Maternity Nursing

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MATERNITY
NURSING

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PREFACE

This *Maternity Nursing* teaching material was prepared for the Indonesian National Qualifications Framework (NQF) and the 2022 Applied Undergraduate Curriculum of the Ministry of Health's Polytechnic of Health. The material presented in this teaching material refers to the Learning Outcomes in the Maternity Nursing Course, which includes: 1) Basic concepts of maternity nursing; 2) Trends, issues, and evidence-based practice of maternity nursing; 3) Nursing care for pregnant women; 4) Intra-natal nursing care; 5) Newborn nursing care; 6) Postnatal nursing care; and 7) Family planning and reproductive health.

This teaching material is organized into seven chapters, where you have to start reading this teaching material sequentially from Chapter 1 to Chapter 7. Chapter 1 will be your basis for studying the next chapter. In each chapter, the material that should be known to students will be described, which is described in the learning objectives. To ensure you understand the material, this teaching material provides practice questions.

The systematics of writing in each chapter consists of: 1) Introduction, 2) Keywords, 3) Learning Objectives, 4) Material Description, 5) Summary, 6) Exercises, and 7) References used. This teaching material is also equipped with tables, pictures or illustrations that are useful to clarify the material presented. This is intended so that this teaching material becomes an exciting learning resource for students.

To further deepen your understanding of *Maternity Nursing* material, you can access references in the form of reading materials or YouTube links, which you can access based on suggestions that will be conveyed in each chapter of this teaching material.

You can also use this teaching material as the primary learning resource when the lecturer is not present face-to-face in delivering *Maternity Nursing* material. This teaching material is a comprehensive series of courses in Maternity Nursing, one of the courses students must take to achieve an Applied Bachelor's degree.

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CHAPTER 1.

BASIC CONCEPTS OF MATERNITY NURSING

INTRODUCTION

As part of professional health workers who will provide nursing care to mothers and babies and their families, we should understand the concepts that underlie this care. There are important things that a maternity nurse must understand before carrying out maternity nursing care, including the philosophy of maternity nursing, the goals of nursing, the concepts of pregnancy, childbirth, postpartum, newborns, and issues related to women's reproductive health. Maternity nurses are also expected to play an active role in overseeing government health programs, so that trends and issues in women's health and indicators of women's health must also be mastered.

Maternity nursing is an important branch of nursing science that focuses on the degree of health of women in this stage of life as the main object. Various women's health problems that occur at this time along with the rapid development of technology have become a challenge for maternity nursing as a comprehensive care service to continue to develop for the better and collaborate with other sciences. Healthy babies will be born to healthy mothers, so maternity nurses hold a strategic key to the health and knowledge of mothers about the health of themselves and their families (Leifer, 2013).

Maternity nursing care plays an important role, starting when adolescent girls start puberty with promotive and preventive efforts

related to adequate nutrition, free from anemia, menstrual hygiene management, and being able to maintain the health of their reproductive organs to prevent early marriage. Furthermore, when women of childbearing age will marry and prepare for pregnancy, they are given nursing care related to nutrition and health screening in preparation for pregnancy. The next stage is when a woman is pregnant, nursing care is given during ante-natal care, intra-natal care, and postnatal care, including breastfeeding and nutrition for toddlers and family planning (Nastiti et al., 2022).

Globally, every two minutes, a woman dies during pregnancy or childbirth. Severe bleeding, high blood pressure, pregnancy-related infections and complications from unsafe abortions are the leading causes of maternal deaths. These are all largely preventable with access to high-quality healthcare. All babies and mothers are entitled to affordable, high-quality health care before, during and after pregnancy (Safari et al., 2021). This requires the role of many parties in its completion, including Maternity nursing. Maternity nursing as a maternal discipline, part of nursing is also required to provide nursing care in the prevention of mortality and morbidity in mothers and newborn. As part of this commitment, Maternity Nurse supports to provide essential care of high-quality maternal and newborn services to increase their chances of survival (Leifer, 2013).

In the current condition when technology is developing very quickly, maternity nursing is also required to follow both scientifically and practically based on research and the latest situation while still paying attention to legal and ethical aspects. Shifts in roles, gender, and global and national policies related to women today also affect when women have lifestyle choices and the right to make decisions and have a high life expectancy and a good quality of life (Addati et al., 2014). In overcoming this, all maternity nurses must think critically, be willing to change, practice collaborative science and be quick to adapt to provide the best nursing care starting in the education (curriculum) stage to clinical and community services.

KEY TERMS

Pregnancy	Childbearing age
Childbirth	Menstrual hygiene management
Postpartum	Ante-natal care
Newborns	Intra-natal care
Women's health	Postnatal care
Maternity nursing	Breastfeeding
Adolescent girls	Puberty

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LEARNING OBJECTIVES

After reading the contents of this chapter, you should be able to master:

- Definition of maternity nursing
- Perspective of maternity nursing
- Philosophy of maternity nursing
- Maternity nursing goals
- Role of maternity nursing
- Ethical standards and legal aspects in maternity nursing

A. DEFINITION OF MATERNITY NURSING

There are several definitions of maternity nursing, including the following:

- Maternity nursing is one form of professional nursing service aimed at women of childbearing age relating to the reproductive system, pregnancy, childbirth, childbirth, between the two pregnancies and newborns up to 40 days old, and their families, focusing on fulfillment of basic needs in adapting physically and psychosocially to achieve family welfare by using the nursing process approach (World Health Organization, 2010).
- Maternity nursing care is the care, support, guidance, and health education given by the nurse to the target women, spouse, and family during antenatal (pregnancy), intra natal

(birth), and postnatal (postpartum/afterbirth) period (Leifer, 2013).

- Maternity nursing is professional nursing care given to individuals and community groups centered on women's health in both healthy and sick conditions covering physical and psychosocial aspects at every stage of life (life cycle approach) from toddlers, adolescents, reproductive age to post-menopausal which consists of reproductive health (gynecology) and obstetrics (obstetrics) Maternity nursing care provided to clients includes promotive, preventive, curative, and rehabilitative. It is important to provide high-quality care to improve maternal and infant health. Maternity nursing care is provided on an ongoing basis to women during pregnancy until delivery and newborns (Koblinsky et al., 2016; Miller et al., 2016).
- Maternity nursing is the care given by the nurse to the expectant family before, during, and following birth (Leifer, 2019a).

Based on those definitions, it can be concluded that maternity nursing is one of the nursing services that focuses on improving the health of women of childbearing age and their babies, so as to avoid morbidity and mortality caused by the process of pregnancy, childbirth, and childbirth.

In several countries, there are several differences in the types of roles of health workers who provide maternal health services (maternal care). There are three professions that provide health services for women of childbearing age, namely doctors of obstetrics and gynecology specialists, maternity specialist nurses, and midwives. Each has a different area of competence and authority. In different countries, these competencies are held by professionals with varying occupational titles (WHO, 2018a).

The different types of nurses who work in the maternal area include perinatal nurses, labor and delivery nurses, neonatal nurses, maternal nurses, pediatric nurses, labor and delivery nurses who work directly with women during childbirth, and neonatal

nurses who work with newborns, among other categories (Khandagale et al., 2021).

Midwives and nurses are experienced and trained in the process of delivery and labor, but they cannot provide all the services that the doctor can provide (Subramaniya, 2021). In Indonesia, the maternity nurse has the competence to help delivery but does not have the authority to perform delivery assistance. Midwives have the authority to perform delivery assistance (Sulistiorini, 2019).

In Australia, a midwife is a registered health professional who works in partnership with women to give the necessary support, care, and advice during pregnancy, birth, and the first few weeks after birth. The role of the midwife in Australia needs to embrace these contemporary issues, particularly the need for midwives to work to the full extent of their capacity and education (Homer et al., 2009).

In the Middle East region (which is sometimes known as the Arab World or the Greater Middle East), the health worker who provides health services in the maternal and infant area is the midwife (Safari et al., 2021). However, based on a study on the experience of Saudi Arabian women in obtaining maternal health services (Karout et al., 2013), it is illustrated that nurses also provide services in the maternal area, and there are even male nurses. The results of the study explain that the nurses who work in the maternal area mostly come from outside Arab countries.

Currently, in America there is a Maternity Nursing Advanced Practice Specialization, namely: Obstetric-gynecology nurse practitioner (OGNP), Women's health care nurse practitioner (WHNP), Family planning nurse practitioner (FPNP), International board-certified lactation consultant (IBCLC), and Certified nurse-midwife (CNM) (Leifer, 2019a). You can learn completely from that reference.

B. PERSPECTIVE OF MATERNITY NURSING

You have understood the definition of maternity nursing, then let us learn about the perspective of maternity nursing. Before you learn about the perspective of maternity nursing, we need to know what does the word perspective mean? The word perspective comes from the Latin, namely "*perspicere*" which means "image, see, view". Based on the terminology, perspective is a point of view to understand or interpret certain problems. According to the Indonesian Dictionary (KBBI) and definitions from Oxford Languages, the meaning of perspective is the human point of view in choosing opinions and beliefs about a matter. Perspective is also known as point of view. Perspectives in the scientific field are often also called paradigms. Paradigm is a perspective to understand the complexity of cyberspace. Other terms that are often identified with perspective are models, approaches, conceptual frameworks, frameworks of thought, and world views (Bahramnezhad et al., 2015). Then what about the perspective or paradigm of maternity nursing?

In nursing, the paradigm is based on sharing the values and presuppositions of key concepts (Bahramnezhad et al., 2015, p. 19). The nursing paradigms include person, environment, health, and nursing and are interrelated in four propositions. These four are collectively referred to as the metaparadigm for the nursing (Nikfarid et al., 2018).

Maternity nursing is part of the science of nursing, so the paradigm of maternity nursing is how maternity nursing views person, environment, health, and nursing and interrelated of them in the context of maternity nursing (see fig.1) The following is an explanation of each type of element of the maternity nursing paradigm.

1. Person/Human

Person (also referred to as Client or Human Beings) is the recipient of nursing care and may include individuals, patients, groups, families, and communities (Deliktas et al., 2019). In maternity nursing, the person is women of childbearing age are

related reproductive system, pregnancy, give birth to, puerperium, between two pregnancies, and newborns up to 40 days old, and their families. The woman is a member of the family unique and whole have different characteristics individually, influenced by age and development, and is a bio-psychosocial and spiritual being. One of the tasks of women's development is the experience of giving birth which can become a crisis situation in the family (World Health Organization, 2018a).

2. Environment

Environment (or situation) is defined as the internal and external surroundings that affect the client. It includes all positive or negative conditions that affect the patient, the physical environment, such as families, friends, and significant others, and the setting where they go in their healthcare (Deliktas et al., 2019). The maternity nursing view is that a person's attitudes, values , and behavior are greatly influenced by the cultural and social environment in addition to physical influences. The process of pregnancy and childbirth and postpartum will involve all members of the family and society. The birth process is the beginning of a new form of relationship in the family which is very important so maternity services will encourage positive interactions between parents, babies and other family members by using family resources (Koblinsky et al., 2016).

3. Health

Health is defined as the degree of wellness or well-being that the client experiences. It may have different meanings for each patient, the clinical setting, and the health care provider (Alligood, 2021). Maternity nursing view that health is a state of fulfillment of basic needs, dynamic in nature where physical and psychosocial changes affect one's health. Every individual has the right to be born healthy so that women of childbearing age have the right to get quality health services (Leifer, 2013).

4. Nursing

The nurse's attributes, characteristics, and actions provide care on behalf of or in conjunction with the client. There are numerous definitions of nursing, though nursing scholars may have difficulty agreeing on its exact definition. The ultimate goal of nursing theories is to improve the patient care (Alligood, 2021). Maternity nursing is a professional nursing service aimed at women of childbearing age-related to the reproductive system, pregnancy, childbirth, postpartum, between two pregnancies and newborns up to 40 days old, and their families which focuses on meeting the needs basic in carrying out physical and psychosocial adaptation using the nursing process approach. Maternity nursing provide holistic nursing care by always respecting clients and their families and realizing that clients and their families have the right to determine the appropriate care for themselves (Koblinsky et al., 2016).

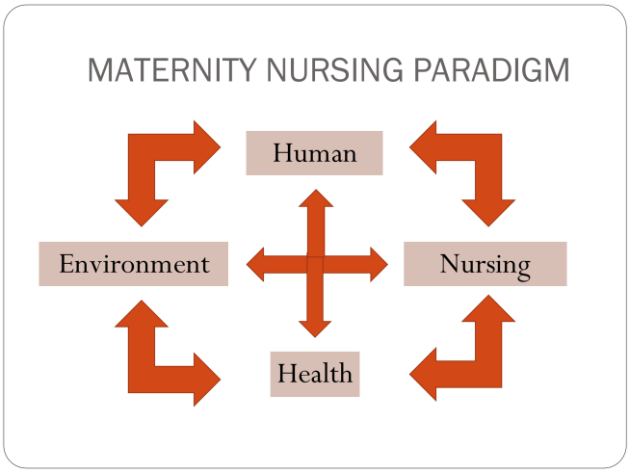

Figure 1. Maternity Nursing Paradigm

C. PHILOSOPHY OF MATERNITY NURSING

Before you learn about the philosophy of maternity nursing, do you know what is philosophy? According to the Indonesian

Dictionary, philosophy is knowledge and investigation with reason regarding the nature of all that exists, its causes, origins, and laws. Another meaning of the word philosophy is the most basic assumptions, ideas, education, and inner attitudes possessed by people or society. So, the philosophy of maternity nursing is the basic thinking that a maternity nurse must have as a framework for thinking.

There are philosophies that underlie maternity nursing:

- **Maternity nursing believes that every individual has the right to be born healthy.**

This belief provides understanding to the maternity nurse that every individual has the right to get quality health services. Based on this, the maternity nurse will strive so that any baby that will be born to a woman can be born in optimal conditions, either through independent action or collaboration. In carrying out nursing care, maternity nurses should not differentiate between the patient's social and economic status. The birth event is a normal physical and psychological process and requires physical and psychosocial adaptation from the individual and family, so that maternity nurses try to help patients and families adapt to the changes that occur as a result of pregnancy, childbirth, postpartum, and breastfeeding periods. Families need to be supported to view pregnancy as a positive and enjoyable experience. Efforts to maintain the health of mothers and their babies really need the active participation of their families (Wagiyo & Putrono, 2016).

- **Maternity nursing believes that the experience of childbearing is a developmental task for the family.**

Maternity nursing believes that the experience of childbearing is a family developmental task, but this can sometimes result in a crisis situation. The birth process is the beginning of a very important new form of relationship, so the Maternity nurse seeks to facilitate the creation of a new, pleasant relationship. Maternity nursing services will enable positive interaction between parents, babies, and other family members. Keep in mind that mothers and infants who are born will be influenced by the culture that is

inherited so that the maternity nurses must learn to be sensitive to the client's culture (Leifer, 2013).

- **The nursing care provided is holistic.**

The nursing care provided to the mother and her family is holistic, to make this happen, in work, maternity nurses try hard to always respect the client and his family. Apart from that it is necessary, it is realized that the client and his family have the right to determine the appropriate treatment for him, such as determining the type of contraception to be used, the type of anesthesia to be used if labor ends with surgery (Addati et al., 2014).

- **Maternity nursing believes that in carrying out nursing care, nurses interact with clients.**

Maternity nursing believes that in carrying out nursing care, nurses interact with clients, for that, maternity nurses are necessary to examine health problems and the resources available to clients, families, and communities. Maternity nurses plan and implement interventions to address client, family and community health problems. Maternity nurses provide support to the potential of client with appropriate nursing actions (Lowdermilk et al., 2010).

- **The successful implementation of nursing care requires teamwork.**

The successful implementation of nursing care requires teamwork, which includes: clients, families, health workers, and communities. "Women-centered care" is a term used to describe a philosophy of maternity care that promotes a holistic approach by recognizing each woman's social, emotional, physical, spiritual and cultural needs. Expectations and contexts are determined by the woman herself. The basic principles of woman-centered care ensure a focus on pregnancy and childbirth as the start of family life, not just as isolated clinical episodes. These phases of motherhood take full account of the meaning and value of each woman. Women-centered care in a clinical setting is safe,

supportive, and gentle. It is the philosophical foundation of maternity nursing (Council of Australian Government (COAG) Health Council (Department of Health), 2019).

Women-centered care was introduced in the 1970s and 80s by the feminist movement. Women-centered care focuses on the special needs, hopes and aspirations of a woman. In women-centered care, women are recognized for their right to make their own choices in caring for and controlling their health, including in overcoming physical, emotional and social problems. Women are also valued in fulfilling psychological, spiritual and cultural needs and expectations. In many countries, women-centered care has become a key feature of maternity care. Maternity nursing care is also concerned with emancipation because it must protect and improve women's health and status and build women's confidence in their ability to give birth. Maternity nursing care takes place in partnership with women, recognizing their rights and respecting their determination in a continuous and non-authoritarian manner (Davis et al., 2021).

The results show that effective communication from healthcare providers and respect for women's autonomy are important components of women-centered care (Compton et al., 2005).

- **Maternity nursing care is influenced by values, attitudes, and culture in society.**

For example, in Saudi Arabia, which is a country with diverse cultures, considers and assesses the role of women in different regions, but all agree that pregnancy is a gift and the beginning of the process of human life, so it is important to pay attention to, as well as become a deep experience for pregnant women, their families. and society. As we know every culture there are various kinds of taboos and requirements that women must adhere to when pregnant, whether it provides health benefits or harms health. It is also a challenge how maternity nursing care is provided by taking into account the culture adopted and encouraging research related

to aspects of culture and maternal health. Maternity nursing care promotes, and protects human beings, their reproductive, health, and sexual rights, and respects ethnic and cultural diversity based on ethical principles of justice, harmony, and respect for human dignity. Maternity nursing care is holistic and sustainable based on the scientific, social, emotional, cultural, spiritual, physical, and psychological characteristics of women (Hussein et al., 2020; Nastiti et al., 2022).

- **Maternity nursing philosophy also believes that pregnancy and childbirth are not painful events.**

Based on this belief, maternity nurses strive to encourage spontaneous delivery, reduce the occurrence of episiotomies and encourage exclusive breastfeeding. The event of giving birth will cause severe pain due to uterine contractions, for this reason maternity nurses must help mothers to adapt to this pain and master various appropriate non-pharmacological actions to help reduce this pain. The process of childbirth is a very important event for women and their babies. They have an increased risk of morbidity and mortality significant if they develop complications. In line with target Of Sustainable Development Goal 3 And The New Global Strategy For Women, Child and Adolescent Health (2016–2030), maternity nurses are required to make various efforts to ensure that women and their babies do more than just make it through the birthing process but also ensuring that they will be able to reach their full potential for health and life (Nastiti et al., 2022; World Health Organization, 2018b).

The philosophy of maternity nursing views pregnancy and childbirth as normal and natural things so the participation of families and communities are very much needed. This philosophy has undergone a shift, becoming every pregnancy and childbirth is a high risk (World Health Organization, 2018b). With this philosophy, maternity nurses must pay special attention to every pregnancy and childbirth. Every pregnancy and childbirth must be seriously screened and monitored. Based on the results of a recent

study, it was found that every pregnant woman will have a 15 percent risk of experiencing an emergency condition (Ijadunola et al., 2010; United Nations, 2019).

Recent studies continue to develop when pregnant women do not only focus on the fetus or biomedical-clinical aspects but the mother on the psycho-social aspects. In addition, health education efforts in the community are also encouraged where women during pregnancy who become the center are a mother (Naughton et al., 2021) so that the family, social environment, and health services (Bradfield et al., 2018) together provide support, pay attention to mothers both in terms of health, emotional needs and comfort when pregnant until giving birth.

D. THE GOALS OF MATERNITY NURSING

You have mastered what maternity nursing is, perspectives, and the philosophy that underlies the actions of a maternity nurse. Now you will learn what the goals of maternity nursing are. The goals of maternal nursing care are necessarily broad because the scope of practice is so broad. The primary goal of maternal nursing is the promotion and maintenance of optimal family health to ensure cycles of optimal childbearing and childrearing. The goals of maternal nursing are necessarily broad because the scope of practice (the range of services and care that may be provided by a nurse based on state requirements) is so broad. The range of practice includes pre-conceptual health care, care of women during three trimesters of pregnancy and the puerperium (the 6 weeks after childbirth, sometimes termed the fourth trimester of pregnancy), and care of infants during the perinatal period (6 weeks before conception to 6 weeks after birth). Detail of the goals of maternity nursing includes:

- Assisting women of childbearing age and their families in dealing with reproductive and pregnancy problems.
- Helping couples of childbearing age understand that pregnancy, childbirth and the puerperium are normal events.

- Providing support so that clients view pregnancy, childbirth & postpartum as positive and enjoyable experiences.
- Helping detect any complications early.
- Providing information to couples of childbearing age about the needs of prospective parents.
- Understanding the client's social and economic conditions (Leifer, 2019a; Subramaniya, 2021; World Health Organization, 2018a)

E. THE ROLE OF MATERNITY NURSING

After you understand the goals of maternity nursing, then you will learn about the role of maternity nurses. As previously mentioned, that in various countries there are differences regarding the designation of professions that provide services to mothers and babies. Professions that carry out roles in maternity nursing are referred to as maternity nurses. In this case, each country has a different profession designation (World Health Organization, 2018a). There are so-called maternity nurses, obstetric nurses, nurse midwives, maternal and child health nurses, and others.

Maternity nurses (nurse obstetrics, nurse midwives, maternal and child health nurse) have a specialist role during normal labor and pregnancy. In addition, the main role of the maternity nurse is to care for pregnant women and their babies during labor and postpartum up to 40 days after the baby's birth. The roles of maternity nurses includes promoting, protecting, and upholding women's reproductive rights and respecting ethnic and cultural diversity, maintaining trust and mutual respect between midwives and families, actively encourages and protects a woman's relaxation and improving the health of the newborn child (Franjić, 2022; Homer et al., 2009; Subramaniya, 2021).

Some of the roles of maternity nurses, namely as caregiver, coordinator, leader, communicator, manager, educator, counselor, and adviser. As **Caregivers**, here maternity nurses provide quality postnatal and antenatal care to optimize women's health during and after pregnancy. They too detect problems from the start, carry out

initial treatment if complications occur and immediately refer them to get access to comprehensive services. Maternity nurses in carrying out the role of **Coordinator**, namely coordinating care for all women and ensuring that these women can access social services that are voluntary and holistic for pregnant women. Furthermore, maternity nurses act as **Leaders**, in this case, they become leaders to review, provide and plan care for women for their consent and input. The main role of the maternity nurse, in this case, is to reduce women's admission to the hospital and get fewer interventions during birth. As good **Communicators**, maternity nurses always understand the effectiveness of the entire communication process. Maternity nurses also assist family members and pregnant women in developing trusting relationships. Maternity nurses also have to communicate effectively with family members and pregnant women so that they can share freely their problems. Another duty is as **Manager**. Here the maternity nurses manage several circumstances that are appropriate and they can also refer and recognize the women to an obstetrician at any emergency time. The maternity nurses also act as an **Educator** and they provide a high-quality education of sensitive health for promoting a healthy lifestyle and also positive parenting. Maternity nurses also act as **Counselors,** they advise pregnant women and give some information. The information provided includes personal care, hygiene, nutrition, danger signs during pregnancy, childbirth and breast-feeding. Maternity nurses are also family planners. They **advise** some and give some information, including regarding methods of family planning, help couples in making decisions about childbirth, help the family for developing a birth plan, promote several concepts about readiness for labour, and advise and assist couples in making decisions in difficult situations (Subramaniya, 2021).

Maternity nursing care for families during childbearing and childrearing years through four phases of health care, namely health promotion, health maintenance, health restoration, and health rehabilitation. The example duty of maternity nurses in health promotion stage is teaching women the importance of rubella

immunization before pregnancy, teaching children the importance of safer sex practices. Maternity nurses will be encouraging women to come for prenatal care, teaching parents the importance of safeguarding their home by childproofing it against poisoning, when in health maintenance stage. Health restoration stage is promptly diagnosing and treating illness using interventions that will return client to wellness most rapidly. In this phase, for example maternity nurses caring for a woman during a complication of pregnancy or a child during an acute illness. At final stage, namely health rehabilitation, in this stage maternity nurses preventing further complications from an illness; bringing ill client back to optimal state of wellness or helping client to accept inevitable death. For example maternity nurses encouraging a woman with gestational trophoblastic disease to continue therapy or a child with a renal transplant to continue to take necessary medications (Davis et al., 2021; Khandagale et al., 2021; Subramaniya, 2021; World Health Organization, 2018a)

F. ETHICAL STANDARDS AND LEGAL ASPECTS IN MATERNITY NURSING

1. Ethical Standards

In language, the word ‘ethics’ comes from the Greek word ethos which means the appearance of a habit. In this case, the object perspective is human actions, attitudes or actions. The definition of ethics specifically is the science of the attitude and decency of an individual in his social environment which is thick with rules and principles related to behavior that is considered right (Nandy, 2022). According to Indonesian Dictionary, ethics is the science of what is good and what is bad and of moral rights and obligations (“Kamus Besar Bahasa Indonesia,” 2023). Thus, the general understanding of ethics as rules, norms, rules, or procedures that are commonly used as guidelines or principles for an individual in carrying out actions and behavior.

Ethics is an integral part of nursing practice and reflects the expectations of the social order. Principles of ethics by the nursing

profession are formally set forth in a code of ethics which is a professional commitment nursing will be responsible and trust given by public (Wagiyo & Putrono, 2016).

Maternity nursing is an exciting and dynamic field of nursing practice. In connection with this, various problems arise related to ethical challenges and the high level of litigation in maternity nursing. In addition, there are demands in the practice of maternity care that is safe, evidence-based, and responsive to the needs of women and their families (Durham et al., 2014). Maternity nurses are required to ensure and improve the welfare of women through the anticipation of injury to the patient (Masih, 2018)

There are several basic ethical principles established in several countries, for example, the Code of Ethics established by the American Association of Nurses (ANA) and specific practice standards from the Association for Women's Health, Obstetrics and Health Neonatal Nurses (AWHONN) which outlines the duties and responsibilities of obstetric and neonatal nurses. The ANA Code of Ethics for Nurses describes the most fundamental values and commitments of the nurse, boundaries of duty and loyalty, and aspects of duties beyond individual patient encounter (Durham et al., 2014).

Besides that, there is also Ethical Principles in Nursing, the Ethical Rights of Patient, and The ICN code of ethics for nurses published in 2021. Legal terms that nurses must be familiar with include these recognizing ethical dilemmas in obstetrical and gynecology risk factors for litigation in obstetrics & gynecology. Based on ICN Code of Ethics for Nurses has four principal elements that provide a framework for ethical conduct: nurses and patients or other people requiring care or services, nurses and practice, nurses and the profession, and nurses and the global health (ICN–International Council of Nurses, 2021; Masih, 2018).

