset by relatively minor changes. Unexpected reactions to sounds, tastes, sights, touch and smells. Difficulty understanding other people's emotions.

Self-assessment 5.8

1. State signs of developmental delay at 18 months.
2. Briefly explain autism
3. list signs of autism

5.9 Immunisation according to expanded program of immunisation

Learning activity 5.9

Today every country in the world has a national immunization programme. Vaccines are viewed as one of the safest, most cost-effective, successful public health interventions to prevent deaths and improve lives.

a. How do you understand by term immunization?

b. When a vaccine introduced into the body, it produces protection from a specific disease, according to your understanding what is the name for that protection?

c. Every country has immunization programme, what do you think about its aim?

Vaccination is the intervention used to prevent or eradicate childhood diseases. It is the most cost-effective health intervention. A set of practice guidelines for different service levels were created by the World Health Organization (WHO), which include vaccine monitoring, immunization techniques, cold chain management and reporting systems.

EPI (Expanded Program on Immunization) covers vaccination services implemented in order to ensure the immunization of all vulnerable age groups by preventively reaching out to them before they contract and develop infectious diseases. This program aims to control, and eventually eradicate these infections with a special focus on decreasing the incidence of these infectious diseases and its associated deaths.

Immunization activities are fully integrated into routine health services within each health Facilities. These are key terms that explains interchangeable words used in immunization activity.

Immunity: Protection from an infectious disease. If you are immune to a disease, you can be exposed to it without becoming infected.

Vaccine: A preparation that is used to stimulate the body's immune response against diseases. Vaccines are usually administered through needle injections, but some can be administered by mouth or sprayed into the nose.

Vaccination: The act of introducing a vaccine into the body to produce protection from a specific disease.

Immunization: A process by which a person becomes protected against a disease through vaccination.

There are two types of immunity: active and passive.

Active Immunity results when exposure to a disease organism triggers the immune system to produce antibodies to that disease. Active immunity can be acquired through natural immunity or vaccine-induced immunity.

Natural immunity: acquired from exposure to the disease organism through infection with the actual disease.

Vaccine-induced immunity: acquired through the introduction of a killed or weakened form of the disease organism through vaccination. if an immune person comes into contact with that disease in the future, their immune system will recognize it and immediately produce the antibodies needed to fight it. Active immunity is long-lasting, and sometimes life-long.

Passive immunity is provided when a person is given antibodies to a disease rather than producing them through his or her own immune system.

Vaccines types and mechanism of action

They exist live-attenuated vaccines, inactivated vaccines, subunit, recombinant, conjugate, and polysaccharide vaccines, toxoid vaccines, mRNA vaccines and Viral vector vaccines

Live-attenuated vaccines: Live-attenuated vaccines inject a live version of the germ or virus that causes a disease into the body. Although the germ is a live specimen, it is a weakened version that does not cause any symptoms of infection as it is unable to reproduce once it is in the body. The types of diseases that live-attenuated vaccines are used for include: Measles and rubella (MR combined vaccine) and rotavirus

Inactivated vaccines: An inactivated vaccine uses a strain of a bacteria or virus that has been killed with heat or chemicals. This dead version of the virus or bacteria is then injected into the body. Inactivated vaccines are the earliest type of vaccine to be produced, and they do not trigger an immune response that is as strong as that triggered by live-attenuated vaccines. The types of diseases that inactivated vaccines are used for include: Hepatitis A and Polio.

Subunit, recombinant, conjugate, and polysaccharide vaccines: Subunit, recombinant, conjugate, and polysaccharide vaccines use particular parts of the germ or virus. They can trigger very strong immune responses in the body because they use a specific part of the germ. These types of vaccines are used to create immunity against the following diseases: Hib (Hemophilus influenza type b), Hepatitis B, Human papillomavirus (HPV), cough, pneumococcal disease.

Toxoid vaccines: Toxoid vaccines use toxins created by the bacteria or virus to create immunity to the specific parts of the bacteria or virus that cause disease, and not the entire bacteria or virus. The immune response is focused on this specific toxin. Toxoid vaccines do not offer lifelong immunity and need to be topped up over time. Toxoid vaccines are used to create immunity against ***diphtheria and tetanus.***

Viral vector vaccines: Viral vector vaccines modify another virus and use it as a vector to deliver protection from the intended virus. Some of the viruses used as vectors include adenovirus, influenza, measles virus and vesicular stomatitis virus (VSV).

The Expanded Program on Immunization (EPI) plans to vaccinate children aged 0 to 15months, against: ***Tuberculosis, polio, diphtheria, Tetanus, Pertussis/ whooping cough, Hepatitis B, infections with haemophilus influenza type B, pneumonia, measles, rubella and rotavirus infections.***

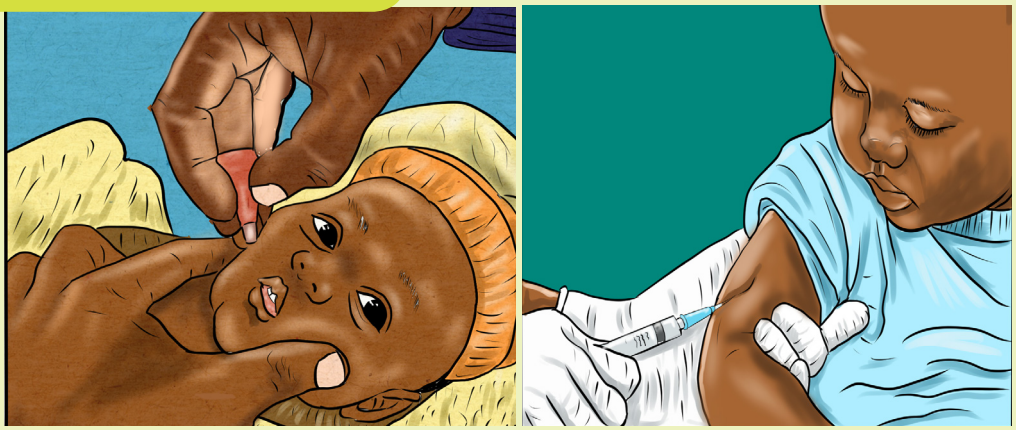
The booster of measles vaccine is given at 15 months, but also 12-year-old adolescent girls receive vaccine against human papillomavirus and tetanus vaccine for pregnant women or women of childbearing age and the child also receives the mosquito net impregnated during vaccination of MR at the age of 9 months.

Self-assessment 5.9

1. Explain types of immunity?
2. At what age of vaccination among children is extended?
3. What are the vaccinated diseases among children in Rwanda?

5.10 National expanded program of immunisation vaccine

Learning activity 5.10



a. What are the diseases do you think to be vaccinated at birth in Rwanda?

b. What vaccines do you think a child receive at 14 weeks?

c. What are the vaccines do you think to be given to a child at 9 months?

The overall goal of the national EPI is to contribute to the improved well-being of the Rwandan people through reduction of child morbidity and mortality through vaccination of preventable diseases. Vaccination program to children in Rwanda is comprised of three principal components: routine vaccination, supplemental immunization activities, and surveillance for target diseases.

a. Routine immunization schedule

Age	Vaccines
At birth	BCG, OPV0
6 Weeks	DPT1- HepB-Hib1, OPV1, Pneumo1, Rota1

10 Weeks	DPT2- HepB-Hib2, OPV2, Pneumo2, Rota2
14 Weeks	DPT3- HepB-Hib3, OPV3,IPV, Pneumo3
9 Months	MR1
15 Months	MR2
12years (girls)	HPV1 and HPV 2

Table 5.2; Immunization schedule

NB: - It is necessary to respect the minimum interval of 28 days between 2 doses of vaccines with multiples doses (DTP-HepB-Hib, OPV, Pneumo and Vaccine Rotavirus).

It is strictly forbidden to administer another multi-dose vaccine before 28 days even if the vaccination date coincides with weekends or public holidays.

For the HPV vaccine, 12-year-old adolescent girls should not receive the second dose before 6 months from the first dose.

In Rwanda, the school approach has been chosen as the basic approach for administering this vaccine, but 12-year-old girls who are out of school and those who have not been privileged enough to receive the vaccine should benefit from it at the health facility.

Vaccination for special cases: child who has never been in contact with the vaccination service

Age	**Intervention**
Less than 1	Administer all vaccines within the interval required according to the immunization schedule
1 2 - 23 months	Administer all vaccines within the interval required according to the immunization schedule, but at first contact it is mandatory to administer the polio and measles vaccine
More than 2 years	At the first contact the child must receive polio and measles vaccines, for other antigens he can receive them after the assessment of the provider.

Table 5.3: immunization schedule for special cases

NB: Systematically check the BCG scar in the child who presents for vaccination at 14 weeks, if no scar revaccinate.

For the premature baby, it is necessary to start the vaccination calendar right out of the neonatology service.

Table 5.4: Diseases, characteristics, mode of administration and manifestations of the adverse effects.

Diseases	Vaccine	Nature of vaccine	Form	Dilution	Number of doses	Mode of administration site of injection	Prescription	Manifestations of adverse effects post immunisation
Tuberculosis	BCG	Live attenuated vaccine	powder	1 ml of dilution	1 dose	Intradermal, above the left upper arm	0,05 ml	Small scar with in some weeks
Poliomyelitis	OPV	Live attenuated of the 2nd type	Liquid	-	4 doses	Oral	2 drops	Rarely, suffer from the disease
poliomyelitis	IPV	Inactive virus	Liquid	-	1 dose	IM at right in outer part of the thigh with the interval of 2.5 cm btn IPV & PCV13 (Pneumococcal vaccine)	0,5 ml	-
Diphtheria, Tetanus, Pertussis/ Whooping cough, Hepatitis B, Haemophilus influenza type B	Pentavalent (DTP+Hb+Hib)	Diphtheria toxoid, tetanus Inactivated pertussis bacteria, purified hepatitis B surface antigen and capsular polysaccharides a Haemophilus influenzae type b	Liquid	-	3 doses	IM, at upper external part of the thigh	0,5 ml	Redness, pain at the injection site, fever, and unusual crying

Pneumococcal infections (pneumonia, meningitis, bacteremia, ear infections, etc.)	PCV-13 (Preventive)	PCV-13 is a vaccine from killed bacteria having a polysaccharide capsule purified with 13 types of bacteria conjugated.	Whitish and homogeneous liquid	-	3 doses	IM, in the antero-external face of the right thigh	0,5 ml	Pain, redness, sometimes fever
Human Papilloma Virus (HPV)	Gardasil	Inactivated virus	Liquid	-	2 doses	Intramuscular at the deltoid muscle of the arm	0,5 ml	Pain, hypersensitivity, fever.
Severe diarrhea with dehydration	Rotavirus Vaccine	Rotarix Live, attenuated, liquid vaccine	Liquid	-	2 doses	Orale	1.5 ml	_
Measles and Rubella	MR	Live attenuated	Powder	5 ml of dilution	2 doses	Subcutaneous on the right arm	0,5 ml	Fever, sometimes rash that appears within 6 to 12 days of receiving the vaccine
Tetanus	Tetanus Toxoid Vaccine	Toxoid	Liquid	-	5 doses	Intramuscular on the arm	0,5 ml	

Self-assessment 5.10

1. State the vaccines given at 6weeks
2. Explain how to administer BCG?
3. Explain how to administer MR vaccine at 9months and 15 months.

5.11 Behaviour change communication and social mobilization

Learning activity 5.11

Observe the following images and reflect on it.

A. 

B. 

a. What do you think that the healthcare provider in image a is doing at the health facility?

b. Where else do you think that behaviour change communication can be carried out?

c. What steps do you think might be followed during vaccination session?

Communication of the key messages about immunization to a group

The community has a big role to play in making the decision to vaccinate the target population.

An example of messages to pass on to parents during an immunization session:

Every child needs to be protected against some vaccine-preventable diseases. Here are the diseases that can be prevented by vaccination: Tuberculosis, Diphtheria, Tetanus, Pertussis, Poliomyelitis, Measles, Rubella, Hepatitis B, a large proportion of pneumonia, meningitis, severe diarrhoea with dehydration caused by rotavirus, etc.

The tetanus toxoid vaccine (VAT) for the pregnant woman protects the unborn baby. Her mother needs two doses in the first pregnancy within 28 days, 6 months later a third dose (VAT3), a year later a fourth dose (VAT4) and finally a year later a fifth dose (VAT5). A mother, who has already received 5 doses of TT with the minimum required interval between doses, is protected against tetanus for the rest of her reproductive life and, as a result, will protect all the children who will be born from her during the first month of their life against tetanus.

The immunization card is a very important tool for monitoring the health of the child; it must be kept carefully and always present whenever the child reports to the health worker.

4. Choose a method of communication that attracts the interest of the group: storytelling, sketch, riddle, song, questions / answers, demonstration

5. Involve the group and Encourage parents to ask questions
   - Against which disease is the child being vaccinated today?
   - What are the possible side effects and how to do if they occur?
   - What is the date of the next appointment?
   - The need for the mother to keep the vaccination card
   - Need to complete vaccination series
   - How old is the child? (Check the date of birth of the child to determine if the child is eligible for the rotavirus vaccine)
   - I am giving your child vaccines: (quote them)
   - They will help your child stay healthy
   - The child may have fever and pain at the injection site. If the fever exceeds two days, bring the child back to the nearest community health worker or health facility.
   - For measles, fever with a slight popular rash may appear within 6 to 12 days.
   - For BCG, a small ulceration may develop followed by a scar and this in 1 to 2 months. If no scar within 3 months, bring the child back to revaccinate.
   - Small health problems related to vaccination are much less serious than if your child did not receive these vaccines.
   - Bring your child back at 15 months old for reminder of measles vaccine.
   - The need for the mother to keep the vaccination card.

1. Social mobilization

Social mobilization is the process of bringing together all possible inter-sectoral partners and allies to participate in development programmes. It builds on the contribution of technical experts, and emphasizes the capabilities and roles of social allies and partners including community members. Social mobilisation aims

at empowering individuals and communities to identify their needs, their rights, and their responsibilities, change their ideas and beliefs and organize the human, material, financial and other resources required for socioeconomic development.

To lead a good social mobilization, the following factors are decisive:

- Obtain in due time a commitment from the politico-administrative authorities (Cell and sector managers, mayors, ...)
- Solicit the participation of religious and community leaders (eg health leaders, local elected officials ...). They usually know where, when, and how to reach the population.
- Consider associations (Umugoroba w'ababyeyi, umuganda, Amarerero (ECD), different clubs, etc.). They constitute a considerable resource on knowledge of the local situation, and other diverse skills.
- Involve CHWs in the transmission of immunization messages at the monthly meeting with CHWs and home visits.
- Make sure there is consistency in the contents of the messages.

Strategies to trace dropouts:

- Identify drop-outs and localise them in folders or vaccination register.
- Communicate the names of identified children to the community health worker within their radius of action
- The community health worker, during home visits, retrieves these children and brings them to the health center for immunization
- During the same visit, the community health worker registers newborns and educates their mothers about their vaccination
- When monitoring children's growth at the community level, the ASC should check the immunization status of children and remind parents to respect future appointments.
- Apply the vaccination policy to any contact : In case the mother brings her child to the health center, ask him for a vaccination form, if the card is missing, his mother receives an individual educational talk and vaccinate the child if necessary or fix an appointement.

Preparation of the equipment for vaccination

i) Injection equipment and vaccines

- 5 ml syringes and needles to reconstitute RR vaccines
- 2 ml syringes and needles to reconstitute BCG.
- 0.5 ml auto-disable syringes for administration of DTP-HepB / Hib, RR, vaccines, Pneumococcal-vaccine (PCV-13), Inactivated Polio Vaccine (IPV), HPV and VAT vaccines
- 0.05ml BCG syringes

- The droppers for the polio vaccine and the rotarix vaccine if the dropper is not incorporated in the bottle)
- Safety boxes (receptacles) and trash
- Cotton or gauze
- Prepare vaccines according to the expected target per session
- Clean water to clean the vaccine injection site (**Never use alcohol or disinfectants)**
- Ice packs
- Vaccine carrier
- Freeze -Tags for monitoring the quality of vaccines

ii) Management tools and IEC materials

- Vaccination card (children, teenage girls aged 12 and pregnant women)
- Immunization registry for immunization of children, teenage girls aged 12 and pregnant women
- Calendar to determine dates of appointments (RDV)
- Scorecards for vaccination
- IEC message books
- Posters and brochures

iii) Other materials

- Tables, Chairs, Benches, Baby Scales, Panties, Height, MUAC, Scissors, Kidney Basins, Pens, DVD and Television.

Stapes of a vaccination session

- Home
- Registration and Sorting
- Growth monitoring
- Group IEC
- Vaccination

To maintain the required temperature during the immunisation session :

- Open the vaccine carrier and place the vaccines on the clean table Vaccine vials should never be placed on frozen ice packs during the immunization session because some non-freezable vaccines may be frozen;
- Frozen accumulators must be thawed (packaged) before putting them in vaccine carriers for vaccine transport
- Avoid taking the ice packs out of the vaccine carrier during the immunization session; this may increase the temperature inside the vaccine carrier and thus expose the vaccines to temperatures above + 8 ° C.
- Always keep the vaccine carrier in the shade and closed

Do not forget the following:

- Avoid opening more than one vial of the same antigen at a time
- For powder vaccines MR, and BCG): Keep the vaccine carrier between + 2 ° C and + 8 ° C before use.

Type de vaccine	Conservation/ storage at the heath district till to 3 months	Transportation at the health center
OPV	+ 2°C to + 8°C	+2°C to + 8°C
BCG and MR	+ 2°C to + 8°C	+2°C to + 8°C
TTV	+2°C to + 8°C	+2°C to + 8°C
DTP-HépB and Hib	+2°C to + 8°C	+2°C to + 8°C
PCV-13	+2°C to + 8°C	+2°C to + 8°C
Rotarix Vaccin	+2°C to + 8°C	+2°C to + 8°C
HPV Vaccine	+2°C to + 8°C	+2°C to + 8°C
VPI	+2°C to + 8°C	+2°C to + 8°C

Table 5.5: Vaccine's conservation

Recommendations:

- When DTP-HepB-Hib, PCV-13, Rotarix and tetanus (VAT) vaccines are kept at too low temperatures (ie below 0 ° C where they freeze), they can no longer be considered as effective. They are damaged and must be thrown away.
- Do not place hot accumulators next to the vaccines.
- Do not load multiple syringes with vaccines in advance before administration.

Self-assessment 5.11

1. State at least four strategies to trace dropout
2. List materials needed during vaccination session
3. When DTP-HepB-Hib, PCV-13, Rotarix and tetanus (VAT) vaccines are kept at too low temperatures (below 0 ° C where they freeze), what will happen and what to do?

5.12 Vaccination cold chain

Learning activity 5.12

Observe the images below and reflect on it.

A. 

B. 

C. 

E. 

F. 

G. 

H. 

I. 

J. 

a) What do you think about cold chain in immunisation?

b) What do you think could be the use of boxes in image a?

c) What do you think could be the purpose of cold chain monitoring equipment?

Cold chain is system for storing and transporting vaccines in a potent state (within an acceptable temperature range) from the manufacturer to users.

The cold chain is the system used for keeping and distributing vaccines in good conditions. It takes a chain of precisely coordinated events in temperature-controlled environments to store, manage and transport these life-saving products.

Vaccines must be continuously stored in a limited temperature range from the time they are manufactured until the moment of vaccination. This is because temperatures that are too high or too low can cause the vaccine to lose its potency (its ability to protect against disease). Once a vaccine loses its potency, it cannot be regained or restored.

The cold chain guidelines recommend the following: the vaccine storage should be maintained in the temperature range of 2–8 °C, the use of minimum/maximum thermometers, temperature charts, and the shake test. The cold chain consists of a series of storage and transport links, all designed to keep vaccines within an acceptable range until it reaches the user.

Vaccines are sensitive to heat and freezing and must be kept at the correct

temperature from the time they are manufactured until they are used.

The cold chain equipment

Different levels within the health care system need different equipment for transporting and storing vaccines and diluents at the correct temperature.

- Primary vaccine stores: need cold or freezers rooms, freezers, refrigerators, cold boxes and sometimes refrigerator trucks for transportation.
- Intermediate vaccine stores: depending on their size and capacity need cold and freezer rooms, and/or freezers, refrigerators and cold boxes.
- Health facilities: need refrigerators with freezing compartments, cold boxes and vaccine carriers.

Cold chain monitoring equipment

The purpose of cold chain monitoring equipment is to keep track of the temperature to which vaccines and diluents are exposed during transportation and storage

The different monitors are: Vaccine vial monitors, Vaccine cold chain monitor card, Thermometers and Freeze indicator

Vaccine Cold Chain Monitor Card

A vaccine cold chain monitor is a card with an indicator strip that changes the colour when the vaccines are exposed to temperatures too high. The vaccine cold chain card is used to estimate the length of time that vaccine has been exposed to high temperatures. Manufacturers pack these monitors with vaccines supplied by WHO and UNICEF.Usually used for large shipments of vaccines. Same card should remain with same batch.

Maintaining cold boxes and vaccine carriers

Must be dried after their use. If left wet with closed lids, they become moldy and the seal will be affected. Store them with the lid open when not used, if possible. Don't store them outside under the sunlight, it can cause cracks and reduce the efficiency of the cold box.

WARNING:

- Never shake the bulbs (not to heat them),
- Never exceed the amount of solvent recommended for dilution of the vaccine
- Regularly use solvents from vaccines of the same manufacturer and same period
- Avoid freezing vaccine diluents At the service delivery level, diluents should be kept in refrigerators
- The dilution syringe and the dropper must be used for each vial.

- Use clean water when cleaning the vaccine injection site.
- Do not use the cold accumulators on the table during the immunization session; they stay at the vaccine doors to keep the correct temperature.
- Read the expiry date of the vaccine on the vial.
- If the date is exceeded, discard the bottle. Similarly, if the label has fallen and is not found, discard the bottle;
- For liquid vaccines: OPV, IPV, VAT, DTP-HepB-Hib, Pneumo, Rotavirus Vaccine and HPV; It must be reassured that vaccines are not frozen before administering them.

Administration of the vaccine:

To avoid suffocation, do not direct the vaccine to the bottom of the mouth (to the throat); rather direct the vaccine to the cheeks (lateral of the mouth).This vaccine should be administered orally to children aged 6-14 weeks for the 1st dose and children 24 weeks or less for the remaining two doses with a minimum interval of 4 weeks between doses.

Caution: If, for some reason, an incomplete dose is administered (for example, the child has spat or regurgitated part of the vaccine), replacement of the dose is not indicated. The child

who comes to the session suffering from diarrhea does not receive oral vaccines.

Self-assessment 5.12

1. List the different monitors used in cold chain monitoring
2. Use true or false

   If, for some reason an incomplete dose is administered (for example, the child has spat or regurgitated part of the vaccine).

   a) Replacement of the dose is indicated.
   b) replacement of the dose is not indicated.
   c) Replace the dose next month.
   d) Replace the dose after 1week.
3. The child who comes for vaccination suffering from …. Does not receive oral vaccines.

   a) Malaria
   b) Headache
   c) Diarrhoea
   d) cough

End Unit assessment 5

Multiple choice questions

1. Which statement defines Primary prevention?
   a. Refers to the actions aimed for early detection and treatment of the disease.
   b. Refers to actions aimed at reducing the incidence of diseases in children
   c. Simply means immunisation.
   d. Refers to the actions aimed at sensitisation.
2. Which of the following statements that define (s) the immunization circle?
   a. Refers to the process of becoming immune to the disease.
   b. Refers to the process of getting vaccination.
   c. Refers to the process of both getting the vaccine and becoming immune to the disease following vaccination.
   d. Refers to the action of vaccinating the population.
3. The increase in size, length, height and weight refers to one of the following term.
   a. Development
   b. Growth
   c. Cognitive milestone
   d. Communication milestone
4. The improvement in the body functioning and behaviour refers also to one of the following elements.
   a. Development
   b. Growth
   c. Cognitive milestone
   d. Communication milestone
5. One of the following principle refers to the fact that development (as well as growth) always proceeds direc¬tionally from head to foot.
   a. Integration
   b. Individual difference
   c. Interrelation
   d. Cephalo-caudal

6. Choose the correct features that are associated with many genetic syndromes that may cause mental retardation or learning disabilities. a) Congenital anomalies

a. Congenital anomalies
b. Head circumference
c. Dermal Lesions of neuro-cutaneous Syndromes
d. Muscle tone problems

7. The Expanded Program on immunization (EPI) plans to vaccinate children aged 0 to 15 months, against the following diseases except:

a. Tuberculosis
b. Polio,
c. Diabetes mellitus
d. Tetanus

8. One of these types of immunity results when exposure to a disease organism triggers the immune system to produce antibodies to that disease and this can be acquired through natural immunity or vaccine-induced immunity.

a. Passive immunity
b. Active Immunity
c. Innate immunity
d. Immunodeficiency

9. One of these types of immunity is provided when a person is given antibodies to a disease rather than producing them through his or her own immune system.

a. Passive immunity
b. Active Immunity
c. Innate immunity
d. Immunodeficiency

10. These are the preventive measures used to prevent the childhood illnesses except:

a. Getting the vaccinations
b. Washing the hands regularly
c. Eat healthy and exercise regularly
d. Receiving the medication due to the disease that the child is suffering from.

SECTION B: SHORT ANSWER QUESTIONS AND TRUE OR FALSE

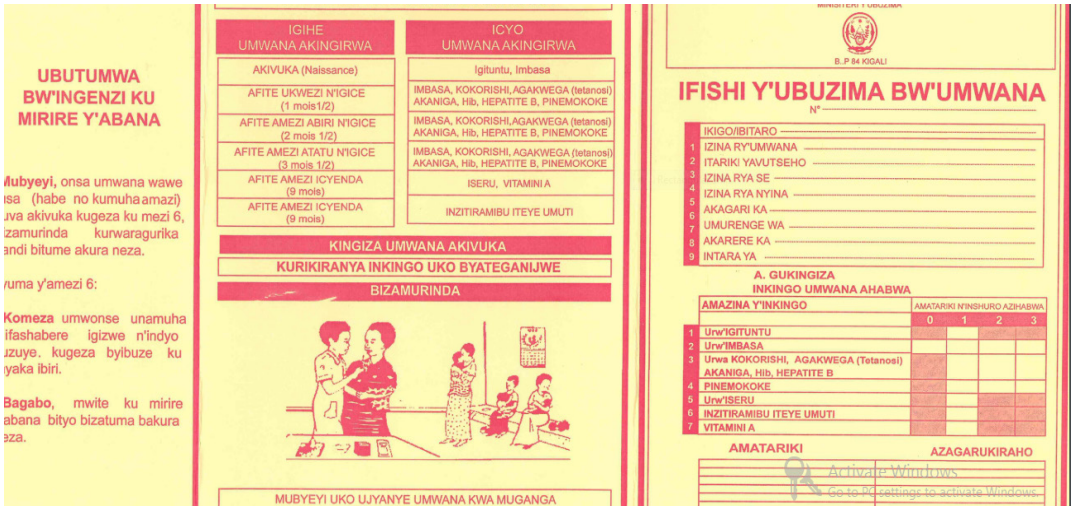
11. The combined vaccine against diphtheria, tetanus and pertussis (whooping cough) and the vaccine against poliomyelitis cause sudden infant death syndrome.
12. Vaccines have several damaging and long-term side-effects that are yet unknown. Vaccination can even be fatal.
13. Better hygiene and sanitation will make diseases disappear and vaccines are not necessary.
14. It is better to be immunized through disease than through vaccines.
15. It is necessary to take children for vaccination as it is the most useful way of preventing childhood illnesses.

SHORT ANSWER QUESTIONS

16. Explain how do vaccines work?
17. State at list 5 activities to trace dropout of immunisation.

ANNEXES

RWANDAN VACCINATION CHART FOR GIRLS



UBUTUMWA BW'INGENZI KU MIRIRE Y'ABANA

Mubyeyi, onsa umwana wawe isa (habe no kumuha amazi) uva akivuka kugeza ku mezi 6, izamurinda kurwaragurika andi bitume akura neza.

ruma y'amezi 6:

Komeza umwonse unamuha ifashabere igizwe n'indyo uzuye. kugeza byibuze ku yaka ibiri.

Bagabo, mwite ku mirire abana bityo bizatuma bakura eza.

IGIHE UMWANA AKINGIRWA	ICYO UMWANA AKINGIRWA
AKIVUKA (Naissance)	Igituntu, Imbasa
AFITE UKWEZI N'IGICE (1 mois1/2)	IMBASA, KOKORISHI,AGAKWEGA (tetanosi) AKANIGA, Hib, HEPATITE B, PINEMOKOKE
AFITE AMEZI ABIRI N'IGICE (2 mois 1/2)	IMBASA, KOKORISHI,AGAKWEGA (tetanosi) AKANIGA, Hib, HEPATITE B, PINEMOKOKE
AFITE AMEZI ATATU N'IGICE (3 mois 1/2)	IMBASA, KOKORISHI, AGAKWEGA (tetanosi) AKANIGA, Hib, HEPATITE B, PINEMOKOKE
AFITE AMEZI ICYENDA (9 mois)	ISERU, VITAMINI A
AFITE AMEZI ICYENDA (9 mois)	INZITIRAMIBU ITEYE UMUTI

KINGIZA UMWANA AKIVUKA

KURIKIRANYA INKINGO UKO BYATEGANIJWE

BIZAMURINDA

MUBYEYI UKO UJYANYE UMWANA KWA MUGANGA

B..P 84 KIGALI

IFISHI Y'UBUZIMA BW'UMWANA

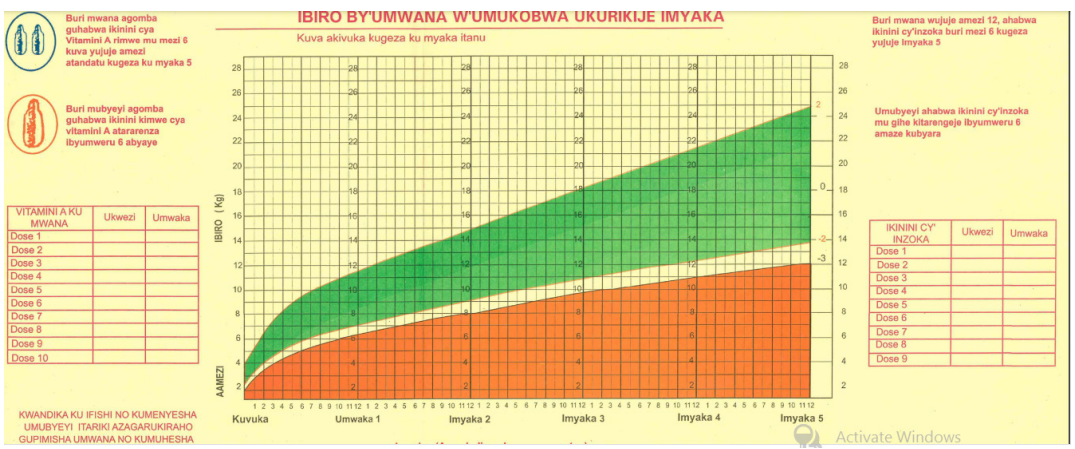
N°

1	IKIGO/IBITARO
2	IZINA RY'UMWANA
3	ITARIKI YAVUTSEHO
4	IZINA RYA SE
5	IZINA RYA NYINA
6	AKAGARI KA
7	UMURENGE WA
8	AKARERE KA
9	INTARA YA

A. GUKINGIZA INKINGO UMWANA AHABWA

	AMAZINA Y'INKINGO	AMATARIKI N'INSHURO AZIHABWA 0	1	2	3
1	Urw'IGITUNTU				
2	Urw'IMBASA				
3	Urwa KOKORISHI, AGAKWEGA (Tetanosi) AKANIGA, Hib, HEPATITE B				
4	PINEMOKOKE				
5	Urw'ISERU				
6	INZITIRAMIBU ITEYE UMUTI				
7	VITAMINI A				

AMATARIKI | AZAGARUKIRAHO



Buri mwana agomba guhabwa ikinini cya Vitamini A rimwe mu mezi 6 kuva yujuje amezi atandatu kugeza ku myaka 5

Buri mubyeyi agomba guhabwa ikinini kimwe cya vitamini A atararenza ibyumweru 6 abyaye

VITAMINI A KU MWANA	Ukwezi	Umwaka
Dose 1		
Dose 2		
Dose 3		
Dose 4		
Dose 5		
Dose 6		
Dose 7		
Dose 8		
Dose 9		
Dose 10		

KWANDIKA KU IFISHI NO KUMENYESHA UMUBYEYI ITARIKI AZAGARUKIRAHO GUPIMISHA UMWANA NO KUMUHESHA

IBIRO BY'UMWANA W'UMUKOBWA UKURIKIJE IMYAKA

Kuva akivuka kugeza ku myaka itanu

IBIRO (Kg)

AAMEZI

Kuvuka | Umwaka 1 | Imyaka 2 | Imyaka 3 | Imyaka 4 | Imyaka 5

Buri mwana wujuje amezi 12, ahabwa ikinini cy'inzoka buri mezi 6 kugeza yujuje imyaka 5

Umubyeyi ahabwa ikinini cy'inzoka mu gihe kitarengeje ibyumweru 6 amaze kubyara

IKININI CY' INZOKA	Ukwezi	Umwaka
Dose 1		
Dose 2		
Dose 3		
Dose 4		
Dose 5		
Dose 6		
Dose 7		
Dose 8		
Dose 9		

Vaccination chart for boys

UBUTUMWA BW'INGENZI KU MIRIRE Y'ABANA

- **Mubyeyi,** onsa umwana wawe gusa (habe no kumuha amazi) kuva akivuka kugeza ku mezi 6, bizamurinda kurwaragurika kandi bitume akura neza.

Nyuma y'amezi 6:

- **Komeza** umwonse unamuha ifashabere igizwe n'indyo yuzuye. kugeza byibuze ku myaka ibiri.

- Bagabo, mwite ku mirire y'abana bityo bizatuma bakura neza.

GAHUNDA YO GUKINGIZA UMWANA

IGIHE UMWANA AKINGIRWA	ICYO UMWANA AKINGIRWA
AKIVUKA (Naissance)	Igituntu, Imbasa
AFITE UKWEZI N'IGICE (1 mois1/2)	IMBASA, KOKORISHI,AGAKWEGA (tetanosi) AKANIGA, Hib, HEPATITE B, PINEMOKOKE
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AFITE AMEZI ICYENDA (9 mois)	ISERU, VITAMINI A
AFITE AMEZI ICYENDA (9 mois)	INZITIRAMIBU ITEYE UMUTI

KINGIZA UMWANA AKIVUKA

KURIKIRANYA INKINGO UKO BYATEGANIJWE

BIZAMURINDA

MUBYEYI UKO UJYANYE UMWANA KWA MUGANGA JYA WITWAZA IYI FISHI YE

REPUBULIKA Y'U RWANDA
MINISITERI Y'UBUZIMA

B. P 84 KIGALI

IFISHI Y'UBUZIMA BW'UMWANA

N°

1	IKIGO/IBITARO
2	IZINA RY'UMWANA
3	ITARIKI YAVUTSEHO
4	IZINA RYA SE
5	IZINA RYA NYINA
6	AKAGARI KA
7	UMURENGE WA
8	AKARERE KA
9	INTARA YA

A. GUKINGIZA INKINGO UMWANA AHABWA

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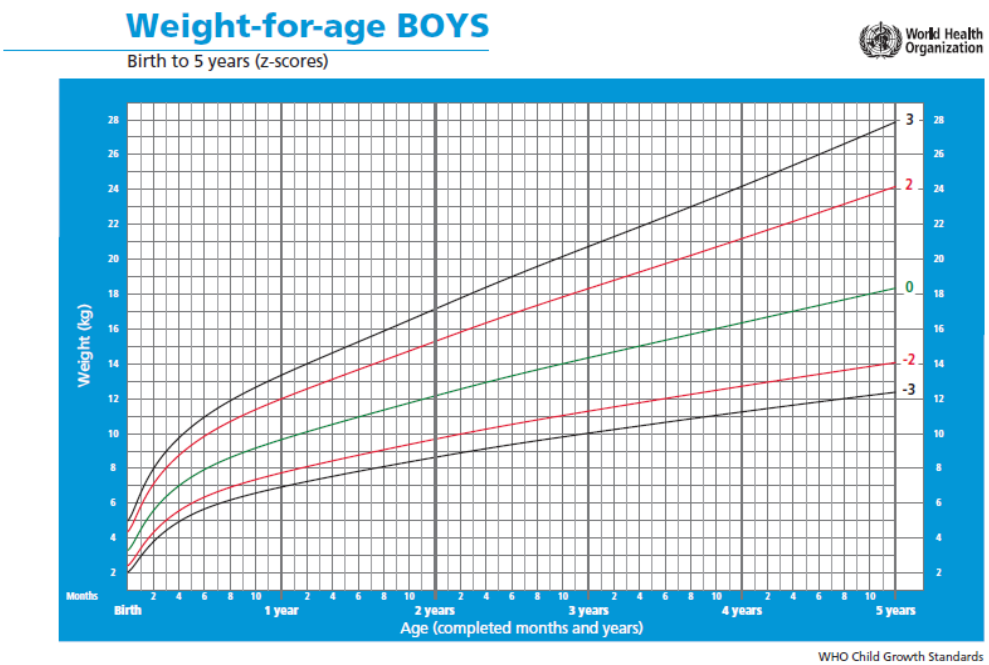
3	Urwa KOKORISHI, AGAKWEGA (Tetanosi) AKANIGA, Hib, HEPATITE B				
4	PINEMOKOKE				
5	Urw'ISERU				
6	INZITIRAMIBU ITEYE UMUTI				
7	VITAMINI A				

AMATARIKI	AZAGARUKIRAHO

GROWTH MONITORING CHART BY WHO

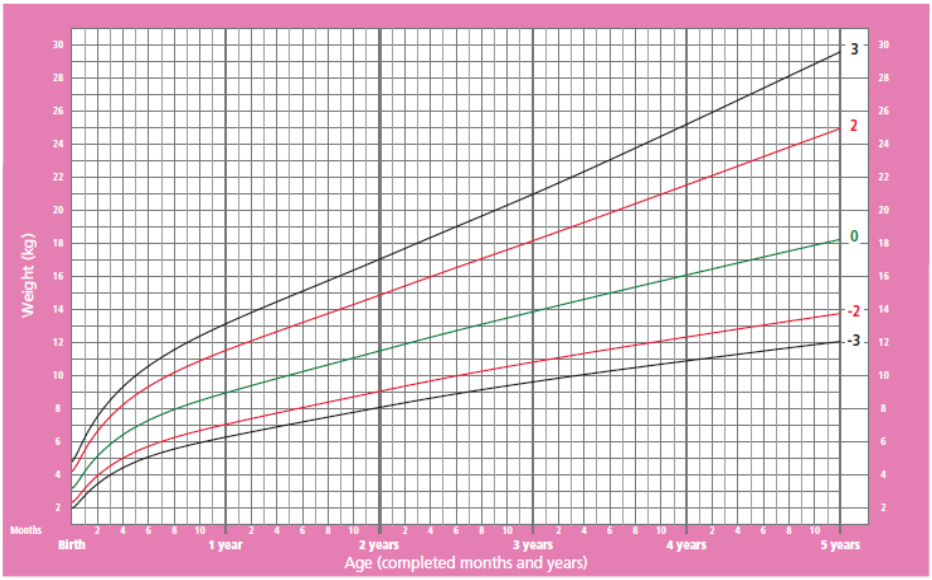


WHO Child Growth Standards

Weight-for-age GIRLS

Birth to 5 years (z-scores)