There are eight ethical principles that must be known by maternity nurses (Durham et al., 2014). The following is an explanation of the eight ethical principles:

a. **Autonomy (The right to self-determination)**

The principle of autonomy in maternity nursing is based on the belief that women are able to think logically and make their own decisions. Adult women are considered competent and have the power to make themselves, choose, and have various decisions or choices that must be respected by maternity nurses. The principle of autonomy is a form of respect for women or is seen as consent not to force and act rationally. Autonomy is the right to independence and freedom for women who demand self-difference. Maternity nursing practice reflects autonomy when maternity nurses respect women's rights to make decisions about their own care. The results of research in Kenya are currently still lacking in women's participation and women's empowerment in making choices about health services. Most women do not yet have the ability to demand or command effective communication and respect for their autonomy (Afulani et al., 2020). Globally there are still many women who experience violence and neglect in health facilities when giving birth (Kassa et al., 2020). When women are pregnant and they also do not get the opportunity to make choices and services because they feel afraid, ashamed, and have low self-esteem toward health workers. It is a patient duty as a maternity nurse that every woman has the right to health services (Afulani et al., 2020).

b. **Respect for others (The principle that all persons are equally valued)**

The application of this principle is that maternity nurses, in carrying out nursing care, should respect patients' rights and the uniqueness of patients, not differentiate between patients and not require patients to behave as other people do, even though they are identical twins. Maternity nurses will respect women's cultural behavior in managing their health during pregnancy, childbirth, and the puerperium. A study in Bishoftu District, the regional state of Oromia, Ethiopia, published in 2021, illustrates that most women who experience disrespect

and violence during childbirth feel dissatisfied with maternity care. Although midwives demonstrate that they are aware of the importance of compassionate and respectful maternity care, clients face verbal abuse, neglect, and a lack of supportive care during labor and delivery. The client's human rights are violated by acts of disrespect or rudeness (Jiru & Sendo, 2021)

c. Beneficence (Obligation to do good)

Beneficence is an ethical principle whereby a maternity nurse does something action for the benefit of the woman and her baby in an effort to help prevent or eliminate the hazard. More specifically, beneficence can be interpreted that the maternity nurse must do good, respect human dignity, and must try their best so that women remain in good health both during pregnancy, childbirth, and postpartum. The main point of the principle of beneficence emphasizes more that a maternity nurse must take a step or action that does more good than bad so that women get the highest satisfaction (Masih, 2018; Varkey, 2021). An example of the beneficence principle is that nurses provide education to patients with severe preeclampsia to limit fluid consumption to prevent pulmonary edema.

d. Nonmaleficence (Obligation to do no harm)

The principle of non-maleficence, namely prohibiting actions that are harmful or worsen the patient's condition. This principle is known as "*primum non nocere*" or "do no harm". This principle is related to the Hippocratic phrase which states "I will use therapy to help sick people based on ability and my opinion, but I would never use it to my detriment or harm them". The principle of non-maleficence is often discussed in the field of medicine, especially in controversial cases related to disease cases terminal, serious illnesses and serious injuries. This principle plays an important role in the decision to maintain or end life. Its application can be performed on competent or incompetent patients. Basically, the principle of

non-maleficence gives opportunities to patients, their guardians, and health workers to accept or reject an action or therapy after weighing the benefits and obstacles in certain situations or conditions. Many philosophers have made the principle of non-maleficence an integral part of the principle of beneficence (prioritizing action for the good of the patient) (Durham et al., 2014; Varkey, 2021). An example of this principle is when a woman is induced in labor, then the patient is in great pain, and there is a threat of uterine rupture, the nurse takes action to stop the induction and collaborates with the doctor to terminate the pregnancy in a way that is more beneficial to the patient.

e. **Justice (Principle of equal treatment of others or that others be treated fairly)**
   Justice is generally interpreted as fair, equitable, and appropriate treatment of persons. Of the several categories of justice, the one that is most pertinent to clinical ethics is *distributive justice*. Distributive justice refers to the fair, equitable, and appropriate distribution of healthcare resources determined by justified norms that structure the terms of the social cooperation (Varkey, 2021). Affordable, timely, high-quality, equitable, and dignified care during and after pregnancy is essential for all women. In countries where there are differences in skin color, there are often violations of justice against women. Maternal equity is a culturally sensitive model of care, which aims to dismantle inequalities in maternity care and optimize the health and well-being of mothers. Human rights require us to eliminate the racism that is rooted in the health system. Usually, rich women will find it easier to get access to health services than poor women (Kassa et al., 2020; Varkey, 2021)
f. **Fidelity (Faithfulness or obligation to keep promises)**
   The principle of loyalty requires individuals to respect their promises and commitments to others. Maternity nurses are true to their commitments and keep promises and keep client

secrets. Loyalty describes nurses' adherence to the code of ethics, which states that the basic responsibility of nurses is to improve health, prevent disease, restore health, and minimize suffering (Ardiansyah, 2022). Hospital regulations mandate that patient names and personal information be stored securely and privately. Maternity nurses and other healthcare workers must maintain strict confidentiality regarding all patient information, including access to electronic health records. This requires technology that is able to electronically track who accesses health records when they access them, and what is reviewed (Leifer, 2019a).

g. Veracity (Obligation to tell the truth)

What is veracity? In the concise Oxford dictionary veracity is conformity to facts, accuracy, and habitual truthfulness. In this regard, veracity is closely connected to the respect of autonomy. When maternity nurses communicate with patients, being honest is an important way to foster trust and show respect for patients, but patients may feel that trust is misplaced if they encounter or felt a lack of honesty and candor from the maternity nurse. Telling the truth does not mean that the maternity nurse has to tell it simply all the information he knew about the patient bluntly. Maternity nurses must collaborate with physicians to convey a patient's diagnosis and prognosis in an empathetic and caring manner. For example, a 25 years old woman underwent a cesarean section for indications of fetal distress. Three weeks after being discharged from the hospital, he returned with a fever, abdominal pain, and tenderness. She was given antibiotics, and her fever persisted, a laparotomy and exploration were performed, and it was found that a sponge had been left behind during the surgery. The sponge is removed, the area is cleaned, and the incision is closed. Antibiotics were continued, and he recovered without further incident and was discharged. Should the surgeon tell the patient about his mistake? Frankly, patient autonomy is very much in effect in

this situation and the patient needs to be informed about it. The mistake caused a loss for the patient (morbidity, re-admission, and financial loss due to the second operation). Even if the end result corrects the error, the surgeon is obligated to inform the patient of the error and its consequences and apologize. The second waiver of medical expenses and compensation must be given to the patient. Subsequently, the hospital investigated the incident and came up with specific recommendations to reduce the error and eliminate it in the future. An acknowledgment from the hospital, an apology from the institution, and compensation for the patient are required. Furthermore, the hospital management conducted an investigation into the case and issued specific recommendations so that similar incidents would not occur. Apart from what has been explained, there are still many examples of ethical issues in maternity nursing that you can read from various references that have been used as references in this section (Amer, 2019; Durham et al., 2014; Leifer, 2019b; Varkey, 2021).

h. Utility (The greatest good for the individual or an action that is valued)

Utilitarianism is an ethical understanding which argues that what is good is useful, beneficial, and profitable. On the other hand, what is evil or bad is that which is useless, useless, and harmful (Nandy, 2022). Utilitarianism is often also called consequentialism (consequentialism), which is a moral understanding that judges that all actions are considered right/good or wrong/bad solely based on the consequences or consequences arising from these actions. Consequences are considered good if they can provide happiness and contain the principle of utility. These consequences can be cumulative so that the action with the greatest good is the kindness that provides the greatest amount of benefits. Or in other words, the right action is that which produces the greatest surplus of happiness. The morality of utilitarianism teaches that the

overall interest must be prioritized over personal interests. This is what distinguishes utilitarianism from egoism or altruism. Expediency is absolute and is pursued by everyone because they all believe that benefit will guarantee the achievement of happiness (Bertens, 2013; Fadhillah & Jannah, 2017).

2. Ethical Dilemma

In clinical situations, ethical principles may conflict with one another. For example, patients have the autonomy to determine their destiny, including the right to refuse treatment that may benefit the pregnancy and the fetus. In this case, an ethical dilemma can occur. In dealing with these case examples, two ethical approaches can be used. The first approach is the patient rights approach. The focus is on the individual's right to choose, including the right to privacy, to know the truth, and to be free from injury or harm. The second approach is the utility approach. This approach argues that ethical action balances good and evil and provides the greatest good for the greatest number (Durham et al., 2014).

An ethical dilemma is a choice that can potentially violate ethical principles. In nursing, maternity nurses are often required to advocate for patients. This action is a form of ethical responsibility to intervene with patients in their care. Advocacy is also a nurse's accountability to patient needs. This case has a unique aspect because the maternity nurse advocates for two people at once: the mother and her baby. However, if you have to choose in difficult conditions, the interests and safety of the mother are more important than those of her fetus (Durham et al., 2014; Jiru & Sendo, 2021; Kassa et al., 2020).

Common health problems for mothers and children conflict when a woman does something that could harm the fetus. The most obvious examples are abortion, artificial insemination, in vitro and embryo fertilization transfer (surrogate parent), selective pregnancy reduction in multifetal (twin) pregnancies, intrauterine fetal treatment, substance abuse, and refusal to follow health

professional advice. Health workers and the public usually respond more often to women like that with anger rather than support. However, the mother and fetus's rights must be noted (Aderemi, 2016).

Abortion is a volatile, legal, social, and political issue; even before 1973, the Supreme Court decision legalizes abortion. Data shows that 49% per cent of pregnancies in America are unwanted by women, and 40% want an abortion. Abortion is one of the most common procedures in the United States Union. This has become a hot political debate. There are camps for and camps against abortion. Support groups are based on ethical principles that every woman has the right to create decisions about their reproductive function based on her own moral and ethical convictions. At the same time, groups that oppose abortion strongly believe that abortion is murder and deprives the fetus of its basic right to life. Under the ANA Code of Ethics, a nurse may refuse to provide care to a client undergoing an abortion if the nurse ethically opposed to the abortion procedure (Aderemi, 2016).

Intrauterine fetal surgery is a surgical procedure uterus during pregnancy, which is done to do surgery on the fetus in the womb. Despite the risk to the fetus and mother, intrauterine fetal surgery therapy can be used to correct the presence lesions in the fetal anatomy correctly. Some argue that medical technology must not interfere with the natural process of pregnancy, so this intervention should not be attempted. While others argue that these interventions can improve the quality of life of the fetus in the future. Of course this is a matter of debate and intellectual discussions, but for maternity nurses, these procedures can become part of their daily routine (Aderemi, 2016).

In maternal care, there will often be cases of patients refusing the actions to be taken by a team of health workers. For example, a woman will undergo surgery to end a troubled pregnancy. The woman refused because she wanted to give birth naturally. Based on the patient's rights, the refusal is justified, but the maternity nurse must try to educate the patient that the surgery to be

performed is the best and last option to save her and her baby (Aderemi, 2016; Leifer, 2019a; Naughton et al., 2021).

Induced ovulation and in vitro fertilization sometimes produce multiple fetuses (multifetal). If this number exceeds the woman's ability to continue the pregnancy until term, the doctor may recommend selection by ending the life of one or more fetuses. In this situation, an ethical dilemma similar to abortion arises. This won't be easy if the couple has been waiting for a baby for a long time (Aderemi, 2016).

3. Legal Aspects in Maternity Nursing

As part of professional health workers, maternity nurses must follow guidelines and authorities according to their competence in carrying out their roles. The moral responsibility of maternity nurses is to practice following applicable norms and ethical codes. This is intended so that the maternity nurse does not conflict with the oath that has been said (Makhfudli et al., 2022).

In Indonesia, the obligations of maternity nurses refer to the implementation of nursing according to the standards of nursing care for mothers and children as stated in the Regulation of the Minister of Health Number 10 of 2015 concerning Standards of Nursing Services in Special Hospitals. Actually, in the obligations of maternity nurses, it is not stated that maternity nurses may provide birth assistance. However, in reality, maternity nurses have competence in providing delivery assistance. Delivery assistance competence is given to maternity clinic nurses if no health worker is authorized to provide delivery assistance. Article 1, paragraph 6 of Law Number 36 of 2009 states that a health worker is any person who devotes himself to the health sector and has knowledge and skills through education in the health sector which, for certain types, requires the authority to carry out health efforts. Maternity nurses must carry out their responsibilities following ethics and morals. In carrying out their practice, Maternity nurses must follow their authority based on their competence to assist in childbirth but do not have the authority to provide delivery assistance. Article 30,

paragraph 1, letter g of the Nursing Law states that nurses are authorized to act in emergencies according to their competence. So that when in an emergency, maternity nurses are allowed to assist in childbirth (Makhfudli et al., 2022).

In America, organizations concerned with setting standards for maternity and pediatric nursing were developed. These included the American College of Nurse-Midwives (ACNM); the Association of Women's Health, Obstetric, and Neonatal Nurses (AWHONN), which was formerly the Nurses Association of the American College of Obstetricians and Gynecologists (NAACOG); and the Division of Maternal Nursing within the American Nurses Association (ANA) (Leifer, 2019a)

The Association for Women's Health, Obstetric and Neonatal Nurses (AWHONN) maintains that continuously available labor support by a professional registered nurse is critical to achieving improved birth outcomes. AWHONN views labor care and labor support as powerful nursing functions and believes it is incumbent on healthcare facilities to provide an environment that encourages the unique patient-nurse relationship during childbirth. Only the registered nurse combines adequate formal nursing education and clinical patient management skills with experience providing physical, psychological, and sociocultural care to laboring women. The registered nurse facilitates the childbirth process in collaboration with the laboring woman. The nurse's expertise and therapeutic presence influence patient and family satisfaction with the labor and delivery experience. Evidence supports that women with continuously available support during labor experience improved labor and delivery outcomes compared to those who labor without a skilled support person. The support provided by the professional registered nurse should include the following:

- Assessment and management of the physiological and psychological processes of labor
- Provision of emotional support and physical comfort measures
- Evaluation of fetal well-being during labor
- Instruction regarding the labor process

- Patient advocacy and collaboration among members of the healthcare team
- Role modeling to facilitate family participation during labor and birth
- Direct collaboration with other members of the healthcare team to coordinate the patient care (Leifer, 2019)

Summary

Maternity nursing is a professional nursing service aimed at women of childbearing age-related to reproductive system, pregnancy, childbirth, postpartum, and breastfeeding. It focuses on meeting the needs of patients and families through a holistic approach, ensuring the well-being of mothers and their babies. Maternity nursing is a holistic approach to maternity care that focuses on each woman's social, emotional, physical, spiritual, and cultural needs. This philosophy is influenced by values, attitudes, and culture in society, as it recognizes the importance of pregnancy and childbirth as the start of family life and takes into account the meaning and value of each woman. Maternity nurses plan and implement interventions to address client, family, and community health problems, providing support to the potential of the client with appropriate nursing actions.

Maternity nurses play a crucial role in providing care for pregnant women and their babies during labor and postpartum up to 40 days after the baby's birth. They play various roles, including caregiver, coordinator, leader, communicator, manager, educator, counsellor, and adviser. Caregivers provide quality postnatal and antenatal care, detect problems, and refer pregnant women to comprehensive services. They also act as a coordinator, coordinating care for all women and ensuring access to voluntary and holistic social services.

As part of professional health workers, maternity nurses must follow guidelines and authorities according to their competence in carrying out their roles. The moral responsibility of maternity nurses is to practice following applicable norms and ethical codes.

Exercises

1. The following is true about humans in the paradigm of maternity nursing:
   a. Family and society influence the adaptation of pregnancy, childbirth and postpartum processes
   b. Unique, intact, consisting of bio-psycho-so-spiritual and influenced by age and development
   c. The process of pregnancy, birth and postpartum will involve the family and society
   d. Women of childbearing age and families are members of society
   e. Maternity nursing is a professional nursing service

   Answer: B
2. The following are not included in the characteristics of maternity nursing:
   a. Focusing on meeting human needs
   b. Approach to the family (father, mother and children) as a unit
   c. In carrying out the role of interacting with clients through a nursing care approach
   d. The nurses themselves determine the successful implementation of nursing care
   e. In conducting interventions, respect the uniqueness of the client and his family

   Answer: D
3. The following are not included in the goals of maternity nursing:
   a. Women of childbearing age
   b. Women in the puerperium
   c. Couples of childbearing age
   d. Infants up to 6 weeks of age
   e. Postpartum mothers up to 40 days

   Answer: D
4. Maternity nursing refers to the nursing paradigm. Which is not included in the environment in maternity nursing are:

a. The process of pregnancy, birth and postpartum will involve the family and society
b. Women of childbearing age and their families are members of society
c. One of the tasks of women's development is the experience of giving birth which can be a crisis in the family
d. The cultural and social environment influences individual attitudes and behavior
e. The process of birth is the beginning of a new form of relationship in the family, which is very important

Answer: E

5. An ethical dilemma is:
   a. A violation of patient autonomy
   b. A choice that violates ethical principles
   c. A conflict between advocacy and respect
   d. A conflict between what is just and good
   e. A violation of ethical principles

   Answer: B

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CHAPTER 2.

TRENDS, ISSUES, AND EVIDENCE-BASED PRACTICE

INTRODUCTION

Along with the development of technology, maternity nursing has undergone many changes. There is a tendency to increase the incidence of cesarean delivery and labor induction. The management of labor and delivery has changed from minimal intervention to more high-quality and well-controlled interventions. Many things have triggered a shift in maternity nursing, including the ability of couples of childbearing ages to access technology, thus encouraging them to control when and how their child is born. These changes also affect fertility rates, birth rates, premature birth rates, newborn weight rates, infant mortality rates, and maternal mortality rates (Durham et al., 2014).

Some examples of medical technology that have contributed to many important advances in maternal and child health include: childhood diseases such as measles and poliomyelitis have been nearly eradicated through immunization; specific genes responsible for many inherited disorders have been identified; stem cell therapy can replace diseased cells with new growth cells; fertility drugs and techniques allow more couples to conceive; and the ability to delay preterm birth, as well as efforts to improve the lives of preterm infants, have progressed rapidly. In addition, there is a growing trend of consumerism towards health care or self-care. This behavior has resulted in many families giving birth and actively caring for children with their health monitoring and maintenance.

Healthcare consumerism has also shifted care from hospitals to communities and shortened hospital stays. However, even though health care has become more advanced, some people still cannot access health services. This condition is challenging for maternity nurses (Durham et al., 2014; Elzeblawy Hassan, 2020).

In this chapter you will get lessons about trends and issues in maternity nursing and evidence-based practice that underlies maternity nursing interventions.

KEY TERMS

Trends
Issues
Telenursing
Robotic nurse
Teenage birth
Gynecologic robotic surgery
Heat therapy during labor
Virtual reality (VR) relieves labor pains
Massaging bra (the lilu)
Family-centered maternity care
Evidence-based practice
Evidence-based care
Bloomlife
My peri tens device
A contraceptive computer chip (by remote control)
Fathers' role
Clearblue digital pregnancy test

LEARNING OBJECTIVES

After completing this chapter, it is hoped that you will be able to:

1. Describe trends in maternity nursing
2. Explain the issues in maternity nursing
3. Explain family-centered maternity care
4. Search for evidence-based practice in maternity nursing

A. TRENDS IN MATERNITY NURSING

Before you learn about trends in maternity nursing, you should know what trends are? Based on Oxford Languages, trend is a general direction in which something is developing or changing. The Cambridge dictionary, explains that trend is a general development or change in a situation or in the way that people are behaving. For

example surveys show a trend away from home-ownership and toward rented accommodation. Now you already know about the meaning and examples of the word trend. What are the trends in maternity nursing. Let's look at the following explanation.

To achieve the sustainable development goals (SDGs) related to health in 2030, health services must adjust the achievement of primary health services to obtain better health services. To achieve these conditions, innovation is needed to support maternal health services. Trends in maternal nursing are evolving as the healthcare system of the contemporary world evolves (Ezran et al., 2019).

In this regard, it is necessary to identify trends in maternity nursing that illustrate an increase or shift in maternal health services towards goodness. The following are examples of shifting trends in maternity nursing:

- In the past, maternity nursing care only focused on physiological changes and the needs of mothers and babies. There has been a change, namely using the Family-Centered Maternity Care approach, in which maternity nurses focus on physiological and psychosocial changes and the needs of families who give birth to children (Durham et al., 2014).
- Previously, women gave birth in the delivery room, then 2 hours later, they were transferred to the postpartum room (another room). Meanwhile, in developed countries such as America, Australia, and others, women giving birth and the recovery period are in the same place as their families. Meanwhile, in developed countries such as America, Australia, and others, women giving birth and the recovery period are in the same place as their families. Where before, the cold and sterile delivery room shifted to a warm room like their home (Durham et al., 2014; Leifer, 2019).
- Previously, in childbirth, prospective fathers and their families were not involved (not allowed) in the labor and birth of their babies. Many prospective fathers, their families, and relatives are permitted to attend births, even deliveries, by surgery (Esamai et al., 2020).

- If the mother is going to stay in the hospital for up to 10 days postpartum, the mother can now leave the hospital after 48 hours of delivery (Elzeblawy Hassan, 2020). Furthermore, you can read more fully about examples of shifting forms of maternal services in the references used in this section.

The world is changing quickly due to new trends in maternity and midwifery nursing. Thus experts must stay current to respond to new advances as they happen. The continuum of care must include high-quality, evidence-based care as it is a crucial strategy for enhancing mother and infant health. The following are current trends in maternity nursing care:

- **Gynecologic robotic surgery**. One of the most recent developments in minimally invasive surgical methods is gynecologic robotic surgery. The use of robotics in gynecology today includes procedures including hysterectomy, myomectomy, oophorectomy, and ovarian cystectomy as well as procedures to remove endometriosis, perform sacrocolpopexy, and perform lymphadenectomy. Similar to any minimally invasive surgery, the benefits of this robotic procedure include smaller incisions that result in decreased morbidity, less postoperative pain, and shorter hospital stays (Sinha et al., 2015).
- **The heat therapy during labour**. Heat can help warm the woman in labor and reduce pain. According to the gate control theory, heat therapy may aid in lowering pain during labor because it blocks pain receptors. According to the most recent research, heat therapy can be used as a non-pharmacological method of managing labor pain since it successfully reduces the severity of labor pain and shortens the time it takes to reach the first stage (Ganji et al., 2013; Goswami et al., 2022).
- **Virtual reality (VR) relieves labor pains**. Virtual Reality (VR) is a computer-generated environment with scenes and objects that appear natural, immersing the user in their surroundings. This environment is perceived through a device known as a Virtual Reality headset or helmet. Based on the results of the

current study, immersive VR applications during labor were linked to improved patient satisfaction. Before receiving an epidural, VR reduced the women's early labor pain levels. To make the long laboring processes for women more comfortable, immersive VR may find a role as an auxiliary in labor and delivery units. Virtual reality (VR) is a diversionary non-pharmacologic intervention to reduce pain and anxiety. VR is safe and effective in relieving maternal labor pain and anxiety (Carus et al., 2022; Xu et al., 2022).

- **Massaging bra (the lilu)**. Breastfeeding and pumping are challenging parts of being a new mom. The Lilu Massager Bra is intended to simplify life for breastfeeding mothers. It integrates with the pump to provide hands-free pumping of up to 55% more milk every session. The bra has lactation massage cushions that simulate the light-handed compression movements advised by lactation specialists. Without using hands, the automatic massage aids in maintaining milk supply and enhancing milk flow. For more details, you can visit the website https://www.wearlilu.com/blogs/lilu-blog
- **Clearblue digital pregnancy test**. All Clearblue®pregnancy tests are made with women in mind and include special and cutting-edge features that make them simple to use and simple to read, allowing women to feel confident in the results and providing comfort when it's most needed. For more details, you can visit the website https://www.clearblue.com/pregnancy-tests/digital
- **Bloomlife.** Currently, the only method available for pregnant women to determine preterm labor is routine medical checkups and clinical examinations in a hospital setting. However, expecting parents frequently confuse preterm labor contractions with Braxton Hicks contractions, which are common during a healthy pregnancy. This raises the number of hospital admissions and related healthcare expenses. Bloomlife is a wearable pregnancy sensor with a twist: the

pregnant lady is only expected to wear it for one, two, or three months of the third trimester. It adheres to the belly and uses electrical signals from the uterine muscle to count and time contractions (Braxton Hicks and labor). Figure 2 will explain more details about Bloomlife.

Figure 2. © Bloomlife
Adapted from Europian Comission (2022) WISH – Wearable Integrated System for Early Detection of Preterm Labour. Available at https://cordis.europa.eu/article/id/436204-a-wearable-for-monitoring-prenatal-health-at-home. Retrieved 2023-06-14

- **My peri tens device.** The MyPeriTens device is both an electrical nerve stimulator and an electrical muscle stimulator controlled through a smartphone app, allowing women to have precise control over the intensity and nature of the electrical signals delivered. The smartphone app has several routines built in that the woman can perform on her own, or with assistance of a physical therapist. Each routine can be selected to run at the patient's preferred intensity level, maximizing benefits while keeping any pain and discomfort at a minimum. **BewellConnect** (Fig.3) recently unveiled their new pelvic floor muscle trainer to help women with related issues, including postpartum complications and incontinence.

Figure 3. BewellConnect
Adapted from www.bewell-connect.us. Retrieved 2023-06-14

- **A contraceptive computer chip (by remote control).** A contraceptive computer chip that can be controlled by remote control has been developed in Massachusetts. The chip is implanted under a woman's skin, releasing a small dose of levonorgestrel, a hormone. This will happen every day for 16 years, but can be stopped at any time by using a wireless remote control. It is roughly the size of a Scrabble tile and has several tiny reservoirs protected by an incredibly thin titanium and platinum seal. A little electric charge from an internal battery is used to momentarily melt the barrier, releasing the hormone and allowing a daily dose of 30 micrograms of levonorgestrel to leak out. A wireless remote can easily deactivate it, saving women from undergoing the clinical steps other contraceptive implants require (Lee, 2014).
- **Fathers'' role.** Both mother and child can benefit much from breastfeeding in terms of health. Women require sufficient support for breastfeeding to be successful and last longer. The support fathers and partners give women is crucial. Research shows that fathers are essential in promoting and supporting their partners with breastfeeding (Baldwin et al., 2021). According to data, fathers are enthusiastic about

breastfeeding and wish to have a more significant role in its preparation and promotion. Fathers said they needed more current and understandable information regarding breastfeeding's advantages and specifics on some logistical challenges associated with helping their spouse breastfeed (Sherriff & Hall, 2011).

- **Telenursing**. The COVID-19 pandemic has hastened the introduction of telemedicine for mother and newborn healthcare. Telemedicine was used by 58% of health professionals, and two-fifths of them reported not getting telemedicine guidelines. Essential telemedicine practices included online birth preparation workshops, video/phone antenatal and postnatal care, a COVID-19 helpline, and online psychosocial counseling. There was a lack of infrastructure and technology literacy, restricted monitoring, budgetary and language constraints, a lack of nonverbal feedback and bonding, and patient distrust. Telemedicine was regarded as a viable alternative to in-person consultations. On the other hand, health practitioners emphasized the inferior quality of service and the possibility of exacerbating already-existing disparities in access to healthcare (Bezerra Cavalcante Facundo et al., 2020; Galle et al., 2021).

The current trend of rising cesarean deliveries and labor inductions represents a dramatic shift in how labor and birth are approached. Since the natural birthing era began in the 1960s, the management of labor and birth has changed from a low use of obstetrical interventions to a high use of obstetrical interventions and a more regulated event. The childbearing generation, which embraces technology and wants control over when and how their children are born, has been the driving force behind this transformation. The doctors' preferences can also affect the timing and mode of birthing. Additionally, preterm birth rates, neonatal birth weight rates, infant mortality rates, and maternal death and mortality rates have all changed (Durham et al., 2014; Esamai et al., 2020; Ezran et al., 2019).

In Saudi Arabia, the cesarean section is the most common treatment performed in these clinics; its high rates have produced significant problems in the Saudi Arabian healthcare system in numerous locations, sectors, and private facilities. Kiwan and Al Qahtani (2018) discovered that CS rates had increased dramatically, from 10.6% in 1997 to 80.2% in 2018. The northern area of Saudi Arabia has the most fantastic CS rate, at 265%, while Royal Commission hospitals have the lowest, at 32.8% (Ba'aqeel HS., 2009; Bondok WM, El-Shehry SH, Fadllallah SM., 2013).

Changes have also occurred in fertility and birth rates, preterm rates, neonatal birth weight rates, infant mortality rates, and maternal mortality rates. The survey results by the Statistics Indonesia for 2020 show that the total fertility rate is 2.18 (Badan Pusat Statistik, 2023). This means that the average woman in Indonesia will give birth to two children during her reproductive period. In the past decade, there has been a decrease in the total fertility rate of 0.39. Total fertility rates are the average number of children a woman of childbearing age, often seen as being between the ages of 15 and 44, can anticipate having over her reproductive years. Fertility rates are based on the supposition that present trends in age-specific fertility would persist throughout a woman's reproductive years, unlike birth rates, which are based on the actual number of live births in a community (Litbang Kompas, 2023).

The decline in fertility rates and birthrates may be attributed to 1) the accessibility of numerous methods of birth control with a high rate of effectiveness; 2) more women are postponing or limiting having children to concentrate on their jobs; and couples are having fewer kids since the cost of raising kids is getting more expensive (Durham et al., 2014).

In Indonesia, contraceptive use also contributed significantly to significant decreases in maternal mortality between 1970 and 2017, and future contributions through 2030 are likely. Still, smaller contributions are most likely due to the contraceptive prevalence rate (CPR) already high level and the significant difficulties in raising it. The effectiveness of Indonesia's health system in addressing

health hazards to women once they become pregnant will be a crucial factor in whether the country can meet the 2030 SDG maternal mortality target of 70 maternal deaths per 100,000 live births (Utomo et al., 2021).

Trends in birth and death rates in Indonesia can be seen in Figures 4 and 5.

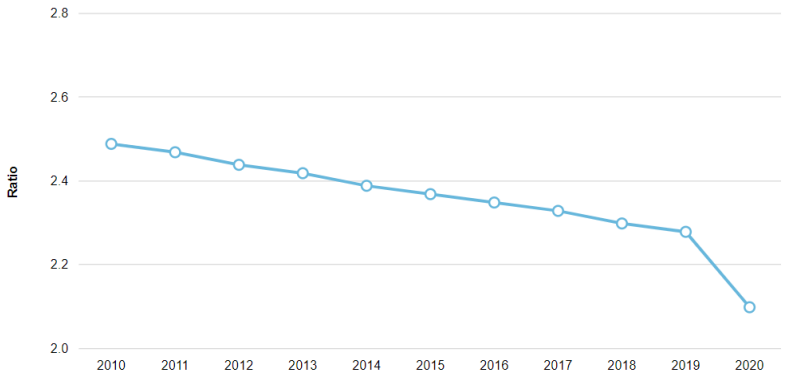

Figure 4. Indonesia Fertility Rate
Adapted from Statistics Indonesia (2023), available at https://www.bps.go.id/ Retrieved 2023-06-14

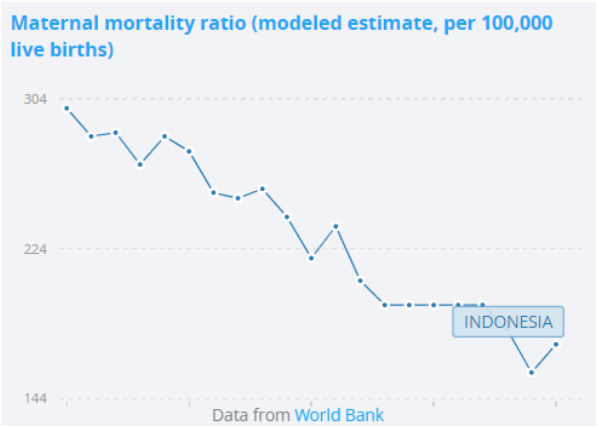

Figure 5. Indonesia Maternal Mortality Rate 2000-2023
Adapted from (WHO, UNICEF, UNFPA, World Bank Group, and UNDESA/Population Division, 2023). Available at https://data.worldbank.org. Retrieved 2023-06-14

Saudi Arabia has a fertility rate of 3.04 children per female, and 91% of women give birth in healthcare facilities (Altaweli et al., 2014). Nearly 300,000 women die daily from childbearing-related causes worldwide, with 99% coming from middle- and low-income nations (World Health Organization, 2023b). The maternal death rate in Saudi Arabia is predicted to be 24 per 100,000 live births, whereas the newborn mortality rate is around 10 per 1,000 live births (Alruwaili, 2023). Pregnancy or delivery-related problems, such as hemorrhage, hypertensive disorders, maternal sepsis, other infections, obstructed labor, and abortive results, all contribute to these unnecessary deaths. With half of the Arab population residing in rural areas, women face significant problems, such as limited access to prenatal and postnatal care services or undergoing procedures outside the hospital with no competent health personnel present (Esamai et al., 2020).

The rise in birth rates among women 35 and older may be related to premature birthrate. Older women are more likely to experience pregnancy issues like gestational diabetes and hypertensive diseases. These issues may affect the length of the pregnancy and the general health of the growing fetus (Durham et al., 2014).

The costs rise as more advanced and complex technology is introduced into today's environment. Obstetric care is becoming lucrative for providers (Mahendradhata et al., 2017). Health is established as an important goal in the Indonesian constitution and well-defined in the Ministry of Health's National Strategic Plan. Indonesia continues to struggle regarding financial security and equity in health finance. Even though JKN coverage is gradually rising, out-of-pocket (OOP) spending is above average. Catastrophic spending remains high, with many workers in the informal sector remaining uninsured. The single risk pooling mechanism (JKN) implementation poses various dangers to fairness in healthcare financing and service utilization fairness. Because all funds and risks are pooled together, provinces or districts with insufficient health infrastructure, supply-side

preparation, and lower healthcare utilization may receive less government assistance than well-developed locations (Mahendradhata et al., 2017).

Medical technology has contributed to several significant advances in maternal and child health: childhood diseases such as measles and poliomyelitis have been nearly eradicated through immunization; specific genes responsible for many inherited diseases have been identified; stem cell therapy may make it possible in the next few years to replace diseased cells with new growth cells; new fertility drugs and techniques allow more couples to conceive than ever before; and the Furthermore, an increasing tendency towards health care consumerism, or self-care, has led to many reproductive and childrearing families being active participants in their health monitoring and care. Healthcare consumerism has also shifted care away from hospitals and towards community sites, away from long-term hospital stays, and towards overnight surgery and ambulatory settings (World Health Organization, 2022).

Even though health care is becoming more advanced, it is still unavailable to everyone. These and other socioeconomic shifts and trends have enlarged nurses' responsibility in mother and child health care, making excellent maternity and neonatal health nursing care a constant challenge. According to studies and reports from low- and high-income countries, many low-income countries have higher maternal, fetal, and neonatal mortality rates. These disparities have numerous causes, including inadequate prenatal care and domestic births. In low-income settings, maternal mortality rates range from 150 to more than 1,000 per 100,000 live births, while stillbirth and neonatal mortality rates are typically between 20 and 40 per 1000 births. Intrapartum stillbirth, or stillbirths during labor and delivery, is an essential indicator of obstetric care quality. While intrapartum stillbirths have been virtually eliminated in high-income countries, they account for up to half of all stillbirths in low-resource settings. Universal access to high-quality facility care reduces mortality and morbidity significantly (Esamai et al., 2020).

In low- and middle-income countries, inadequate antenatal care results in a failure to detect and manage high-risk pregnancies. This lack of access to antenatal care and obstetric complications contribute to a high infant mortality rate, including stillbirths. In nations with a high standard of living, access to prenatal care is virtually universal. In the neonatal period, prematurity, infections, and asphyxia account for approximately 80% of global fatalities, most occurring in developing nations. Prenatal and intrapartum factors primarily cause asphyxia, preterm births, and neonatal peritonitis. Four out of ten infants die within the first month of life. The most lethal infectious diseases for children who survive the first month are pneumonia, gastroenteritis, and malaria (Esamai et al., 2020).

As a co-morbidity, malnutrition contributes to over two-thirds of these fatalities. Over one-third of all fatalities among children under five are due to malnutrition. In developing nations, many births occur outside health facilities and are attended by untrained attendants. It is known that facility birth is the single most effective intervention for preventing maternal and newborn morbidity and mortality. However, this is only the case if the facility provides quality care. Only 7% of newborns are resuscitated by skilled health professionals trained in neonatal resuscitation, and only 22% are born in health facilities with appropriate resuscitation equipment. One emerging obstacle to attaining and sustaining desired maternal and child health targets is neglecting the gap between the community and primary care health facilities, failing to adopt a systems/holistic approach and the continuum of the three-delays model (Esamai et al., 2020)

B. ISSUES IN MATERNITY NURSING

Congratulations. You have understood the trends in maternity nursing. In the following sessions, you will identify various issues in maternity nursing. Do you know what the issue is? How is it different from a trend? According to Oxford Languages, the issue is an important topic or problem for debate or discussion. For

example, the issue of global warming. The following explains the issues in maternity nursing currently being discussed.

Teenage pregnancy rates, tobacco use during pregnancy, substance abuse during pregnancy, obesity, and health inequities are major challenges affecting the health of mothers and infants. Teen births affect teen moms and their offspring in the long run, posing many challenges for both teen parents and society (Durham et al., 2014; Leifer, 2019).

- **Teenage pregnancy**

A woman under 20 becoming pregnant is known as a teen pregnancy. Typically, it refers to teenagers in the 15–19 age range. But females as young as ten can participate. Adolescent or teen pregnancy are other names for it (Mann et al., 2020).

Since 1990, the number of births in the United States caused by teen moms has decreased gradually. Over 158,000 children were delivered to teenagers aged 15 to 19 in 2020, a 75% decrease from 1991. Both the decrease in teen sexual activity and the increase in the use of birth control when they engage in it contribute to this trend. Many issues will be increased for teenage mothers. Health problems affecting children born to teen mothers are premature birth, and low birth weight are more likely to occur in children born to teen mothers. Infants that are premature or have low birth weight are more likely to experience infant mortality, respiratory distress syndrome, intraventricular hemorrhage, and visual and digestive issues. Health issues for teen mothers are at higher risk for sexually transmitted illnesses and HIV, like Chlamydia and Syphilis. Chlamydia increases the risk of newborn eye infection and pneumonia, and Syphilis causes neonatal blindness and increased risk of maternal and neonatal death. Teen mothers are also at higher risk for hypertensive problems during pregnancy (Bałanda-Bałdyga et al., 2020; Marino et al., 2016; World Health Organization, 2023a)

- **Tobacco use during pregnancy**

Smoking in pregnancy constitutes the largest remediable risk factor for maternal and child health. Many health effects have been documented. Nicotine and carbon monoxide are two main components of cigarette smoke that are known to impact fetal growth. While nicotine can reduce the passage of oxygen and other nutrients across the placenta by restricting uterine arteries, carbon monoxide reduces the quantity of oxygen accessible to the fetus, causing fetal hypoxia. In this case, those who will suffer from tobacco are not only active smokers, but passive smokers will also suffer losses. Passive smokers are pregnant women who do not smoke but live with or spend time with smokers who expose their children to environmental tobacco smoke (Cornelius & Day, 2000; Gould et al., 2020). Tobacco use during pregnancy can cause a variety of problems in the mother and baby, which include:

a. **Effects on Obstetric.** Maternal smoking during pregnancy increased risks of obstetric complications, e.g., higher rates of spontaneous abortions, ectopic pregnancies, placental abruption, placenta praevia, premature labor, and preterm birth, compared with pregnant non-smokers. Offspring may experience increased risks of respiratory problems, stillbirth, and sudden infant death syndrome (SIDS). Pregnant women who smoke tend to have altered nutritional levels, including lower folate and vitamin B12 (which raise the risk of hyperemesis gravidarum) and higher homocysteine levels (Gould et al., 2020).
b. **Effects on Infant Growth**. Maternal smoking during pregnancy has long been considered an important risk factor for low birth weight (LBW), birth length, and head and chest circumference shorter (Cornelius & Day, 2000). Smoking was associated with an increased risk of congenital birth defects, including cardiovascular, digestive, musculoskeletal, face, and neck defects, spina bifida, a cleft lip or palate, and heart defects such as atrial and ventricular septal defects (Gould et al., 2020).

c. **Long-Term Effects on Growth**. Maternal smoking was also significantly associated with a high ponderal index and reduction of the growth of the long bones in the fetus (higher proportionate weight for height, tended to be shorter, obesity, and skinfold thickness) (Cornelius & Day, 2000).
d. **Effects on Cognitive Function**. At birth, prenatal tobacco exposure has been associated with poorer auditory orientation, autonomic regulation, increased tremors and startles (muscle tone abnormalities), poor language development, lower cognition, deficits in visual memory, and verbal learning scores on the Wide Range Assessment of Memory and Learning test (Cornelius & Day, 2000).
e. **Effects on Activity, Attention, and Impulsivity**. Researchers reported associations between prenatal tobacco exposure, increased activity, inattention, impulsivity, and increased risk of attention deficit hyperactivity disorder (Cornelius & Day, 2000).
f. **Behavioral and Psychological Effects**. Researchers reported a significant effect of prenatal tobacco exposure on externalizing behaviors, including oppositional, aggressive, and overactive behaviors in 3-year-olds (Cornelius & Day, 2000).

- **Substance abuse during pregnancy**

Over the past few decades, pregnant women have consumed significantly more alcohol and illegal drugs than before. Alcohol and illicit drug use during pregnancy can significantly impact the health of the newborn and the growing fetus (Durham et al., 2014).

One of the main public health issues is prenatal alcohol exposure. Previous studies estimated that the prevalence of Fetal Alcohol Syndrome (FAS) among children born to pregnant women who drank heavily (defined as an average of two or more drinks per day or five to six drinks per occasion) was 4.3%, which is roughly three times higher than the prevalence of FAS among women in the general population who drank alcohol during pregnancy. Fetal

alcohol syndrome (FAS) is a condition that occurs when pregnant women consume alcohol that interferes with the development of the fetus in the womb. This syndrome is characterized by growth retardation, facial malformations, and central nervous system impairment (Sebastiani et al., 2018). A number of congenital abnormalities, including preterm birth, abruption placenta, drug withdrawal in the newborn, and abruptio placenta, are all linked to exposure to illicit drugs during pregnancy (Durham et al., 2014). Drugs classified as illicit include extremely addictive illegal substances, including heroin, marijuana, and meth. Although using one of these medicines for the first time is typically a voluntary decision, an unforeseen addiction might make quitting later substantially more difficult (Sebastiani et al., 2018). For more details about substance abuse during pregnancy, please read and make summary the following references:

a. Nawi, A. M., Ismail, R., Ibrahim, F., Hassan, M. R., Manaf, M. R. A., Amit, N., Ibrahim, N., & Shafurdin, N. S. (2021). Risk and protective factors of drug abuse among adolescents: A systematic review. BMC Public Health, 21(1), 2088. https://doi.org/10.1186/s12889-021-11906-2
b. Sebastiani, G., Borrás-Novell, C., Casanova, M. A., Pascual Tutusaus, M., Ferrero Martínez, S., Gómez Roig, M. D., & García-Algar, O. (2018). The Effects of Alcohol and Drug Abuse on Maternal Nutritional Profile during Pregnancy. Nutrients, 10(8), 1008. https://doi.org/10.3390/nu10081008

- **Obesity**

Obesity is a body mass index (BMI) greater than or equal to 30 (Durham et al., 2014). Can you calculate body mass index? How is the body mass index determined? Simple math determines a person's body mass index using height and weight. BMI is calculated as follows: kg = weight in kilograms/m2, where m2 equals height in meters squared (Marshall et al., 2022).

In pregnancy, the causes and effects of obesity are complex. Obese moms need risk-adapted pregnancy treatment since obesity

is linked to poor maternal and fetal outcomes. The American Medical Association adopted Resolution 420 (A-13) in 2013, with the support of numerous national medical specialty organizations in the US, recognizing obesity as a disease state with multiple pathophysiological characteristics that calls for various measures to better its prevention and treatment (Strauss, 2021). Obesity in childbearing women has adverse effects on both the woman and her child. Obese pregnant women are at higher risk for gestational hypertension, preeclampsia, gestational's diabetes, thromboembolism, cesarean birth, wound infections, shoulder dystocia related to macrosomia (birth weight of ≥ 4,000 grams), sleep apnea, and anesthesia complications. The fetuses and or infants of obese pregnant women are at higher risk for fetal abnormalities, spina bifida, heart defects, anorectal atresia, hypospadias, intrauterine fetal death (IUFD), birth injuries related to macrosomia, childhood obesity, and diabetes (Durham et al., 2014).

- **Health Disparities**

Health disparities are discrepancies in access to, use of, and health consequences for various criteria, including age, race, ethnicity, socioeconomic level, geographic groups, and population health status (Durham et al., 2014). There is a limited in-depth understanding of the levels of maternal mortality and morbidity and the causes of their occurrence, despite the rising global attention on maternal mortality as a public health issue. A significant number of maternal deaths occur in environments where vital records are incomplete and many unwell mothers cannot get care (Small et al., 2017). The causes of the majority of maternal deaths are unclear. However, based on the information, it can be estimated that between 2003 and 2009, direct obstetric causes were responsible for roughly 73.0 percent of all maternal deaths, while indirect causes were responsible for 27.5 percent of all fatalities. The major causes of maternal mortality are hemorrhage, hypertension, sepsis, abortive outcomes, embolism, and other direct causes. More than 72.6 percent of deaths from hemorrhage were classified as

postpartum hemorrhage (Filippi et al., 2016). Figure 6 will explain how much each of these causes maternal death.

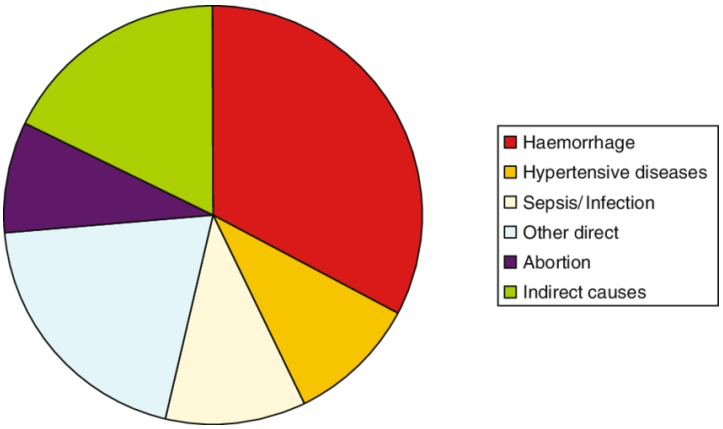

Figure 6. Main causes of maternal death
Adapted from World Health Organization. (2023). Maternal mortality. *World Health Organization*. Available at https://www.who.int/news-room/fact-sheets/detail/maternal-mortality. Retrieved 15 Jun. 23

C. FAMILY-CENTERED MATERNITY CARE

Maternity care is now more focused on the family. A family-centered approach is a fundamental unit of society that promotes family unity. Integration and bonding are emphasized, and much anticipatory counseling is provided. According to the International Childbirth Education Association (ICEA), family-centered maternity care is the basis upon which normal physiologic maternity care is built. Furthermore, family-centered maternity care can be provided in any birth site, including the home, birth center, hospital, or even in an emergency circumstance. In brief, family-centered maternity care respects the family unit by promoting physical and psychological development through evidence-based, tailored treatment. FCMC's primary purpose is to instill confidence in new parents. Supporting new parents throughout pregnancy and postpartum increases their confidence in their talents. When experts undertake duties that parents can do independently, the parent's

sense of competence is undermined. Genuinely family-centered care assists parents in caring for their newborns. In the case of high-risk infants, parents should be involved in as many aspects of the infant's care as possible, including, but not limited to, decision-making, kangaroo care, and breastfeeding (Durham et al., 2014).

Confidence in the lady and her family is essential for successful family-centered care. Excellence in technical and medical elements of treatment is anticipated, but it is insufficient in and of itself. Birth is more than just transferring the baby from the inside to the outside. It is one of life's most critical emotional and social growth stages. Women must be well informed to make sound decisions. Prenatal care should include teaching the woman about pregnancy, birth, and postpartum care and informing her of evidence-based research and all available options (De Labrusse et al., 2016).

Healthcare personnel must be knowledgeable to give quality care. Evidence-based research must be integrated into existing practice. This evidence will not occur if individuals providing care are unaware of the research findings (De Labrusse et al., 2016).

Facilities that promote FCMC will educate their personnel on topics such as communication skills, labor support, non-pharmacologic types of pain management, breastfeeding assistance, and perinatal mental disorders. The mother's cultural preferences should be respected. All medical personnel should support the mother's role as the infant's primary caregiver (Afulani et al., 2021).

The mother and her family will also receive evidence-based instruction at the facilities. Education should be part of every prenatal and postpartum visit and specific childbirth and nursing sessions. Support groups for breastfeeding, perinatal mental disorders, and early childhood parenting should be easily accessible (Afulani et al., 2021).

FCMC leads to higher satisfaction for all parties concerned. Families cared for using a family-centered paradigm are more satisfied with their birth experience. They will have a say in the

decision-making process, which will boost their self-esteem. Real-world experience will have confirmed their learning. Healthcare practitioners that work in a family-centered paradigm will likewise be more satisfied (De Labrusse et al., 2016).

FCMC acknowledges the significant changes that take place during the reproductive year. The physical changes are noticeable. The importance of social and emotional adaptations is not lessened. Genuinely family-centered care is secure, both physically and emotionally. Communication that is skillful and empathetic should go hand in hand with medical knowledge. Relationships based on respect should be the foundation of collaborative decision-making. The most recent evidence-based research must be available to parents and professionals alike. Numerous healthcare and governmental organizations have established various protocols to encourage family-centered treatment. These are valuable and necessary. Before maternity care is family-centered, attitudes and organizational structures must shift (Afulani et al., 2021).

D. EVIDENCE-BASED PRACTICE IN MATERNITY NURSING

Healthcare professionals increasingly believe practice decisions should be based on the best available knowledge or evidence. Evidence-based practice (EBP), as well as terms like evidence-based medicine (EBM) and evidence-based nursing (EBN), reflect a significant global paradigm shift in how health care outcomes are viewed, how the discipline is taught, how practice is conducted, and how health care practices are evaluated for quality (Durham et al., 2014).

Evidence-based care is described as the meticulous use of the best available evidence so that the clinician and the client can make the best decision, considering the client's needs and values (Wodajo et al., 2023a). It necessitates three principles. The first is the ability of the carers to use the appropriate knowledge in a given situation. The second requires physicians to examine the needs and values of those receiving treatment. The third necessitates that care professionals consider the patient's preferences in the specific

scenario. Adopting these principles of evidence-based care practice contributes to optimal care for women throughout the intrapartum interval. Evidence-based care (EBC) is thus a crucial component of maternity and newborn health care that is an effective strategy to improve intrapartum care quality and minimize maternal and neonatal death and morbidity (Enria et al., 2021).

A medical strategy known as evidence-based practice (EBP) combines the best available research data with clinical knowledge and patient values. Making sure that “stakeholders” (health professionals, patients, family members, and caregivers) are aware of and use research evidence to inform their decisions about their health and healthcare includes translating evidence into practice, also known as the knowledge translation (Elzeblawy Hassan, 2020).

Evidence-based maternity care and childbirth, to put it simply, are practices that are based on facts that have been established through peer-reviewed literature and medical research. It involves providing high-quality treatment while causing the least amount of harm. Unfortunately, routine hospital treatment is not provided in this manner in many regions of the world. In truth, many hospital practices put healthy mothers and babies at risk and directly conflict with current medical knowledge. Hospital standard care might involve a lot of interventions. IVs, continuous fetal monitoring, epidurals, dietary restrictions, motion restrictions, and having mothers push in the supine position can all put a mother and her unborn child under undue stress, interfere with the hormone cycle, and cause difficulties (Lowdermilk et al., 2013; Wodajo et al., 2023a).

Health care frequently falls short in transferring research into practice and improving care. While EBP has improved patient outcomes, significant gaps persist between what we know and what we do. Failure to adopt the most recent healthcare research is costly and dangerous and may result in the administration of ineffective care (Wodajo et al., 2023b).

Many innovations have become standard practice in perinatal nursing: fetal monitoring, mother/baby care, and early postpartum

discharge. Medical and technological innovations, the social context of the time, and families' preferences and healthcare costs influenced these changes in care. The realities facing current perinatal nursing care are how nurses respond to the increasing use of technology during birth, threats of litigation, and providing the best care under time and cost constraints (Elzeblawy Hassan, 2020).

Continuous electronic fetal monitoring (EFM) in labor is one of the most common interventions during labor. However, little evidence supports continuous electronic fetal monitoring, particularly with low-risk patients. Two Cochrane Reviews compared the efficacy and safety of routine continuous EFM of labor with intermittent auscultation. The reviewers concluded that routine EFM has no measurable impact on infant morbidity and mortality. In the latest review, the authors concluded continuous EFM during labor is associated with a reduction in neonatal seizures but no significant differences in cerebral palsy, infant mortality, or other standard measures of neonatal well-being. However, continuous EFM was associated with increased cesarean and operative vaginal births. They noted the real challenge is how best to convey this uncertainty to women to enable them to make an informed choice without compromising the normality of the labor (Durham et al., 2014).

It is no longer acceptable for nurses to continue doing things the way they have always been done, by tradition, without questioning whether or not it is the best approach. Nurses can ensure EBP by participating in multidisciplinary teams that generate research-based practice guidelines (Wodajo et al., 2023).

Summary

Technology development has significantly impacted maternity nursing, leading to a shift in the management of labor and delivery from minimal intervention to high-quality and well-controlled interventions. It has led to a decrease in the incidence of cesarean delivery and labor induction and an increase in the use of

technology to control the birth process. Medical technology has also contributed to significant advances in maternal and child health, such as the near eradication of childhood diseases through immunization, the identification of inherited disorders through stem cell therapy, and the ability to delay preterm birth.

Trends in maternity nursing include the Family-Centered Maternity Care approach, where maternity nurses focus on physiological and psychosocial changes and the needs of families who give birth to children. This approach has allowed prospective fathers and their families to participate in the labor and birth of their babies, reducing morbidity and postoperative pain.

In conclusion, maternity nursing has evolved significantly due to technological advancements and evidence-based practices. By staying current and adapting to new trends, maternity nurses can better support their patients and improve the overall quality of care they provide.

Exercise

1. The global paradigm shift in how health care outcomes are viewed, how the discipline is taught, how practice is conducted, and how health care practices are evaluated for quality is called:
   a. Trends
   b. Issues
   c. Paradigm
   d. EBC
   e. EBP

   Answer: E
2. The following is not included medical technology that has contributed directly to maternal and child health:
   a. Estimated date of delivery application in play store
   b. A device for detecting bleeding in the brain
   c. SMS/voice messages to pregnant women
   d. A fetoscope with electronic fetal monitors
   e. Bloomlife

Answer: B

3. The following is an essential indicator of obstetric care quality:
   a. Birthrate
   b. Intrapartum stillbirth
   c. The incidence of preeclampsia
   d. Number of people of reproductive age
   e. Nurses' responsibility in mother and child health care

   Answer: B
4. The two most important predictors of an infant's health and survival after birth are:
   a. Gestational age and birth weight
   b. Gestational age and early prenatal care
   c. Gestational age and complication during labor and birth
   d. Gestational age and Apgar score
   e. Gestational age and behaviour of mother

   Answer: C
5. Infant mortality is defined as a death before _____.
   a. 28 days of age
   b. 6 months of age
   c. 12 months of age
   d. 18 months of age
   e. 24 months of age

   Answer: A

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CHAPTER 3.

THE CONCEPT OF NURSING CARE IN PREGNANCY

INTRODUCTION

Pregnancy-related avoidable morbidity and mortality rates were still too high in 2016, the first year of the Sustainable Development Goals (SDGs) era. Although significant progress has been accomplished, nations must consolidate and accelerate these developments and broaden their goals beyond just survival to maximize their populations' health and potential. In the future, World Health Organization (WHO) wants to see a lot in which every expecting mother and new baby can access high-quality care during pregnancy, delivery, and postpartum. Antenatal care (ANC), a component of the continuum of reproductive health care, offers a platform for crucial medical tasks such as disease prevention, screening, and promotion of good health. It has been proven that ANC can save lives by employing timely and suitable evidence-based procedures. Importantly, ANC offers the chance to interact with and support women, families, and communities at a crucial juncture in a woman's life. Creating these ANC recommendations has brought to light the significance of effectively communicating with pregnant women about physiological, biomedical, behavioral, and sociocultural issues and effectively supporting them respectfully with social, cultural, emotional, and psychological support. ANC's support and communication capabilities are crucial for saving lives and enhancing the quality of care, healthcare usage, and life outcomes. Positive ANC and birthing experiences for women can

lay the groundwork for a successful pregnancy and labor (World Health Organization, 2016).

Prenatal care is one of the roles and responsibilities of maternity nurses covered in the previous chapter. They strive to keep expectant mothers and their unborn children healthy. This kind of procedure keeps the fetus healthy and helps avoid any issues. Nurses advise on daily routines during pregnancy, educate expectant parents, enhance mental and physical balance, and maintain children's health before, during, and after birth. This advice is a crucial component of promoting pregnant women's welfare. Along with various information on parental self-care, such as hygiene, diet, warning indications of childbirth and pregnancy, and breastfeeding, the maternity nurses also offer advice to expectant mothers (Khandagale et al., 2021).

The care given to pregnant women and adolescent girls by trained healthcare professionals to promote the most excellent possible health outcomes for both mother and child during pregnancy is known as antenatal care (ANC). Identifying risks, preventing and treating diseases associated with or present during pregnancy, and promoting health and education are all parts of ANC. Through the early detection and treatment of pregnancy-related complications and identifying women and girls who are more likely than others to experience difficulties during labor and delivery, ANC lowers maternal and perinatal morbidity and mortality (World Health Organization, 2016).

Pre-eclampsia and eclampsia are significant causes of maternal and perinatal morbidity and mortality, with pre-eclampsia and eclampsia accounting for around a quarter of maternal deaths and near misses. Antenatal screening for pre-eclampsia is a critical component of optimal ANC. It is regularly performed at each ANC encounter by testing the mother's blood pressure and looking for proteinuria. If pre-eclampsia is detected, particular therapy is required to prevent eclampsia and associated poor maternal and perinatal outcomes (Durham et al., 2014).

KEY TERMS

- Morbidity
- Mortality
- Antenatal care (ANC)
- Naegele's rule
- Screening
- Prenatal care
- The fetus
- Prenatal assessment
- Ballottement
- Ultrasound photography
- Melasma
- Anamnesis
- Obstetric history
- Menstrual history
- Gestational diabetes
- Trimester
- Gravida
- Nulligravida
- Primigravida
- Abdominal striae
- Fetoscope
- Linea nigra
- Multigravida
- Gestational age
- Presumptive signs
- Probable signs
- Positive signs
- Goodell's sign
- Chadwick's sign
- Hegar's sign
- Pregnancy test
- Doppler
- Leopold's maneuvers

LEARNING OBJECTIVES

After completing this chapter, it is hoped that you will be able to:

- Describe the assessment of pregnancy.
- Explain various nursing diagnoses in pregnant women, both in normal pregnancies and pregnancies with complications.
- Develop a nursing care plan based on the nursing diagnosis in pregnant women.
- Describe physical examination procedures in pregnant women
- Describe health education needed by pregnant women

A. ASSESSMENT OF PREGNANCY

Prenatal assessment terminology is a set of terms used to describe obstetrical history and to define a woman's obstetrical status. Maternity nurses assess pregnant women through three stages: anamnesis, physical examination, and collaboration of

diagnostic tests if needed. An assessment for risk factors that may affect the pregnancy is performed during the first visit and is updated at subsequent visits.

1. Anamnesis in Pregnant Women

Anamnesis is usually done for pregnant women visiting a health service for the first time, such as a health center or obstetric clinic. An assessment for risk factors that may affect the pregnancy is performed during the first visit and is updated at subsequent visits. Anamnesis must be done in a private and comfortable situation, using language that is easily understood by the patient and done in a relaxed manner, not in a hurry. The history begins with the Nurse introducing herself and asking the patient open-ended questions, such as “What are you complaining about? What made you come to the health service today? Whom did you come with?”

At this first meeting, the Nurse must foster a warm relationship and show empathy to promote the patient’s trust in the Nurse so that the patient will be open and honest in answering all the Nurse’s questions to explore the health problems of the pregnant woman. When conducting anamnesis, the Nurse can use the form provided to avoid forgetting things in the anamnesis. The structure and content of the anamnesis format for pregnant women will vary in each hospital or clinic. However, in principle, it contains information about biographical data, reasons for visiting health services, obstetric history, menstrual history, health history of the woman and her partner, current health or history of present illness, past medical history, family history, contraceptive history, and psychosocial history of the Woman and her partner (Durham et al., 2014; Leifer, 2019; Lowdermilk et al., 2013).

a. Biographical data

Things that need to be asked about the identity of pregnant women, namely: name, age, education, ethnicity, address, marital status, occupation, religion, and race. Identifying the age of pregnant women is essential because advanced maternal age (AMA) increases the risk of pregnancy

complications, including ectopic pregnancy, spontaneous abortion, fetal chromosomal abnormalities, congenital anomalies, placenta previa and abruption, gestational diabetes, pre-eclampsia, and cesarean delivery. Such complications could cause preterm birth and increase the risk of perinatal mortality. Demographic data show an increased population of women aged 35–45 influenced by evolving social and cultural changes, including higher divorce rates, having multiple partners before settling down, living together before marriage, and having a later or second marriage. Women with higher socioeconomic status (SES) and higher education tend to delay motherhood into their mid-to-late 30s. Advances in medical sciences have provided women with better contraceptive options and more available fertility treatment, but SES affects access to and utilization of assisted reproductive technology (ART) (Correa-de-Araujo & Yoon, 2021).

b. Reasons for visiting health services

Complaints patients feel stated as reasons that cause pregnant women to visit health services. Pregnant women can come without complaints and want to know about their and their babies' health. According to WHO recommendations, ANC is carried out at least eight times for every pregnant Woman, with details twice in the first trimester, once in the second trimester, and three times in the third trimester. Added at least once examined by a doctor during the first visit in the first trimester and once during the third-trimester stay (World Health Organization, 2016).

c. Obstetric history

In this section, the Nurse examines the number and outcomes of past pregnancies and the problems in the mother or infant. The following phrases are used to describe the obstetric history of a woman:

- Gravida: any pregnancy, regardless of duration; also, the number of pregnancies, including the one currently in

progress. Gravida refers to the total number of times a woman has been pregnant without referencing how many fetuses there were with each pregnancy or when the pregnancy ended. It is simply how often a woman has been pregnant, including the current pregnancy.