World Health Organization

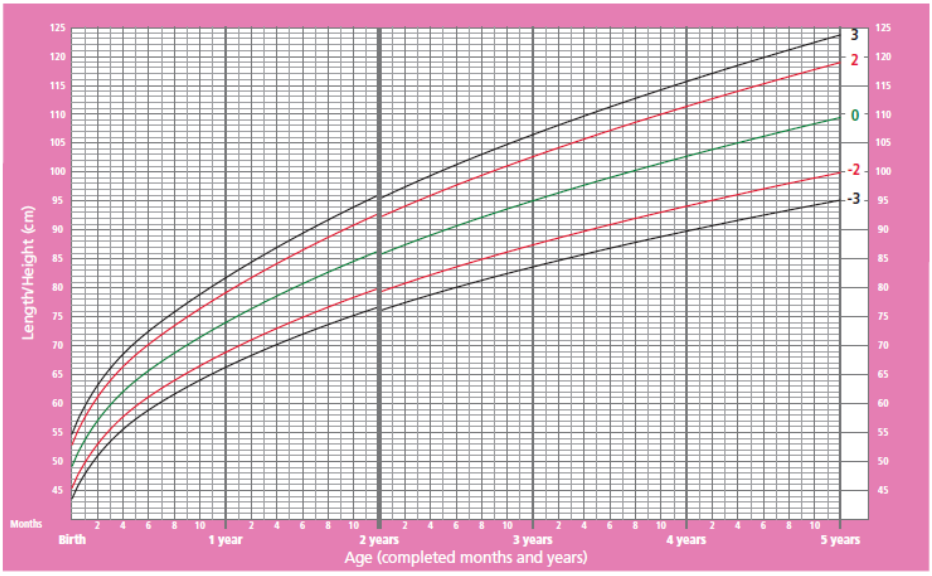


WHO Child Growth Standards

Length/height-for-age GIRLS

Birth to 5 years (z-scores)

World Health Organization

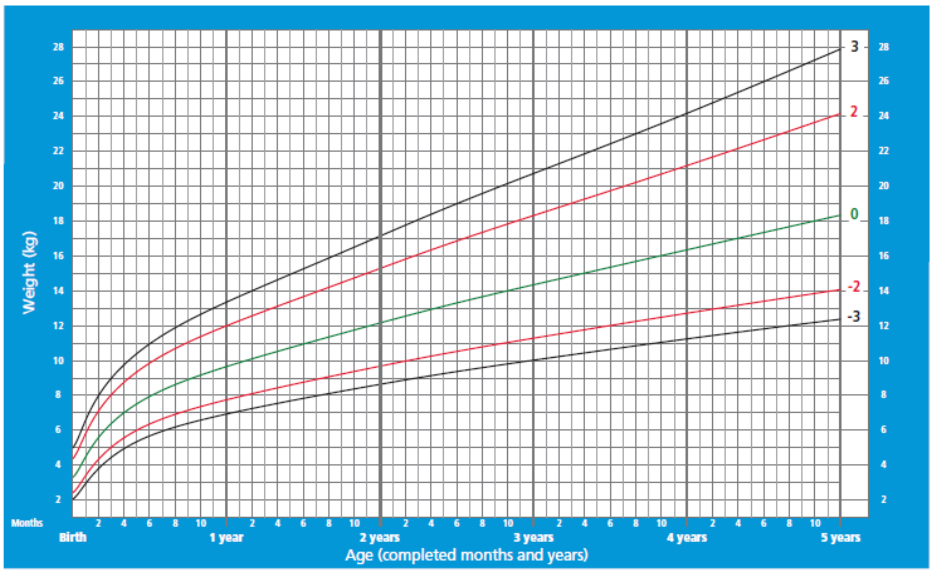


WHO Child Growth Standards

Weight-for-age BOYS

Birth to 5 years (z-scores)

World Health Organization

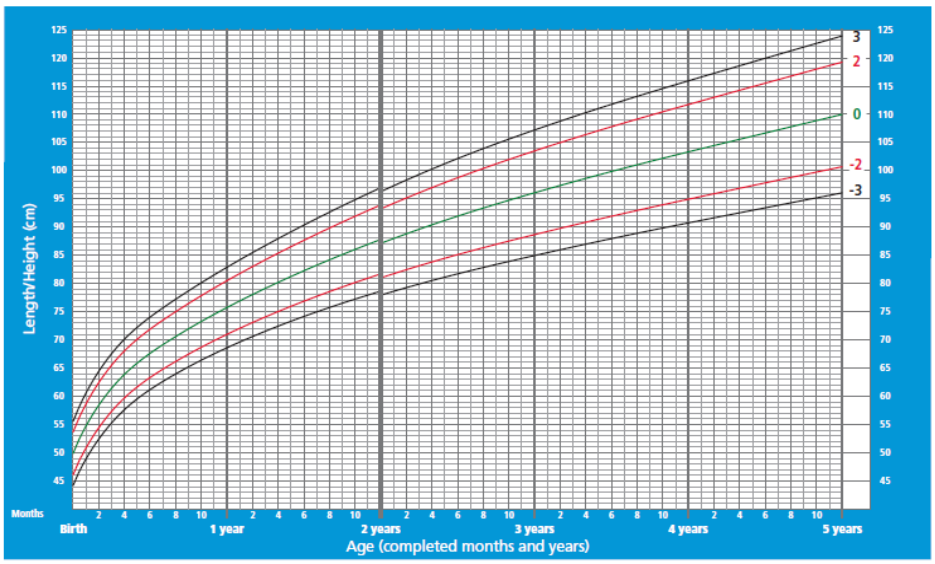


WHO Child Growth Standards

Length/height-for-age BOYS

Birth to 5 years (z-scores)

World Health Organization



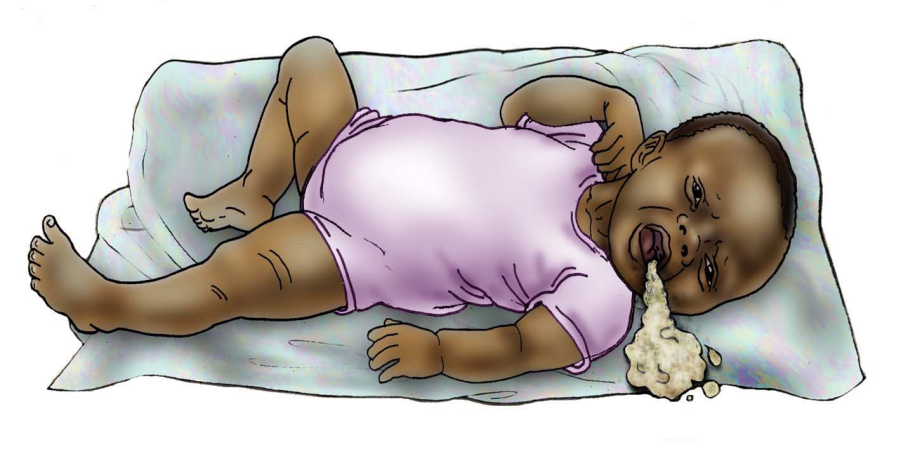
WHO Child Growth Standards

UNIT 6 CHILD HEALTH CARE

Key Unit Competence

Provide care to children

6.0 Introductory activity



Describe what you can see on the picture above.

6.1 Introduction to Integrated Management of Childhood Illnesses (IMCI)

Learning activity 6.1

Children are not small adults and they face multiple diseases that affect their health. In developing countries, there is a high burden of diseases affecting under five children requiring early detection of those diseases and management.

Based on your clinical exposure and meeting patients of different ages, what should be prioritized when managing sick young children in low resource settings?

Since the 1970s, the estimated annual number of deaths among children less than 5 years old has decreased by almost a third. This reduction, however, has been very uneven. And in some countries rates of childhood mortality are increasing. In 1998, more than 50 countries still had childhood mortality rates of over 100 per 1000 live births. Altogether more than 10 million children die each year in developing countries before they reach their fifth birthday. Seven in ten of these deaths are due

to acute respiratory infections (mostly **pneumonia**), **diarrhoea, measles, malaria**, or **malnutrition** and often to a combination of these conditions.

Limited supplies and equipment, combined with an irregular flow of patients, leave health care providers at first-level facilities with few opportunities to practice complicated clinical procedures. Instead, they must often rely on history and signs and symptoms to determine a course of management that makes the best use of available resources.

Providing quality care to sick children in these conditions is a serious challenge. In response to this challenge, WHO and UNICEF developed a strategy known as **Integrated Management of Childhood Illness (IMCI)**. Although the major stimulus for IMCI came from the needs of curative care, the strategy combines improved management of childhood illness with aspects of nutrition, immunization, and other important disease prevention and health promotion elements.

The objectives are to reduce deaths and the frequency and severity of illness and disability and to contribute to improved growth and development.

Below are principles of IMCI:

- All sick young infants up to two months must be assessed for bacterial **infection/jaundice and major symptoms of diarrhea**
- All sick children 2months to 5 years must be examined for **general danger signs** which indicate the need for referral or admission to a hospital
- All young infants and child 2months-5years of age must be routinely assessed for **nutritional status and immunization** status, **feeding problems** and other **potential problems**.

Integrated Management of Childhood Illnesses (IMCI) is:

- not necessarily dependent on the use of sophisticated and expensive technologies
- a more integrated approach to managing sick children
- move beyond addressing single diseases to addressing the overall health and well-being of the child
- careful and systematic assessment of common symptoms and specific clinical signs to guide rational and effective actions
- integrates management of most common childhood problems (pneumonia, diarrhea, measles, malaria, dengue hemorrhagic fever, malnutrition and anemia, ear problems)
- includes preventive interventions
- adjusts curative interventions to the capacity and functions of the health system (evidence-based syndromic approach)
- involves family members and the community in the health care process

Due to its appropriateness, the IMCI facilitates the **accurate identification at first contact, appropriate combined treatment of all major illnesses, speeds –up referral of the severely ill child and improves the quality of care of sick children at the first referral level.**

Self- assessment activity 6

1. Describe three (3) principles of IMCI.
2. What are the major facilitators of IMCI in low resource settings?

6.2 Components of Integrated Management of Childhood Illnesses (IMCI)

Learning activity 6.2

In your opinion, what should be the involvement of families and community during the patient care?

Integrated Management of Childhood Illnesses (IMCI) is meant to move along the two tracks of the health systems and community, respectively while promoting the establishment of strong links between the two with much emphasis on capacity building. Its aim is to reduce preventable mortality, minimize illness and disability and promote healthy growth and development of children under 5 years of age.

To improve access and quality of care for newborns and children in primary health care services, WHO and UNICEF designed the IMCI strategy.

IMCI is a strategy that has **three components** which are:

1. Improvements in the case-management skills of health staff through the provision of locally adapted guidelines on IMCI and through activities to promote their use
2. Improvements in the health system required for effective management of childhood illness
3. Improvements in family and community practices

The aim is to strengthen prevention and management of common childhood illnesses in the newborn period, and support children's healthy growth and development.

6.2.1 Improvement health workers skills

This refers to clinical and communication skills and covers both pre-service education and in-service training in the **case management** of sick children.

IMCI **case management** requires a well-defined set of knowledge and skills to accurately **assess**, **classify**, and **treat** ill children and, thereby, reduce mortality and reduce disabilities.

a. Case management process

The health worker assesses a child by checking first for **danger signs**, asking questions about common conditions (cough or difficult breathing, diarrhea, fever, and ear problems), **examining** the child, and **checking the nutrition, immunization status** and assesses also the child for other health problems.

After classification, the health worker identifies specific treatments and develops an **integrated treatment plan** for each child. If a child requires urgent referral, the health worker gives essential treatment before the patient is transferred. If a child needs treatment at home, the health worker gives the first dose of drugs to the child.

The health worker provides practical treatment instructions, and advice on how to give oral drugs, feeding, fluids during **illness**, how to treat local infections at home and advises the caretaker on follow-up care to recognize signs that indicate that the child should return immediately to the health facility.

If a child is underweight, provides counselling to solve feeding problems, including assessment of breastfeeding practices and follow up on immunization schedule and if necessary, reassesses the child for new problems.

b. Assessing danger signs in children using IMCI strategy

In IMCI all children are assessed for the following danger signs:

- lethargic or unconscious
- Convulsing now
- History of convulsions
- Vomiting everything.
- Not able to drink or breastfeed

If a child has any of these danger signs, he/she should be managed quickly and if necessary refer after giving him/her pre- referral treatment.

c. Main symptoms

After the danger signs, children are then assessed for four main symptoms. These are:

- Cough and difficult breathing
- Diarrhea
- Fever
- Ear problem

6.2.2 Improvement of health systems

Improving health systems to deliver IMCI concerns policy, planning and management, financing, organization of work and distribution of tasks at health facilities, human resources, availability of drugs and supplies, referral, monitoring and health information system, supervision, evaluation and research. It is an umbrella which covers human resources and their capacity.

6.2.3 Improvement of family and community practices

The community component of the Integrated Management of Childhood Illness (IMCI) strategy addresses family and community child care practices. The family and the community where children live play a major role in child health and development. There is a longstanding need to involve the family and community actively and plan and implement child care interventions in both the health system and the community in parallel. There are **12 key family and community practices** related to child health and development, that if properly promoted and adopted by the targeted communities, would potentially contribute to improving child survival, growth and development.

These includes:

- **Breastfeeding feeding**: the baby should breastfeed exclusively for at least up to 6 months to improve their immunity and reduce resistance to infection.
- **Complementary feeding**: From 6 months of age, other feeds may be introduced like freshly prepared energy and nutrients rich complementary foods combined with breastfeeding can be continued up to 2 years or longer.
- **Micronutrients**: Ensure that children receive adequate amounts of micronutrients (vitamin A, iron and zinc, in particular).
- **Hygiene**: Children's faeces should be properly disposed, and wash hands after defecation before preparing meals and before feeding children.
- **Immunization**: children's schedule of immunization should be respected (complete a full course of immunizations example: BCG, DPT, OPV and measles).

- **Malaria**: Protect children in malaria-endemic areas, by ensuring that they sleep under insecticide-treated mosquito nets
- **Psychosocial development**. Promote mental and social development of children and stimulating environment (talking, playing, dancing,)
- **Home care for illness**. Continue to feed and offer more fluids, including breastmilk, to children when they are sick.
- **Home treatment for infections**. Give sick children appropriate home treatment for infections.
- **Care-seeking**. Recognize when sick children need treatment outside the home and seek care from appropriate providers.
- **Compliance with advice**. Follow the health worker's advice about treatment, follow-up and referral.
- **Antenatal care**. Ensure that every pregnant woman has adequate antenatal care. This includes having at least four antenatal visits with an appropriate health care provider and receiving the recommended doses of the tetanus toxoid vaccination.

In addition, IMCI incorporates a strong component of prevention and health promotion as an integral part of care. thus, among other benefits, it helps **increase vaccination coverage and improve knowledge and home-care practices** for children under five, subsequently contributing to growth and healthy development.

Key requirements for IMCI strategy

- The adoption of a national policy and standards on an integrated approach to child health and development.
- Regular review and updating of IMCI clinical guidelines with adaptation to the country's epidemiology, medicines and commodities, relevant policies, and local foods and language used by the population.
- Improving quality of care in primary health facilities by training, mentoring and support supervision of health workers in integrated assessment, treatment and effective counseling of caregivers.
- Ensuring availability of the essential medicines, laboratory tests and key equipment for prevention and case management.
- Strengthening referral pathways and improving quality of care in hospitals for management of severely ill children referred from the outpatient clinics.
- Empowering families and communities to prevent disease, seek timely care from qualified health care providers for illness, provide adequate home care for sick children, and support children's healthy growth and development.

Three major determinants of effective implementation

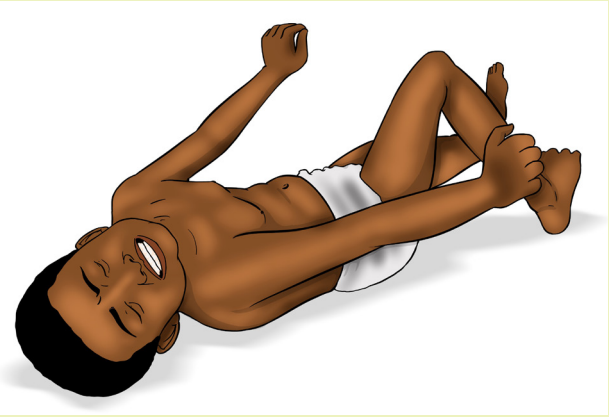
- Political leadership to ensure an enabling environment
- Strengthened health systems based on empowerment, recognized, motivated, supplied and supported frontline health workers
- Empowered communities that can hold systems accountable and utilize IMCI services

Self- assessment activity 6.2

1. Mention three components of IMCI Strategy.
2. Discuss the major determinants of effective implementation of IMCI.

6.3 Specific assessment of children under five years

Learning activity 6.3



Describe what you see on the picture above.

WHO have developed a series of IMCI charts which show the sequence of the steps and provide information that will help to apply IMCI case management guidelines according to the age of the child.

Describes how to assess and classify sick children so that signs of disease are not overlooked. According to the chart, you should ask the mother about the child's problem and check the child for general danger signs. Then ask about the four main symptoms: **cough** or **difficult breathing, diarrhea, fever** and **ear problem**. A child who has one or more of the main symptoms could have a serious illness. When a main symptom is present, ask additional questions to help classify the illness.

Check the child for malnutrition and anemia. Also check the child's **immunization status** and assess other problems the mother has mentioned.

6.3.1 Assess the child for danger signs

Record what the mother tells you about the child's problems by using good communication skills.

ASK THE MOTHER WHAT THE CHILD'S PROBLEMS ARE

- Determine if this is an initial or follow-up visit for this problem.
  - if follow-up visit, use the follow-up instructions on TREAT THE CHILD chart.
  - if initial visit, assess the child as follows:

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

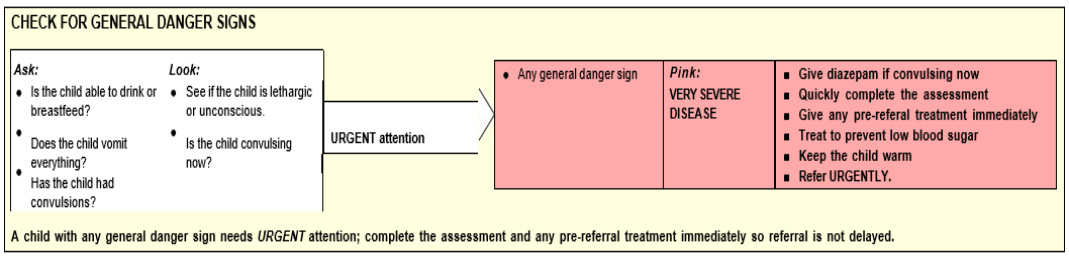


Table 6.1: Classification of danger signs in children

Check ALL sick children for general danger signs. A general danger sign is present if:

- the child is not able to drink or breastfeed
- the child vomits everything
- the child has had convulsions
- the child is lethargic or unconscious.

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 which may not be available in health center.

Complete the rest of the assessment immediately.

When you check for general danger signs:

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 she says 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 a drink of clean water or breastmilk. Look to see if the child is swallowing the water or breastmilk.

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 his nose is cleared, the child does not have the danger sign, "not able to drink or breastfeed."

ASK: Does the child vomit everything?

A child who is not able to hold anything down at all has the sign "vomits everything." What goes down comes back up. 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.

ASK: Has the child had convulsions?