- Nulligravida: a woman who has never carried a pregnancy to term or has never been pregnant or given birth.
- Primigravida: a woman who is pregnant for the first time.
- Multigravida: a woman who has previously given birth, regardless of the number of pregnancies, or is pregnant for at least the second time.
- Para: a woman who has given birth to one or more children who have reached the age of viability (20 weeks gestation), regardless of the number of fetuses delivered or whether the children are still alive.
- Nullipara: A woman who has never given birth to a viable child.
- Primipara: a mother who has given birth to her first child (after the point of viability), regardless of whether or not the newborn was alive at birth or is still alive. Informally, the expression is also used to refer to a woman before the birth of her first child. Para refers to the number of births after 20 weeks gestation, whether live births or stillbirths. There is no reference to the number of fetuses delivered with this system, so twins count as one delivery, just like a singleton birth.
- Multipara: a woman who has given birth to two or more children (past the point of viability), whether or not the children were alive at birth or are still living. Informally, the term is also used to characterize a woman before the birth of her second child.
- Abortion: The spontaneous or induced termination of a pregnancy before viability (20 weeks gestation), which may occur before viability.

- Gestational age: The prenatal age of the developing fetus as determined from the first day of the Woman's LNMP.

The number of pregnancies is indicated by the word gravida. The term "para" denotes how the pregnancies turned out. The para number only rises when a woman delivers a fetus at least 20 weeks gestational, in contrast to the gravida number, which increases by one each pregnancy. For instance, a lady who is 32 weeks pregnant, has a 3-year-old son and has experienced two spontaneous abortions (miscarriages) at 12 weeks gestation would be classified as gravida 4, para 1, abortions 2. The prenatal record of a woman's pregnancy can be standardized by using the GTPAL system to describe the specific outcomes of each pregnancy. Another country used The GTPALM system. This recording system adds information on whether pregnant women have ever been pregnant or given birth to multiple babies.

GTPAL (meaning gravida, term, para, abortion, and living) is a more comprehensive system that gives information about each infant from prior pregnancies. This system designates the numbers of infants as follows:

G = total number of times pregnant (same as G/P system above)
T = number of term infants born (after 37 completed or 37 6/7 weeks gestation)
P = number of preterm infants born between 20 and 37 completed weeks gestation or 37 6/7 weeks)
A = number of abortions (either spontaneous or induced) before 20 weeks gestation (or <500 grams at birth)
L = the number of children currently living.

The following is an example of writing an obstetric history using the GTPALM and GTPALM systems.

Name	Gravida	Term	Preterm	Abortions	Living	Multiple
Mrs. A	3	0	1	1	0	0
Mrs. B	3	1	0	1	2	1

Based on the data, Nurse can write:
Mrs. A: G3 P0110 (GTPAL) G3 P01100 (GTPALM)
Mrs. B: G3 P1012 (GTPAL) G3 P10121 (GTPALM)
In this section, nurses also identify:

- If women have experience with abortions, if any, were spontaneous or induced. Type of birth experiences (e.g., induced or spontaneous labors, vaginal or cesarean births, use of forceps or vacuum-assist, type of pain management)
- Complications with past pregnancy or childbirth and birth.
- Length of gestation each past pregnancy
- Neonatal outcomes including Apgar scores, birth weight, neonatal complications, feeding method, health, and development since birth
- Pregnancy loss and assess the grieving status

d. Menstrual history

In this section, Nurse asks the Woman about regularity, frequency, length of menstrual cycles, and the first day of the last normal menstrual period (LNMP). The Woman's estimated delivery date (EDD) is calculated based on LNMP. After the first day of the LNMP, the intermediate-term pregnancy persists for 40 weeks (280 days). Nagele's rule is utilized to calculate EDD. To determine the EDD, one must identify the first day of LNMP, count backward three months, and then add seven days. The year is revised if necessary. Numerous regular deliveries occur before or after the estimated date of delivery. A gestation wheel, an electronic calculator designed for this purpose, a physical examination, an ultrasound, or a combination of these methods may also be used to calculate the EDD. For example, the first day of LNMP is April 5, 2023. When should the mother give birth? She will birth on January 12, 2024.

Pregnancy is measured in weeks of gestation, starting on the first day of the LMP and ending with 40 finished weeks (the EDD) once an EDD has been established. The gestational wheel (Fig.7) is a helpful tool for rapidly and accurately determining the EDD. Still, because of variances of up to a few days between wheels, it is less accurate than Naegele's rule. Using Naegele's rule to predict a woman's due date first and a gestational wheel to ascertain her present gestational age is better. Place the "first day of last period" arrow from the inner circle on the date of the LMP on the outer ring to use the gestational wheel. The date on the outside circle that aligns with the arrow at 40 completed weeks on the inside circle is then read as the EDD. In the above scenario, the LMP and EDD are both _____.

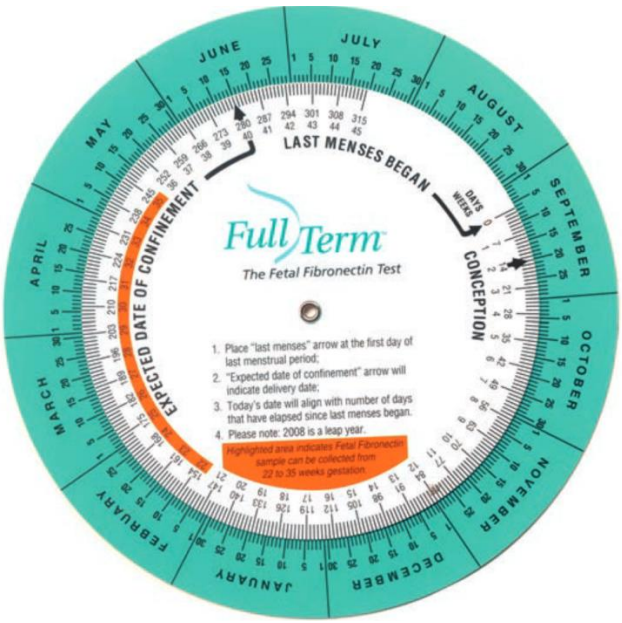

Figure 7. Gestational wheel**.**
Adapted from Durham, R. F., Chapman, L., & Chapman, L. (2014). *Maternal-newborn nursing: The critical components of nursing care* (2nd ed). F.A. Davis

To utilize the gestational wheel, align the arrow from the inner circle marked “first day of last period” with the date of the LMP on the outer ring. The EDD is then identified as the date on the outer circle that coincides with the arrow at the inside circle’s 40 completed weeks. The LMP for the scenario in Figure 7 is September 7, and the EDD is June 14.

e. Health history of the woman and her partner

The Nurse must recognize danger signs (such as genetic flaws or drug, alcohol, or tobacco usage) and potential blood incompatibility between the mother and the fetus. Alcohol, cigarette, and illicit drug use during pregnancy can cause poor pregnancy outcomes and early childhood behavioral and developmental problems. Maternal smoking during pregnancy has been shown to have a deleterious effect on the neural development of the fetus. Studies have shown a relationship between maternal smoking and psychiatric disorders in the offspring, such as schizophrenia and attention-deficit hyperactivity disorder (Niemela et al., 2016). Smoking during pregnancy also may affect the developing eggs of the female fetus, which will affect the smoker’s grandchildren (Halliday, 2017). The use of marijuana during pregnancy is associated with preterm birth (Leemaq, 2016). The pregnant woman should not be given nicotine replacement therapy, as the effect of replacement therapy can result in long-term lung problems in the offspring (Janssen and Oudÿk, 2017). The Nurse should discuss the habit of smoking and drug use during early prenatal care.

f. The current health of the woman

At this point, the Nurse examines the signs and symptoms of pregnancy to determine whether the Woman is positively pregnant. In addition, it is necessary to identify the ability of pregnant women to adapt to changes in physical changes due to the pregnancy process. Pregnancy is divided into three 13-week parts called trimesters. In each trimester of pregnancy, different physical changes occur in response to the growth

and development of the fetus (Leifer, 2019). The following will explain the signs and symptoms of pregnancy and the physiological changes in pregnancy. In this case, examining whether diseases accompany the current pregnancy is necessary. If any, the Nurse should ultimately ask a chronological story that includes the onset of the problem, under what circumstances the issue arose, its manifestations, and the various treatments the pregnant Woman had taken. The main complaint must clearly describe the symptoms experienced, location, quality or character, quantity or severity, time (onset, duration, frequency), situation, triggering and relieving factors, related factors, and how pregnant women perceive the symptoms experienced (Leifer, 2019).

Signs and symptoms of pregnancy are grouped into three general categories: presumptive, probable, and positive. Presumptive signs of pregnancy are those from which a pregnancy cannot be diagnosed with certainty. The probable signs of pregnancy probable indications of pregnancy provide more vital evidence of pregnancy. Positive signs of pregnancy only a developing fetus causes positive signs of pregnancy (Durham et al., 2014).

Presumptive signs of pregnancy are amenorrhea, nausea, breast tenderness, deepening pigmentation, urinary frequency, and quickening. Although these signs and symptoms are frequent during pregnancy, other illnesses can frequently be the source of them (Durham et al., 2014). Amenorrhea, or the absence of menstruation, is frequently the first indication of pregnancy in a healthy, sexually active woman. Anorexia nervosa, early menopause, chronic disease, specific drugs, intense exercise, changes in metabolism and endocrine dysfunction, and severe psychological disorders may also be to blame. At least half of all pregnancies involve nausea and occasionally vomiting; these symptoms are not harmful to the mother or the unborn child and may be brought on by an increase in hCG levels in the early stages of

pregnancy (Landon et al., 2021). The symptoms are known as “morning sickness,” but can happen anytime. As hormones from the placenta drive the formation of the ductal system in preparation for breastfeeding, breast alterations include soreness and tingling. Many women have similar breast changes before menstruation. Pink to brown lines, known as striae, may appear as the breasts grow (Leifer, 2019).

Changes in pigmentation are most common in women with dark skin. Increased pigmentation on the face (chloasma, or “mask of pregnancy”), breasts (darkening of the areolae), and belly (linea nigra, a line running down the middle of the abdomen from just above the umbilicus to the symphysis pubis) are all common skin changes associated with pregnancy (Bieber et al., 2017; Soma-Pillay et al., 2016).

Urination is frequently frequent and urgent in the first trimester of pregnancy. The growing uterus and the increased blood flow to the pelvic region cause pressure on the bladder. Frequent urination occurs in the first trimester until the uterus swells and becomes an abdominal organ in the second trimester. As the presenting section drops in the pelvis in preparation for birth, the third trimester causes the Woman to urinate more frequently. Infection of the urinary tract and pelvic masses are causes of urinary abnormalities that are not related to pregnancy (Soma-Pillay et al., 2016)

At 16 to 20 weeks of pregnancy, the mother initially feels fetal movement, known as quickening as a slight fluttering in the lower belly. Because they know how to recognize it, women who have already given birth frequently report quickening at an earlier stage. Because it roughly marks the halfway of the pregnancy and serves as another benchmark for confirming gestational age, this is an important event to document. Other potential reasons for this lower abdomen fluttering include abdominal gas, regular bowel motion, or fake pregnancy (pseudocyesis) (Durham et al., 2014).

The probable signs of pregnancy probable indications of pregnancy provide more vital evidence of pregnancy. However, these also may be caused by other conditions. The Probable signs include Goodell's, Chadwick's, Hegar's, abdominal enlargement, Braxton hicks contractions, ballottement, striae, and a positive pregnancy test (Kepley et al., 2023).

The softening of the cervix and vagina as a result of increased vascular congestion is known as Goodell's sign (Fig.8). The purplish or bluish discoloration of the cervix, vagina, and vulva that results from increased vascular congestion is known as Chadwick's sign (Fig.9). Both an infection or hormonal imbalance could bring on Goodell's and Chadwick's sign. The lower uterine segment softening is Hegar's sign (Fig.10) (Kepley et al., 2023).

Figure 8. Goodell's sign
Adapted from https://www.osmosis.org/world. Retrieved on June 16, 2023

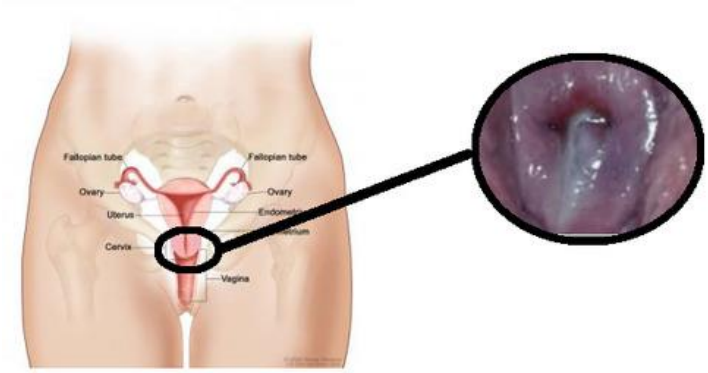

Figure 9. Chadwick's sign
Adapted from https://quizlet.com/_5pzcrk?x=1jqt. Retrieved on June 16, 2023

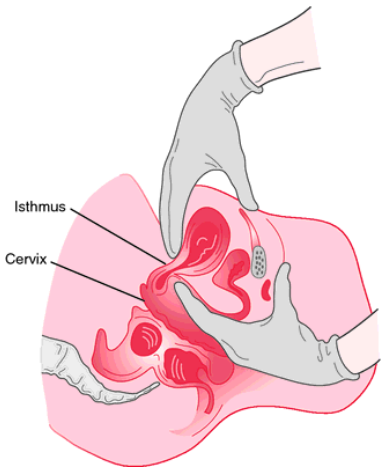

Figure 10. Hegar's sign
Adapted from McKinney. (n.d.) *The Columbia Electronic Encyclopedia*®. (2013). Retrieved on June 16, 2023, from https://encyclopedia2.thefreedictionary.com/McKinney

At the start of pregnancy, there is an uneven increase in the size of the abdomen and uterus. The uterine fundus can be felt at the end of the 12th week, right above the symphysis pubis, reaching the umbilicus between the 20th and 22nd week. Tumors in the uterus or the abdomen can also result in growth. Braxton Hicks contractions are irregular, painless

uterine contractions that begin in the second trimester. These contractions give the sensation of the abdomen being stiff and tense. They become progressively more noticeable as the term approaches and are more pronounced in multiparas. They may become strong enough to be mistaken for true labor. Uterine fibroids (benign tumors) may also cause these contractions (Soma-Pillay et al., 2016).

Ballottement (Fig.11) is a maneuver by which the fetal part is displaced by a light tap of the examining finger on the cervix, and then the part rebounds quickly. Uterine or cervical polyps (small tumors) may cause the sensation of ballottement on the examiner's finger. The fetal outline may be identified by palpation after the 24th week. It is possible to mistake a tumor for a fetus (Kepley et al., 2023).

Figure 11. Internal ballottement (18 weeks).
Adapted from Lowdermilk, D. L., Perry, S. E., & Cashion, K. (Eds.). (2010). *Maternity nursing* (8th ed). Mosby/Elsevier

Abdominal striae (stretch marks) are fine, pinkish-white, or purplish-gray lines that some women develop when the skin's elastic tissue has been stretched to its capacity (Fig.12). Increased amounts of estrogen cause an increase in adrenal gland activity. This change, in addition to the stretching, is believed to cause the breakdown and atrophy of the underlying connective tissue in the skin. Striae are seen on

the breasts, thighs, abdomen, and buttocks. After pregnancy, the striae lose their bright color, hey become thin, silvery lines. Striae may occur with skin stretching from any cause, such as weight gain (Oakley & Patel, 2023).

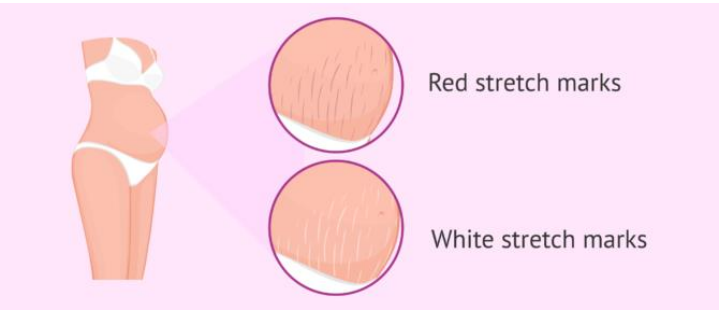

Figure 12. Abdominal striae (stretch marks)
Adapted from Salvador, Z. (2022). Why stretch marks appear in pregnancy and how to get rid of them. Available at https://www.invitra.com/en/. Retrieved on June 16, 2023

Pregnancy tests use maternal urine or blood to determine the presence of hCG, a hormone produced by the chorionic villi of the placenta. Home pregnancy tests based on the presence of hCG in the urine can have greater than 97% accuracy, but the instructions must be followed precisely to obtain this accuracy. Professional pregnancy tests are based on urine or blood serum levels of hCG, and they are more accurate. A highly reliable pregnancy test is the radioimmunoassay. The radioimmunoassay is a blood test that accurately identifies pregnancy 1 week after ovulation. Pregnancy tests (Fig.13) of all types are probable indicators because several factors may interfere with their accuracy, including medications such as antianxiety or anticonvulsant drugs, blood in the urine, malignant tumors, or premature menopause (Durham et al., 2014; Plebani, 2020).

Figure 13. Pregnancy test device
Adapted from Oliveira, D. (2022). Pregnancy Test: When & How to Take One. Available at https://www.tuasaude.com/en/home-pregnancy-test/. Retrieved on June 16, 2023

Positive signs of pregnancy only a developing fetus causes positive signs of pregnancy. These include a demonstration of fetal heart activity, fetal movements felt by an examiner, and visualization of the fetus with ultrasound. The fetal heartbeat may be detected by ten weeks gestation by using a Doppler device (Fig.14). The examiner can detect the fetal heartbeat using a fetoscope between 18 and 20 weeks of pregnancy. When the fetal heartbeat is heard with a fetoscope, this is important because it provides another marker of the approximate midpoint of gestation. When assessing the fetal heartbeat with a Doppler device or fetoscope, the Woman's pulse rate must be evaluated simultaneously to be sure that the fetal heart is actually heard. The fetal heart rate at term ranges between a low of 110 to 120 beats/min and a high of 150 to 160 beats/min. The rate is higher in early gestation and slows as the term approaches. Identification of the embryo or fetus by using ultrasound photography of the gestational sac (Fig.15) is possible at 4 to 5 weeks gestation with 100% reliability. This nonunion-invasive is the earliest positive sign

of a pregnancy. An ultrasound is often routinely performed around 20 weeks gestation (Leifer, 2019).

Figure 14. Doppler device
Adapted from Valeii, K. (2021). What Is a Fetal Doppler? A Tool for Listening to a Fetal Heartbeat. Available at https://www.verywellhealth.com/fetal-doppler-5119457. Retrieved on June 16, 2023

Figure 15. Ultrasound photography
Adapted from https://www.amazon.sa/-/en/Pregnancy-Ultrasound-Announcement-Trimesters-Expecting/dp/B08RC1MF39. Retrieved June 16, 2023

The physiological changes in pregnancy are typical for a patient to change various organ systems, such as cardiovascular, respiratory, gastrointestinal, urinary, and more, in response to a growing fetus. Factors that lead to changes in these organ systems include but are not limited to, changes in hormone levels, fetus size, and the physiologic requirements of the gravida and fetus, with the majority of physiologic changes returning to normal in the postpartum period. Many of the physiologic changes associated with pregnancy can be attributed to changes in hormones produced by the placenta. One such hormone is human chorionic gonadotropin (hCG), specifically, the beta subunit (beta-hCG). Beta-hCG is produced by the syncytiotrophoblastic cells of the placenta and is responsible for stimulating the corpus luteum to produce progesterone, which is essential in maintaining pregnancy (Betz & Fane, 2023).

The cardiovascular system of a pregnant individual will undergo significant physiologic changes, including an increased heart rate, stroke volume, cardiac output, and a decrease in vascular resistance. Increased ventricular wall mass, myocardial contractility, and cardiac compliance are also seen (Soma-Pillay et al., 2016).

Functional residual capacity (FRC) is the sum of expiratory reserve volume (ERV) and residual volume (RV). Throughout pregnancy, due to the enlarging uterus, the resting position of the diaphragm shifts up approximately 5 cm, leading to bibasilar alveolar collapse and basilar atelectasis, thus decreasing the ERV and FRC. Vital capacity (VC) remains unchanged, as reduced ERV is accompanied by an increased IRV (Devis & Knuttinen, 2017).

In a pregnant individual, plasma renin levels rise, and atrial natriuretic peptide (ANP) levels tend to fall, leading to systemic vasodilation and increased vascular capacitance. This physiologic process, without compensation, would lead to

an underfilled vascular system. The maternal blood volume is increased by approximately 1.5 liters to compensate for this and blood loss during delivery. In addition, maternal erythropoietin production is increased, increasing red blood cell (RBC) mass by around 30%. This increase in plasma volume greater than RBC mass results in dilutional anemia, or physiologic anemia of pregnancy (Soma-Pillay et al., 2016).

As previously mentioned, increased cardiac output leads to increased blood flow to the kidneys, increased glomerular filtration rate (GFR) by about 50%, and increased renal plasma flow (RPF) by as much as 80%. This increased GFR leads to a subsequent decrease in the serum concentration of creatinine, urea, and uric acid. Due to fluid retention, the kidneys enlarge, and physiologic hydronephrosis occurs. Due to the actions of progesterone and relaxin on smooth muscles, dilation of the urinary collecting system occurs, which can lead to urinary stasis and a 40% increase in the predisposition for urinary tract infections and pyelonephritis with asymptomatic bacteriuria in pregnancy (Kepley et al., 2023).

Gastroesophageal reflux disease (GERD) is common in pregnant patients due to multiple factors. Increased pregnancy progesterone leads to reduced lower esophageal sphincter (LES) resting muscle tone, delayed gastric emptying, and increased short bowel transit time. These findings and compression from a gravid uterus predispose to GERD (Kepley et al., 2023).

During pregnancy, elevated hormone levels such as estrogen or progesterone can stimulate excess melanin production, leading to hyperpigmentation of the face, known as melasma. Linea nigra, a hyperpigmented line running down the center of the abdomen, may also occur due to pregnancy-related hyperpigmentation and is typically associated with increased pigmentation of the areolae, axillae, and genitals (Bieber et al., 2017).

g. Past medical history

In this section, nurses also identify past medical history. In the past medical history, it is necessary to study various diseases that may be experienced by pregnant women, such as diabetes, hypertension, kidney disease, allergies, lung disease, anemia, bleeding, heart disease, Covid-19, surgery, and others that can affect pregnancy and childbirth. Pregnancy may be experienced as a time of additional risk for women living with a chronic illness that demands increased monitoring or surveillance. Preexisting and pregnancy-related hypertension are the most common complicating conditions, mainly because of their high prevalence in older women and those who are overweight. Hypertensive pregnancy disorders (HPDs)—including gestational hypertension, pre-eclampsia/eclampsia, chronic hypertension, and pre-eclampsia or eclampsia superimposed to chronic hypertension—are major causes of maternal and fetal morbidity and mortality that affect 12% of all pregnancies. Preexisting diabetes and gestational diabetes increase three to six-fold in women aged> 40 years (vs. 20–29 years). Preexisting diabetes is associated with increased risks of congenital anomalies and perinatal mortality and morbidity. The incidence of gestational diabetes in the general obstetric population is 3%, rising to 7%–12% in women aged>40 years and 20% in those aged>50 years. A significant complication of gestational diabetes is macrosomia (Durham et al., 2014).

h. Contraceptive history

Providing high-quality primary and reproductive health care must start with assessments of pregnancy intention and contraceptive use. We discovered that teenagers were less likely to have a documented pregnancy intention, indicating that there may have been missed opportunities to have dialogues with sexually active teenagers about contraception and preconception care. Clinicians may underestimate the incidence of unplanned pregnancies and the likelihood of

maternal comorbidities among women aged 30 and older because documentation of contraception, particularly contraceptive nonuse, declined with age. Some women choose not to use birth control because of “other opposition,” which can include their spouses, other members of their families or communities, or even members of their religions. The Nurse asks about the type of contraceptive, whether an oral contraceptive was taken before the woman realized she might be pregnant, whether an intrauterine device is still in place (Thiel De Bocanegra et al., 2018).

i. The psychosocial history of the woman and her partner

According to the theory of fetal or perinatal programming, which holds that circumstances in the womb, like inadequate nutrition or higher levels of stress hormones during crucial developmental stages, cause complex adaptation processes to be triggered, there is an association between early environmental influences and later illnesses in children. The digestive, circulatory, and central nervous systems, among other organs, may experience lasting changes to their structure and operation due to this (Ulrich & Petermann, 2016).

The woman was also asked to identify stability of lifestyle and ability to parent a child, effective cultural practices or health beliefs that may affect the pregnancy (Durham et al., 2014). A woman’s pregnancy is not just a physical occurrence. She gradually transitions from accepting the fetus as a component of herself during the months of pregnancy to getting the child as a separate human being. She transforms from a lady who is pregnant to a mother. As the pregnancy progresses, the woman’s responses alter. Fathers’ reactions can be very different. Some women desire to actively participate in pregnancy’s emotional and physical aspects. Others favor taking on a management role, assisting the woman in following the doctor’s advice. While some men prefer not to participate actively during pregnancy or

childbirth, they want to “be there” for the mother. Cultural norms impact fathers’ roles since, in some societies, pregnancy and childbirth are exclusively seen as the task of women. If a father is less involved in the pregnancy and delivery than other family members, the Nurse should not infer that he is uninterested (Leifer, 2019).

2. Physical Examinations

Physical examination in pregnant women begins with checking vital signs and anthropometric measurements and continues with a head-to-toe physical examination. Physical examination is carried out every time the patient visits the antenatal service (Durham et al., 2014; Leifer, 2019).

Examination of vital signs involves measuring body temperature, blood pressure, pulse, respiration rate, and pulse oximetry. When standard vital signs alone are checked, it might be challenging to determine the patient’s physiological functioning. Pulse oximetry can occasionally aid. Vital signs accurately gauge a living thing’s fundamental physiological processes. They are called “vital” because measuring and assessing them is an essential initial step in any clinical evaluation. Assessing the patient’s vital signs constitutes the initial set of clinical examinations. Even though several indicators may be helpful in addition to the conventional four necessary sign parameters, research has only discovered that smoking status is significantly associated with patient outcomes (Nathan et al., 2018; Sapra et al., 2023).

Body mass index (BMI, most frequently pre-pregnancy), gestational weight gain (GWG), and skinfold thickness measurements (SFT) are a few anthropometric measures that have been employed throughout preconception and pregnancy to assess maternal body composition and changes throughout pregnancy. Pregnancy weight might be difficult to determine in emerging nations because prenatal treatment typically starts after the first trimester. Analogously, estimating total weight gain and evaluating anthropometry can be challenging. In this sense, SFT might be an

inexpensive, simple strategy, and offer sufficient lifestyle modifications to prevent disease even in low- and middle-income nations. Pregnancy SFT measurement has previously been documented. (Gómez-Carrascosa et al., 2021). Third-trimester anthropometric measurements may help predict increased risk for c-section in women with obesity. Several studies have examined the association between skinfold thickness measurements and perinatal outcomes with varying conclusions. Many studies showed that: 1) maternal arm fat was correlated to infant percent body fat and maternal arm muscle area was related to infant length; 2) changes in maternal arm fat and arm circumference during gestation were correlated with infant birth weight in teenage pregnancies; 3) second-trimester changes in the sum of upper extremity maternal skinfold thickness in were inversely associated with infant birthweight *z*-score, after adjustment for maternal age, BMI, and parity; and 4) an inverse relationship between change in triceps, but not subscapular skinfold thickness and infant birthweight, but this was during the third trimester (Boucher et al., 2022).

Average weight gain per week depending on pre-pregnancy BMI. In the past, a woman's ability to gain weight while pregnant was limited. It was believed that keeping weight gain to a minimum would keep the fetus tiny and make delivery simpler. Evidence suggests that premature labor and low maternal weight growth are related, and recommendations for weight gain during pregnancy have increasingly increased. Based on the Woman's pre-pregnancy weight and body mass index (BMI), requests for weight growth during pregnancy are made. The BMI takes into account height and weight. Women are classified as having an average weight if their BMI is between 18.5 and 24.9, underweight if their BMI is under 18.5 or between 25 and 25.9, overweight if their BMI is between 25 and 24.9, and obese if their BMI is over 30. Adolescent women who are pregnant should acquire weight in the top half of the range now suggested for women. Another crucial factor is the pattern of weight growth. Women are advised to gain up to 4.4 pounds (2 kilograms)

during the first trimester and roughly 1 pound (0.44 kilograms) weekly for the remainder of the pregnancy. During the first trimester, nausea, vomiting, and a few temporary dietary dislikes frequently prevent weight gain or result in weight loss; however, the weight is typically gained again as the gastrointestinal disturbances pass (Leifer, 2019; Marshall et al., 2022).

A head-to-toe physical examination includes an examination of the entire body of a pregnant woman from head to toe. The head examination includes an examination of the hair and face (Durham et al., 2014).

Clinical pelvimetry (measurement of the dimensions of the bony pelvis through palpation during an internal pelvic examination) may be performed during the initial pelvic examination. Its purpose is to identify any variations in pelvic structure that might inhibit or preclude a fetus from passing through the bony pelvis during vaginal birth (Piryani & Piryani, 2015).

Assessment of uterine growth: uterine growth after 10–12 weeks' gestation is assessed by measuring the fundus height using a centimeter measuring tape. The zero point of the tape is placed on the symphysis pubis, which is then extended to the top of the fundus. The measurement should approximately equal the number of weeks pregnant. Instruct the Woman to empty her bladder before the measurement because a full bladder can displace the uterus (Leifer, 2019).

Leopold's maneuvers (palpation of the abdomen) to identify the position of the fetus in utero: examiner able to palpate fetal parts. Assessment of fetal heart tones: Fetal heart tones are auscultated with an ultrasound Doppler in the first trimester, initially heard by 10- and 12-weeks gestation. The regular fetal heart rate (FHR) baseline is between 110 bpm to 160 bpm (Leifer, 2019).

Fetal movement: assess for quickening (when the Woman feels her baby move for the first time). Quickening occurs around 18 weeks gestation (usually between 18- and 20-weeks gestation, but sometimes as early as 14–16 weeks' gestation in a multigravida and occasionally as late as 22 weeks gestation in some

primigravidas). Record Woman's assessment of "kick counts." Daily fetal movement count (kick counts) is a maternal assessment of fetal movement by counting fetal movements to identify potentially hypoxic fetuses. Maternal perception of fetal movement was one of the earliest tests of fetal well-being and remained an essential assessment of fetal health. The pregnant woman is instructed to palpate the abdomen and track fetal movements daily by tracking fetal movements for 1 or 2 hours. In the 2-hour approach recommended by ACOG, maternal perception of at least ten distinct fetal movements within 2 hours is considered reassuring; once movement is achieved, counts can be discontinued for the day. In the 1-hour approach, the count is considered reassuring if it equals or exceeds the established baseline; generally, four movements in 1 hour is favorable. Define fetal movements or kick counts to include: kicks, flutters, swishes, or rolls. Instruct the mother to keep a journal or document the time it takes to feel fetal movement. Instruct the mother to perform counts at the same time every day. Instruct mother to monitor time intervals it takes and to contact HCP immediately for deviations from normal (e.g., no movements or decreased movements). Decreased fetal activity should be reported to the provider as further evaluation of the fetus, such as a non-stress test or biophysical profile, is indicated (Boucher et al., 2022).

Presence of edema: slight lower body edema is expected due to decreased venous return. Upper body edema, especially of the face, is abnormal and needs further evaluation (Leifer, 2019).

3. Laboratory and Diagnostic Studies

Laboratory studies are ordered or obtained at the initial prenatal visit to establish baseline values for follow-up and comparison as the pregnancy progresses. Ultrasound might be performed during the first trimester to confirm intrauterine pregnancy, viability, and gestational age. Urine dipstick for glucose, albumin, and ketones: mild proteinuria and glucosuria is standard. 1-hour glucose test at 24 –28 weeks' gestation (may have already been done in 2nd trimester)**.** Repeat gonorrhea culture (GC),

Chlamydia, syphilis test by rapid plasma reagin (RPR) if indicated and not screened in the second trimester, human immunodeficiency virus (HIV), and hepatitis B surface antigen (HBsAg) tests as indicated**.** Screening for Group B Streptococcus (GBS): a quarter to a third of all women are colonized with GBS in the lower gastrointestinal or urogenital tract (typically asymptomatic). GBS infection in a newborn, either early-onset (first week of life) or late-onset (after the first week), can be invasive and severe, with potential long-term neurological sequella. Vaginal and rectal swab cultures are done at 35–37 weeks gestation to determine the presence of GBS bacterial colonization before the onset of labor to anticipate intrapartum antibiotic treatment needs (Brahmana & Widiyatmoko, 2022; Durham et al., 2014).

Triple or quad screen blood tests at 15–20 weeks' gestation: screening tests for neural tube defect and Trisomy 21are not diagnostic. Amniocentesis is recommended if screening tests are positive. Screening for gestational diabetes: 1-hour glucose challenge test recommended between 24 and 28 weeks. A 3-hour glucose tolerance test (GTT) is ordered if the 1-hour screen is elevated. Hemoglobin and hematocrit between 28 and 32 weeks to identify anemia and the need for iron supplements. This is the time in pregnancy when the hemoglobin and hematocrit are likely to be at their lowest, so the result provides the care provider with valuable information for managing late pregnancy. Syphilis serology if prevalent or as indicated. Antibody screen for Rh-negative women. Administer RhoGAM to Rh-negative women with negative antibody screen results. RhoGAM is administered at 28 weeks gestation to help prevent isoimmunization and the resulting risk of hemolytic disease in fetuses in subsequent pregnancies (Leifer, 2019).

B. NURSING DIAGNOSIS

The following are nursing problems that often occur in pregnant women (Durham et al., 2014):

- Altered pattern of elimination
- Altered fluid intake related to nausea and vomiting

- Decreased gastric motility
- Discomfort with defecation because of hemorrhoids

C. NURSING CARE PLANS

The following is a nursing care plan to address problems in pregnant women (Durham et al., 2014).

- **Altered pattern of elimination**

Goal: Resumption of typical bowel patterns
Outcome: The patient will resume her normal bowel patterns.
Nursing Actions:

- ✓ Assess bowel habits before conception, including frequency, consistency, shape, and color.
- ✓ Listen for bowel noises.
- ✓ Consider past experiences with constipation.
- ✓ Explore prior effective strategies for constipation.
- ✓ Explain the causes of constipation during pregnancy.
- ✓ Teach strategies for constipation, such as diet, physical activity, and adequate fluid intake.
- ✓ promote diets high in fiber and fresh fruits and vegetables.
- ✓ Encourage dietary experimentation to determine what works for her.
- ✓ Establish a schedule for gastrointestinal movements.
- ✓ Discuss the rationale behind strategies.
- ✓ Discuss using a stool softener and bulk laxative with the Woman and the care provider.
- ✓ Encourage the patient to discuss constipation-related concerns by asking open-ended queries.

- **Altered fluid intake related to nausea and vomiting**

Goal: Normal fluid intake
Outcome: Normal fluid intake and decreased nausea and vomiting
Nursing Actions:

- ✓ Evaluate the causes of vertigo and vomiting.
- ✓ Suggest frequent modest meals.
- ✓ Reduce fluid consumption with meals.

- ✓ Stay away from fatty and piquant foods.
- ✓ Investigate the causes of nausea during pregnancy.
- ✓ Teach strategies for coping with morning sickness during pregnancy.
- ✓ Urge the Woman to try out various techniques to mitigate nausea.
- ✓ Suggest vitamin b6 or ginger for nausea relief.
- ✓ Decreased gastric motility
- ✓ Discomfort with defecation because of hemorrhoids

- **Decreased gastric motility**

Goal: Increased motility

Outcome: The patient has a normal bowel movement.

Nursing Actions:

- ✓ Provide dietary information to increase the consumption of fiber and roughage.
- ✓ Consider foods high in fiber, such as pears, apples, prunes, kiwis, and preserved fruits.
- ✓ Instruct the Woman to consume bran cereal in the morning and to examine labels for at least 4–5 grams of fiber per serving.
- ✓ Discuss methods for increasing fluid intake.
- ✓ Drink tepid liquid upon rising.
- ✓ Encourage physical activity to promote peristalsis.
- ✓ Reiterate the relationship between diet, exercise, fluid consumption, and constipation.

- **Discomfort with defecation because of hemorrhoids**

Goal: Reduce gastrointestinal movement-related discomfort.

Outcome: The patient will experience a reduced pain and maintain adequate bowel function.

Nursing Actions:

- ✓ Reinforce methods for avoiding constipation.
- ✓ Encourage the Woman not to delay defecation. Instruct the Woman not to exert herself while evacuating.

- ✓ Discuss hemorrhoid care, such as TUCKS napkins and hemorrhoid creams.
- ✓ Discuss stool softening agents.
- ✓ Recommend that the Woman rest her foot on a footstool to aid bowel evacuation.
- ✓ Reiterate the relationship between diet, exercise, fluid consumption, and constipation.

- **Hyperemesis Gravidarum**

During pregnancy, mild nausea and vomiting can be treated with ease. Contrarily, a pregnant woman with hyperemesis gravidarum experiences frequent nausea and vomiting, which can seriously affect how much she eats and how much fluid she retains. Hyperemesis gravidarum refers to pregnancy-related vomiting that is so severe that it causes dehydration, electrolyte andacid–base imbalance, malnutrition, ketosis, and weight loss. Serum levels of pregnancy-related hormones such as chorionic gonadotropin (hCG), progesterone, and estrogen appear to be associated with hyperemesis. A low-birth-weight baby could come from restricted fetal growth. Dehydration reduces the perfusion of the placenta, which decreases the fetus's access to blood oxygen and nutrients (Jennings & Mahdy, 2023; London et al., 2017).

The following are the results of studies usually found in pregnant women with hyperemesis gravidarum (Durham et al., 2014; C. Liu et al., 2021).

- ✓ Constant nausea and vomiting, frequently accompanied by the utter inability to eat or drink.
- ✓ A substantial loss of weight (more than 5% of prepreg weight);
- ✓ Ketonuria
- ✓ Electrolyte and acid-base imbalances; dehydration as seen by a dry tongue and mucous membranes. Decreased turgor (elasticity) of the skin, sparse and concentrated urine, and a high serum hematocrit level.
- ✓ Mental health issues include unusual stress, emotional immaturity, apathy, or pregnancy ambivalence.

The following is a list of nursing diagnoses that are often enforced in pregnant women with hyperemesis gravidarum (Durham et al., 2014; Lowdermilk et al., 2013; Tim Pokja SDKI DPP PPNI, 2016).

- ✓ Nausea
- ✓ Anxiety
- ✓ Nutritional deficit
- ✓ Self-care deficit
- ✓ Hypovolaemia
- ✓ Fatigue
- ✓ Risk of Hypovolemia
- ✓ Risk of fluid imbalance
- ✓ Risk of electrolyte imbalance
- ✓ Shock risk

The following is a general nursing care plan for pregnant women with hyperemesis gravidarum (Durham et al., 2014; Jennings & Mahdy, 2023; Landon et al., 2021; Leifer, 2019; C. Liu et al., 2021; London et al., 2017)**.**

- ✓ Discard items or food that have overpowering odors. Odor sensitivity brought on by pregnancy may result in nausea and vomiting. Strong odor makes hyperemesis during pregnancy worse.
- ✓ Promote non-pharmacologic approaches to treating nausea. Deep breathing exercises, meditation, distraction, and music therapy can all assist pregnant women who experience nausea and vomiting have less of it.
- ✓ Dispense antiemetics as advised. Pregnant women with hyperemesis gravidarum may be given antiemetics to help with their nausea and vomiting.
- ✓ Promote acupuncture. It is believed that putting pressure on the inner wrist's middle pressure point would lessen nausea. To apply pressure to this location, special acupressure bands can be purchased.
- ✓ In the outpatient context, antiemetic medications such as oral ondansetron, transdermal clonidine, and diclegis (doxylamine

succinate and pyridoxine hydrochloride) may be administered for more severe symptoms.

- ✓ If the Woman's home remedies are unsuccessful, she might need to be admitted to the hospital to treat her dehydration and low nourishment.
- ✓ Severe instances may occasionally require hospitalization and total parenteral feeding. Wernicke's syndrome, which is characterized by double vision and ataxia, is frequently avoided by giving thiamine before intravenous dextrose.
- ✓ Because the majority of care is provided at home, nursing care is centered on patient education. The Woman has to learn how to lessen the causes of her nausea and vomiting.
- ✓ To evaluate fluid balance, precise records of intake, outflow, and daily weight are kept.
- ✓ Regular, modest meals and drinks prevent the stomach from getting too full, which can cause vomiting. The best carbs tolerable are those that are simple to digest, like crackers or baked potatoes. Avoiding foods with overpowering aromas is advised. Between solid meals, drinking liquids can help to lessen stomach distention. After meals, sitting up straight helps to prevent esophageal reflux (backflow) from the stomach.
- ✓ In order to avoid serving as a visual reminder of vomiting, the emesis bowl is kept out of sight.
- ✓ If the lady vomits, it should be immediately emptied, and the quantity should be noted on the intake and output record.
- ✓ The Nurse should listen to the Woman's sentiments about being pregnant, raising children, and dealing with chronic nausea in order to offer support. The Nurse should not presume that every Woman with hyperemesis gravidarum is having a difficult time adjusting to her pregnancy, even though psychological problems may be involved in some cases of this condition.

- **Abortion**

Abortion is the spontaneous (miscarriage) or intentional termination of a pregnancy before the age of viability (20 weeks gestation) (Hendriks et al., 2019).

The following are the results of studies that are usually found in pregnant women with abortion (De Codt et al., 2020; Hendriks et al., 2019; W. Liu et al., 2022; Redinger & Nguyen, 2023)

- ✓ Complete abortion: in this type of miscarriage, the uterine mouth opens widely and the entire fetal tissue comes out of the womb. When a complete abortion occurs, the pregnant mother will experience vaginal bleeding as well as abdominal pain as during childbirth. Usually, a complete abortion occurs at less than 12 weeks of pregnancy.
- ✓ Incomplete abortion: incomplete abortion is a type of miscarriage that occurs when the fetal tissue is partially out. In general, the bleeding and abdominal pain will last for a long time.
- ✓ Abortion incipiens: in abortion incipiens, bleeding occurs accompanied by abdominal pain, but fetal tissue is still intact in the uterus. Despite this, miscarriage remains unavoidable because the uterine mouth is already open.
- ✓ The threatened abortion (the imminent abortion): vaginal bleeding before 20 weeks gestational age in the presence of a positive urine and/or blood pregnancy test with a closed cervical os, without passage of sperm or egg, and without indication of fetal or embryonic death the threat of abortion is not actually a miscarriage. In this condition, the uterus mouth is still closed and the fetus is still alive in the womb. The bleeding from the vagina and the pain in the stomach is still slight. Although the risk of miscarriage is greater, there is still a chance to save the pregnancy. The World Health Organization (WHO) defines a threatened abortion as open bleeding or pregnancy-related bloody vaginal discharge that occurs during the first half of the pregnancy without cervical dilatation.

The following is a list of nursing diagnoses that are often enforced in pregnant women with abortion (Durham et al., 2014; Leifer, 2019; Tim Pokja SDKI DPP PPNI, 2016)

- ✓ Hypovolaemia
- ✓ Risk of Hypovolemia
- ✓ Shock risk
- ✓ Acute pain
- ✓ Anxiety
- ✓ Grieving
- ✓ Disturbed self-identity
- ✓ Situational low self-esteem
- ✓ Helplessness
- ✓ Inability to cope with the family
- ✓ Coping is not effective
- ✓ Risk of shock

The following is a general nursing care plan for pregnant women with abortion (Durham et al., 2014; Hendriks et al., 2019; Leifer, 2019; Lowdermilk et al., 2013).

- ✓ When an abortion is threatened, attempts are made to maintain the fetus inside the mother until viability. Investigations into the reasons for recurrent pregnancy loss may focus on genetic, immunological, anatomical, endocrine, or viral elements. Cerclage, or closing a weak cervix that opens when the developing fetus pushes against it, usually works. A low fetal heart rate or human chorionic gonadotropin (hCG) level may be a concerning symptom by eight weeks of gestation. Parental therapy is crucial in every incidence of miscarriage. There are emotional reactions that should be acknowledged and dealt with, even when the mother chooses to terminate the pregnancy (Leifer, 2019).
- ✓ There are generally three procedures that are used to terminate the event of an abortion that cannot be sustained (Leifer, 2013):
  - ➢ Vacuum aspiration (vacuum curettage): Cervical dilation with metal rods or laminaria (a material that absorbs water

and swells, enlarging the cervical orifice) followed by controlled suction through a plastic cannula to remove all POC. Used up to 12 weeks gestation; also used to remove products of conception (POC) after spontaneous abortion; may be followed by curettage (see D&E); paracervical block (local anesthesia of the cervix) or general anesthesia required; conscious sedation with midazolam (Versed) may be used.

- D&E: Cervical dilation similar to vacuum curettage, then thin uterine wall scraping to remove POC. With a higher risk of cervical or uterine trauma and severe blood loss than vacuum curettage, this procedure is utilized for first-trimester or early second-trimester abortions and removes all POC following spontaneous abortion. General anesthesia or paracervical block might be performed.
- Misoprostol (Cytotec, a prostaglandin analog) is administered after mifepristone (Mifeprex, an antiprogestin). A prostaglandin inhibitor that is taken orally and is safe to use for up to 70 days during pregnancy. The prostaglandin analog, which causes muscle contraction and pregnancy termination, comes after the antiprogestin drug. It is advised to follow up with a healthcare professional in 1-2 weeks.

✓ The amount of vaginal bleeding is assessed following vacuum aspiration or curettage. Every 15 minutes for the first hour, then every 30 minutes until the postanesthesia care unit is discharged, blood pressure, pulse, and respiration are monitored.

✓ Like medications reduce blood loss after term birth, oxytocin (Pitocin) controls blood loss before and after curettage. After any abortion, Rh-negative women are administered Rh0(D) immune globulin (RhoGAM [300 mcg] or the lower-dose MICRhoGAM [50 mcg]) to avoid the generation of antibodies that could harm the fetus during a subsequent pregnancy.

- ✓ The most precise way to measure blood loss is to count the pads and estimate how saturated each one is (for example, 50% or 75%).
- ✓ Women with threatening abortions who choose to stay at home are instructed to report any unusual bleeding or tissue passing.
- ✓ The Nurse should examine the patient's vital signs and bleeding to look for hypovolemic shock brought on by blood loss. If she is actively bleeding, she should refrain from eating (have a "nothing by mouth" [NPO] state") to avoid aspiration if dilatation and evacuation treatment call for anesthesia.
- ✓ A hematocrit and hemoglobin level are ordered as laboratory tests.
- ✓ To check for infection, the Woman's temperature is taken at admission to the recovery room and every 4 hours until discharge.
- ✓ After curettage, most women are sent straight from the recovery center to their homes.
- ✓ These are some pointers for self-care at home:
  - ➢ Describe a rise in bleeding. Tampons should not be used as they may spread infection.
  - ➢ For three days, take your temperature every 8 hours. Report any infection-related symptoms, such as fever above 38 °C (100.4 °F), unpleasant odors, or dark vaginal discharge.
  - ➢ If directed, take an oral iron supplement.
  - ➢ Resuming sexual activity as directed by a medical professional (often following the cessation of bleeding).
  - ➢ Revisit your doctor at the appointed time for a checkup and advice on contraception.
  - ➢ A pregnancy may develop before the Woman's first period after the abortion surgery.
- ✓ Emotional support, the mental suffering that spontaneous abortion causes the Woman and her family, is frequently undervalued by society. They often lament what may have

been, even if the pregnancy wasn't anticipated or intended. They may experience more profound and more prolonged grief than others expect. The Nurse pays attention to the Woman and sympathizes with her and her partner's sadness. The Communication box provides examples of both successful and unsuccessful communication strategies for families who have lost a pregnancy. The family may benefit from community support groups and spiritual counseling to help them cope with any miscarriage losses (Correa-de-Araujo & Yoon, 2021).

- **Anemia**

The blood's diminished capacity to provide oxygen to cells is known as anemia. Anemia during pregnancy is indicated by hemoglobin levels of less than 10.5 g/dL in the second trimester and less than 11 g/dL in the first and third trimesters or hematocrit levels of less than 33% (Creasy et al., 2014). Two nutritional anemias (iron and folic acid deficiency anemia) and two stemming from genetic abnormalities (sickle cell disease and thalassemia) are prominent during pregnancy. Mild anemia (hemoglobin value of 11 mg/dL) is not dangerous but rather a sign of inadequate nutrition. Iron deficiency anemia, which affects 15% to 50% of pregnant women, is the most prevalent anemia in pregnancy. Pregnancy-related physiologic anemia is the name given to it (Landon et al., 2021).

The majority of anemic women exhibit indistinct symptoms, if any. A woman with anemia may tire readily, have little energy, excessive fatigue, headache, tachycardia, brittle fingernails, cheilosis (severely chapped lips), or a smooth, red, shiny tongue. Her mucous membranes and epidermis are pale (Frayne & Pinchon, 2019).

Severe anemia can cause shortness of breath, a pounding heart, and an accelerated pulse. The Woman whose anemia develops progressively has fewer symptoms than the Woman whose anemia develops suddenly, such as from blood loss. Women

with sickle cell anemia experience painful crisis episodes (Leifer, 2019; Ugwu & Uneke, 2020; Zhang et al., 2022).

The following is a list of nursing diagnoses that are often enforced in pregnant women with abortion (Durham et al., 2014; Leifer, 2019; Tim Pokja SDKI DPP PPNI, 2016).

- ✓ Ineffective Peripheral Perfusion
- ✓ Nutritional deficit
- ✓ Activity intolerance
- ✓ Fatigue
- ✓ Anxiety
- ✓ Knowledge Deficit
- ✓ Risk of infection
- ✓ Risk of falling

The following is a general nursing care plan for pregnant women with abortion (Durham et al., 2014; Hendriks et al., 2019; Leifer, 2019; Lowdermilk et al., 2013)

- ✓ Teach clients and their families about boosting dietary sources of iron and using iron supplements as needed. If the client has severe anemia, be ready for blood-typing, cross-matching, and the delivery of packed PBCs during labor. Support and management for patients with hemoglobinopathies. Consent should be given to a client who has thalassemia or carries the trait, mainly if the lady has just learned that she is a carrier. Throughout the pregnancy, watch for any indications of an infection. Assess the iron and folate stores as well as the reticulocyte counts in a pregnant sickle cell disease patient. Also, perform a hemolysis screening. Give iron and folic acid supplements, nutrition advice, and emphasize the need to avoid oxidizing medicines to a pregnant client with G-6-PD (Leifer, 2019; Ugwu & Uneke, 2020; Zhang et al., 2022).
- ✓ Pregnant women require supplemental iron for their increased blood volume, transfer to the fetus, and as a buffer against the expected blood loss during childbirth. In iron-deficiency anemia, red blood cells are small (microcytic) and pallid

(hypochromic). The tannic acid in tea and bran may inhibit iron absorption from concurrently consumed foods. Iron supplements are frequently used to satisfy pregnancy requirements and maintain iron stores. Vitamin C may increase iron absorption. Calcium impairs iron absorption, so iron should not be consumed with milk or antacids. To fix the problem and replenish her iron stores, the Woman with iron-deficiency anemia needs additional iron. She is administered oral doses of elemental iron for approximately three months after correcting the anemia (Leifer, 2019).

- ✓ Folic acid deficiency (folate or folacin deficiency) is marked by large, underdeveloped RBCs (megaloblastic anemia). Frequently, iron-deficiency anemia is also prevalent. Alcohol, anticonvulsants, oral contraceptives, sulfa drugs, and oral contraceptives can inhibit the absorption of folate from the diet (Marshall et al., 2022). Folic acid is necessary for average fetal growth and development. A lack of folic acid has been linked to neural tube defects in newborns (Wald, 2022). A daily supplement of 400 to 800 mcg (0.4 to 0.8 mg) is now recommended for all women of reproductive age to ensure adequate folic acid. Folate deficiency is treated with folic acid supplements because folic acid cannot be obtained through diet alone. Women who have once given birth to a child with a neural tube defect may require a higher supplementation dose of folic acid (Asres et al., 2023).
- ✓ To prevent or treat nutritional anemias, such as iron deficiency and folic acid deficiency, the Nurse should educate all women on the best dietary sources for these nutrients. Examples of iron-rich foods are meats, poultry, fish, liver, legumes, green leafy vegetables, whole or enriched grain products, nuts, blackstrap molasses, tofu, eggs, and dried fruits. Green leafy vegetables, asparagus, green beans, fruits, whole cereals, liver, legumes, and yeast are foods rich in folic acid. The rich sources of vitamin C (which may improve iron assimilation) are citrus fruits and juices, strawberries, cantaloupe, cabbage,

green and red peppers, tomatoes, potatoes, and green leafy vegetables. She is trained on how to consume the supplements for maximum efficacy. For instance, the Nurse explains that while milk is healthy to consume during pregnancy, it should not be finished at the same time as an iron supplement, or the iron will be less readily absorbed. Vitamin C-rich foods may improve absorption. (Marshall et al., 2022).

- ✓ When the Woman takes iron, her stools will be dark green to black, and she may experience moderate gastrointestinal discomfort. If these adverse effects bother her, she should contact her obstetrician or nurse-midwife; another iron preparation may be more tolerable. She should not consume iron-containing antacids (Creasy et al., 2014; Leifer, 2019; Wald, 2022).

D. PHYSICAL EXAMINATION PROCEDURES IN PREGNANT WOMEN

1. Head-to-toe examination

Let's see and carry out the physical examination procedure for pregnant women. Head-to-toe examination in pregnant women consists of an examination of the head, neck, chest, abdomen, genitalia, and upper and lower extremities.

- First, check the general condition & awareness of the client. Is the general condition excellent or sick, compos mentis/full consciousness, or experience a decrease in consciousness?
- Check vital signs (TTV), including blood pressure, respiration, pulse, and temperature as well as measure the weight of pregnant women and height.
- Examination of the head includes hair, face, eyes, nose, and ears. Assess the symmetry of the head, see if there are lumps on the mother's head, and whether the mother's hair is easily removed.
- Look for pertinent clinical symptoms on the patient's face (jaundice, melasma, edema palpebra).

- Assess the conjunctiva and sclera of the eye. See if the mother's conjunctiva is anemic (pale), and whether the sclera is icteric/yellow/jaundice or not. When checking for conjunctival pallor, ask the patient to gently pull down their lower eyelid so you can look inside (see Fig. 16). Anemia is linked to conjunctival pallor. When examining the sclera for jaundice, the nurse pulls up the upper eyelid to expose the sclera and asks the patient to look down (see Fig. 17).

Figure 16. Conjunctival icterus
Adapted from https://webeye.ophth.uiowa.edu/eyeforum/atlas/pages/eyerounds.org. Retrieved on June 16, 2023

Figure 17. Conjunctival pallor
Adapted from (Lee & Aronowitz, 2021). Conjunctival and Palmar Pallor. *Journal of General Internal Medicine*, *36*(11), 3575–3576. https://doi.org/10.1007/s11606-021-06981-5

- Examine the nose, whether the mother's nose has masses or lumps, and whether the olfactory function is good.
- Examine lips and teeth, is the mucous membrane of the lips moist or dry? Are there cavities or dental caries?
- Examine ears and mastoids. Is there a mass in the ear or tenderness over the mastoid bone?
- On the neck, assess for enlarged thyroid and gland lymph nodes (see Fig.17 &18). Assess whether there is an increase in jugular venous pressure (see Fig.19).

Figure 17. Lymph node examination
Adapted from Mallick, I (2022). The Causes of Enlarged Lymph Nodes. Available at https://www.verywellhealth.com/what-are-lymph-nodes-2252565
Retrieved on June 16, 2023

Positioning for a proper thyroid examination.

Figure 18. Examination of the thyroid gland
Adapted from Daniels, R. (2023). Thyroid gland and surgery.
Available at https://www.oakleafsurgical.com/hv/2012_sp/sp2012_thyroid.php
Retrieved on June 16, 2023

Figure 19. Jugular vein distension
Adapted from Cadman, B. (2023). What to know about jugular vein distention (JVD). Available at https://www.medicalnewstoday.com/articles/320320
Retrieved on June 16, 2023

Next, examine the chest. The examiner previously asked permission for the patient to undress the chest. Auscultate the heart using a stethoscope on the two right and left intercostal (ICS), then the four left ICS. Compare whether a single sound or other sounds. Continue with auscultation of lung sounds using a stethoscope on the left lung and right, starting from the right and left two ICS, to the bottom ICS both on the right and left. Compare whether there is a difference in sound between the lung's right and left lungs. Are lung sounds clear (vesicular)? Is there a wheezing sound? Are there rhonchi sounds? (Durham et al., 2014; Kepley et al., 2023; Leifer, 2019)

The next is breast examination in pregnant women. Inspection of breast symmetry, mammary areola, and nipple prominence. Assess whether the left and right breasts are symmetrical or not, areola mammary, whether there is hyperpigmentation, and whether the nipple protrudes. Suppose the nipples of pregnant women protrude inward or flat (inverted). In that case, you should teach the mother the Hoffman technique, pressing the areola mammary throughout the nipple circle so that the nipples of pregnant women can come out. Palpate the entire mammary area & examine colostrum expenditure by slightly squeezing the areola mammae. Before you explore colostrum/breast milk you have to ask the client whether the mother has ever had a miscarriage or not, whether the mother has had preterm labor or not. Examining the mother's nipples can secrete the hormone oxytocin, which stimulates uterine contractions, miscarriage, or premature delivery (Durham et al., 2014; Karjatin, 2016; Leifer, 2019).

Next, do an abdominal examination. Before carrying out an abdominal investigation on pregnant women, position the patient according to the gestational age in the inquiry. In early pregnancy, place the patient supine on a couch, with the head of the bed elevated 15-30° in late pregnancy: position the patient in a left lateral position (tilted 15° to horizontal level) to avoid compression of the abdominal aorta and inferior vena cava by the gravid uterus (known as aortocaval compression) (Durham et al., 2014).