Ask the mother if the child has had convulsions during this current illness.

LOOK: See if the child is lethargic or unconscious.

A lethargic child is not awake and alert when he should be. He 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.

Note: If the child is sleeping and has cough or difficult breathing, count the number of breaths first before you try to wake the child.

If the child has a general danger sign, complete the rest of the assessment **immediately**. This child has a severe problem. There must be no delay in his treatment.

6.3.2 Assess the child for main symptoms

Ask the mother about the four main symptoms: cough or difficulty in breathing, diarrhea, fever and ear problems.

a. COUGH OR DIFFICULT IN BREATHING

Respiratory infections can occur in any part of the respiratory tract such as the nose, throat, larynx, trachea, air passages or lungs. A child with cough or difficult breathing may have pneumonia or another severe respiratory infection. Pneumonia is an infection of the lungs. Both bacteria and viruses can cause pneumonia. In developing countries, pneumonia is often due to bacteria. The most common are Streptococcus pneumoniae and Hemophilus influenzae. Children with bacterial pneumonia may die from hypoxia (too little oxygen) or sepsis (generalized infection).

There are many children who come to the health center with less serious respiratory infections. Most children with cough or difficult breathing have only a mild infection. For example, a child who has a cold may cough because nasal discharge drips down the back of the throat. Or, the child may have a viral infection of the bronchi called bronchitis. These children are not seriously ill. They do not need treatment with antibiotics. Their families can treat them at home.

Health care providers need to identify the few, very sick children with cough or difficult breathing who need treatment with antibiotics. checking for these two clinical signs: **fast breathing** and **chest indrawing**.

When children develop pneumonia, their lungs become stiff. One of the body's responses to stiff lungs and hypoxia (too little oxygen) is fast breathing.

When the pneumonia becomes more severe, the lungs become even stiffer. Chest indrawing may develop. **Chest indrawing is a sign of severe pneumonia**.

ASSESS COUGH OR DIFFICULT BREATHING

A child with cough or difficult breathing is assessed for:

How long the child has had cough or difficult breathing?

- Fast breathing
- Chest indrawing
- Stridor in a calm child.

STEPS FOR ASSESSING A CHILD FOR COUGH OR DIFFICULT BREATHING

For ALL sick children, ask about cough or difficult breathing.

ASK: Does the child have cough or difficult breathing?

"Difficult breathing" is any unusual pattern of breathing. Mothers describe this in different ways. They may say that their child's breathing is "fast" or "noisy" or "interrupted."

If the mother answers NO, look to see if you think the child has cough or difficult breathing. If the child does not have cough or difficult breathing, ask about the next main symptom, diarrhea. Do not assess the child further for signs related to cough or difficult breathing.

If the mother answers YES, ask the next question.

ASK: For how long?

A child who has had cough or difficult breathing for more than 30 days has a chronic cough. This may be a sign of tuberculosis, asthma, whooping cough or another problem.

COUNT the breaths in one minute.

Normal breathing rates are higher in children age 2 months up to 12 months than in children age 12 months up to 5 years. For this reason, the cut-off for identifying fast breathing is higher in children 2 months up to 12 months than in children age 12 months up to 5 years.

If the child is:	The child has fast breathing if you count:
2 months up to 12 months: 12 months up to 5 years:	**50** breaths per minute or more **40** breaths per minute or more

Note: The child who is exactly 12 months old has fast breathing if you count 40 breaths per minute or more.

LOOK for chest indrawing.

For chest indrawing to be present, it must be clearly visible and present all the time. If you only see chest indrawing when the child is crying or feeding, the child does not have chest indrawing. Any chest indrawing, even if it is not severe, is an indicator of severe pneumonia in a child age 2 months up to 5 years.

LOOK and LISTEN for stridor.

Stridor is a harsh noise made when the child breathes IN. Stridor happens when there is a swelling of the larynx, trachea or epiglottis. This swelling interferes with air entering the lungs. It can be life-threatening when the swelling causes the child's airway to be blocked. A child who has stridor when calm has a dangerous condition.

To look and listen for stridor, look to see when the child breathes IN. Then listen for stridor. Put your ear near the child's mouth because stridor can be difficult to hear.

Sometimes you will hear a wet noise if the nose is blocked. Clear the nose, and listen again. A child who is not very ill may have stridor only when he is crying or upset. Be sure to look and listen for stridor when the child is calm.

You may hear a wheezing noise when the child breathes OUT. This is not stridor.

b. DIARRHEA

Diarrhea is passage of frequent loose or watery stools. Mothers usually know when their children have diarrhea. Diarrhea is common in children especially in those between 6 months and 2 years of age. It is more common in children under 6 months who are drinking cow's milk or infant feeding formulas more so if they are bottle-fed.

Frequent passing of normal stool is not diarrhea. The number of stools normally passed in a day varies with the diet and age of the child. In many regions' diarrhea is defined as 3 or more loose or watery stools in a 24-hour period.

What are the Types of Diarrhea?

Most diarrheas which cause dehydration are loose or watery. If an episode of diarrhea lasts less than 14 days, it is acute diarrhea. Acute watery diarrhea causes dehydration and contributes to malnutrition. The death of an infant with acute diarrhea is usually due to dehydration.

If the diarrhea lasts 14 days or more, it is persistent diarrhea. Up to 20% of episodes of diarrhea become persistent. Persistent diarrhea often causes nutritional problems and contributes to deaths in children.

Diarrhea with blood in the stool, with or without mucus, is called dysentery. The most common cause of dysentery is Shigella bacteria. Amoebic dysentery is not common in young children.

ASSESS DIARRHOEA

A child with diarrhea is assessed for:

- how long the child has had diarrhea
- blood in the stool to determine if the child has dysentery, and for
- signs of dehydration.

Ask about diarrhea in ALL children:

ASK: Does the child have diarrhea?

If the mother answers NO, ask about the next main symptom, fever. You do not need to assess the child further for signs related to diarrhea.

If the mother answers YES, or if the mother said earlier that diarrhea was the reason for coming to the clinic, record her answer. Then assess the child for signs of dehydration, persistent diarrhea and dysentery.

ASK: For how long?

Diarrhea which lasts **14 days or more** is persistent diarrhea. Give the mother time to answer the question. She may need time to recall the exact number of days.

ASK: Is there blood in the stool?

Ask the mother if she has seen blood in the stools at any time during this episode of diarrhea. Next, check for signs of **dehydration**.

LOOK and **FEEL** for the following signs:

LOOK at the child's general condition. Is the child lethargic or unconscious? restless and irritable?

When you checked for general danger signs, you checked to see if the child was Lethargic or **unconscious**. If the child is lethargic or unconscious, he has a general danger sign. Remember to use this general danger sign when you classify the child's diarrhea. Look to see if the child is restless and irritable.

LOOK for sunken eyes.

Note: In a severely malnourished child who is visibly wasted (that is, who has marasmus), the eyes may always look sunken, even if the child is not dehydrated. Even though sunken eyes is less reliable in a visibly wasted child, still use the sign to classify the child's dehydration.

OFFER the child fluid. Is the child not able to drink or drinking poorly? drinking eagerly, thirsty?

Ask the mother to offer the child some water in a cup or spoon. Watch the child drink.

A child is ***not able to drink*** if he is not able to suck or swallow when offered a drink. A child may not be able to drink because he is lethargic or unconscious.

A child is ***drinking poorly*** if the child is weak and cannot drink without help. He may be able to swallow only if fluid is put in his mouth.

A child has the sign ***drinking eagerly, thirsty*** if it is clear that the child wants to drink. Look to see if the child reaches out for the cup or spoon when you offer him water. When the water is taken away, see if the child is unhappy because he wants to drink more.

If the child takes a drink only with encouragement and does not want to drink more, he does not have the sign "drinking eagerly, thirsty."

PINCH the skin of the abdomen. Does it go back: Very slowly (longer than 2 seconds)? Slowly?

Note: In a child with marasmus (severe malnutrition), the skin may go back slowly even if the child is not dehydrated. In an overweight child, or a child with edema, the skin may go back immediately even if the child is dehydrated. Even though skin pinch is less reliable in these children, still use it to classify the child's dehydration.

c. FEVER

A child with fever may have malaria, measles or another severe disease. Or, a child with fever may have a simple cough or cold or other viral infection.

MALARIA

Malaria is caused by four species of plasmodia transmitted through the bite of a female anopheles' mosquitoes, the dangerous one being Plasmodium falciparum. The most common species is Plasmodium vivax. Fever is the main symptom of malaria. It can be present all the time or go away and return at regular intervals. Other signs of malaria are shivering, sweating and vomiting. Signs of malaria can overlap with signs of other illnesses. For example, a child may have malaria and cough with fast breathing, a sign of pneumonia. This child needs treatment for both falciparum malaria and pneumonia. Children with malaria may also have diarrhea. They need an antimalarial and treatment for the diarrhea.

In areas with very high malaria transmission, malaria is a major cause of death in children. A case of uncomplicated malaria can develop into severe malaria as soon as 24 hours after the fever first appears. Severe malaria is malaria with complications such as cerebral malaria or severe anemia. The child can die if he does not receive urgent treatment.

Deciding Malaria Risk: To classify and treat children with fever, you must know the malaria risk in your area. The National Anti-Malaria Program classifies areas as high or low malaria risk areas.

MEASLES: Fever and a generalized rash are the main signs of measles. Measles is highly infectious. Maternal antibody protects young infants against measles for about 6 months. Then the protection gradually disappears. Most cases occur in children between 6 months and 2 years of age. Overcrowding and poor housing increase the risk of measles occurring early.

Measles is caused by a virus. It infects the skin and the layer of cells that line the lung, gut, eye, mouth and throat. The measles virus damages the immune system for many weeks after the onset of measles. This leaves the child at risk for other infections.

Complications of measles occur in about 30% of all cases.

- diarrhea (including dysentery and persistent diarrhea)
- pneumonia
- stridor
- mouth ulcers
- ear infection and
- severe eye infection (which may lead to corneal ulceration and blindness).

Encephalitis occurs in about one in one thousand cases. A child with encephalitis may have general danger sign such as convulsions or lethargic or unconscious.

Measles contributes to malnutrition because it causes diarrhea, high fever and mouth ulcers. These problems interfere with feeding. Malnourished children are more likely to have severe complications due to measles. This is especially true for children who are deficient in vitamin A. One in ten severely malnourished children with measles may die. For this reason, it is very important to help the mother to continue to feed her child during measles.

ASSESS FEVER

Decide the malaria risk (high or low).

Then assess a child with fever for:

- how long the child has had fever
- history of measles
- stiff neck
- bulging fontanelle
- runny nose
- signs suggesting measles -- which are generalized rash and one of these: cough, runny nose, or red eyes.
- if the child has measles now or within the last 3 months, assess for signs of measles complications which are: mouth ulcers, pus draining from the eye and clouding of the cornea.

ASK: Does the child have fever?

Check to see if the child has a history of fever, feels hot or has a temperature of 37.5o or above.

The child has a history of fever if the child has had any fever with this illness. Use words for “fever” that the mother understands. Make sure the mother understands what fever is. For example, ask the mother if the child’s body has felt hot. Feel the child’s abdomen or axilla and determine if the child feels hot.

Look to see if the child’s temperature was measured today and recorded on the child’s chart. If the child has a temperature of 37.5oC or above, the child has fever. If the child’s temperature has not been measured, and you have a thermometer, measure the child’s temperature.

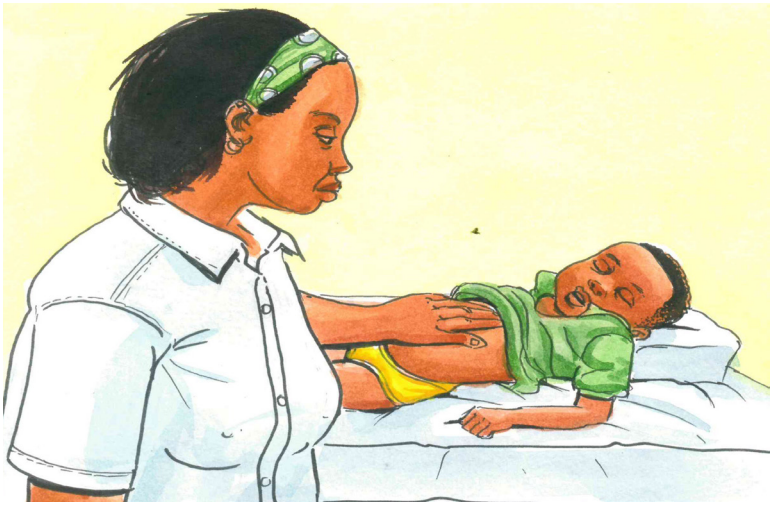


Figure 6.1: Checking for fever in children

If the child does not have fever (by history, feels hot or temperature 37.5oC or above), ask about the next main symptom, ear problem.

If the child has fever (by history, feels hot or temperature 37.5oC or above), assess the child for additional signs related to fever. Assess the child’s fever even if the child does not have a temperature of 37.5oC or above or does not feel hot now. History of fever is enough to assess the child for fever.

DECIDE Malaria Risk: high or low

Decide if the malaria risk is high or low. You will use this information when you classify the child’s fever.

ASK: For how long? If more than 7 days, has fever been present every day?

Ask the mother how long the child has had fever. If the fever has been present for more than 7 days, ask if the fever has been present every day.

Most fevers due to viral illnesses go away within a few days. A fever which has been present every day for more than 7 days can mean that the child has a more severe disease such as typhoid fever. Refer this child for further assessment.

ASK: Has the child had measles within the last 3 months?

Measles damages the child's immune system and leaves the child at risk for other infections for many weeks.

A child with fever and a history of measles within the last 3 months may have an infection due to complications of measles such as an eye infection.

LOOK or FEEL for stiff neck.

A child with fever and stiff neck may have meningitis. A child with meningitis needs urgent treatment with injectable antibiotics and referral to a hospital.

While you talk with the mother during the assessment, look to see if the child moves and bends his neck easily as he looks around. If the child is moving and bending his neck, he does not have a stiff neck.

Figure 6.2: Assessing for neck stiffness

If you did not see any movement, or if you are not sure, draw the child's attention to his umbilicus or toes. For example, you can shine a flashlight on his toes or umbilicus or tickle his toes to encourage the child to look down. Look to see if the child can bend his neck when he looks down at his umbilicus or toes.

If you still have not seen the child bend his neck himself, ask the mother to help you lie the child on his back. Lean over the child, gently support his back and shoulders with one hand. With the other hand, hold his head. Then carefully bend the head forward toward his chest. If the neck bends easily, the child does not have stiff neck. If the neck feels stiff and there is resistance to bending, the child has a stiff neck. Often a child with a stiff neck will cry when you try to bend the neck.

FEEL for bulging fontanelle

The fontanelle is open for most of the period of infancy before it is closed by the growth of the surrounding bones. If the fontanelle is open, feel for bulging fontanelle just as you did for young infants.

LOOK for runny nose.

A runny nose in a child with fever may mean that the child has a common cold. If the child has a runny nose, ask the mother if the child has had a runny nose only with this illness. If she is not sure, ask questions to find out if it is an acute or chronic runny nose.

When malaria risk is low, a child with fever and a runny nose does not need an antimalarial. This child's fever is probably due to the common cold.

LOOK for signs suggesting MEASLES.

Assess a child with fever to see if there are signs suggesting measles. Look for a generalized rash and for one of the following signs: cough, runny nose, or red eyes.

Generalized rash

In measles, a red rash begins behind the ears and on the neck. It spreads to the face. During the next day, the rash spreads to the rest of the body, arms and legs. After 4 to 5 days, the rash starts to fade and the skin may peel. Some children with severe infection may have more rash spread over more of the body. The rash becomes more discolored (dark brown or blackish), and there is more peeling of the skin.

A measles rash does not have vesicles (blisters) or pustules. The rash does not itch. Do not confuse measles with other common childhood rashes such as chicken pox, scabies or heat rash. (The chicken pox rash is a generalized rash with vesicles. Scabies occurs on the hands, feet, ankles, elbows, buttocks and axilla. It also itches. Heat rash can be a generalized rash with small bumps and vesicles which itch. A child with heat rash is not sick.) You can recognize measles more easily during times when other cases of measles are occurring in your community.

Cough, Runny Nose, or Red Eyes

To classify a child as having measles, the child with fever must have a generalized rash AND one of the following signs: cough, runny nose, or red eyes. The child has "red eyes" if there is redness in the white part of the eye. In a healthy eye, the white part of the eye is clearly white and not discolored.

If the child has MEASLES now or within the last 3 months: Look to see if the child has mouth or eye complications. Other complications of measles such as stridor in a calm child, pneumonia, and diarrhea are assessed earlier; malnutrition and ear infection are assessed later.

LOOK for mouth ulcers. Are they deep and extensive?

Look inside the child's mouth for mouth ulcers. Ulcers are painful open sores on the inside of the mouth and lips or the tongue. They may be red or have white coating on them. In severe cases, they are deep and extensive. When present, mouth ulcers make it difficult for the child with measles to drink or eat.

Mouth ulcers are different than the small spots called Koplik spots. Koplik spots occur in the mouth inside the cheek during early stages of the measles infection. Koplik spots are small, irregular, bright red spots with a white spot in the center. They do not interfere with drinking or eating. They do not need treatment.

LOOK for pus draining from the eye.

Pus draining from the eye is a sign of conjunctivitis. Conjunctivitis is an infection of the conjunctiva, the inside surface of the eyelid and the white part of the eye. If you do not see pus draining from the eye, look for pus on the conjunctiva or on the eyelids.

Often the pus forms a crust when the child is sleeping and seals the eye shut. It can be gently opened with clean hands. Wash your hands after examining the eye of any child with pus draining from the eye.

LOOK for clouding of the cornea.

The cornea is usually clear. When clouding of the cornea is present, there is a hazy area in the cornea. Look carefully at the cornea for clouding. The cornea may appear clouded or hazy. The clouding may occur in one or both eyes.

Corneal clouding is a dangerous condition. The corneal clouding may be due to vitamin A deficiency which has been made worse by measles. If the corneal clouding is not treated, the cornea can ulcerate and cause blindness. A child with clouding of the cornea needs urgent treatment with vitamin A.

A child with corneal clouding may keep his eyes tightly shut when exposed to light. The light may cause irritation and pain to the child's eyes. To check the child's eye, wait for the child to open his eye. Or, gently pull down the lower eyelid to look for clouding.

If there is clouding of the cornea, ask the mother how long the clouding has been present. If the mother is certain that clouding has been there for some time, ask if the clouding has already been assessed and treated at the hospital. If it has, you do not need to refer this child again for corneal clouding.

d. EAR PROBLEMS

A child with an ear problem may have an ear infection.

When a child has an ear infection, pus collects behind the ear drum and causes pain and often fever. If the infection is not treated, the ear drum may burst. The pus discharges, and the child feels less pain. The fever and other symptoms may stop, but the child suffers from poor hearing because the ear drum has a hole in it. Usually the ear drum heals by itself. At other times the discharge continues, the ear drum does not heal, and the child becomes deaf in that ear.

Sometimes the infection can spread from the ear to the bone behind the ear (the mastoid) causing mastoiditis. Infection can also spread from the ear to the brain causing meningitis. These are severe diseases. They need urgent attention and referral.

Ear infections rarely cause death. However, they cause many days of illness in children. Ear infections are the main cause of deafness in developing countries, and deafness causes learning problems in school. The **ASSESS & CLASSIFY** chart helps you identify ear problems due to ear infection.

ASSESS EAR PROBLEM

A child with ear problem is assessed for:

- ear pain
- ear discharge and
- if discharge is present, how long the child has had discharge, and
- tender swelling behind the ear, a sign of mastoiditis.

ASK: Does the child have an ear problem?

If the mother answers NO, record her answer. Do not assess the child for ear problem. Then check for malnutrition and anaemia.