Sift through the abdomen. Expose the belly appropriately, from the xiphisternum to the symphysis pubis, and examine the relevant clinical signs. First, observe the shape of the abdomen. This action can give an early indication of the location of the fetus. Second, observations of fetal movement are usually seen from 24 weeks of gestation. If there is a surgical scar check, this can provide clues about previous abdominal surgery (e.g., cesarean section). Then observe the Linea nigra, a dark line running vertically down the middle of the stomach (a normal finding in pregnancy). Look for striae gravidarum, reddish or purple lesions that develop due to overstretching of the abdominal skin when the gravid uterus expands (commonly known as stretch marks). Finally, observe the presence of striae albicans, namely adult stretch marks that appear silver and less clear (Leifer, 2019). For details, see Figure 20.

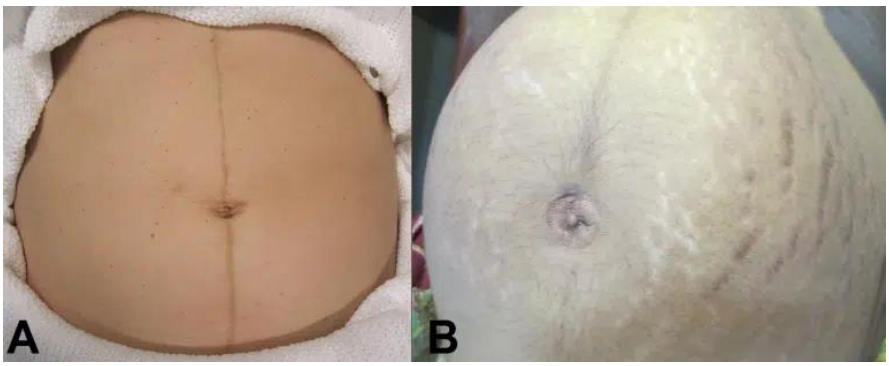

Figure 20. Skin changes in pregnancy.
A) Linea nigra. B) Striae gravidarum and albicans.
Adapted from work by the Indian Journal of Dermatology and James Heilman, MD [CC BY-SA 3.0] via Wikimedia Commons. Available at https://teachmeobgyn.com/history-taking-examinations/examinations/obstetric/ Retrieved on June 16, 2023

Next, do a perineal hygiene assessment. Instruct the mother to take off her undergarments and underwear. Assess for vaginal bleeding/discharge, hemorrhoids, varicose veins, leukorrhea, wounds, scars, masses, and abnormal fluid (Durham et al., 2014).

Next, check the feet of pregnant women. You examine whether pregnant women have edema on both legs/feet by pressing the area above the ankle/malleolus. See if there is a depression when pressed or not on the packed surface. The mother has edema if there is a basin (Durham et al., 2014). For details, see Figure 21a. You can also determine the edema grade in the legs (see Fig.21b).

Figure 21a.
Adapted from Norris, T. (2017). Everything You Should Know About Pitting Edema.
Available at https://www.healthline.com/health/pitting-edema.
Retrieved on July 2, 2023

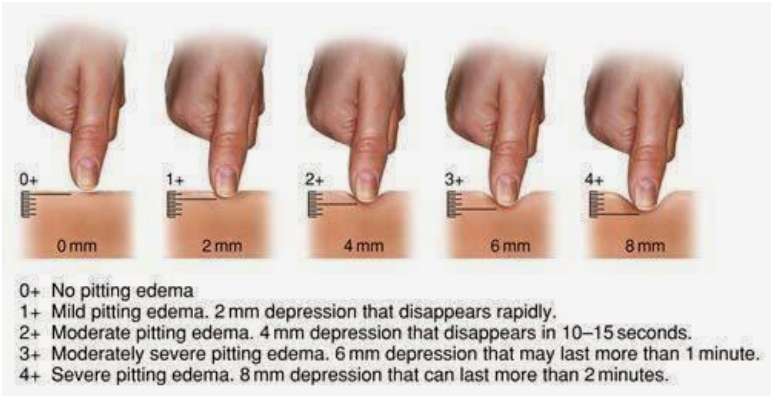

Figure 21b. The edema grade
Adapted from Cleveland Clinic medical professional. (2022). Edema
Available on https://my.clevelandclinic.org/health/diseases/12564-edema.
Retrieved on July 2, 2023

Next, examine the presence of varicose veins in the legs. You check the leg or back of the mother's knee. Veins under the skin that are bulging, twisted, and swollen are known as varicose veins. Most frequently located in the legs, these veins can occasionally result in mild to moderate discomfort, blood clots, and skin ulcers. Varicose veins can develop during pregnancy due to the fetus's pressure on the leg veins. However, the disease improves between three and twelve months after delivery (Dutta, 2019). For details, see Figures 22a and 22b. *In Figure 22a, you can see the v*aricose veins illustration), and in Figure 22b you look at v*aricose veins on a leg.*

Figure 22a.
Adapted from Dutta, Sanchari Sinha. (2019, September 17). What are Varicose Veins, and Can They be Treated? News-Medical. Retrieved on July 01, 2023. From https://www.news-medical.net/health/What-are-Varicose-Veins-and-Can-They-be-Treated.aspx.

Then do a tendon reflex test, usually in the patella area. Examine the patella reflex on both of the mother's knees. The monosynaptic reflex arc is demonstrated clinically and classically by the patellar reflex. The route that causes the quadriceps muscle to contract contains no interneurons. Instead, the motor neuron in the spinal cord and the sense neuron make a direct synaptic connection. Reciprocal innervation, on the other hand, uses an inhibitory interneuron to relax the antagonistic hamstring muscle. The examiners may apply the Jendrassik maneuver to ensure a more accurate reflex test because the patient's conscious inhibition

or exaggeration of the response could affect this test of a fundamental natural reflex. In the Jendrassik maneuver, the patient interlocks both sets of fingers while clenching their teeth and flexing them into a hook-like shape. A reflex hammer is then used to strike the tendon below the patient's knee to trigger the patellar reflex. The leg is typically extended once and then rests after a hammer tap. Westphal's sign, which is when this response disappears or declines, is worrisome. This response could be lessened or even nonexistent in lower motor neuron lesions and when you're sleeping. On the other hand, repeated leg oscillation (pendular reflex) after the tap could be a symptom of cerebellar disorders (Bilgin et al., 2020). You can see Figure 23.

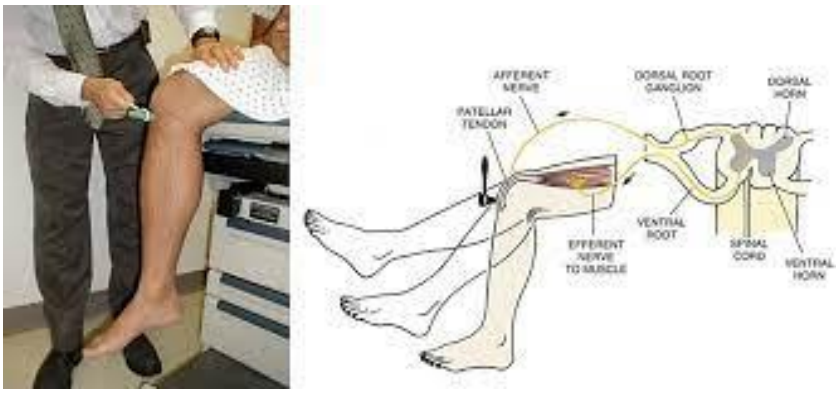

Figure 23. A tendon reflex test
Bilgin, S., Carlak, H., Polat, Ö., Nüzket, T., Uslu, S. & Uysal, H. (2020). Mathematical model of patella T-reflex and clinical evaluation with Ashworth scales. *Biomedical Engineering/Biomedizinische Technik*, *65*(5), 587-594. https://doi.org/10.1515/bmt-2019-0071

2. Uterine fundal height examination

At this time, ask about abdominal pain before palpating the abdomen and continue to monitor the patient's face for any signs of discomfort during the examination. Briefly palpate each of the nine abdominal regions lightly to identify tenderness or masses unrelated to pregnancy (e.g., appendicitis). Palpate the uterus to determine its boundaries, including the upper and lateral edges. The uterine

fundus can be found at different locations during pregnancy, depending on the patient's current gestational age (Fig. 24). At 12 weeks of gestation, it is at the level of the symphysis pubis. At 20 weeks gestation, it is at the level of the umbilicus, and at 36 weeks gestation, the height of the uterine fundus is precisely at the xiphoid process.

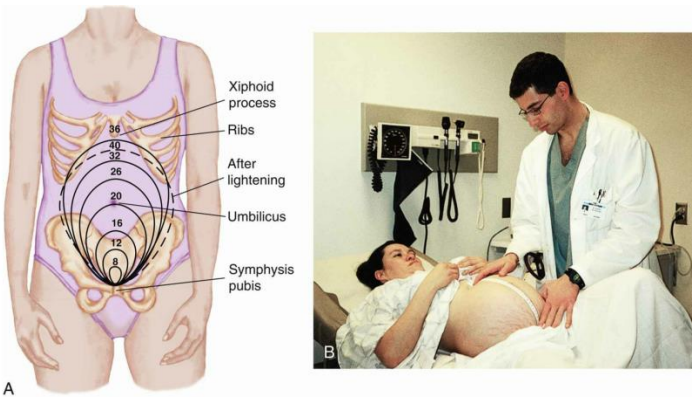

Figure 24. Height of fundus during gestation. (A) The numbers represent the weeks of pregnancy, and the circles represent the height of the fundus expected at that stage of gestation. Note: The 40th week is represented by a dotted line indicating lightning has occurred. (B) A health-care provider measures the height of the fundus during a clinic visit.
Adapted from Durham, R. F., Chapman, L., & Chapman, L. (2014). *Maternal-newborn nursing: The critical components of nursing care* (2nd ed). F.A. Davis.

3. The Leopold maneuvers and fetal heart rate

The Nurse can do abdominal palpations, known as the Leopold maneuver, to determine the fetal position and presentation. Using this approach at the time of admission can occasionally reveal a multifetal pregnancy that wasn't known to exist. The fetal back, the ideal area to hear the FHR, may be found using the Leopold maneuver, making it easier to decide where the fetal monitor sensor should be placed. The Leopold maneuver consists of 4 steps.

The first maneuver is to determine what part of the fetus is located in the fundus of the uterus. Palpate the upper abdomen by

placing both hands on the fundus, the top of the uterus, while facing the expectant mother. Utilize this maneuver to assess the sensation's consistency, mobility, magnitude, and shape. With this first grip, you may establish longitudinal presentation, calculate the pregnancy age, and measure the height of the fundus to the umbilicus or costal arch (see Fig. 25a & 25b).

Figure 25a. The examiner determines the top of the uterine fundus, whether the head or buttocks are on the uterine fundus.
Adapted from Sugandi, A. (2022). Functions and Stages of Examination Leopold 1 to 4. Available at https://www.nerslicious.com. Retrieved on June 16, 2023

Figure 25b. Palpate the upper border of the uterus for measuring the height of the fundus
Adapted from Potter, L. (2023). Obstetric Abdominal Examination–OSCE Guide. Available at https://geekymedics.com/obstetric-abdominal-examination/ Retrieved on June 16, 2023

The second maneuver is to determine the location of the fetal back and check the Fetal lie. Fetal lie refers to the relationship between the fetus's and mother's long axes. Place your hand on either side of the patient's uterus (make sure you are facing the patient). Gently palpate each side of the uterus. One side of the uterus should feel full (because of the back of the fetus). You may be able to handle the fetal limbs on the other side of the uterus. For details, see Figures 26 and 27.

Figure 26. Palpate the abdomen to determine the fetal lie
Adapted from Potter, L. (2023). Obstetric Abdominal Examination–OSCE Guide. Available at https://geekymedics.com/obstetric-abdominal-examination/ Retrieved on June 16, 2023

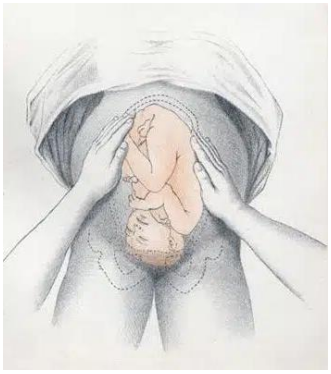

Figure 27. Assessing fetal lie
Adapted from by TeachMeSeries Ltd (2023). Obstetric Examination Available at https://teachmeobgyn.com/history-taking-examinations/examinations/obstetric/ Retrieved on June 16, 2023

The third maneuver is to determine the presenting part of the fetus. Fetal presentation refers to which part of the fetal anatomy is closest to the pelvic inlet or the lowest part of the fetus. How to determine the presence of the fetus:

- Make sure you face the patient for signs of discomfort and advise the patient that this may feel a little uncomfortable.
- Place your hands on either side of the lower pole of the uterus, just above the symphysis pubis (see Fig.28).
- Apply firm pressure to the medial uterine angle, and palpate the presenting part:
  - ✓ The rugged, tight, and round part indicates the head presentation. Ballot head by pushing it gently from one side to the other
  - ✓ The broader and softer portion of the presentation indicates a breech presentation. The part of the less clear presentation shows the fetus's limb presentation. Breech and foot presentation is called breech presentation (see Fig. 29).
- In this step, Nurse may palpate the area and estimate the fluid volume to check for oligohydramnios/polyhydramnios. Only feeling fetal components on deep palpation while evaluating the lie shows a lot of fluid presents.

Figure 28. Assess the presenting part of the fetus
Adapted from Potter, L. (2023). Obstetric Abdominal Examination–OSCE Guide. Available at https://geekymedics.com/obstetric-abdominal-examination/ Retrieved on June 16, 2023

Figure 29. Assessing presentation
Adapted from by TeachMeSeries Ltd (2023). Obstetric Examination
Available at https://teachmeobgyn.com/history-taking-examinations/examinations/obstetric/
Retrieved on June 16, 2023

The fourth maneuver is to determine the place of the cephalic prominence or ascertain the fetus's involvement. Examiners should evaluate the level of fetal in late pregnancy. When more than 50% of the presenting section, generally the head, has dipped into the pelvis, the fetus is said to be "engaged"; if the entire head is palpable, the fetus is unengaged. When evaluating involvement, the fetal head separates into five parts. It is five-fifths palpable (i.e., not moving) if the entire head felt in the belly. It's a tangible (i.e., wholly engaged) zero-fights if you can't feel your head bouncing up. For details, please see Figure 30.

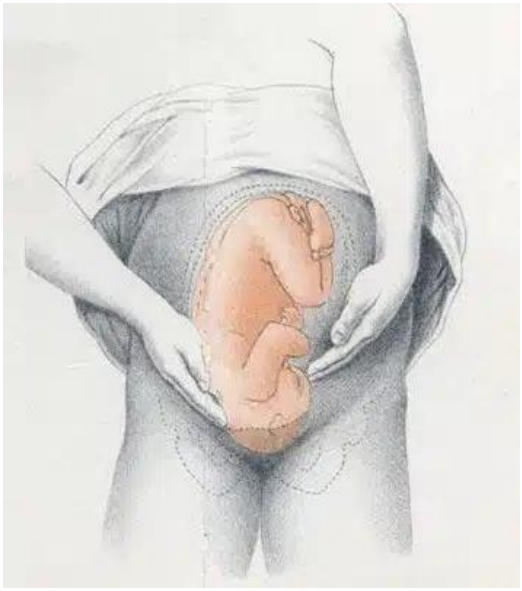

Figure 30. Assessing fetal engagement.
Adapted from by TeachMeSeries Ltd (2023). Obstetric Examination
Available at https://teachmeobgyn.com/history-taking-examinations/examinations/obstetric/
Retrieved on June 16, 2023

Next, check the fetal heartbeat. You can use a Pinard stethoscope or a Doppler ultrasound probe to detect the fetal heartbeat. Therefore, it's crucial to have a fundamental grasp of how to find and recognize the fetal heartbeat:

- Aiming the Pinard stethoscope between the fetus's shoulders and the fetus's back, according to your judgment of the fetus's position. Hand-held Doppler machine >16 weeks. Pinard stethoscope over the anterior shoulder >28 weeks
- Feel the patient's radial pulse, also known as the maternal pulse.
- Place your ear against the pinard and remove your hand so that the Pinard is only being held against your abdomen by your ear. You should apply light pressure to create a tight seal between your ear and the Pinard and between the Pinard and abdomen. The patient will feel uncomfortable if you press too

firmly and have difficulty hearing anything if you push too softly.

- Keep an ear out for fetal heartbeat. You most likely hear the flow through the uterine vessels rather than the fetal heartbeat if the maternal pulse you can listen to is in sync.
- Measure fetal HR for one minute, which should be 110-160bpm (>24 weeks)

4. Calculate the estimated fetal weight

We can apply Johnson's formula to assess the fetus's weight according to the fundal height (FH) and fetal skull situation (n). The index n = 12 if the skull is mobile or applied, n = 11 if the head is engaged: (FH– n) x 155 = G in grams of the fetus 4 In the case of pregnant women over 90 kg of body weight, a corrected formula is applied: (FH– n–1) x 155 = G in grams of the fetus (Leifer, 2019).

For example, the results of examinations in pregnant women found that the uterine fundal height was 33 cm, and the baby's head had not yet entered the pelvic inlet, so the estimated fetal weight is as follows: (33-12) x 155 = 3.255 grams. Can you try it with another case?

E. LABORATORY AND DIAGNOSTIC TESTS PROCEDURES IN PREGNANT WOMEN

1. Laboratory Tests Procedures

A blood test is an essential examination in a pregnancy laboratory test. This examination helps ensure the health of pregnant women and the fetus in the womb. Routine blood tests include Blood groups (A, B, AB, or O), Rhesus D status, Red cell antibodies, Full blood count, Inherited blood disorders (sickle cell and thalassemia), Syphilis, HIV, Hepatitis B, Rubella, and Gestational diabetes (Alkhatib, 2018).

Blood group examination in pregnant women is not only to find out the type of blood type of the mother but also to prepare in case Mother needs a blood transfusion at any time in the event of an emergency. The result of the test Rhesus D status is reported as

rhesus positive or rhesus negative. If rhesus is negative, Mother will be offered anti-D injections to prevent antibodies from forming, which could harm the baby (Sajan et al., 2021).

A full blood count can help determine a pregnant woman's blood cell levels. Through this test, pregnant women can decide if the mother's red blood cell count is average enough or too little. Low red blood cells can be an early symptom of anemia. In addition, a thorough blood test will also show the number of white blood and platelets in the body. If the number of these cells increases, there is a possibility that the mother has an infection. This examination can also determine the levels of iron and other nutrients in the body, so the doctor can find out whether there is a tendency for the mother to be malnourished or not (Reese et al., 2018).

Pregnant women should also check their blood sugar levels regularly. This examination is vital to prevent the development of diabetes. Gestational diabetes is a type of diabetes that affects some women during pregnancy. About 10-15 percent of pregnant women experience gestational diabetes. These health problems can increase the risk of pregnant women experiencing hypertension and cause fetal health problems (Hillier et al., 2021).

In this session, you already know what blood tests are essential for pregnant women. Then what is the nurse's role in preparing the specimen for the blood test examination? How to pregnant women ready to get the proper blood specimen?

Preparing a blood specimen for blood group testing is the same as for a Rhesus D examination. Blood sampling is taken through a finger prick (Fig.31) or a syringe inserted into a vein in the arm (Fig.32). No special preparation needs to be done, and the patient does not need to fast before the blood type check. Before taking the specimen, clean the blood collection area with an antiseptic solution to kill germs. The blood that has been taken is then mixed with antibodies, and the reaction will be observed (Padoan, 2020).

The test for Full blood count, Inherited blood disorders, Syphilis, HIV, Hepatitis B, and Rubella is done by taking blood from

a vein close to the skin's surface. No special preparation needs to be done, and the patient does not need to fast before the test. The most frequently selected area is the elbow crease (Fig.32). The veins most often used are the median cubital vein, the basilica vein, and the cephalic vein. The following are the steps taken by the nurse when taking a blood sample for a complete blood count: cleaning the skin area at the blood collection site, using an antiseptic solution, tie an elastic rope at the top of the blood collection site so that blood flow is blocked in that area, insert the needle into the vein and draw out the required amount of blood, then collect it in a small tube, cover the needle puncture wound with a bandage, attach a label containing the name and time of blood collection on the blood collection tube, then send it to the laboratory for examination (Durham et al., 2014; Leifer, 2013; Padoan, 2020).

The specimen for examination of hemoglobin levels in whole blood. i.e., blood in the same form or condition as when circulating in the stream. Samples may be obtained from venous or capillary blood by adding EDTA anticoagulant to prevent blood clots (Padoan, 2020).

Figure 31. Taking blood samples from the patient's fingertips
Adapted from Felicia, L. (2023). Tes Golongan Darah. Available at https://www.sehatq.com/tindakan-medis/tes-golongan-darah. Retrieved on July 2, 2023.

Figure 32. Venous location for blood sampling
Adapted from https://gustinerz.com/prosedur-pengambilan-sampel-darah-vena/. Retrieved on July 2, 2023.

The four most common types of diabetes screenings are the A1C test, Fasting blood sugar test, Random blood sugar test, and Glucose tolerance test. A fasting blood sugar test has these specific requirements: overnight fasting (refraining from eating or drinking food or liquids besides water for at least eight hours), and the blood sample must be taken after fasting, typically in the morning before breakfast. A random blood sugar (RBS) test measures blood sugar levels at the time of testing. This test doesn't have to be done at a specific time of day, nor does it require fasting. Like a fasting blood sugar test, a glucose tolerance test involves fasting and a blood sample before breakfast. This is to measure fasting blood glucose levels. Then Mother will be given eight ounces of a glucose solution. After two hours, another blood test will measure blood glucose levels. All blood specimens for diabetes screenings can be taken from a fingertip or an arm vein (Padoan, 2020).

2. Diagnostic Test

a. Electrocardiography (ECG)

Although little is known about the characteristics of the 12-lead ECG in pregnancy, there is evidence from previous studies to suggest that some of the ECG parameters that change during pregnancy and are known as a cardiovascular adaptation of pregnancy are potential mechanisms by which these changes may occur. Although on some evidence, there are indications that pregnancy affects the ECG at some point and that there is recovery from these changes after delivery. Heart rate (HR) increases progressively during pregnancy, reaching a peak in the third trimester. This increase in HR is related to hormonal factors in stage 20 early in pregnancy and, after that, to an increase in the diameter of the left atrium and sympathetic activation. The 12-lead ECG examination is carried out in a state of resting pregnant women and position supination with a calibration of 25 m/sec and an amplitude of 10 mm/mV. Interpretation then determines the rhythm, heart rate, axis, P wave morphology, PR interval, duration, wave configuration QRS, QT interval, and T wave (Durham et al., 2014; Kepley et al., 2023).

b. Ultrasound

Ultrasonography uses high-frequency sound waves to produce an image of an organ or tissue. It is the most common diagnostic test during pregnancy (Cunningham et al., 2010). Ultrasound use varies based on trimester and is commonly used to obtain vital information: gestational age, fetal growth, fetal anatomy, placental abnormalities and location, fetal activity, amount of amniotic fluid, and visual assistance for some invasive procedures such as amniocentesis (Durham et al., 2014).

A standard ultrasound evaluates fetal presentation, amniotic fluid volume, cardiac activity, placental position, gestational age measurements, and fetal number. Other categories of ultrasound include limited obstetric and

specialized ultrasound, usually done after a standard ultrasound when deemed necessary for further fetal evaluation (Durham et al., 2014).

Limited ultrasound can be used to measure amniotic fluid volume, evaluate interval growth, evaluate the cervix, confirm fetal cardiac activity or fetal presentation as an adjunct to ultrasound-guided amniocentesis or external version, for confirmation of embryonic number, for measurement of crown-rump length, or guarantee of a yolk sac or uterine sac with assisted reproductive technology. Specialized ultrasounds include fetal Doppler assessment, the performance of biophysical profile (BPP), evaluation of amniotic fluid, fetal echocardiography, or measurement of additional fetal structures. Standard ultrasounds are typically done in the first trimester to confirm pregnancy and calculate gestational age. Further ultrasounds may be performed at other times (Durham et al., 2014).

There are two ultrasound procedures, namely transvaginal ultrasound and abdominal ultrasound. Transvaginal ultrasound is generally performed in the first trimester for earlier visualization of the fetus, the woman is in a lithotomy position, and a sterile covered probe/transducer is inserted into the vagina. In abdominal ultrasound, a full bladder is necessary to elevate the uterus out of the pelvis for better visualization. When abdominal ultrasound is performed during the first half of pregnancy, the woman is prone, and transmission gel and transducer are placed on the maternal abdomen. The transducer is moved over the maternal abdomen to create an image of the structure being evaluated (Durham et al., 2014).

The following is an ultrasound examination procedure in detail (Durham et al., 2014):

- Explain the procedure to the woman and her family. Explain that ultrasound uses sound waves to produce an image of the baby.

- Assess for latex allergies with transvaginal ultrasound.
- For transvaginal, have the patient wear a gown and undress from the waist down. For abdominal ultrasound, only the lower abdomen needs to be exposed.
- Inform the woman that a sterile sheathed probe is used for transvaginal ultrasound and is inserted into the vagina. Inform her that she may feel pressure, but no pain is usually supposed.
- Position patient in lithotomy for transvaginal ultrasound and supine for abdominal ultrasound.
- Provide comfort measures to the woman during the procedure, such as a pillow under her head and a warm blanket above and below her abdomen.
- Be sensitive to cultural and social as well as modesty issues.
- Provide emotional support.
- Schedule appropriate follow-up.
- Document ultrasound examination according to institutional policy.

c. Non-Stress Test

The non-stress test (NST) is a screening tool that uses electronic fetal monitoring (EFM) to assess fetal condition or well-being. The heart rate of a physiologically normal fetus with adequate oxygenation and an entire autonomic nervous system accelerates in response to movement. The NST records fetal heart rate (FHR) accelerations to fetal activity. It is the most widely accepted method of evaluating fetal status, particularly for high-risk pregnant women with complications such as hypertension, diabetes, multiple gestation, trauma and bleeding, a woman's report of lack of fetal movement, and placental abnormalities. The FHR is monitored with the external FHR transducer until reactive (up to 40 minutes) while running an FHR contraction strip for interpretation. Monitor FHR and fetal activity for 20–30 minutes.

F. PREGNANCY EXERCISE

There is proof that light to moderate exercise during a healthy pregnancy is good, but excessive practice should be avoided. Given that the mother's circulatory system serves as the fetus' lifeline and any changes can impact its development and survival, the Nurse should advise the patient regarding activity during pregnancy. During all three trimesters of pregnancy, the action activity should be based on the maternal heart state and fetoplacental reserve. Modern health and fitness practices mandate including information about exercise during pregnancy in prenatal education programs. Women with prior training might be more tolerant of physical activity than women with sedentary lifestyles. Maintaining fitness during pregnancy should be the primary focus, not enhancing fitness or losing weight (Leifer, 2019).

Summary

Maternity nurses assess pregnant women through three stages: anamnesis, physical examination, and collaboration of diagnostic tests if needed. Anamnesis is usually done for pregnant women visiting a health service for the first time. At this first meeting, the Nurse must foster a warm relationship and show empathy to promote the patient's trust in the Nurse so that the patient will be open and honest in answering all the Nurse's questions to explore the health problems of the pregnant woman. Anamnesis format for pregnant women varies, but typically includes biographical data, health history, obstetric, menstrual, family, contraceptive, and psychosocial factors.

Pregnant women's identity includes name, age, education, ethnicity, address, marital status, occupation, religion, and race. Advanced maternal age increases the risk of pregnancy complications, such as ectopic pregnancy, spontaneous abortion, and gestational diabetes. Demographic data shows an increased population aged 35-45, influenced by social and cultural changes. Women with higher socioeconomic status delay motherhood into

their 30s, while advances in medical sciences improve fertility treatment.

Gravida indicates the number of pregnancies, while para indicates the outcome. Para numbers increase when a woman delivers a fetus at least 20 weeks gestational, while gravida numbers increase by one each pregnancy. The GTPAL system standardizes pregnancy records, while GTPALM adds information on multiple births.

The Woman's estimated delivery date (EDD) is calculated using Nagele's rule, which involves identifying the first day of LNMP, counting backward three months, and adding seven days. EDD can be revised if necessary. Other methods include gestation wheel, electronic calculator, physical examination, ultrasound, or a combination.

Nurses should be aware of potential danger signs during pregnancy, including genetic flaws, drug, alcohol, and tobacco usage. Maternal smoking can negatively impact fetus development, psychiatric disorders, and the developing eggs of the female fetus. Marijuana use is linked to preterm birth, and nicotine replacement therapy should not be given to pregnant women. Nurses should discuss smoking and drug use habits during early prenatal care.

The Nurse examines the signs and symptoms of pregnancy to determine if a woman is positively pregnant and to identify the ability of pregnant women to adapt to changes in physical changes due to the pregnancy process. Pregnancy is divided into three 13-week parts called trimesters, and in each trimester, different physical changes occur in response to the growth and development of the fetus. The main complaint must clearly describe the symptoms experienced, location, quality or character, quantity or severity, time (onset, duration, frequency), situation, triggering and relieving factors, related factors, and how pregnant women perceive the symptoms experienced.

Signs and symptoms of pregnancy are grouped into three general categories: presumptive, probable, and positive. Presumptive signs of pregnancy are those from which a pregnancy

cannot be diagnosed with certainty, while probable signs provide more vital evidence of pregnancy. Positive signs of pregnancy only a developing fetus causes positive signs of pregnancy.

Nurses must analyze past medical history to study diseases affecting pregnant women, including diabetes, hypertension, kidney disease, allergies, lung disease, anemia, bleeding, heart disease, and Covid-19. Pregnancy is a time of increased risk for women with chronic illnesses, requiring increased monitoring and surveillance. Preexisting and pregnancy-related hypertension are common complications, with gestational diabetes increasing three to six-fold in women over 40 years. Preexisting diabetes increases risks of congenital anomalies and perinatal mortality.

High-quality primary and reproductive health care should begin with assessments of pregnancy intention and contraceptive use. Teenagers may have missed opportunities to discuss contraception and preconception care. Clinicians may underestimate unplanned pregnancies and comorbidities among women aged 30 and older due to declining documentation of contraception. Nurses should inquire about contraceptive type, oral contraceptive use, and intrauterine device status.

Physical examination in pregnant women begins with checking vital signs and anthropometric measurements and continues with a head-to-toe physical examination. Physical examination is carried out every time the patient visits the antenatal service.

Laboratory studies are conducted at the initial prenatal visit to establish baseline values for follow-up and comparison as the pregnancy progresses. Ultrasound may be performed during the first trimester to confirm intrauterine pregnancy, viability, and gestational age. Urine dipsticks for glucose, albumin, and ketones are standard. A 1-hour glucose test is recommended at 24-28 weeks' gestation. Repeat gonorrhea culture, chlamydia, syphilis, HIV, and hepatitis B surface antigen tests as needed.

Screening for Group B Streptococcus (GBS) is recommended at 35-37 weeks gestation to anticipate intrapartum antibiotic

treatment needs. Blood tests at 15-20 weeks' gestation are not diagnostic, and amniocentesis is recommended if positive. Screening for gestational diabetes is recommended at 24-28 weeks, with a 3-hour glucose tolerance test ordered if elevated. Hemoglobin and hematocrit between 28-32 weeks identify anemia and iron supplements, and syphilis serology is conducted if prevalent. Antibody screen for Rh-negative women is administered at 28 weeks gestation to prevent isoimmunization and hemolytic disease risk in fetuses.

Pregnant women often experience nursing problems like altered elimination patterns, nausea, vomiting, decreased gastric motility, and discomfort with defecation.

Questions Review

1. A woman enters the clinic for her prenatal appointment. She says she has a 5-year-old son born at 39 weeks gestation, a 3-year-old daughter born at 34 weeks gestation, and that she is currently 28 weeks pregnant with twins. Her first pregnancy ended at 16 weeks gestation. The Nurse will interpret her obstetric history as follows:
   a. G4 T2 P2 A1 L4.
   b. G3 T2 P0 A1 L2.
   c. G3 T1 P1 A1 L2.
   d. G4 T1 P1 A1 L2
   e. G3 T2 P1 A1 L2.
2. Which of the following goals should exercise be done during pregnancy?
   a. Maintaining physical fitness
   b. Minimizing weight gain
   c. Achieving weight loss
   d. Improving physical fitness
   e. Birthing process easier
3. A woman is lying on the examination table on her back for a prenatal examination at 30 weeks gestation. She complains of

feeling faint and dizzy all of a sudden. The Nurse should react in the following ways:

a. Reassure the Woman and take steps to lower her degree of anxiety.
b. Give the Woman some orange juice or another type of glucose that is quickly absorbed.
c. The Woman's head with a cushion.
d. The Woman is turned on her side.

4. A home pregnancy test results in a woman's first prenatal visit, and her chart displays a TPALM recording of 40120. The nursing staff would assume that:
   a. She will only need a small amount of prenatal education because this is her fourth pregnancy.
   b. The mother will require assistance in planning the care of her other children while in labor and giving birth at home.
   c. The Woman shouldn't be too anxious because she knows how the pregnancy develops.
   d. Because of the increased danger of this pregnancy, actions to decrease anxiety will be required.

5. LNMP for a woman was set for April 1, 2023. She has been attending her prenatal clinic appointments on time, but she says she has to change the time of a future work since she and her husband will be on an ocean cruise from December 30 through January 7, 2024, to celebrate the New Year. The Nurse's best answer would be:
   a. "Prenatal appointments cannot be changed. Each visit is significant.
   b. When on an ocean cruise, remember to have nausea medication.
   c. Instead of the New Year's dates, "Perhaps you might consider rescheduling your vacation around the Thanksgiving holiday."
   d. I'll change the time of your clinic appointment to fit your vacation schedule.

6. A woman undergoes an incomplete abortion, followed by vacuum aspiration. She is currently crying softly in the recovery room with her spouse. Choose the most relevant nursing action.
    a. Leave the couple alone, except for any necessary recovery-room care.
    b. Tell the couple that most abortions are beneficial because the unborn child would have been aberrant.
    c. Inform the couple that spontaneous abortion is widespread and does not preclude them from having additional children.
    d. Express regret for their loss and be present if they wish to discuss it.
7. Which category of pregnancy signs are subjective and can only be reported by the patient?
    a. Positive Signs
    b. Probable Signs
    c. Presumptive Signs
    d. Proven Signs
8. Which of the following are NOT considered presumptive signs of pregnancy? Select all that apply:
    a. Positive pregnancy test
    b. Amenorrhea
    c. Fatigue
    d. Increased urination
9. A 35-year-old female suspects she may be pregnant. The physician notes in the chart that the lower uterine segment is soft. As a nurse, you know this is known as:
    a. Ballottement
    b. Hegar's Sign
    c. Goodell's Sign
    d. Chadwick's Sign
10. Which statement below correctly describes Chadwick's Sign?
    a. "This sign is present when there is softening of the cervix."

b. “Chadwick’s Sign is the rebounding of the fetus against the examiner’s fingers when the uterus is pushed during palpation.”
c. “This can be noted when the lower segment of the uterus softens.”
d. “Chadwick’s Sign occurs when there is a bluish color to the vulva, cervix, and vagina.”

11. The examiner notes there is softening of the cervix. This is known as?
    a. Goodell’s Sign
    b. Hegar’s Sign
    c. Chadwick’s Sign
    d. Palmer’s Sign
12. During a physical assessment of a pregnant female, it is noted that the fetus has movement and recoil against the examiner’s fingers when the uterus is palpated. This is termed a?
    a. Palmer’s Sign
    b. Ballottement
    c. Hegar’s Sign
    d. Chadwick’s Sign
13. A 25-year-old female, 18 weeks pregnant, reports feeling fluttering in her lower abdomen. She states it feels like the baby is moving. This is known as:
    a. Ballottement
    b. Quickening
    c. Hegar’s Sign
    d. Goodell’s Sign
14. Which of the following lab results indicates anemia?
    a. Hemoglobin 11.2
    b. Hemoglobin 10
    c. Hematocrit 34%
    d. Hematocrit 38%
15. Softening of the cervix that occurs in the second month of pregnancy is known as:
    a. Hegar’s sign

b. Braxton's sign
c. Goodell's sign
d. Chadwick's sign

16. Using Naegele's rule, calculate the EDD for a patient with an LMP of March 10.
    a. December 3
    b. December 7
    c. December 10
    d. December 17

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CHAPTER 4.

THE INTRAPARTUM PERIOD

INTRODUCTION

Most of the 140 million births yearly occur among women with no risk factors for difficulties for themselves or their unborn children at the start of and throughout labor. However, the timing of the birth is crucial to the survival of both the mother and the child because complications considerably raise the risk of morbidity and mortality. The new Global Strategy for Women's, Children's, and Adolescents' Health (2016–2030) and Sustainable Development Goal 3's objectives to "ensure healthy lives and promote well-being for all at all ages" are driving the expansion of global agendas to ensure that women and their unborn children not only survive any labor complications that may arise but also thrive and live up to their total health and potential (World Health Organization, 2018).

Childbirth is a normal physiological process involving the health of the mother and a fetus that will become a member of our future generation. Every nursing intervention consists of the welfare of two patients and the application of medical-surgical and pediatric nursing skills, psychosocial and communication skills, and obstetric care-specific skills. In developed countries, labor and delivery are frequently family affairs involving fathers, grandparents, and others in the birthing room. Each family member often recalls the specifics of this event for a very long time. The privacy and rights of the mother must be protected, the institution's policies and procedures must be considered, and the nurse must be conversant with the state Board of Nursing's scope of practice (Leifer, 2019).

Regular uterine contractions (UCs) signal the start of the intrapartum phase, which continues until the placenta is expelled. This is typically accomplished through a procedure known as labor. The time between the end of a pregnancy and the beginning of the infant's extrauterine life is known as childbirth. The intrapartum/childbirth process is covered in this chapter, along with the variables influencing labor and delivery, how labor and delivery progress, and the nursing care required (Leifer, 2019).

Labor and birth are divided into four stages: 1) The first stage begins with the onset of labor and ends with complete cervical dilatation; 2) The second stage begins with complete dilatation of the cervix and ends with the delivery of the baby; 3) The third stage begins after the delivery of the baby and ends with the delivery of the placenta; and 4) The fourth stage begins after the delivery of the placenta and is completed 4 hours later (it is the immediate postpartum period) (Leifer, 2019).

Powers (uterine contractions and the mother's pushing), passage (cervix, muscles, ligaments, and fascia), passengers (fetus, placenta, amniotic membranes, and amniotic fluid), position (Mother's position) and psyche (Mother's and family responds), sometimes called the "five Ps," are the four interdependent parts of the labor and delivery process. Preparation, such as attending prenatal classes, position (horizontal or vertical), professional assistance (knowledgeable nurses present who explain and coach), place or setting (as lack of privacy and shift personnel changes can disrupt rapport), procedures (such as internal examinations), and people (such as the presence of encouraging family members) are additional factors that affect the progress of labor (Durham et al., 2014; Lowdermilk et al., 2013a).

Initiating labor, which results from the mother and fetus interacting, depends on various circumstances. These include placental aging, hormonal alterations, uterine muscle stretching, and enhanced oxytocin sensitivity. Labor typically starts when the fetus is big enough to fit through the mother's pelvis yet little enough to acclimate to life outside the uterus. This stage is typically attained

between 39 and 40 weeks, or roughly 280 days following the woman's last menstrual cycle (Durham et al., 2014).

Many common causes of maternal and perinatal mortality, including obstructed labor, eclampsia, and postpartum hemorrhage, are unpredictable. Therefore, skilled personnel intervening during an emergency in labor and delivery significantly changes maternal and child health outcomes (World Health Organization, 2018).

The role of the interprofessional team in monitoring and caring for women during labor is critically important in keeping women safe and improving outcomes during the labor process. Medical professionals such as nurses, midwives, pharmacists, family physicians, anesthesiologists, and obstetricians/gynecologists may be involved in a woman's labor process. Close communication is needed between these professionals to create an atmosphere of safety and patient-centered care (Hutchison et al., 2023).

KEY TERMS

- Intrapartum
- Perineum
- Power
- Passage
- Passenger
- Psychology
- Position
- Placenta
- Effacement
- Dilatation
- Engagement
- Amniotic membranes
- Uterine contractions
- The first stage
- The second stage
- The third stage
- The fourth stage
- Last normal menstrual period (LNMP)
- Expected delivery date (EDD)
- The interprofessional team
- Vaginal examination (vaginal toucher/VT)

LEARNING OBJECTIVES

After completing this chapter, you will be able to describe the following:

- Assessment on intrapartum mothers.
- Nursing problems in intrapartum mothers.

- Nursing care plan for intrapartum mothers.
- Anamnesis procedures in intrapartum mothers.
- Physical examination procedure on intrapartum mothers.
- Intrapartum action procedures.

A. ASSESSMENT OF INTRAPARTUM MOTHERS

The assessments consisted of anamnesis, physical examination, and supporting examination. The three major assessments performed promptly on admission are 1) Maternal (Mother) condition, 2) Fetal condition, and 3) Progress of labor (Leifer, 2019). During labor, mother and fetus are evaluated at intervals to assess their well-being and to determine how the labor is progressing (Cohen & Friedman, 2021)

1. Anamnesis

Anamnesis of the mother in labor aims to determine whether the mother has risk factors that can cause her and her fetus to experience life-threatening conditions. Anamnesis for the mother consists of 1) Demographic data, 2) The woman's reason for coming to the health facility, 3) Previous obstetric history, 4) Medical history, 5) Screening for risk factors, 6) Characteristics of the onset of labor, and 7) Psychosocial and cultural (Durham et al., 2014; Leifer, 2019; Lowdermilk et al., 2013a).

Maternal demographic data includes name, mother's age, mother's education, religion, and mother's financial ability. Assessing the age of the mother giving birth is very important because the mother's age affects the quality of the delivery process, too young or too old (Bałanda-Bałdyga et al., 2020; World Health Organization, 2018). Increased maternal age during pregnancy and labor is believed to have potential complications. Advanced maternal age is associated with higher cesarean section (CS) rates among nulliparous women with term pregnancies who underwent labor induction. Miscarriage, congenital or chromosomal abnormalities, hypertension, diabetes, placenta previa, and preterm labor are potential complications of advanced maternal age (Sharami et al., 2022).

Maternity mothers often come to delivery assistance services with the main complaints of leaving amniotic fluid (amniotic fluid), excreting mucus mixed with blood, pain due to uterine contractions, spitting out fresh blood inside large quantities (hemorrhage), headache, blurry eyes, and seizures (Preeclampsia-eclampsia). In reviewing the health history of the most recent maternity mother, ask the mother about the frequency and duration of contractions, location and characteristics of discomfort due to contractions, back pain, absence of feeling in the suprapubic, Persistence of contractions despite a change in position when the mother is walking or lying down, typical bloody show, and features of the amniotic membranes (Durham et al., 2014; Leifer, 2019). Women may experience painful contractions throughout pregnancy that do not lead to cervical dilatation or effacement, referred to as false labor (Hutchison et al., 2023).

It is essential to ask about a woman's previous obstetric history, as this may help inform the risk assessment in the current pregnancy and have implications for the mode of delivery. Gravidity is the number of times a woman has been pregnant, regardless of the outcome. Parity is the total number of pregnancies carried over the threshold of viability. Previous preterm labor increases the risk of preterm labor in later pregnancies. High birth weight in previous pregnancies raises the possibility of previous gestational diabetes. A low birth weight (small for gestational age) in a previous pregnancy increases the risk of a further small for gestational age baby. Mode of delivery is also asked, like spontaneous vaginal delivery, assisted vaginal delivery (e.g., forceps), or cesarean section (will have implications for the choice of future mode of delivery). Antenatal and postnatal previous complications need to be identified. The antenatal complications may pose a risk to the current delivery, i.e., pre-eclampsia, gestational diabetes, gestational hypertension, placenta praevia, and shoulder dystocia.

The postnatal period may pose a risk to the current delivery, i.e., postpartum hemorrhage, perineal/rectal tears during delivery,

and retained products of conception. It would help if you also asked when the first day of her last normal menstrual period (LNMP) was. This will help you calculate the expected delivery date (EDD) and the fetus's gestational age. Calculating the EDD and gestational age will help you to identify whether the labor is preterm, term, or post-term. Often, women do not recall their LNMP; in such cases, asking her when she first felt her baby's movement inside her (quickening or fetal kick) is helpful. This occurs approximately 18-20 weeks in primigravida mothers and 16-18 weeks in multigravidas (Durham et al., 2014; Leifer, 2019; Lyndon et al., 2022).

Medical history is important to be studied whether she has now or has recently had vaginal bleeding, severe headache/blurred vision, convulsions or loss of consciousness, difficulty breathing, fever, severe abdominal pain, and premature leakage of amniotic fluid (waters breaking early).

2. Physical Examination

Physical examination during the intrapartum period included Leopold maneuvers (see Chapter 3), uterine contractions (frequency, duration, and intensity), vaginal discharge, vaginal examination (vaginal toucher/VT), intake output, vital signs, urinary bladder, examination of the fetal heart rate (frequency per minute and pattern), estimated weight fetus, position, and presentation of the fetus. A brief physical study should evaluate a woman's general condition. Any edema, especially of the fingers, face, and abdominal scars, should be further explored. Fundal height is measured (or estimated by an experienced nurse) to determine if it is appropriate for her gestation. Reflexes are checked to identify hyperactivity that may occur with gestational hypertension (Durham et al., 2014; Leifer, 2019; Lowdermilk et al., 2013b).

The temperature is checked every four or every 2 hours if it is elevated or the membranes have ruptured (frequency varies among facilities). A temperature of 38°C (100.4°F) or higher should be reported. If the temperature is elevated, the amniotic fluid is assessed for signs of infection. IV antibiotics are usually given to a

woman who has a fever because of the risk that the infant will acquire group B streptococcus infection. The pulse, blood pressure, and respiration are assessed every hour. Maternal hypotension (particularly if the systolic pressure is less than 90 mm Hg) or hypertension (greater than 140/90 mm Hg) can reduce blood flow to the placenta (Hutchison et al., 2023).

Contractions can be assessed by palpation or by continuous electronic fetal monitoring (EFM). Some women have sensitive abdominal skin, especially around the umbilicus. When palpation is used to evaluate contractions, the entire hand is placed lightly on the uterine fundus. The nurse should keep the fingers still when palpating contractions. Moving the fingers over the uterus can stimulate contractions and give a wrong idea of their true frequency. Assesses contractions for frequency, duration, and intensity. The **frequency** of uterine contractions will be 3-5 times every 10 minutes. Each contraction lasts 40–60 seconds; this is known as the **duration** of contractions. The woman tells you that her contractions feel strong; this is the **intensity** of contractions. You can assess the strength of uterine contractions by palpating the woman's abdomen in the area of the fundus (top) of the uterus. In between contractions, when the uterus is relaxed and the muscular wall is soft, you can palpate the fetal parts. But when a strong contraction comes, you cannot feel the fetal parts because the abdominal wall over the uterus is tense and painful if you apply deep pressure with your fingers (Durham et al., 2014; Hutchison et al., 2023).

Evaluation of the fetus and birth canal (cephalopelvimetry) consists of maternal and fetal features. The maternal's features need to be checked: cervical dilatation, effacement, consistency, application to the presenting part, architectural characteristics of the bony pelvis, and labor pattern (normal or dysfunctional progress). Fetal features consist of estimated weight, presentation (see Fig.33), position (see Fig.34), degree of flexion (attitude) (see Fig.35), synclitism (see Fig.36), degree of cranial molding (see Fig.37), and station (pattern of descent) (see Fig.38) (Cohen &

Friedman, 2021). Presentation refers to the part of the fetus that enters the pelvic inlet first and leads through the birth canal during labor at term. The three main presentations are *cephalic* presentation (head first), occurring in 96% of births (Fig. 9-2); *breech* presentation (buttocks or feet first), occurring in 3% of births; and *shoulder* presentation, seen in 1% of births. The presenting part is that part of the fetal body first felt by the examining finger during a vaginal examination. In a cephalic presentation, the presenting part is usually the occiput. In a breech presentation, it is the sacrum; in the shoulder presentation, it is the scapula. When the presenting part is the occiput, the presentation is noted as a vertex. Factors determining the presenting part include fetal lie, fetal attitude, and extension or flexion of the fetal head.

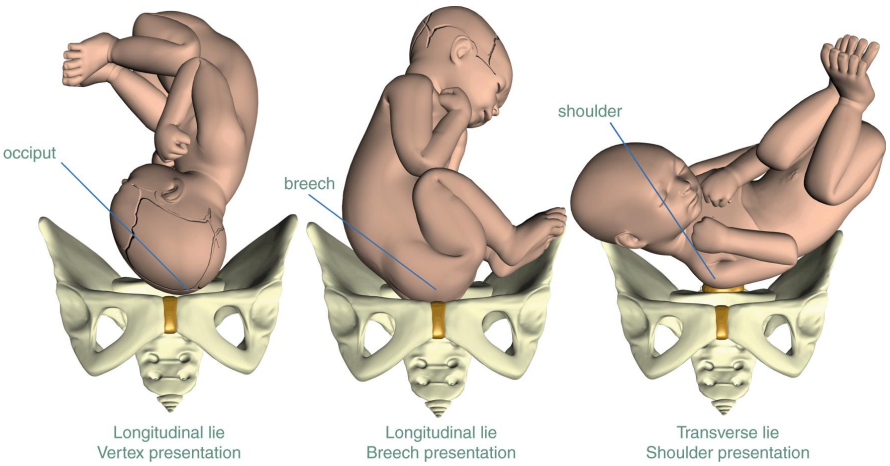

Figure 33. The fetus presentation.
Adapted from Dörr et al., (2017). Obstetric Interventions. Cambridge University Press

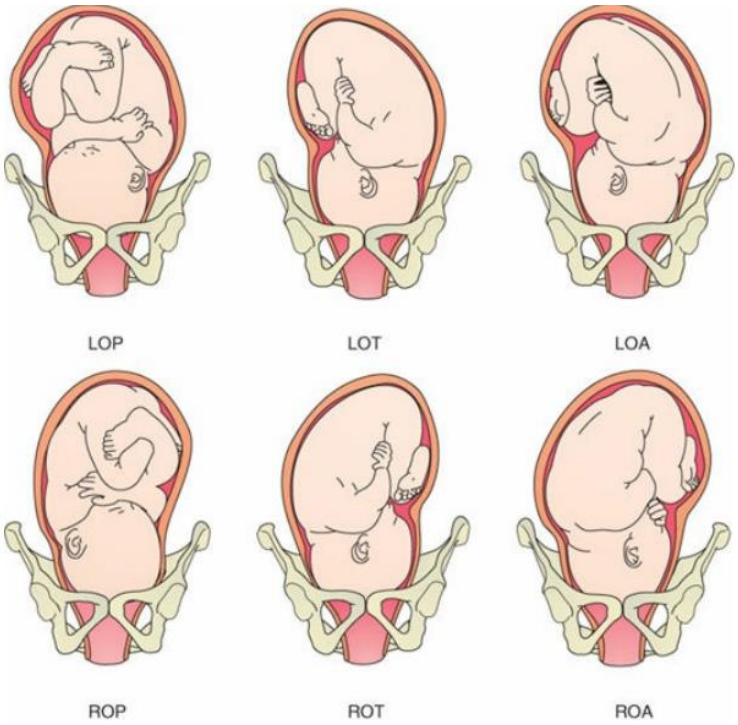

Figure 34 The fetal position. All are vertex presentations. A, anterior; L, left; O, occiput; P, posterior; R, right; T, transverse. LOP (left occipitoposterior), LOT (left occipitotransverse), LOA (left occipitoanterior), ROP (right occipitoposterior), ROT (right occipitotransverse), and ROA (right occipitoanterior)

Adapted from Hutchison et al. (2023). Stages of labor. Treasure Island (FL). StatPearls Publishing

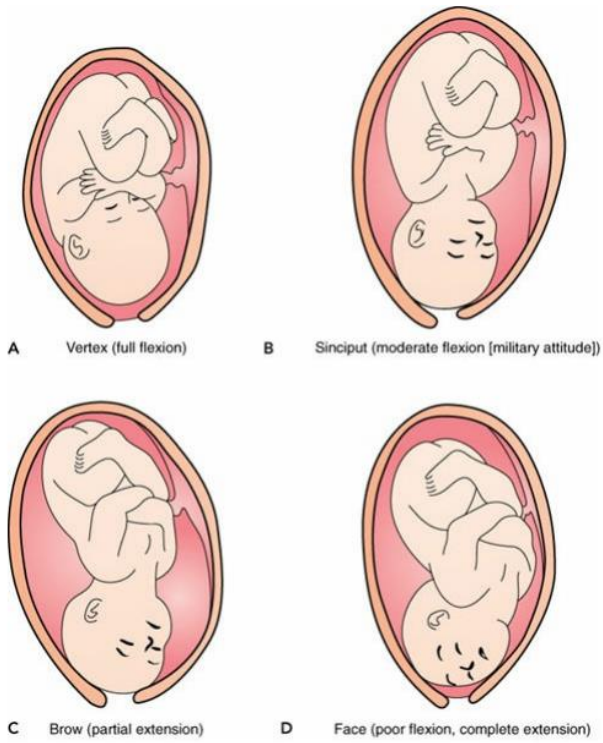

Figure 35. The degree of flexion. (A) The fetus in full flexion presents the skull's smallest anteroposterior diameter (suboccipitobregmatic) to the inlet in this good attitude (vertex presentation). (B) The fetus is not as well flexed (military attitude) and presents the occipitofrontal diameter to the inlet (sinciput presentation). (C) The fetus is in partial extension (brow presentation). (D) In complete extension, the fetus presents a wide (occipitomental) diameter (face presentation).

Adapted from Hutchison et al. (2023). Stages of labor. Treasure Island (FL). StatPearls Publishing

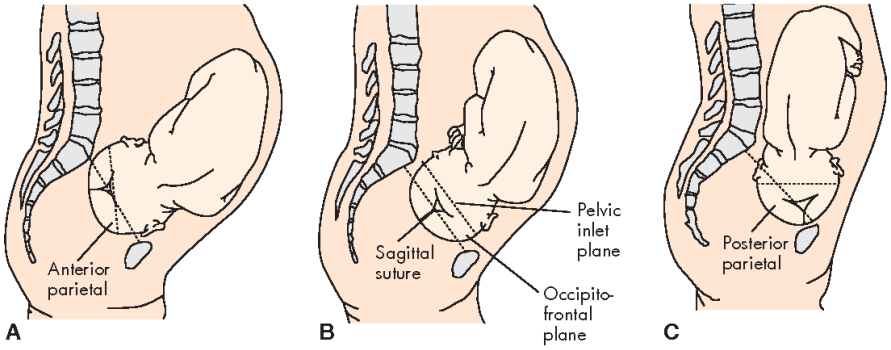

Figure 36. Synclitism and asynclitism. A. Anterior asynclitism, B. Normal synclitism, and C. Posterior asynclitism
Adapted from https://www.semanticscholar.org/paper/Labor-and-Birth-Processes-Learning-Objectives-Key-Lowdermilk/5ec0bc30878487ba055ef9a80c7ec7894a214757/figure/6.
Retrieved on July 8, 2023

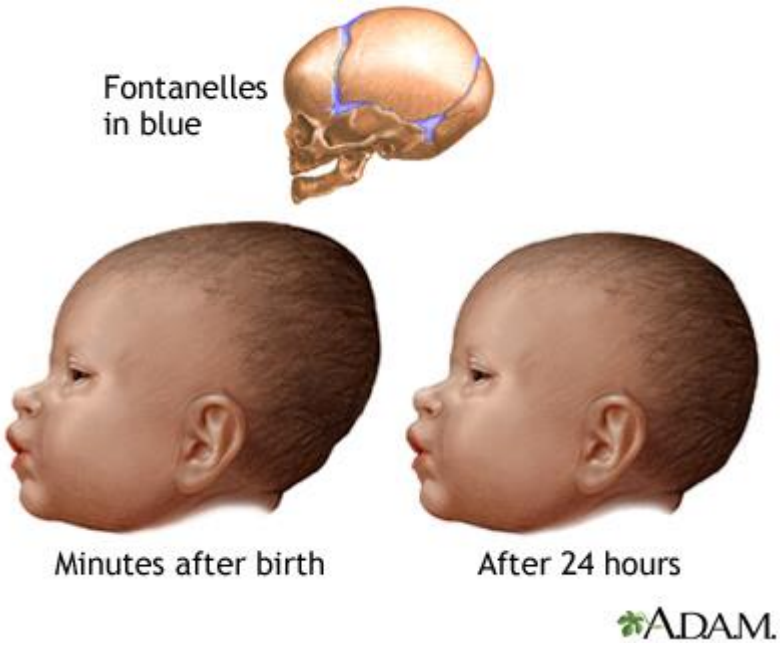

Figure 37. Newborn head molding
Adapted from Kaneshiro, N.K. (2021). Medical encyclopedia: newborn head molding. https://medlineplus.gov/ency/imagepages/9696.htm
Retrieved on July 9, 2023

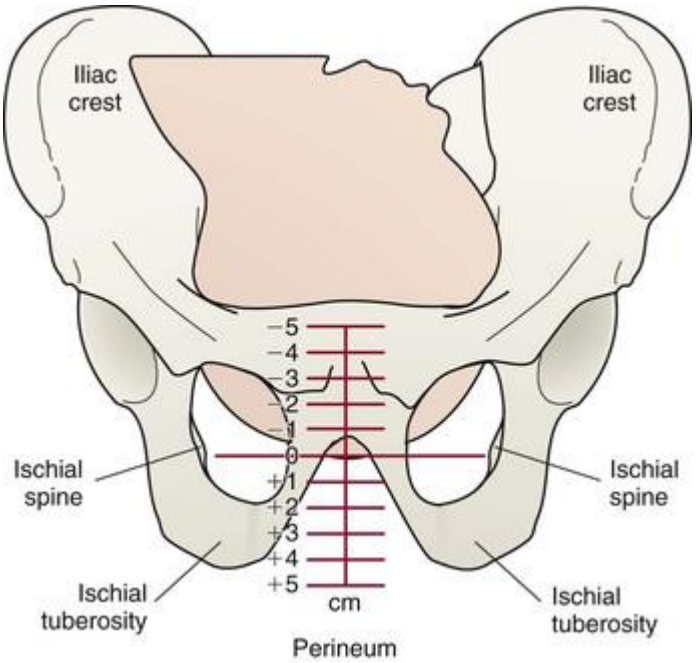

Figure 38. Stations of presenting part, or degree of descent. The lowermost portion of the presenting part is at the level of the ischial spines, station 0.

Adapted from Hamilton et al. (2016). Descent of the fetal head (station) during the first stage of labor. Am J Obstet Gynecol *214*(3), 360.e1-6. https://doi.org/10.1016/j.ajog.2015.10.005. Retrieved on July 9, 2023

Engagement is the term used to indicate that the largest transverse diameter of the presenting part (usually the biparietal diameter) has passed through the maternal pelvic brim or inlet into the true pelvis and usually corresponds to station 0. Engagement often occurs in the weeks just before labor begins in nulliparas and may occur before labor or during labor in multiparas. Engagement can be determined by abdominal or vaginal examination.