If the mother answers YES, ask the next question:

ASK: Does the child have ear pain?

Ear pain can mean that the child has an ear infection. If the mother is not sure that the child has ear pain, ask if the child has been irritable and rubbing his ear.

ASK: Is there ear discharge? If yes, for how long?

Ear discharge is also a sign of infection. When asking about ear discharge, use words the mother understands.

If the child has had ear discharge, ask for how long. Give her time to answer the question. She may need to remember when the discharge started.

You will classify and treat the ear problem depending on how long the ear discharge has been present.

- An ear discharge that has been present for 2 weeks or more is treated as a chronic ear infection. An ear discharge that has been present for less than 2 weeks is treated as an acute ear infection.

You do not need more accurate information about how long the discharge has been present.

LOOK for pus draining from the ear.

Pus draining from the ear is a sign of infection, even if the child no longer has any pain. Look inside the child's ear to see if pus is draining from the ear.

FEEL for tender swelling behind the ear.

Feel behind both ears. Compare them and decide if there is tender swelling of the mastoid bone. In infants, the swelling may be above the ear.

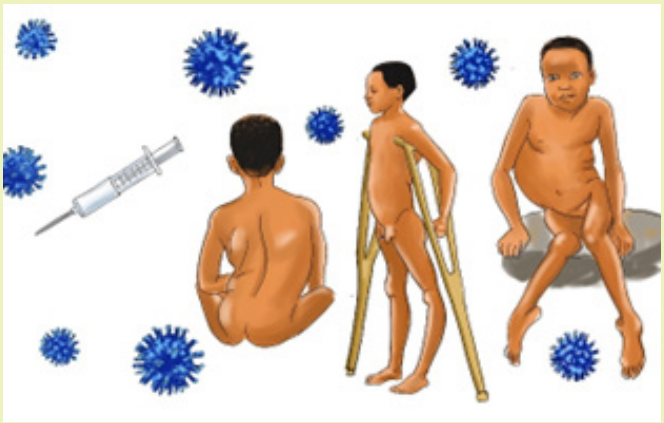
Both tenderness and swelling must be present to classify mastoiditis, a deep infection in the mastoid bone. Do not confuse this swelling of the bone with swollen lymph nodes.

Self- assessment activity 6.3

1. Enumerate three danger signs that a child may present using IMCI Strategy.
2. What are the four main symptoms assessed using IMCI Strategy?

6.4. General assessment of children under five years

Learning activity 6.4



Describe what you see on the picture above.

When the main symptom is present, assess the child further for signs related to main symptom and classify the illness according to the signs which are present or absent.

Check for signs of **malnutrition** and **anemia** and classify the child's nutritional status.

Check **HIV status** and classify, check the **child's immunization status** and decide if the child needs any immunizations and assess **any other problems**.

6.4.1 Check for malnutrition

Check all sick children for signs suggesting malnutrition.

A mother may bring her child to clinic because the child has an acute illness. The child maynot have specific complaints that point to malnutrition. A sick child can be malnourished, but the doctor or the child's family may not notice the problem.

A child with malnutrition has a higher risk of many types of disease and death. Even children with mild and moderate malnutrition have an increased risk of death.

Identifying children with malnutrition and treating them can help prevent many severe diseases and death. Some malnutrition cases can be treated at home. Severe cases needreferral to hospital for special feeding or specific treatment of a disease contributing to malnutrition (such as tuberculosis).

Causes of Malnutrition: There are several causes of malnutrition. They may vary from country to country. One type of malnutrition is **protein-energy malnutrition**. Protein-energy malnutrition develops when the child is not getting enough energy

or protein from his food to meet his nutritional needs. A child who has had frequent illnesses can also develop protein- energy malnutrition. The child's appetite decreases, and the food that the child eats is not used efficiently. When the child has protein-energy malnutrition:

- The child may become severely wasted, a sign of marasmus.
- The child may develop oedema, a sign of kwashiorkor.
- The child may not grow well and become stunted (too short).

A child whose **diet lacks recommended amounts of essential vitamins and minerals** can develop malnutrition. The child may not be eating enough of the recommended amounts of specific vitamins (such as vitamin A) or minerals (such as iron). Not eating foods that contain vitamin A can result in vitamin A deficiency. A child with vitamin A deficiency is at risk of death from measles and diarrhoea. The child is also at risk of blindness.

ASSESS FOR MALNUTRITION

LOOK for visible severe wasting.

A child with visible severe wasting has marasmus, a form of severe malnutrition. A child hasthis sign if he is very thin, has no fat, and looks like skin and bones. Some children are thin but do not have visible severe wasting.

To look for visible severe wasting, remove the child's clothes. Look for severe wasting of the muscles of the shoulders, arms, buttocks and legs. Look to see if the outline of the child's ribs is easily seen. Look at the child's hips. They may look small when you compare them with the chest and abdomen. Look at the child from the side to see if the fat of the buttocks is missing. When wasting is extreme, there are many folds of skin on the buttocks and thigh. It looks as if the child is wearing baggy pants.

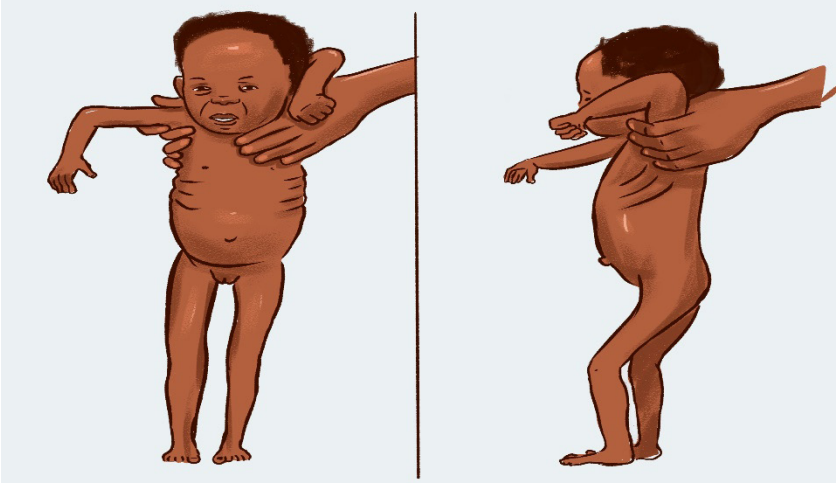


Figure 6.3: a child with severe wasting

The face of a child with visible severe wasting may still look normal. The child's abdomenmay be large or distended.

LOOK and FEEL for oedema of both feet

A child with oedema of both feet may have kwashiorkor, another form of severe malnutrition. Oedema is when an unusually large amount of fluid gathers in the child's tissues. The tissues become filled with the fluid and look swollen or puffed up.

Look and feel to determine if the child has oedema of both feet. Use your thumb to press gently for a few seconds on the top side of each foot. The child has oedema if a dent remainsin the child's foot when you lift your thumb.

Determine weight for age.

Determine the weight for age as you did for the young infant. See separate WHO growthcharts for boys and girls. Decide if the point is above, on, or below the bottom curve.

- If the point is below the bottom curve, the child is severely underweight for age.
- If the point is *above or on the -3 SD line (bottom line)*, the child is not severely underweight.
- If the point is above or on the bottom curve, but below -2 SD line, thechild is moderately underweight for age.
- Ifthe point is above or on the -2 SD line, the child is not moderately underweight.

EXAMPLE: A male child is 26 months old and weighs 8.0 kilograms. Determine the child's weight for age and plot on the growth chart. See the response on the chart below

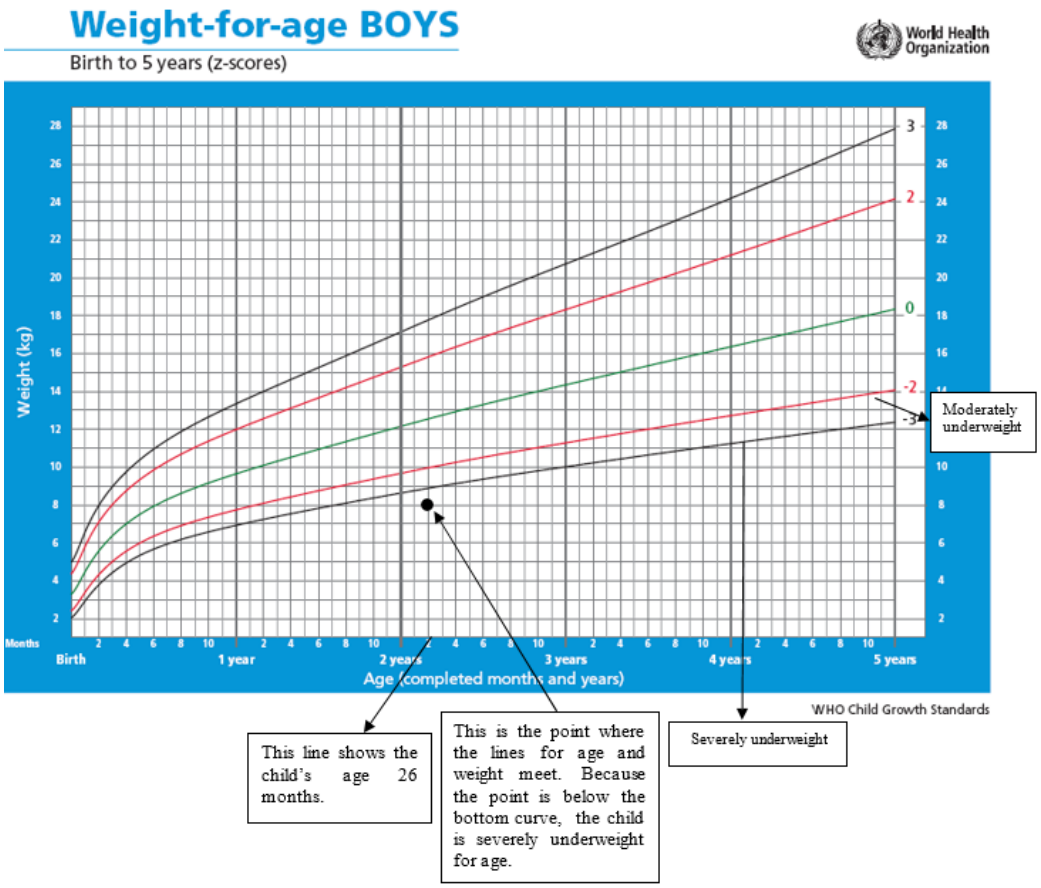


Figure 6.4: WHO weight for age chart

6.4.2 Check for anaemia

Check all sick children for signs suggesting anaemia.

A mother may bring her child to clinic because the child has an acute illness. The child may not have specific complaints that point to anaemia. Most children with anaemia can be treated at home. Severe cases need referral to hospital for blood transfusion.

Causes of Anaemia: Not eating foods rich in iron can lead to iron deficiency and **anaemia**. Anaemia is a reduced number of red cells or a reduced amount of haemoglobin in each red cell. A child can also develop anaemia as a result of:

- Infections
- Parasites such as hookworm or whipworm. They can cause blood loss from the gut and lead to anaemia.
- Malaria which can destroy red cells rapidly. Children can develop anaemia if they have had repeated episodes of malaria or if the malaria was inadequately treated.

The anaemia may develop slowly. Often, anaemia in these children is due to both malnutrition and malaria.

ASSESS FOR ANAEMIA

Here is the box from the "Assess" column on the *ASSESS & CLASSIFY* chart. It describes how to assess a child for malnutrition and anaemia.

LOOK for palmar pallor.

Pallor is unusual paleness of the skin. It is a sign of anaemia.

To see if the child has palmar pallor, look at the skin of the child's palm. Hold the child's palm open by grasping it gently from the side. Do not stretch the fingers backwards. This may cause pallor by blocking the blood supply.

6.4.3 Check the child's immunization, prophylactic vitamin a & iron-folic acid supplementation status

Immunization, prophylactic vitamin A and iron-folic acid supplementation status should beassessed in ALL sick children.

CHECK THE CHILD'S IMMUNIZATION STATUS

Check the immunization status for ALL sick children. Have they received all the immunizations recommended for their age? Do they need any immunizations today?

Use the National Recommended Immunization Schedule when you check the child's immunization status. Look at the *ASSESS & CLASSIFY* chart and locate the recommended immunization schedule. Refer to it as you read how to check a child's immunization status.

THEN CHECK THE CHILD'S IMMUNIZATION STATUS:			
VACCINE	**AGE AND INTERVAL**	**TOTAL DOSES**	**SITE & ROUTE**
BCG	Birth	1	0.05 ml Intradermal, external upper arm
OPV	Birth, 6, 10, 14 weeks	4	2 oral drops
Parenteral polio vaccine	14 weeks	1	0.5 ml IM
DPT or DTP-HEPB-Hib	6, 10, 14 weeks	3	IM
Pneumococcal conjugate vaccine	6, 10, 14 weeks	3	0.5 ml IM on vastus lateralis
Rotavirus vaccine	6, 10, 14 weeks	3	oral
Vitamin A	6 months	1	100000 IU oral
Rotavirus vaccine	6, 10, 14 weeks	3	oral
Measles-rubella (MR Vaccine)	9 months,15 months	2	0.5 ml subcutaneous right arm

Table 6.2: Immunization schedule

Give the recommended vaccine when the child is the appropriate age for each dose. All children should receive all the recommended immunizations before their first birthday. If the child does not come for an immunization at the recommended age, give the necessary immunizations any time after the child reaches that age. Give the remaining doses at least 4 weeks apart. You do not need to repeat the whole schedule.

CHECK THE CHILD'S PROPHYLACTIC VITAMIN A SUPPLEMENTATION STATUS

Vitamin A is an essential micronutrient and is necessary for vision, integrity of membrane structures, the normal functioning of body cells, growth and development. A child with vitamin A deficiency is at a risk of death from measles and diarrhea. The child is also at risk of blindness. The National Vitamin A Prophylaxis Program recommends 9 doses of vitamin A at 9, 18, 24, 30, 36, 42, 48, 54 and 60 months of age.

PROPHYLACTIC VITAMIN A	Give a single dose of vitamin A: • 100,000 IU at 9 months with measles immunization • 200,000 IU at 16-18 months with DPT Booster • 200,000 IU at 24 months, 30 months, 36 months, 42 months, 48 months, 54 months and 60 months.

Give the recommended dose of vitamin A when the child is the appropriate age for each dose. In case a child more than 9 months of age has not received a dose of vitamin A in last 6 months, give a dose as per the dosage schedule according to age of the child.

CHECK THE CHILD'S PROPHYLACTIC IRON-FOLIC ACID SUPPLEMENTATION STATUS

Anaemia is a reduced number of red cells or a reduced amount of haemoglobin in each red cell. Not eating foods rich in iron can lead to iron deficiency and anaemia. A child can also develop anaemia as a result of various systemic infections, malaria, or infestation with hookworm or whipworm. Prophylactic supplementation of iron folic acid for 100 days in ayear is recommended under the National Anaemia Prophylaxis Programme.

6.4.4 Assess children for HIV

HIV testing is RECOMMENDED for all children with unknown HIV status especially those to HIV-positive mothers.

6.4.5 Assess other problems

Since the ASSESS & CLASSIFY chart does not address all of a sick child's problems, you will now assess other problems the mother told you about. For example, she may have said the child has a skin infection, itching or swollen neck glands. Or you may have observed another problem during the assessment. Identify and treat any other problems according to your training, experience and clinic policy. Refer the child for any other problem you cannot manage in clinic.

MAKE SURE CHILD WITH ANY GENERAL DANGER SIGN IS REFERRED after first dose of an appropriate antibiotic and other urgent treatments.

EXCEPTION: Rehydration of the child according to Plan C may resolve danger signs so that referral is no longer needed.

This note reminds you that a child with any general danger sign needs urgent treatment and referral. It is possible, though uncommon, that a child may have a general danger sign, but may not have a severe classification for any of the main symptoms.

Self-assessment 6.4

1. If a child has pallor of the palms when performing your assessment, what does it indicate.
2. In a table format, describe the Rwanda national immunisation calendar.

6.5 Assessment of children aged below 2 months

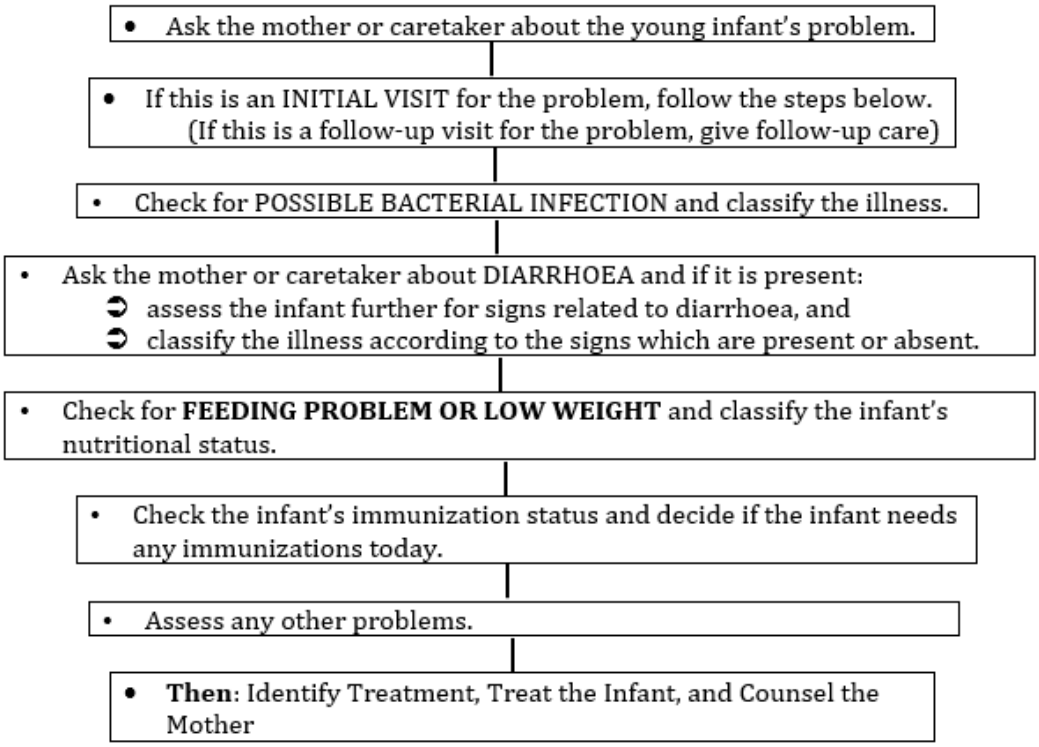
Learning activity 6.5

A 20 days' sick infant is brought to the health post by her mother complaining for inability to breastfeed and change of the infant's skin colour. From your previous knowledge and experiences, what questions would you ask the mother to explore more the problem?

For all sick young infants aged below 2 months, they must be checked for possible bacterial infection/jaundice, feeding problems, immunization status and verify if the infant has diarrhea. Mothers are to be taught how to keep their infant warm, teach correct position and encourage for exclusive breastfeeding, advise on home care of young infant, recognition of illness in newborn, appropriate referral, and advice mother to return immediately if danger signs present.

Ask the mother what the young infant's problems are. Determine if this is an initial or follow-up visit for these problems. If this is a follow-up visit, you should manage the infant according to the special instructions for a follow-up visit as found in IMCI charts of assessment and management.

SUMMARY OF "ASSESS AND CLASSIFY"



Young infants have special characteristics that must be considered when classifying their illnesses. They can become sick and die very quickly from serious bacterial infections. They frequently have only general signs such as few movements, fever, or low body temperature. Mild chest indrawing is normal in young infants because their chest wall is soft.

The chart is not used for a sick newborn, that is a young infant who is less than 1 week of age. In the first week of life, newborn infants are often sick from conditions related to labour and delivery, or have conditions which require special management. Newborns may be suffering from asphyxia, sepsis from premature ruptured membranes or other intrauterine infection, or birth trauma. Or they may have trouble breathing due to immature lungs. Jaundice also requires special management in the first week of life. For all these reasons, management of a sick newborn is somewhat different from caring for a young infant age 1 week up to 2 months.

The steps for assessing and caring for a sick young infant are:

- Check for signs of possible bacterial infection. Then classify the young infant based on the clinical signs found.

- Ask about diarrhoea. If the infant has diarrhoea, assess for related signs. Classify the young infant for dehydration. Also classify for persistent diarrhoea and dysentery if present.
- Check for feeding problem or low weight. This may include assessing breastfeeding. Then classify feeding.
- Check the young infant's immunization status.
- Assess any other problems.

If you find a reason that a young infant needs urgent referral, you should continue the assessment.

6.5.1. How to check a young infant for possible bacterial infection

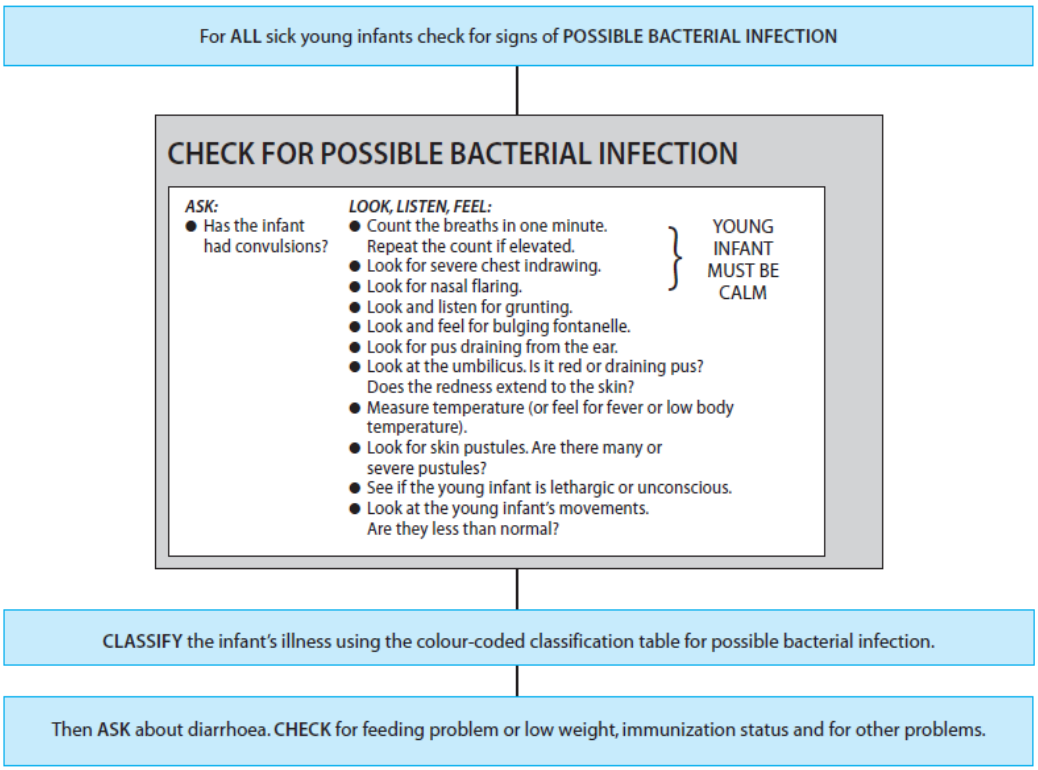


Table 6.5: Checking for bacterial infection in children

This assessment step is done for ***every*** sick young infant. In this step you are looking for signs of bacterial infection, especially a serious infection. A young infant can become sick and die very quickly from serious bacterial infections such as pneumonia, sepsis and meningitis.

It is important to assess the signs in the order on the chart, and to keep the young infant calm. The young infant must be calm and may be asleep while you assess the first four signs, that is, count breathing and look for chest indrawing, nasal flaring and grunting.

To assess the next few signs, you will pick up the infant and then undress him, look at the skin all over his body and measure his temperature. By this time, he will probably be awake. Then you can see if he is lethargic or unconscious and observe his movements.

Check for possible bacterial infection in **ALL** young infants.

ASK: HAS THE INFANT HAD CONVULSIONS?

Ask the mother this question.

LOOK: COUNT THE BREATHS IN ONE MINUTE. REPEAT THE COUNT IF ELEVATED

Count the breathing rate as you would in an older infant or young child. Young infants usually breathe faster than older infants and young children. The breathing rate of a healthy young infant is commonly more than 50 breaths per minute. Therefore, 60 breaths per minute or more is the cut off used to identify fast breathing in a young infant.

If the first count is 60 breaths or more, repeat the count. This is important because the breathing rate of a young infant is often irregular. The young infant will occasionally stop breathing for a few seconds, followed by a period of faster breathing. If the second count is also 60 breaths or more, the young infant has fast breathing.

LOOK FOR SEVERE CHEST INDRAWING

Look for chest indrawing as you would look for chest indrawing in an older infant or young child. However, mild chest indrawing is normal in a young infant because the chest wall is soft. Severe chest indrawing is very deep and easy to see. Severe chest indrawing is a sign of pneumonia and is serious in a young infant.

LOOK FOR NASAL FLARING

Nasal flaring is widening of the nostrils when the young infant breathes in.

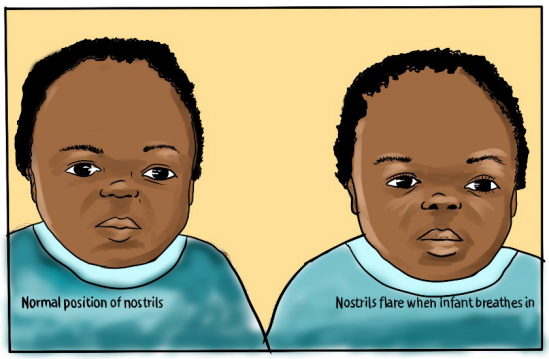


Figure 6.6: Picture showing a normal child and a child with nasal flaring

LOOK AND LISTEN FOR GRUNTING

Grunting is the soft, short sounds a young infant makes when breathing out. Grunting occurs when an infant is having trouble breathing.

LOOK AND FEEL FOR BULGING FONTANELLE

The fontanelle is the soft spot on the top of the young infant's head, where the bones of the head have not formed completely. Hold the young infant in an upright position. The infant must not be crying. Then look at and feel the fontanelle. If the fontanelle is bulging rather than flat, this may mean the young infant has meningitis.

LOOK FOR PUS DRAINING FROM THE EAR

Pus draining from the ear is a sign of infection. Look inside the infant's ear to see if pus is draining from the ear.

LOOK AT THE UMBILICUS—IS IT RED OR DRAINING PUS? DOES THE REDNESS EXTEND TO THE SKIN?

There may be some redness of the end of the umbilicus or the umbilicus may be draining pus. (The cord usually drops from the umbilicus by one week of age.) How far down the umbilicus the redness extends determines the severity of the infection? If the redness extends to the skin of the abdominal wall, it is a serious infection.

FEEL: MEASURE TEMPERATURE (OR FEEL FOR FEVER OR LOW BODY TEMPERATURE)

Fever (axillary temperature more than 37.5 °C or rectal temperature more than 38 °C) is uncommon in the first two months of life. If a young infant has fever, this may mean the infant has a serious bacterial infection. In addition, fever may be the only sign of a serious bacterial infection. Young infants can also respond to infection by dropping their body temperature to below 35.5 °C (36 °C rectal temperature). Low body temperature is called hypothermia. If you do not have a thermometer, feel the infant's stomach or axilla (underarm) and determine if it feels hot or unusually cool.

LOOK FOR SKIN PUSTULES. ARE THERE MANY OR SEVERE PUSTULES?

Examine the skin on the entire body. Skin pustules are red spots or blisters that contain pus. If you see pustules, is it just a few pustules or are there many? A severe pustule is large or has redness extending beyond the pustule. Many or severe pustules indicate a serious infection.

LOOK: SEE IF THE YOUNG INFANT IS LETHARGIC OR UNCONSCIOUS

Young infants often sleep most of the time, and this is not a sign of illness. Even when awake, a healthy young infant will usually not watch his mother and a health worker while they talk, as an older infant or young child would.

A lethargic young infant is not awake and alert when he should be. He may be drowsy and may not stay awake after a disturbance. If a young infant does not wake up during the assessment, ask the mother to wake him. Look to see if the child wakens when the mother talks or gently shakes the child or when you clap your hands. See if he stays awake.

An unconscious young infant cannot be wakened at all. He does not respond when he is touched or spoken to.

LOOK AT THE YOUNG INFANT'S MOVEMENTS. ARE THEY LESS THAN NORMAL?

A young infant who is awake will normally move his arms or legs or turn his head several times in a minute if you watch him closely. Observe the infant's movements while you do the assessment.

6.5.2. How to classify possible bacterial infection

Classify all sick young infants for bacterial infection. Compare the infant's signs to signs listed on the color-coded table and choose the appropriate classification. There are two possible classifications for bacterial infection: POSSIBLE SERIOUS BACTERIAL INFECTION and LOCAL BACTERIAL INFECTION.

SIGNS	CLASSIFY AS	IDENTIFY TREATMENT (Urgent pre-referral treatments are in bold print.)
• Convulsions or • Fast breathing (60 breaths per minute or more) or • Severe chest indrawing or • Nasal flaring or • Grunting or • Bulging fontanelle or • Pus draining from ear or • Umbilical redness extending to the skin or • Fever (37.5 ℃* or above or feels hot) or low body temperature (less than 35.5 ℃* or feels cold) or • Many or severe skin pustules or • Lethargic or unconscious or • Less than normal movement.	POSSIBLE SERIOUS BACTERIAL INFECTION	➤ **Give first dose of intramuscular antibiotics.** ➤ **Treat to prevent low blood sugar.** ➤ **Advise mother how to keep the infant warm on the way to hospital.** ➤ **Refer URGENTLY to hospital**
• Red umbilicus or draining pus or • Skin pustules.	LOCAL BACTERIAL INFECTION	➤ **Give an appropriate oral antibiotic.** ➤ **Teach the mother to treat local infections at home.** ➤ **Advise mother to give home care for the young infant.** ➤ **Follow-up in 2 days.**

Table 6.3: Classification of possible bacterial infection

Self-assessment 6.5

Compare and show in a tabulated format the signs of a serious bacterial infections and local bacterial infection in sick children below 2 months and propose the appropriate treatment using IMCI strategy.

6.6. Assessment of children aged from 2 months to 5 years

Learning activity 6.6

A 48 months old child was admitted to the hospital for having bacterial infection. He looks to be afraid of facility's environment and healthcare team. What strategies will the nurse use to get permission from the child and administer injectable medication as prescribed?

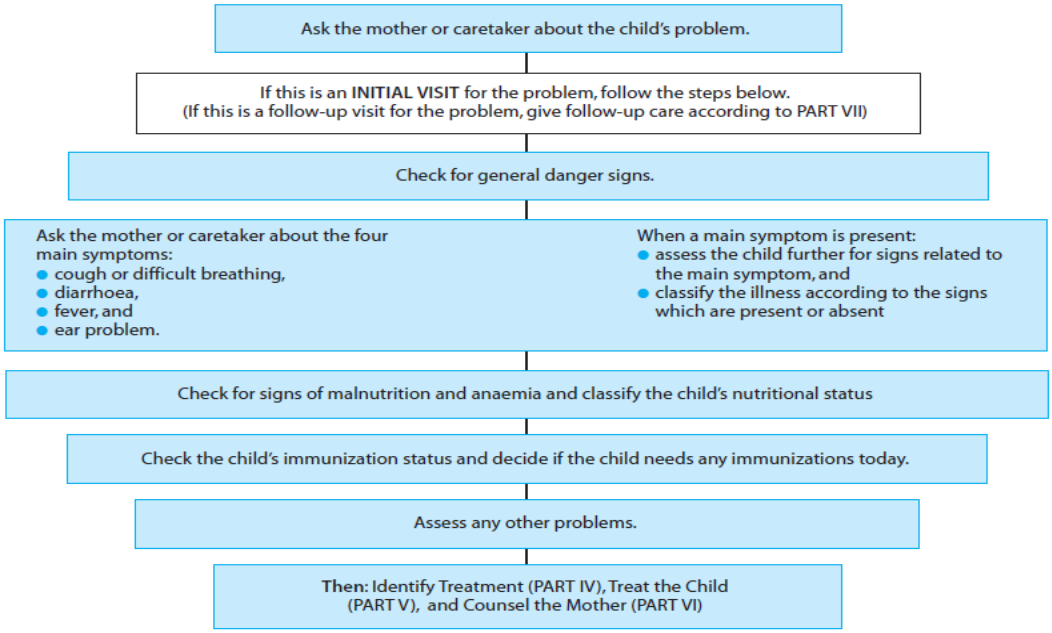
A mother or other caretaker brings a sick child to the clinic for a particular problem or symptom. If you only assess the child for that particular problem or symptom, you might overlook other signs of disease. The child might have pneumonia, diarrhoea, malaria, measles, or malnutrition. These diseases can cause death or disability in young children if they are not treated.

There should be recognition of illness and risk, prevention and management of iron and vitamin A deficiency, counselling on feeding for all children under 2 years and counselling on feeding for malnourished children.

The chart *ASSESS AND CLASSIFY THE SICK CHILD AGE 2 MONTHS UP TO 5 YEARS* describes how to assess and classify sick children so that signs of disease are not overlooked. The chart then helps you to identify the appropriate treatments for each classification. According to the chart, you should ask the mother about the child's problem and check the child for general danger signs. Then ask about the four main symptoms: cough or difficult breathing, diarrhoea, fever and ear problem.

A child who has one or more of the main symptoms could have a serious illness. When a main symptom is present, ask additional questions to help classify the illness and identify appropriate treatment(s). Check the child for malnutrition and anaemia. Also check the child's immunization status and assess other problems that the mother has mentioned. The next several chapters will describe these activities.

SUMMARY OF "ASSESS AND CLASSIFY"



For every child that is brought to the clinic:

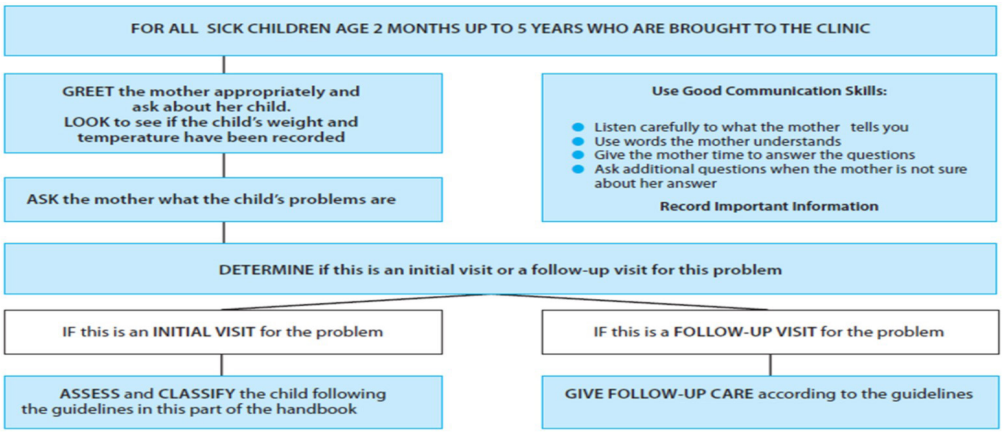


Table 6.4: Summary of assess and classify

SUMMARY ON EFFECTIVE COMMUNICATION FOR SICK CHILDREN

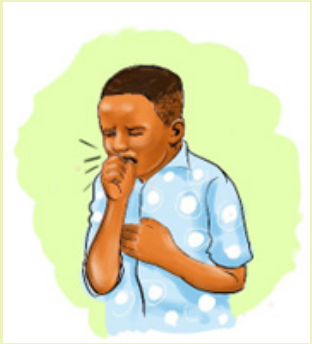
- Active listening
- Empathizing with the child's point of view
- Developing trusting relationships
- Understanding non-verbal communication
- Building rapport
- Explaining, summarizing and providing information
- Giving feedback in clear way
- Understanding and explaining the boundaries of confidentiality

Self-assessment 6.6

What are key points to consider for effective communication when caring for sick children.

6.7. Management of the child with COUGH OR DIFFICULT BREATHING using IMCI strategy

Learning activity 6.7



Describe what you see on the picture.

CLASSIFY COUGH OR DIFFICULT BREATHING

There are three possible classifications for a child with cough or difficult breathing. They are:

- Severe pneumonia or very severe disease or
- Pneumonia or
- No pneumonia: cough or cold

DESCRIPTION OF EACH CLASSIFICATION FOR COUGH OR DIFFICULT BREATHING.

- **Severe pneumonia or very severe disease**

A child with cough or difficult breathing and with any of the following signs: any general danger sign, chest indrawing or stridor in a calm child -- **is classified as having SEVERE PNEUMONIA OR VERY SEVERE DISEASE.**

A child with chest indrawing usually has severe pneumonia. Or the child may have anotherserious acute lower respiratory infection such as bronchiolitis, pertussis, or a wheezing problem. Chest indrawing develops when the lungs become stiff. The effort the child needs to breathein is much greater than normal.

A child with chest indrawing has a higher risk of death from pneumonia than the child who has fast breathing and no chest indrawing. If the child is tired, and if the effort the child needs to expand the stiff lungs is too great, the child's breathing slows down. Therefore, a child with chest indrawing may not have fast breathing. Chest indrawing may be the child's only sign of severe pneumonia.

Treatment

In developing countries, bacteria cause most cases of pneumonia. These cases need treatment with antibiotics. Viruses also cause pneumonia. But there is no reliable way to find out if the child has bacterial pneumonia or viral pneumonia. Therefore, whenever a childshows signs of pneumonia, give the child an appropriate antibiotic.

A child classified as having SEVERE PNEUMONIA OR VERY SEVERE DISEASE is seriously ill. He needs urgent referral to a hospital for treatments such as oxygen, a bronchodilator or injectable antibiotics. Before the child leaves your clinic, give the firstdose of injectable chloramphenicol (if not possible give oral amoxicillin). The antibiotichelps prevent severe pneumonia from becoming worse. It also helps treat other serious bacterial infections such as sepsis or meningitis.

- **Pneumonia**

A child with cough or difficult breathing who has fast breathing and no general danger signs,no chest indrawing and no stridor when calm is classified as having PNEUMONIA.

Treatment

Treat PNEUMONIA with oral amoxycillin. If amoxycillin is not available give oral cotrimoxazole. Show the mother how to give the antibiotic. Advise her when to return forfollow-up and when to return immediately.

- **No pneumonia: cough or cold**

A child with cough or difficult breathing who has no general danger signs, no chest indrawing, no stridor when calm and no fast breathing is classified as having NO PNEUMONIA: COUGH OR COLD.

Treatment

A child with **NO PNEUMONIA: COUGH OR COLD** does not need an antibiotic. The antibiotic will not relieve the child's symptoms. It will not prevent the cold from developing into pneumonia. But the mother brought her child to the clinic because she is concerned about her child's illness. Give the mother advice about good home care. Teach her to soothe the throat and relieve the cough with a safe remedy such as warm tea with sugar. Advise the mother to watch for fast or difficult breathing and to return if either one develops.

A child with a cold normally improves in one to two weeks. However, a child who has a chronic cough (a cough lasting more than 30 days) may have tuberculosis, asthma, whooping cough or another problem.

THEN ASK ABOUT MAIN SYMPTOMS:
Does the child have cough or difficult breathing?

If yes, ask:	*Look, listen, feel*:*	*Classify COUGH or DIFFICULT BREATHING*		
• For how long?	• Count the breaths in one minute. • Look for chest indrawing. • Look and listen for stridor. • Look and listen for wheezing. CHILD MUST BE CALM **If wheezing with either fast breathing or chest indrawing:** Give a trial of rapid acting inhaled bronchodilator for up to three times 15-20 minutes apart. Count the breaths and look for chest indrawing again, and then classify.			
If the child is:	*Fast breathing is:*			
2 months up to 12 months	50 breaths per minute or more			
12 Months up to 5 years	40 breaths per minute or more			
		• Any general danger sign or • Stridor in calm child.	*Pink:* SEVERE PNEUMONIA OR VERY SEVERE DISEASE	▪ **Give first dose of an appropriate antibiotic** ▪ **Refer URGENTLY to hospital****
		• Chest indrawing or • Fast breathing.	*Yellow:* PNEUMONIA	▪ **Give oral Amoxicillin for 5 days***** ▪ If wheezing (or disappeared after rapidly acting bronchodilator) give an inhaled bronchodilator for 5 days**** ▪ If chest indrawing in HIV exposed/infected child, give first dose of amoxicillin and refer. ▪ Soothe the throat and relieve the cough with a safe remedy ▪ If coughing for more than 14 days or recurrent wheeze, refer for possible TB or asthma assessment ▪ Advise mother when to return immediately ▪ Follow-up in 3 days
		• No signs of pneumonia or very severe disease.	*Green:* COUGH OR COLD	▪ If wheezing (or disappeared after rapidly acting bronchodilator) give an inhaled bronchodilator for 5 days**** ▪ Soothe the throat and relieve the cough with a safe remedy ▪ If coughing for more than 14 days or recurrent wheezing, refer for possible TB or asthma assessment ▪ Advise mother when to return immediately ▪ Follow-up in 5 days if not improving

**If pulse oximeter is available, determine oxygen saturation and refer if < 90%.*
*** If referral is not possible, manage the child as described in the pneumonia section of the national referral guidelines or as in WHO Pocket Book for hospital care for children.*
****Oral Amoxicillin for 3 days could be used in patients with fast breathing but no chest indrawing in low HIV settings.*
***** In settings where inhaled bronchodilator is not available, oral salbutamol may be tried but not recommended for treatement of severe acute wheeze.*

Table 6.5: Classification of cough or difficult breathing

Self-assessment 6.7

You receive a 46 months old child in consultation at the health center with cough for the past 4 days. On assessment, you notice a respiratory rate of 42 breaths per minute with chest indrawing and fast breathing but blood smear shows HIV negative. Please make a classification of this child and identify related management basing on IMCI strategy.

6.8 Management of the child with DIARRHEA using IMCI strategy

Learning activity 6.8

a. Describewhat you see on the picture above.
b. What are the dangers of drinking from an open tap.

There are three classification tables for classifying diarrhea.

- All children with diarrhea are classified for dehydration.
- If the child has had diarrhea for 14 days or more, classify the child for persistent diarrhea.
- If the child has blood in the stool, classify the child for dysentery.

STEPS FOR ASSESSING A CHILD WITH DIARRHEA

Classify dehydration

There are three possible classifications of dehydration in a child with diarrhea:

- severe dehydration
- some dehydration
- no dehydration

To classify the child's dehydration, begin with the red (or top) row.

If **two** or more of the signs in the red row are present, classify the child as having SEVERE DEHYDRATION.

If **two** or more of the signs are not present in the red row, look at the yellow (or middle) row. If two or more of the signs are present in the yellow row, classify the child as having SOME DEHYDRATION.

If **two** or more of the signs are not present in the red row or yellow row, classify the child as having NO DEHYDRATION. This child does not have enough signs to be classified as having SEVERE/ SOME DEHYDRATION. Some of these children may have one sign of dehydration or have lost fluids without showing signs.

Here is a description of each classification for dehydration:

SEVERE DEHYDRATION

If the child has two of the following signs: **lethargic** or **unconscious, sunken eyes, not able to drink or drinking poorly, skin pinch goes back very slowly**, classify the dehydration as SEVERE DEHYDRATION.

Treatment

Any child with dehydration needs extra fluids. A child classified with SEVERE DEHYDRATION needs fluids quickly. Treat with IV (intravenous) fluids.

SOME DEHYDRATION

If the child does not have signs of SEVERE DEHYDRATION, Does the child have signs of SOME DEHYDRATION?

If the child has two or more of the following signs: **restless/ irritable, sunken eyes, drinks eagerly, thirsty, skin pinch goes back slowly** then classify the child's dehydration as SOME DEHYDRATION.

Treatment

A child who has SOME DEHYDRATION needs fluid and foods. Treat the child with ORS solution. In addition to fluid, the child with SOME DEHYDRATION needs food. Breastfed children should continue breastfeeding. Other children should receive their usual milk or some nutritious food after 4 hours of treatment with ORS. Children with some dehydration are also given daily dose of zinc supplement for 14 days. Zinc shouldbe given as soon as the child can eat and has successfully completed 4 hours of rehydration.

NO DEHYDRATION

A child who does not have two or more signs in either the red or yellow row is classified ashaving NO DEHYDRATION.

Treatment

This child needs extra fluid to prevent dehydration. A child who has NO DEHYDRATION needs home treatment. The 3 rules of home treatment are:

1. Give extra fluid
2. Give zinc supplement daily for 14 days. The first tablet should be given in the health center, demonstrating to the mother how to dissolve it in water or breastmilk, if necessary.

3. Continue feeding
4. When to return.

“Plan A: Treat Diarrhea at Home” describes what fluids to teach the mother to use and how much she should give. A child with NO DEHYDRATION also needs zinc supplement, food and the mother needs advice about when to return to the clinic. Feeding recommendations and information about when to return are on the chart *COUNSEL THE MOTHER*.

CLASSIFY PERSISTENT DIARRHOEA

After you classify the child’s dehydration, classify the child for persistent diarrhea if thechild has had diarrhea for 14 days or more.

There are two classifications for persistent diarrhea:

- Severe persistent diarrhea
- Persistent diarrhea

SEVERE PERSISTENT DIARRHOEA

If a child has had diarrhea for 14 days or more and also has some or severe dehydration, classify the child’s illness as **SEVERE PERSISTENT DIARRHOEA**.

Treatment

Children with diarrhea lasting 14 days or more who are also dehydrated need referral to hospital. These children need special attention to help prevent loss of fluid. They may alsoneed a change in diet. They may need laboratory tests of stool samples to identify the cause of the diarrhea. Treat the child’s dehydration before referral unless the child has another severe classification.Treatment of dehydration in children with severe disease can be difficult. These children should be treated in a hospital.

PERSISTENT DIARRHOEA

A child who has had diarrhea for 14 days or more and who has no signs of dehydration isclassified as having PERSISTENT DIARRHOEA.

Treatment

Special feeding is the most important treatment for persistent diarrhea. Children with persistent diarrhea are also given single dose of vitamin A and a daily dose of zinc sulphate for 14 days.

CLASSIFY DYSENTERY

There is only one classification for dysentery: Classify a child with **diarrhea** and **blood** in the stool as having **DYSENTERY**.

Treatment

Treat the child's dehydration. Also give ciprofloxacin for Shigella because:

- *Shigella* cause about 60% of dysentery cases seen in clinics.
- *Shigella* cause nearly all cases of life-threatening dysentery.

Finding the actual cause of the dysentery requires a stool culture. It can take at least 2 days to obtain the laboratory test results.

Does the child have diarrhoea?

If yes, ask:
- For how long?
- Is there blood in the stool?

Look and feel:
- Look at the child's general condition. Is the child:
  - Lethargic or unconscious?
  - Restless and irritable?
- Look for sunken eyes.
- Offer the child fluid. Is the child:
  - Not able to drink or drinking poorly?
  - Drinking eagerly, thirsty?
- Pinch the skin of the abdomen. Does it go back:
  - Very slowly (longer than 2 seconds)?
  - Slowly?

Classify DIARRHOEA

for DEHYDRATION	Two of the following signs: • Lethargic or unconscious • Sunken eyes • Not able to drink or drinking poorly • Skin pinch goes back very slowly.	***Pink:*** **SEVERE DEHYDRATION**	▪ If child has no other severe classification: Give fluid for severe dehydration (Plan C) OR **If child also has another severe classification: Refer URGENTLY to hospital with mother giving frequent sips of ORS on the way Advise the mother to continue breastfeeding** ▪ **If child is 2 years or older and there is cholera in your area, give antibiotic for cholera**
	Two of the following signs: • Restless, irritable • Sunken eyes • Drinks eagerly, thirsty • Skin pinch goes back slowly.	***Yellow:*** **SOME DEHYDRATION**	▪ Give fluid, zinc supplements, and food for some dehydration (Plan B) ▪ **If child also has a severe classification: Refer URGENTLY to hospital with mother giving frequent sips of ORS on the way Advise the mother to continue breastfeeding** ▪ Advise mother when to return immediately ▪ Follow-up in 5 days if not improving
	Not enough signs to classify as some or severe dehydration.	***Green:*** **NO DEHYDRATION**	▪ Give fluid, zinc supplements, and food to treat diarrhoea at home (Plan A) ▪ Advise mother when to return immediately ▪ Follow-up in 5 days if not improving
and if diarrhoea 14 days or more	• Dehydration present.	***Pink:*** **SEVERE PERSISTENT DIARRHOEA**	▪ Treat dehydration before referral unless the child has another severe classification ▪ Refer to hospital
	• No dehydration.	***Yellow:*** **PERSISTENT DIARRHOEA**	▪ Advise the mother on feeding a child who has PERSISTENT DIARRHOEA ▪ Give multivitamins and minerals (including zinc) for 14 days ▪ Follow-up in 5 days
and if blood in stool	• Blood in the stool.	***Yellow:*** **DYSENTERY**	▪ **Give ciprofloxacin for 3 days** ▪ Follow-up in 3 days

Table 6.6: Classification of diarrhea

Self-assessment 6.8

A mother brought a 36 months old child to the health post complaining of diarrhea since the last 15 days. You make an assessment and do not notice any danger sign or sign of dehydration. Asking for the history, blood was not reported to be in the stool. Classify and identify appropriate management of this child using IMCI strategy.

6.9 Management of the child with FEVER using IMCI strategy

Learning activity 6.9

- Describe what you see on the picture above.
- With your experience in previous clinical placement, what is the range of normal temperature for children.

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

If the child has signs of both fever and measles, classify the child for fever and for measles.

There are two fever classification tables on the ASSESS & CLASSIFY chart. One is for classifying fever when the risk of malaria is high. The other is for classifying fever when the risk of malaria is low. To classify fever, you must know if the malaria risk is high or low.

Then you select the appropriate classification table.

HIGH MALARIA RISK:

There are two possible classifications of fever when the malaria risk is high.

- very severe febrile disease
- malaria

VERY SEVERE FEBRILE DISEASE *(High Malaria Risk)*

If the child with fever has any general danger sign, bulging fontanelle or a stiff neck, classify the child as having VERY SEVERE FEBRILE DISEASE.

Treatment

A child with fever and any general danger sign or stiff neck may have meningitis, severe malaria (including cerebral malaria) or sepsis. It is not possible to distinguish between these severe diseases without laboratory tests. A child classified as having VERY SEVERE FEBRILE DISEASE needs urgent treatment and referral. Before referring urgently, you will give several treatments for the possible severe diseases.

Give the child an injection of quinine for malaria after RDT/ making a blood smear. Also give first dose of injectable chloramphenicol (If not possible give oral amoxycillin) for meningitis or other severe bacterial infection. You should also treat the child to prevent low blood sugar. Also give paracetamol if there is a high fever.

MALARIA *(High Malaria Risk)*

If a general danger sign or stiff neck is not present, look at the yellow row. Because the child has a fever (by history, feels hot, or temperature 37.5oC or above) in a high malaria risk area, classify the child as having MALARIA.

When the risk of malaria is high, the chance is also high that the child's fever is due to malaria.

Treatment

Give Oral antimalarials for high malaria risk areas according to the National Anti-Malaria Program policy.

- If smear or RDT is positive for **P. falciparum** give Artesunate, Sulpha- pyrimethamine, and Primaquine on day 1; and Artesunate on Day 2 and Day 3.
- If smear is positive for **P. vivax** give chloroquine for 3 days and primaquine for 14 days.
- If both RDT and blood smear is **negative** or not available, give chloroquine for 3 days.

Give paracetamol to a child with high fever (axillary temperature of 38.5oC or above). Most viral infections last less than a week. A fever that persists every day for more than 7 days may be a sign of typhoid fever or other severe disease. If the child's fever has persisted every day for more than 7 days, refer the child for additional assessment.

FOR LOW MALARIA RISK

If risk of malaria in your area is low, use the Low Malaria Risk classification table. There are three possible classifications of fever in a child with low malaria risk.

- Very severe febrile disease
- Malaria
- Fever - malaria unlikely

VERY SEVERE FEBRILE DISEASE *(Low Malaria Risk)*

If the child with fever has any general danger sign, bulging fontanelle or a stiff neck, classify the child as having VERY SEVERE FEBRILE DISEASE.

Treatment

Manage the child on the same lines as VERY SEVERE FEBRILE DISEASE in High Malaria Risk areas.

MALARIA *(Low Malaria Risk)*

If a general danger sign or stiff neck or bulging fontanelle is not present, look at the yellow row. If there is no runny nose, no measles and no other cause of fever (pneumonia, cough or cold, dysentery, diarrhea, skin infection) in a low malaria risk area, classify the child as having MALARIA.

Treatment

Give oral antimalarials for low malaria risk areas according to the National Anti-Malaria Program policy.

- If smear is positive for **P. falciparum** with Chloroquine and Primaquine on day 1 and Chloroquine alone on Day 2 and Day 3.
- If smear is positive for **P. vivax** give Chloroquine for 3 days along with Primaquine for 14 days.
- If smear is **negative** or not available, give chloroquine for 3 days.

Give one dose of paracetamol in clinic for high fever (temperature 38.5°C or above).

FEVER-MALARIA UNLIKELY *(Low Malaria Risk)*

If a general danger sign or stiff neck or bulging fontanelle is not present, and Runny nose or Measles or Other cause of fever is PRESENT in a low malaria risk area, classify the child as having FEVER - MALARIA UNLIKELY.

Treatment

Give one dose of paracetamol in clinic for high fever (temperature 38.5°C or above), and 3 additional doses for use at home for high fever. If fever is present every day for more than 7 days, refer for assessment.

CLASSIFY MEASLES

A child who has the main symptom “fever” and measles now (or within the last 3 months) is classified both for fever and for measles. First you must classify the child’s fever. Next you classify measles.

If the child has no signs suggesting measles, or has not had measles within the last three months, do not classify measles. Ask about the next main symptom, ear problem.

There are three possible classifications of measles:

- severe complicated measles
- measles with eye or mouth complications
- measles

The table for classifying measles if present now or within the last 3 months is shown as follows:

SEVERE COMPLICATED MEASLES

If the child has any general danger sign, clouding of cornea, or deep or extensive mouth ulcers, classify the child as having SEVERE COMPLICATED MEASLES. This child needs urgent treatment and referral to hospital.

Children with measles may have other serious complications of measles. These include stridor in a calm child, severe pneumonia, severe dehydration, or severe malnutrition. You assess and classify these signs in other parts of the assessment. Their treatments are appropriate for the child with measles.

Treatment

Some complications are due to bacterial infections. Others are due to the measles virus which causes damage to the respiratory and intestinal tracts. Vitamin A deficiency contributes to some of the complications such as corneal ulcer. Any vitamin A deficiency is made worse by the measles infection. Measles complications can lead to severe disease and death.

All children with SEVERE COMPLICATED MEASLES should receive urgent treatment. Treat the child with first dose of vitamin A. Also give the first dose of injectable chloramphenicol (if not possible give oral amoxycillin) before referring the child.

If there is clouding of the cornea, or pus draining from the eye, apply tetracycline ointment. If it is not treated, corneal clouding can result in blindness. Ask the mother if the clouding has been present for some time. Find out if it was assessed and treated at the hospital. If it was, you do not need to refer the child again for this eye sign.

MEASLES WITH EYE OR MOUTH COMPLICATIONS

If the child has pus draining from the eye or mouth ulcers which are not deep or extensive, classify the child as having MEASLES WITH EYE OR MOUTH COMPLICATIONS. A child with this classification does not need referral.

You assess and classify the child for other complications of measles (pneumonia, diarrhea, ear infection and malnutrition) in other parts of this assessment. Their treatments are appropriate for the child with measles.

Treatment

Identifying and treating measles complications early in the infection can prevent many deaths. Give two doses of Vitamin A (Give first dose in clinic and give mother one dose to give at home the next day.). It will help correct any vitamin A deficiency and decrease the severity of the complications. Teach the mother to treat the child's eye infection or mouth ulcers at home. Treating mouth ulcers helps the child to more quickly resume normal feeding.

MEASLES

A child with measles now or within the last 3 months and with none of the complications listed in the pink or yellow rows is classified as having MEASLES. Give the child vitamin A to help prevent measles complications.

All children with measles should receive two doses of Vitamin A

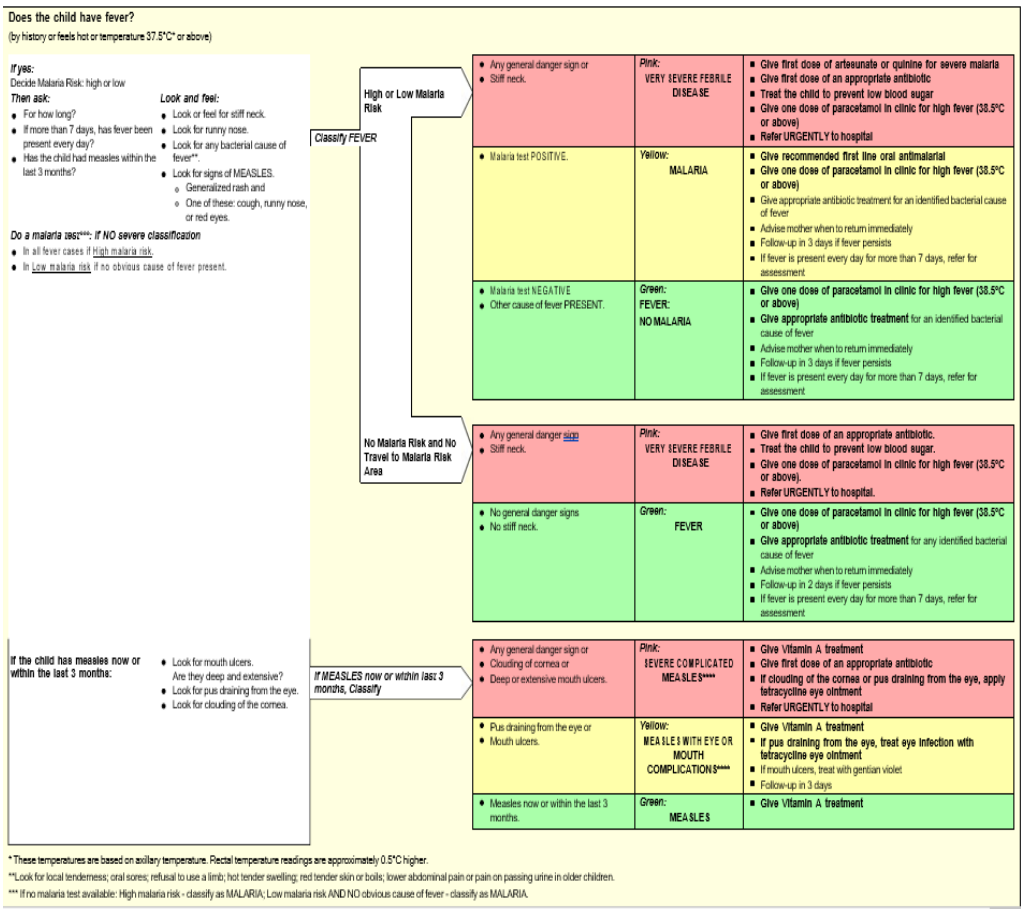


Table 6.7: Classification of fever

Self-assessment 6.9

A 6 months old infant was brought to the consultation by her mother complaining of hot skin on touch and crying through the last night. She also added that his brother recovered from malaria 2 weeks ago. On assessment, the child has a temperature of 38.5°C. A negative test of malaria was confirmed. Classify and identify the appropriate management of this child using IMCI strategy.

6.10 Management of the child with EAR PROBLEM using IMCI strategy

Learning activity 6.10

A child of 24 months was brought by his mother in consultation complaining of the child crying persistently throughout the night. On examination you discovered that there was a pus discharge from ear, and swollen behind the ear with pain to touch.

As a student in senior six, what can you do to assist this child.

There are four classifications for ear problem:

- mastoiditis
- acute ear infection
- chronic ear infection
- no ear infection

MASTOIDITIS

If a child has tender swelling behind the ear, classify the child as having MASTOIDITIS.

Treatment

Refer urgently to hospital. This child needs treatment with injectable antibiotics. He may also need surgery. Before the child leaves for hospital, give the first dose of injectable chloramphenicol (if not possible, give oral amoxycillin). Also give one dose of paracetamol if the child is in pain.

ACUTE EAR INFECTION

If you see pus draining from the ear and discharge has been present for less than two weeks, or if there is ear pain, classify the child's illness as ACUTE EAR INFECTION.

Treatment

A child with an ACUTE EAR INFECTION should be given oral amoxycillin for 5 days. If amoxycillin is not available give cotrimoxazole for 5 days. Antibiotics for treating pneumonia are effective against the bacteria that cause most ear infections. Give paracetamol to relieve the ear pain (or high fever). If pus is draining from the ear, dry the ear by wicking.

CHRONIC EAR INFECTION

If you see pus draining from the ear and discharge has been present for two weeks or more, classify the child's illness as CHRONIC EAR INFECTION.

Treatment

Most bacteria that cause CHRONIC EAR INFECTION are different from those which cause acute ear infections. For this reason, oral antibiotics are not usually effective against chronic infections. Do not give repeated courses of antibiotics for a draining ear.

The most important and effective treatment for CHRONIC EAR INFECTION is to keep the ear dry by wicking. Teach the mother how to dry the ear by wicking. Also give topical quinolone ear drops for two weeks.

NO EAR INFECTION

If there is no ear pain and no pus is seen draining from the ear, the child's illness is classified as NO EAR INFECTION. The child needs no additional treatment.

Does the child have an ear problem?

If yes, ask:	*Look and feel:*	*Classify EAR PROBLEM*		
• Is there ear pain? • Is there ear discharge? If yes, for how long?	• Look for pus draining from the ear. • Feel for tender swelling behind the ear.	• Tender swelling behind the ear.	*Pink:* MASTOIDITIS	▪ Give first dose of an appropriate antibiotic ▪ Give first dose of paracetamol for pain ▪ Refer URGENTLY to hospital
		• Pus is seen draining from the ear and discharge is reported for less than 14 days, or • Ear pain.	*Yellow:* ACUTE EAR INFECTION	▪ Give an antibiotic for 5 days ▪ Give paracetamol for pain ▪ Dry the ear by wicking ▪ Follow-up in 5 days
		• Pus is seen draining from the ear and discharge is reported for 14 days or more.	*Yellow:* CHRONIC EAR INFECTION	▪ Dry the ear by wicking ▪ Treat with topical quinolone eardrops for 14 days ▪ Follow-up in 5 days
		• No ear pain and No pus seen draining from the ear.	*Green:* NO EAR INFECTION	▪ No treatment

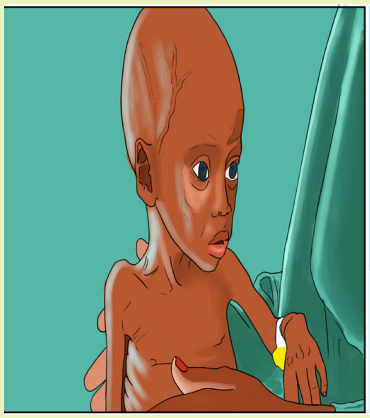
Table 6.8: Classification of ear problem

Self-assessment 6.10

A child of 24 months was received in consultation complaining of crying guarding the left side of jaw and pus discharge from the left side of the ear for 8 days. Classify and identify the treatment for this child using IMCI strategy.

6.11 Management of the child with NUTRITIONAL PROBLEM AND ANEMIA using IMCI strategy

Learning activity 6.11



Using your knowledge and skills from previous units covered, list the physical characteristics of what you see on the picture above.

CLASSIFY NUTRITIONAL STATUS

There are three classifications for a child's nutritional status. They are:

- Severe malnutrition
- Very low weight
- Not very low weight

SEVERE MALNUTRITION

If the child has visible severe wasting or oedema of both feet, classify the child as having SEVERE MALNUTRITION

Treatment

Children classified as having SEVERE MALNUTRITION are at risk of death from pneumonia, diarrhoea, measles, and other severe diseases. These children need urgent referral to hospital where their treatment can be carefully monitored. They may need special feeding and antibiotics. Before the child leaves for hospital, give the child a single dose of vitamin A. Prevent low blood sugar, while referral is being organized initiate active treatment for hypothermia and keep the child warm on the way to hospital.

VERY LOW WEIGHT

If the child is severely underweight for age, classify the child as having VERY LOW WEIGHT

Treatment

A child classified as having VERY LOW WEIGHT has a higher risk of severe disease. Assess the child's feeding and counsel the mother about feeding her child according to the recommendations in the FOOD box on the COUNSEL THE MOTHER chart.

Advise the mother to return for follow-up in 1 month.

NOT VERY LOW WEIGHT

If the child is Not Severely Underweight, classify the child as having NOT VERY LOW WEIGHT.

Treatment

If the child is less than 2 years of age, assess the child's feeding. Counsel the mother about feeding her child according to the recommendations in the FOOD box on the COUNSEL THE MOTHER chart. Children less than 2 years of age have a higher risk of feeding problems and malnutrition than older children.

THEN CHECK FOR ACUTE MALNUTRITION

CHECK FOR ACUTE MALNUTRITION

LOOK AND FEEL:

Look for signs of acute malnutrition

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

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

- Check for any medical complication present:
  - Any general danger signs
  - Any severe classification
  - Pneumonia with chest indrawing
- If no medical complications present:
  - Child is 6 months or older, offer RUTF*** to eat. Is the child:

    Not able to finish RUTF portion?

    Able to finish RUTF portion?
  - Child is less than 6 months, assess breastfeeding:

    Does the child have a breastfeeding problem?

Classify NUTRITIONAL STATUS

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

*WFH/L is Weight-for-Height or Weight-for-Length determined by using the WHO growth standards charts.

** MUAC is Mid-Upper Arm Circumference measured using MUAC tape in all children 6 months or older.

***RUTF is Ready-to-Use Therapeutic Food for conducting the appetite test and feeding children with severe acute malnutrition.

Table 6.9: Classification of acute malnutrition

CLASSIFY ANAEMIA

There are three classifications for a child's anaemia. They are:

- Severe anaemia
- Anaemia
- No anaemia

SEVERE ANAEMIA

If the child has severe palmar pallor, classify the child as having SEVERE ANAEMIA

Treatment

Children classified as having SEVERE ANAEMIA are at risk of death due to chronic hypoxaemia or congestive cardiac failure. These children need urgent referral to hospital because they may need blood transfusions and their treatment can be carefully monitored.

ANAEMIA

If the child has some palmar pallor, classify the child as having ANAEMIA.

Treatment

A child with some palmar pallor may have anaemia. Treat the child with iron folic acid. Advise the mother to return for follow-up in 14 days.

NO ANAEMIA

If the child has no palmar pallor, classify the child as having NO ANAEMIA.

Treatment

Give prophylactic iron folic acid for a total of 100 days in a year after a child has recovered from acute illness, if child is 6 months of age or older and has not received prophylactic iron folic acid for 100 days in last one year.

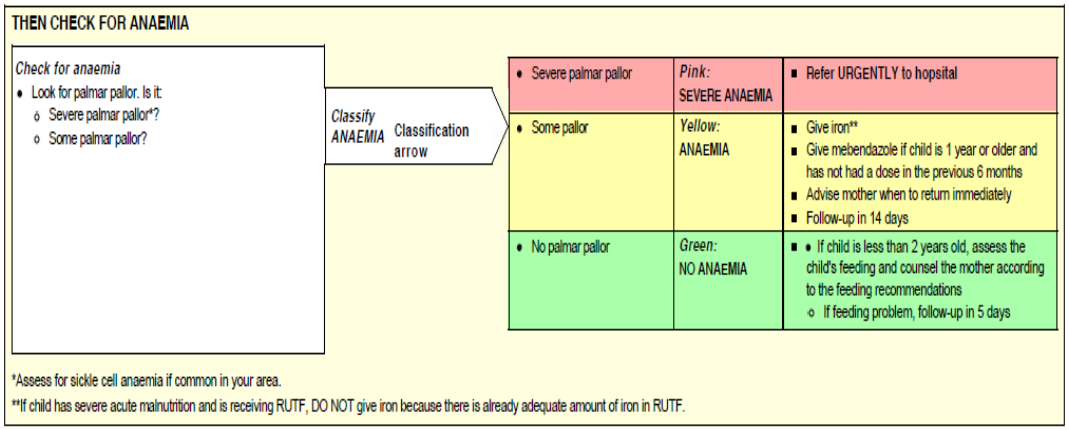


Table 6.10: Classification of anemia

Self-assessment 6.11

You receive a 40 months old child in consultation presenting some pallor in the palm of arms. No danger signs or any other abnormality is found. Classify and identify the treatment for this child using IMCI strategy.

6.12 Management of the child with HIV using IMCI strategy

Learning activity 6.12

What are the most common Sexually Transmitted Infections that a mother may transmit to the unborn fetus?

Types of HIV Tests		
	What does the test detect?	**How to interpret the test?**
SEROLOGICAL TESTS (Including rapid tests)	• These tests detect antibodies made by immune cells in response to HIV. • They do not detect the HIV virus itself.	• HIV antibodies pass from the mother to the child. Most antibodies have gone by 12 months of age, but in some instances, they do not disappear until the child is 18 months of age.

		• This means that a positive serological test in children less than 18 months in NOT a reliable way to check for infection of the child.
VIROLOGICAL TESTS (Including DNA or RNA PCR)	These tests directly detect the presence of the HIV virus or products of the virus in the blood.	• Positive virological (PCR) tests reliably detect HIV infection at any age, even before the child is 18 months old. • If the tests are negative and the child has been breastfeeding, this does not rule out infection. The baby may have just become infected.

Table 6.11: Types of HIV tests

For HIV exposed children 18 months or older, a positive HIV antibody test result means the child is infected.

For HIV exposed children less than 18 months of age:

- If PCR or other virological test is available, test from 4 - 6 weeks of age.
  - A positive result means the child is infected.
  - A negative result means the child is not infected, but could become infected if they are still breast feeding.
- If PCR or other virological test is not available, use HIV antibody test. A positive result is consistent with the fact that the child has been exposed to HIV, but does not tell us if the child is definitely infected.

Interpreting the HIV Antibody Test Results in a Child less than 18 Months of Age		
Breastfeeding status	**POSITIVE (+) test**	**NEGATIVE (-) test**
NOT BREASTFEEDING, and has not in last 6 weeks	HIV EXPOSED and/or HIV infected - Manage as if they could be infected. Repeat test at 18 months.	HIV negative Child is not HIV infected

BREASTFEEDING	HIV EXPOSED and/or HIV infected - Manage as if they could be infected. Repeat test at 18 months or once breastfeeding has been discontinued for more than 6 weeks.	Child can still be infected by breastfeeding. Repeat test once breastfeeding has been discontinued for more than 6 weeks.

Table 6.12: Interpretation of HIV tests

THEN CHECK FOR HIV INFECTION

Use this chart if the child is NOT enrolled in HIV care.

ASK

Has the mother or child had an HIV test?

IF YES:

Decide HIV status:

- Mother: POSITIVE or NEGATIVE
- Child:
  - Virological test POSITIVE or NEGATIVE
  - Serological test POSITIVE or NEGATIVE

If mother is HIV positive and child is negative or unknown, ASK:

- Was the child breastfeeding at the time or 6 weeks before the test?
- Is the child breastfeeding now?
- If breastfeeding ASK: Is the mother and child on ARV prophylaxis?

IF NO, THEN TEST:

- Mother and child status unknown: TEST mother.
- Mother HIV positive and child status unknown: TEST child.

Classify HIV status

• Positive virological test in child OR • Positive serological test in a child 18 months or older	***Yellow:*** CONFIRMED HIV INFECTION	▪ **Initiate ART treatment and HIV care** ▪ **Give cotrimoxazole prophylaxis*** ▪ Assess the child's feeding and provide appropriate counselling to the mother ▪ Advise the mother on home care ▪ Asess or refer for TB assessment and INH preventive therapy ▪ Follow-up regularly as per national guidelines
• Mother HIV-positive AND negative virological test in a breastfeeding child or only stopped less than 6 weeks ago OR • Mother HIV-positive, child not yet tested OR • Positive serological test in a child less than 18 months old	***Yellow:*** HIV EXPOSED	▪ **Give cotrimoxazole prophylaxis** ▪ **Start or continue ARV prophylaxis as recommended** ▪ Do virological test to confirm HIV status** ▪ Assess the child's feeding and provide appropriate counselling to the mother ▪ Advise the mother on home care ▪ Follow-up regularly as per national guidelines
• Negative HIV test in mother or child	***Green:*** HIV INFECTION UNLIKELY	▪ Treat, counsel and follow-up existing infections

* Give cotrimoxazole prophylaxis to all HIV infected and HIV-exposed children utill confirmed negative after cessation of breastfeeding.

** If virological test is negative, repeat test 6 weeks after the breatfeeding has stopped; if serological test is positive, do a virological test as soon as possible.

Table 6.13: Classification of HIV

Self-assessment 6.12

Describe the classification of HIV status using IMCI strategy

6.13 Follow up care using IMCI strategy

Learning activity 6.13

Following a nursing intervention for a sick child, it is important to assess the progress of the treatment given. Discuss its related rationale.

At a follow-up visit you can see if the child is improving on the drug or other treatment that was prescribed:

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

PNEUMONIA

After 3 days:

Check the child for general danger signs.
Assess the child for cough or difficult breathing.
Ask:

- Is the child breathing slower?
- Is there a chest indrawing?
- Is there less fever?
- Is the child eating better?

} See *ASSESS & CLASSIFY* chart.

Treatment:

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

PERSISTENT DIARRHOEA

After 5 days:
Ask:

- Has the diarrhoea stopped?
- How many loose stools is the child having per day?

Treatment:

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

DYSENTERY

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

Ask:

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

Treatment:

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

Exceptions - if the child:

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

} REFER to hospital.

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

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

MALARIA

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

Treatment:

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

FEVER: NO MALARIA

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

Treatment:

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

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

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

Treatment for eye infection:

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

Treatment for mouth ulcers:

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

Treatment for thrush:

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

EAR INFECTION

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

Treatment:

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

FEEDING PROBLEM

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

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

ANAEMIA

After 14 days:

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

UNCOMPLICATED SEVERE ACUTE MALNUTRITION

After 14 days or during regular follow up:

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

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

Check for oedema of both feet.

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

Treatment:

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

MODERATE ACUTE MALNUTRITION

After 30 days:

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

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

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

Treatment:

- If the child is no longer classified as MODERATE ACUTE MALNUTRITION, praise the mother and encourage her to continue.
- If the child is still classified as MODERATE ACUTE MALNUTRITION, counsel the mother about any feeding problem found. Ask the mother to return again in one month. Continue to see the child monthly until the child is feeding well and gaining weight regularly or his or her WFH/L is -2 z-scores or more or MUAC is 125 mm. or more.

Exception:

If you do not think that feeding will improve, or if the child has lost weight or his or her MUAC has diminished, refer the child.

HIV EXPOSED

Follow up regularly as per national guidelines.

At each follow-up visit follow these instructions:

- Ask the mother: Does the child have any problems?
- Do a full assessment including checking for mouth or gum problems, treat, counsel and follow up any new problem
- Provide routine child health care: Vitamin A, deworming, immunization, and feeding assessment and counselling
- Continue cotrimoxazole prophylaxis
- Continue ARV prophylaxis if ARV drugs and breastfeeding are recommended; check adherence: How often, if ever, does the child/mother miss a dose?
- Ask about the mother's health. Provide HIV counselling and testing and referral if necessary
- Plan for the next follow-up visit

HIV testing:

- If new HIV test result became available since the last visit, reclassify the child for HIV according to the test result.
- Recheck child's HIV status six weeks after cessation of breastfeeding. Reclassify the child according to the test result.

If child is confirmed HIV infected

- Start on ART and enrol in chronic HIV care.
- Continue follow-up as for CONFIRMED HIV INFECTION ON ART

If child is confirmed uninfected

- Continue with co-trimoxazole prophylaxis if breastfeeding or stop if the test resuls are after 6 weeks of cessation of breastfeeding.
- Counsel mother on preventing HIV infection through breastfeeding and about her own health

CONFIRMED HIV INFECTION NOT ON ART

Follow up regularly as per national guidelines.

At each follow-up visit follow these instructions:

- Ask the mother: Does the child have any problems?
- Do a full assessment including checking for mouth or gum problems, treat, counsel and follow up any new problem
- Counsel and check if mother able or willing now to initiate ART for the child.
- Provide routine child health care: Vitamin A, deworming, immunization, and feeding assessment and counselling
- Continue cotrimoxazole prophylaxis if indicated.
- Initiate or continue isoniazid preventive therapy if indicated.
- If no acute illness and mother is willing, initiate ART (See Box Steps when Initiating ART in children)
- Monitor CD4 count and percentage.
- Ask about the mother's health, provide HIV counselling and testing.
- Home care:
  - Counsel the mother about any new or continuing problems
  - If appropriate, put the family in touch with organizations or people who could provide support
  - Advise the mother about hygiene in the home, in particular when preparing food
- Plan for the next follow-up visit

Self-assessment 6.13

Explain the follow up care of a child that visited the health center 3 days ago suffering from pneumonia.

End unit assessment

1. What is the importance of IMCI?
2. List danger signs that should be assessed in children following IMCI strategy.
3. Enumerate main symptoms of pediatric illness following IMCI strategy.
4. Mention three signs that indicate a child with protein energy malnutrition.
5. A father brought a child of 20 months at health center, whose mother died while giving birth to baby, the baby has been given cow milk from birth because their social economic status did not allow them to buy formula for baby, the baby does not like to eat and is still taking cow milk. The father mentioned also that the baby had malaria when he was 7 months, 11 months and 2 weeks ago he had another episode of malaria. The baby is now very weak, has skin pallor.

   a. What would be the problem of the child?

   b. What are possible causes?

6. A mother brings her child to the health center complaining that the child has been passing loose watery stools with no blood stains for the past 10 days, the physical assessment the child looks weak with sunken eyes and shows signs of dehydration.

   a. What are the common ways that infants may get diarrhea?

   b. judge what a child with diarrhea may be assessed

   c. how would you classify this type of diarrhea?

7. What signs will you based on to classify a child as having severe pneumonia or very severe disease?
8. What signs will you based on to diagnose severe dehydration in children? describe the treatment that will be provided to the child
9. What are the four main classifications of ear problem in children
10. Explain how a child with dysentery may be classified
11. Describe how to identify severe wasting in an infant
12. Mention the complications that a child with vitamin A deficiency may develop.

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