The health care provider does a vaginal examination periodically to determine how labor is progressing. The cervix is evaluated for effacement and dilatation (see Fig. 39). The ischial spines determine the fetus's descent (station). There is no interval for vaginal examinations. The observant nurse watches for physical

and behavioral changes associated with the progression of labor to reduce the number of vaginal examinations needed. Vaginal examinations are limited to prevent infection, especially if the membranes are ruptured. They are also uncomfortable (Leifer, 2019; Moncrieff et al., 2022). Throughout the first stage of labor, serial cervical exams are done to determine the position of the fetus, cervical dilatation, and cervical effacement. Cervical effacement refers to the cervical length in the anterior-posterior plane. When the cervix is completely thinned out, and no length is left, this is called 100 percent effacement. The first stage of labor contains a latent phase and an active phase. During the latent phase, the cervix dilates slowly to approximately 6 centimeters. The latent phase is generally considerably longer and less predictable about the cervical change rate than in the active phase. A normal latent phase can last up to 20 and 14 hours in nulliparous and multiparous women, respectively, without being prolonged. The cervix changes rapidly and predictably in the active phase until it reaches 10 centimeters and cervical dilatation and effacement are complete. Active labor with more rapid cervical dilatation generally starts around 6 centimeters. During the active phase, the cervix typically dilates at 1.2 to 1.5 centimeters per hour. Multiparas, or women with a history of prior vaginal delivery, tend to demonstrate more rapid cervical dilatation (Hutchison et al., 2023).

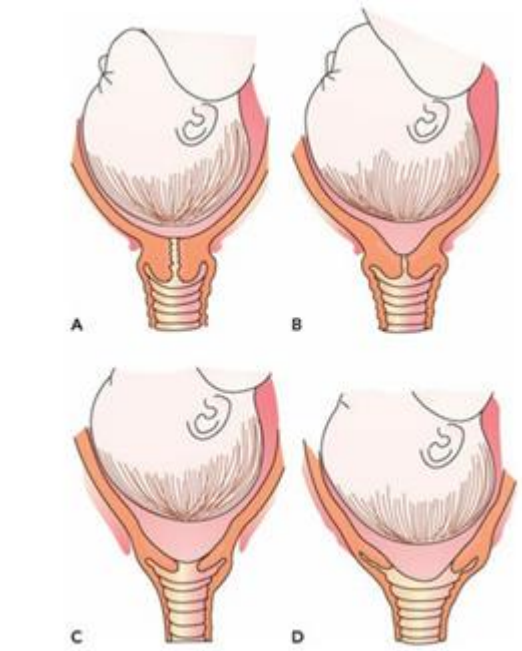

Figure 39. Effacement and dilation of the cervix. (A) The beginning of labor. (B) Effacement is beginning; dilation is not apparent yet. (C) Effacement is almost complete. (D) After complete effacement, dilation proceeds rapidly.
Adapted from https://www.semanticscholar.org/paper/Labor-and-Birth-Processes-Learning-Objectives-Key-Lowdermilk/5ec0bc30878487ba055ef9a80c7ec7894a214757/figure/6. Retrieved on July 8, 2023

In primiparas, effacement is accomplished before dilatation begins. Be sure to inform women of effacement and dilation following a pelvic examination. If a woman is told at noon that she is 3 cm dilated and then at 4 pm, she is told she is still 3 cm dilated. It is a discouraging report because it seems absolutely nothing happened in 4 hours. Effacement, however, will have been occurring; telling her about this can encourage her to continue breathing or working with contractions. In multiparas, dilatation may proceed before effacement is complete. Effacement must occur by the end of dilatation, however, before the fetus can be safely

pushed through the cervical canal; otherwise, cervical tearing can result. Dilatation refers to the enlargement or widening of the cervical canal from an opening a few millimeters wide to one large enough (approximately 10 cm) to permit the passage of a fetus (Hutchison et al., 2023).

Women in labor do not usually need strict measurement of intake and output, but the time and approximate amount of each urination are recorded. The woman may not sense a full bladder, so she should be checked every 1 or 2 hours for a bulge above the symphysis pubis. A full bladder is a source of vague discomfort and can impede fetal descent. It often causes discomfort that persists after an epidural block has been initiated. Policies about oral intake vary among birth facilities. Ice chips are usually allowed to moisten the mouth unless it is likely that the woman will have a cesarean birth. Many facilities allow Popsicles or hard, sugarless lollipops (Leifer, 2019; Lyndon et al., 2022).

The nurse assesses the woman's response to labor, including her breathing and relaxation techniques, and supports adaptive responses. Nonverbal behaviors that suggest difficulty coping with labor include a tense body posture and thrashing in bed. The healthcare provider is notified if the woman requests added pain relief, such as epidural analgesia (Durham et al., 2014).

3. Supporting Investigation

A blood sample for measuring hematocrit and a midstream urine specimen for determination of glucose and protein levels are standard tests performed on admission. The hematocrit test is often omitted if a woman has had regular prenatal care and a recent evaluation. The woman who did not have prenatal care will have additional tests that may include a complete blood count, urinalysis, a drug screen, tests for sexually transmitted infections, and others, as indicated (Durham et al., 2014; Hutchison et al., 2023).

In the management of labor, there is extensive evidence that digital pelvic examination does not accurately assess the position and descent of the fetal head during the first and second stages of

labor. Several recent studies using two- and three-dimensional ultrasound have described objective measures of fetal head progression during labor. Using ultrasound is crucial in performing a safe operative delivery and can help predict whether a vaginal delivery will be successful (Molina & Nicolaides, 2010).

B. NURSING PROBLEMS IN INTRAPARTUM MOTHERS

- Deficient knowledge of the labor process
- Pain related to the labor and delivery process
- Fear related to unknowns of labor; the threat of potential harm to self or fetus
- Risk of ineffective maternal/fetal perfusion related to perfusion in labor
- Risk of infection related to vaginal exams after rupture of membranes (Durham et al., 2014; Tim Pokja SDKI DPP PPNI, 2016)

C. NURSING CARE PLAN FOR INTRAPARTUM MOTHERS

The nursing outcome is the woman will understand the process and interventions related to labor, and the woman will have decreased pain, the woman will have decreased fear during labor, the woman's vital signs and fetal heart rate will remain stable, and the woman will be free of infection (Durham et al., 2014).

Nursing actions during all phases of the first stage of labor are related to the following:

- Diet and hydration: typically, medical orders limit oral intake to clear liquids once admitted to the hospital. The WHO recommends women dictate their oral intake of carbohydrates to decrease maternal ketosis.
- Activity and rest: encouraging frequent position changes and upright positions assist labor progression, facilitate fetal descent, and decrease pain perception.
- Elimination: frequent emptying of the bowel and bladder assists the mother's comfort, provides more pelvic room as

the baby descends, and decreases pressure and injury to the urethra and bowel.

- Comfort: providing comfort measures and therapies facilitates labor progress, decreases pain perception, and supports maternal coping mechanisms to manage the labor process. Many studies indicate that using TENS as a nonpharmacological strategy for pain relief in labor has positive results.
- Support and family involvement: shown to provide emotional and physical support to the laboring mother, decreasing stress and possibly facilitating labor progress.
- Education: providing education and information about labor, procedures, and hospital policies will decrease maternal and family anxiety and fear. Empowers women to make informed decisions.
- Safety: providing a safe, friendly environment will enhance the birthing experience. (Durham et al., 2014; Johnson et al., 2017; Leifer, 2019; Njogu et al., 2021; Reis et al., 2022; Teoli & An, 2023).

D. ANAMNESIS PROCEDURES IN INTRAPARTUM MOTHERS

The following will explain the history-taking procedure for the mother in labor. The purpose of anamnesis in birthing mothers is to know; 1) problems related to the process of the first stage of labor, 2) complicating factors in labor, and 3) the prognosis of labor. Important things to ask are 1) gestational age, 2) history of previous pregnancies, 3) parity, 4) history of past births (vaginal or sectio caesarea, 5) weight of the baby who was born earlier, and 6) problems with previous pregnancies and deliveries. The tool that is prepared before conducting anamnesis is the appropriate birth mother assessment form. Before taking the history, you must explain to the mother the purpose of the history taking and the questions that will be asked (Durham et al., 2014; Karjatin, 2016; Leifer, 2019; Suwanti, 2016).

The following are the stages of the procedure for conducting anamnesis:

- Say hello and introduce yourself.
- Position the patient as comfortably as possible.
- Ask about the complaints felt by the patient.
- Ask about uterine contractions, like when they started to hurt, frequency, duration, and strength.
- Ask about any vaginal discharge, like vaginal bleeding, blood slime, the timing of the start of vaginal discharge, and the nature of bleeding, like color, smell, and amount.
- Ask about fetal movement.
- Ask about the last rest.
- Ask about when the patient last ate.
- Ask about the last defecation/urination.
- Record the results of the anamnesis on the partograph sheet.
- Say, thank you to the patient.

E. PHYSICAL EXAMINATION PROCEDURE ON INTRAPARTUM MOTHERS

1. General Examination

The purpose of a general physical examination in pregnant women is to assess the health and physical comfort of the mother and her baby. Before carrying out a physical examination, explain to the mother and family what is going on during the examination and explain the reasons, and encourage the mother to ask and answer questions submitted so that they understand the interests inspection (Suwanti, 2016).

The stages of physical examination (Durham et al., 2014; Leifer, 2019; Suwanti, 2016):

- Wash hands before starting the examination
- Be gentle and polite, reassure the mother, and help the mom to feel comfortable. If mom is tense or restless, suggest taking slow, deep breaths.
- Ask the mother to empty her bladder (If necessary, check the amount of urine, protein, and acetone in the urine).

- Assess the mother's health and general condition, mood, level of anxiety or pain, the color of the conjunctiva, cleanliness, nutritional status, and body water adequacy.
- Assess the mother's vital signs (blood pressure, temperature, pulse, and breathing) to accurately assess the mother's blood pressure and pulse and check between contractions.
- Ask the mother to lie down and place a pillow under her head and shoulder.
- Then do a head-to-toe physical examination as previously described.

2. Examination of Uterine Contractions and Pain Scale

Determining Contractions by Palpation. The purpose is to provide a periodic assessment of uterine contractions. Steps of assessment of uterine contractions:

- Place the fingertips of one hand lightly on the upper uterus. Keep the fingers still, but move them occasionally to feel mild contractions.
- Palpate at least three to five contractions to estimate their average characteristics accurately.
- Note the time when each contraction begins and ends.
  - ✓ Calculate the frequency by counting the elapsed time from the beginning of one contraction to the beginning of the next.
  - ✓ Calculate the duration by determining the number of seconds from each contraction's beginning to the end.
- Estimate the intensity by indenting the uterus at the contraction's peak. If it is easily indented (like the tip of the nose), the contraction is mild; if it is harder to indent (like the chin), it is moderate; if it is nearly impossible to indent (like the forehead), it is firm.
- Chart the average frequency (in minutes and fractions), duration (in seconds), and intensity.

- Report contractions more frequent than every 2 minutes or lasting longer than 90 seconds or intervals of relaxation shorter than 60 seconds (Landon et al., 2021).

3. Examination of Fetal Heart Rate (FHR)

Determining Fetal Heart Rate. The purpose is to assess and document the fetal heart rate (FHR). The steps are:

- Determine the best location for assessing FHR.
- Identify where the most precise fetal heart sounds will likely be found, over the fetal back and usually in the mother's lower abdomen. Figure 40 illustrates where fetal heart sounds radiate best from various fetal positions. Hearing fetal heart sounds in these positions confirms that the fetus responds well to labor and provides confirmatory information about the fetal position. Conversely, recognizing fetal position aids in locating fetal heart sounds.
- Assess fetal heart rate using one of the following methods (see Fig. 41 and 42):
- Fetoscope
  - Place the head attachment (if there is one) over your head and the earpieces in your ears.
  - Place the bell in the approximate area of the fetal back and press firmly while listening for the muffled fetal heart sounds. When they are heard, count the rate in 6-second increments for at least 1 minute.
  - Multiply the low and high numbers by 10 to compute the average rate range (130 to 140 beats/min).
  - Assess the rate before and after at least one complete contraction cycle.
  - If the fetal heart sounds are heard, check the mother's pulse rate simultaneously; the rates and rhythms will differ.
- Doppler Transducer
  - Place water-soluble gel on the head of the hand-held transducer.

- Position the earpieces in your ears, or connect the transducer to a speaker.
- Turn the switch on and place the transducer head over the approximate area of the fetal back.
- Count as instructed with a fetoscope. If earpieces are used, let the parents hear the fetal heartbeat.

- External Fetal Monitor
  - Read the manufacturer's instructions for specific procedures.
  - Connect the cable to the correct socket on the monitor unit.
  - Put the water-soluble gel on the transducer, and apply it as instructed for the Doppler transducer.
  - A belt, a wide band of stockinette, or an adhesive ring is used to secure the transducers for external fetal monitoring.
  - The rate is calculated by the monitor and displayed on an electronic panel.

- The displayed number will change as the machine recalculates the rate. Report the following: promptly report rates below 110 beats/min or above 160 beats/min for a full-term fetus, report slowing of the rate that lingers after the end of a contraction, and report a lack of variability in FHR.
- Chart the rate. The guidelines for a normal FHR at term are the lower limit of 110 beats/min and the upper limit of 160 beats/min.

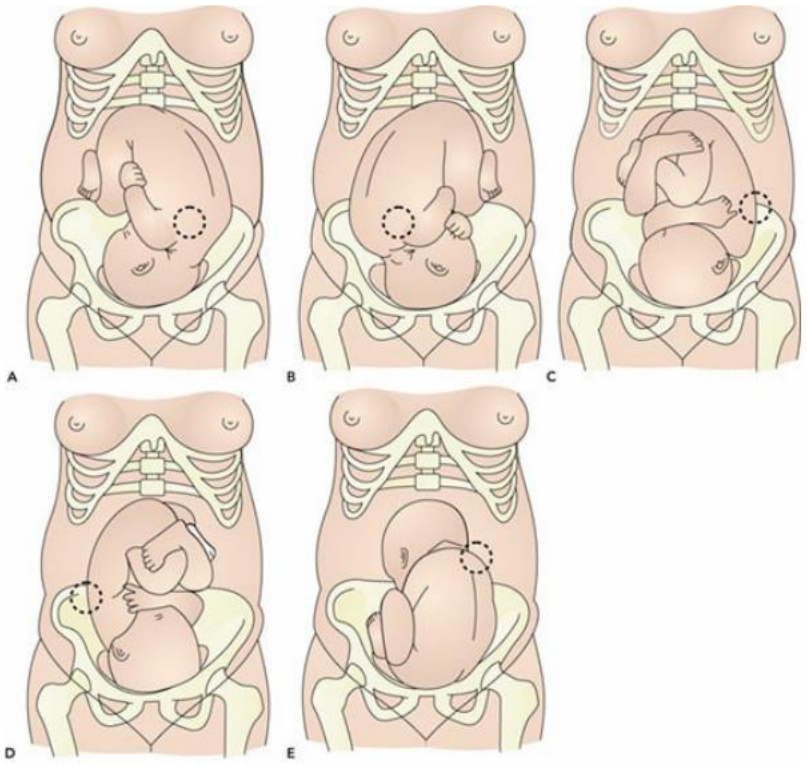

Figure 40. Locating fetal heart sounds by fetal position: (A) Left occipitoanterior (LOA), (B) right occipitoanterior (ROA), (C) left occipitoposterior (LOP), (D) right occipitoposterior, and (E) left sacroanterior (LSaA).
Adapted from https://www.semanticscholar.org/paper/Labor-and-Birth-Processes-Learning-Objectives-Key-Lowdermilk/5ec0bc30878487ba055ef9a80c7ec7894a214757/figure/6. Retrieved on July 8, 2023

Figure 41. Assess fetal heart A. Fetoscope, B. Dopler, C. Pinard stetoscope

Adapted from Bienstock, J. L., Fox, H. E., & Wallach, E. E. (2015). The Johns Hopkins Manual of Gynecology and Obstetrics (5th ed.). Philadelphia, PA: Wolters Kluwer.

Figure 42. External electronic monitoring is in place. Two devices (a uterus transducer and a fetus ultrasound sensor) are strapped to the woman's abdomen.

(busayamol/Shutterstock.com)

4. Sterile Vaginal Exam

An intrapartum sterile vaginal exam is performed vaginal exam, and the labia are separated with a sterile gloved hand. Fingers are lubricated with a water-soluble lubricant. The first and second fingers are inserted into the introitus; the cervix is located, and the following parameters are assessed (see Fig. 43):

- Cervical dilatation: This measurement estimates the dilatation of the cervical opening by sweeping the examining finger from the margin of the cervical opening on one side to that on the other.
- Cervical effacement: This measurement estimates the shortening of the cervix from 2 cm to paper thin, measured by palpation of cervical length with the fingertips. The degree of cervical effacement is expressed in terms of the length of the cervical canal compared to that of an unaffected cervix. When it is reduced by one-half (1 cm), it is 50% effaced. When the cervix is thinned out completely, it is 100% effaced.
- Position of the cervix: The relationship of the cervical os to the fetal head is characterized as posterior, mid-position, or anterior.
- Station: Level of the presenting part in the birth canal with the ischial spines. The station is 0 when the presenting part is at the ischial spines or in the pelvis.
  - ✓ Presentation: Cephalic (head first), breech (pelvis first), shoulder (shoulder first)
  - ✓ Fetal position: Locate presenting part and specific fetal structure to determine the fetal position with the maternal pelvis.

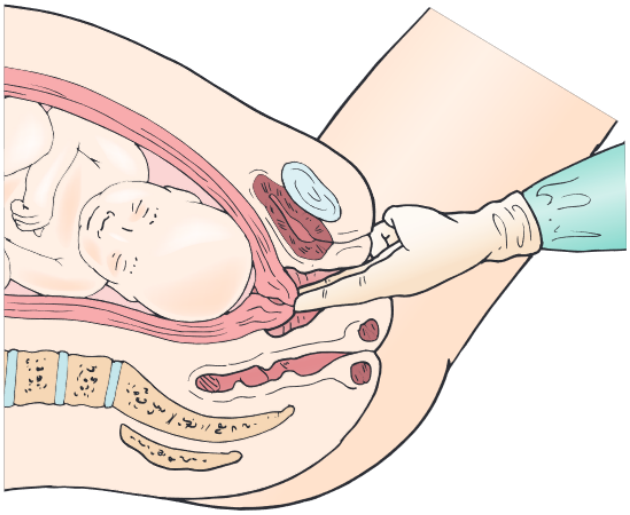

Figure 43. Sterile vaginal exam.
Adapted from Durham et al. (2014). Maternal-newborn nursing: the critical components of Nursing care. Philadelphia. F.A. Davis

5. Management of Pain and Discomfort During Labor and Delivery

The experience of pain during labor is common to all women and is accepted as natural. Typical physiological processes cause most labor discomfort (Burke 2014). It has been said that labor pain is one of the most agonizingly terrible experiences imaginable. Compared to other conditions, labor pain is different in that it is felt in multiple ways. The nurse can create a care plan for the lady at each stage of labor by thoroughly understanding the causes and features of pain in the labor and delivery setting. Acute pain during labor might manifest itself in various ways. Lower uterine and cervical stretching, lactic acid buildup in the muscles, traction on the pelvic organs, and pressure on the bony pelvis all contribute to discomfort in the early stages of labor. In the second stage, pressure on the perineum, cervix, urethra, and rectum from the pelvic muscles causes pain. It is believed that pressure from the fetal occiput on the mother's spine and pelvis during labor causes back discomfort (Durham et al., 2014; Smith et al., 2021).

Physical and mental factors affect pain: rate of cervical dilation and strength of contractions, size and position of fetus, sleep deprivation and exhaustion, the woman's culture, labor support system, previous birth experiences, childbirth preparation, and the woman's expectations. The gate control theory of pain can be applied to labor and birth, stating that pain sensations are transmitted through ascending nerve pathways to the brain. Alternate activities like pressure, cutaneous stimulation, or heat or cold can close the gate, reducing pain impulses. Similar mechanisms exist in the hypothalamus and cerebral cortex, and strategies like breathing, focusing, and visual stimulation can affect pain impulses' awareness. Nonpharmacological labor discomfort management involves preparation, stimulation, and support. Nurses must have strategies to manage discomfort and pain during labor. Flexibility and adaptability are vital for labor nurses, as no single strategy works for long periods (Amiri et al., 2019; Durham et al., 2014; Tabatabaeichehr & Mortazavi, 2020).

Childbirth preparation methods often teach relaxation and breathing techniques. Women are taught to take deep breaths at the beginning and slowly during contractions. They may need to breathe more rapidly and shallowly as labor pain increases. Hyperventilation can cause respiratory alkalosis, but can be eliminated by breathing into a bag or cupped hands. Discuss labor management with the woman and her support team to facilitate a care plan and provide support(Amiri et al., 2019; Durham et al., 2014).

Effleurage involves gently stroking the abdomen during contractions, while back massage and counter pressure relieve pain caused by fetal head internal pressure. These techniques are often associated with the posterior position of the fetus during labor, and women may resist touch as labor progresses (Eskandari et al., 2022).

Many therapies have been used to promote relaxation and decrease the perception of pain while providing a complement to decrease the use of pharmacological interventions. They are

aromatherapy, massage, birthing ball, hydrotherapy, and music therapy. Today, all of these complementary therapies are employed in some capacity, either separately or in combination, in all birthing settings, from homes to independent birth centers to hospital rooms. They can help the mother and her support group by giving comfort, empowering the woman's conception of the birth process, and advocating for a painless, safe delivery. The majority of classes include a range of techniques for handling labor discomfort. Particular techniques include: By promoting education, environmental management, and relaxation, the Dick-Read technique promotes childbirth without fear. Lamaze: By using breathing and training, it encourages psychoprophylaxis. Bradley: Instead of being diverted from the agony, this husband-coached labor focuses on coping with and managing it (Durham et al., 2014; Tabatabaeichehr & Mortazavi, 2020).

Summary

Labor and birth are divided into four stages: onset, cervical dilatation, delivery, placenta, and the immediate postpartum period. The "five Ps" (powers, passage, passengers, position, and psyche) are interdependent parts of the labor and delivery process. Preparation, position, professional assistance, place, procedures, and people also affect labor progress. Labor involves the mother and fetus when the fetus is large enough to fit through the mother's pelvis but not yet acclimating to life outside the uterus, typically occurring between 39-40 weeks.

Assessments include anamnesis, physical examination, and supporting examinations, with three significant assessments performed on admission: maternal condition, fetal condition, and labor progress. Anamnesis of the mother in labor is crucial to assess the mother's risk factors for life-threatening conditions during pregnancy and labor. Physical examinations during the intrapartum period include Leopold maneuvers, uterine contractions, vaginal discharge, vaginal examination (vaginal toucher/VT), intake output, vital signs, urinary bladder, examination

of the fetal heart rate, estimated weight fetus, position, and presentation of the fetus. These examinations evaluate a woman's general condition, edema, and any edema, especially of the fingers, face, and abdominal scars.

Evaluation of the fetus and birth canal (cephalopelvimetry) consists of maternal and fetal features. The maternal features need to be checked, including cervical dilatation, effacement, consistency, application to the presenting part, architectural characteristics of the bony pelvis, and labor pattern (normal or dysfunctional progress). Fetal features include estimated weight, presentation, position, degree of flexion (attitude), synclitism, degree of cranial molding, and station (pattern of descent). Vaginal examinations are conducted periodically to determine how labor is progressing. The cervix is evaluated for effacement and dilatation, and the ischial spines determine the fetus's descent (station). Multiparas, or women with a history of vaginal delivery, tend to demonstrate more rapid cervical dilatation. In primiparas, effacement is accomplished before dilatation begins, and it is important to inform women of this during a pelvic examination. Dilatation refers to the enlargement or widening of the cervical canal from a few millimeters wide to one large enough to permit the passage of a fetus. On admission, standard tests include blood samples for hematocrit and midstream urine for glucose and protein levels. Women without prenatal care may have additional tests, including blood count, urinalysis, drug screen, and sexually transmitted infections. Digital pelvic examinations may not accurately assess fetal head position during labor. Two- and three-dimensional ultrasounds are crucial for safe operative delivery and predicting vaginal delivery success.

Nursing issues in intrapartum mothers include inadequate knowledge, pain, fear, ineffective perfusion, and infection risks due to labor and delivery processes. The nursing care plan for intrapartum mothers aims to reduce pain, fear, vital signs, fetal heart rate, and infection. Nursing actions include diet and hydration, activity and rest, elimination, comfort, support and family

involvement, education, and safety. These actions aim to help the woman understand labor processes, reduce pain perception, and support her coping mechanisms. Childbirth preparation methods often teach relaxation and breathing techniques, such as deep breaths and effleurage. These techniques help women manage labor pain and reduce the perception of pain. Aromatherapy, massage, birthing ball, hydrotherapy, and music therapy are complementary therapies used in all birthing settings to promote comfort, empower the woman's conception, and advocate for a painless, safe delivery. Techniques like the Dick-Read technique promote childbirth without fear, Lamaze encourages psycho prophylaxis, and Bradley focuses on coping with labor discomfort. Support and family involvement can also help reduce stress and facilitate labor progress. Education and information about labor procedures and hospital policies can help women make informed decisions. A safe and friendly environment can enhance the birthing experience.

Questions Review

1. Labor pain in active labor is primarily caused by the following:
   a. Cervical dilation
   b. Uterine contractions
   c. Fetal descent
   d. Perineal tearing
2. Passenger, as one of the 4 Ps of labor, refers to:
   a. The position of the mother
   b. The passage of the vagina
   c. The fetal descent in the pelvis
   d. The fetus
3. Women who have a support person with them in labor are more likely to:
   a. Have epidural anesthesia
   b. Have a precipitous labor
   c. Experience fewer birth complications
   d. Experience more interventions

4. Fetal heart rate should be assessed in a low-risk woman in active labor:
   a. Every 5 minutes
   b. Every 10 minutes
   c. Every 15 minutes
   d. Every 30 minutes
5. To determine the frequency of uterine contractions, the nurse should note the time from the following:
   a. Beginning to end of the same contraction.
   b. End of one contraction to the beginning of the next contraction.
   c. Beginning of one contraction to the beginning of the next contraction.
   d. Contraction's peak until the contraction begins to relax.
6. Excessive anxiety and fear during labor may result in a(n):
   a. Ineffective labor pattern.
   b. Abnormal fetal presentation or position.
   c. Release of oxytocin from the pituitary gland.
   d. Rapid labor and uncontrolled birth.
7. A pregnant woman with her first child phones an intrapartum facility and says her "water broke." The nurse should tell her to:
   a. Wait until she has contractions every 5 minutes for 1 hour.
   b. Take her temperature every 4 hours and come to the facility if it is over 38°c (100.4°f).
   c. Come to the facility promptly, but safely.
   d. Call an ambulance to bring her to the facility.
8. A laboring woman suddenly begins grunting and bearing down during a strong contraction. The nurse should initially:
   a. Leave the room to find an experienced nurse to assess the woman.
   b. Look at her perineum for increased bloody show or perineal bulging.
   c. Ask her if she needs pain medication.
   d. Tell her that these are familiar sensations in late labor.

9. A woman in active labor has contractions every 3 minutes lasting 60 seconds, and her uterus relaxes between contractions. The electronic fetal monitor shows the FHR reaching 90 beats/min for 20 seconds during a uterine contraction. The appropriate priority nursing action is to:
    a. Continue to monitor closely.
    b. Administer oxygen by mask at ten l/min.
    c. Notify the health care provider.
    d. Prepare for a cesarean section.

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CHAPTER 5.

THE CONCEPT OF NEWBORN NURSING CARE

INTRODUCTION

The neonatal phase is the first 28 days of life, starting at birth. The newborn adjusts to a new environment and moves from intrauterine to extrauterine life throughout these few weeks. Most term newborns whose moms had good pregnancies and low-risk labors and births manage this transition fairly easily (Durham et al., 2014).

The nurse is uniquely positioned to help the newborn baby transition from a warm, dark, fluid-filled environment to the outside world, full of new tactile sensations and sounds. The nurse must be familiar with a newborn's typical biopsychosocial adaptations during this adjustment phase from intrauterine to extrauterine life to spot any aberrations.

An orderly, continuous transition from fetal life to extrauterine life occurs at the time of birth. Every system in the body changes in some way. Chilling and alterations in blood chemistry both increase breathing. Respiratory function also appears to be influenced by sensory and physical cues. The initial breath opens the alveoli. After then, the child enters the domain of air exchange, at which point they start living independently. This step also starts the interdependence of the heart and lungs. The immaturity of the digestive system, namely due to a deficiency in pancreatic and liver enzymes, affects the newborn's capacity to process food. Although the kidneys are anatomically mature, their capacity to concentrate

urine and preserve fluid balance is constrained due to a slowed glomerular flow rate and constrained renal tubular reabsorption. The majority of neural processes are bare (Leifer, 2019).

When examining the infant, the nurse notes both expected normal findings and any differences from or departures from normal that need to be communicated to the healthcare professional. The primary goal of nursing care at this time is to safeguard and sustain the newborn as he goes through various physiological changes and adjusts to life outside the womb. This is achieved by preserving body heat, maintaining respiratory health, lowering infection risk, helping parents understand how to care for their newborn, and assisting parents in giving proper diet and hydration (Leifer, 2019).

This chapter will give you much understanding of the assessment of newborn care, nursing diagnosis, and nursing care plan. In this chapter, several procedures for newborns will also be presented.

KEY TERMS

- Assessment of newborns
- A newborn's physiology
- Respiratory distress syndrome
- Cyanosis
- Apnea
- Tachypnea
- Hypercarbia
- Hypoxemia
- Acidosis
- Apgar Score
- Moro reflex
- Rooting reflex
- Sucking reflex
- Plantar grasp
- Evaporation
- Conduction
- Convection
- Radiation
- Stridor
- Stertor
- Syndactyly
- Polydactyly
- Hemangioma
- Cephalhematoma
- Meconium
- Lanugo
- Vernix
- Caput succedaneum

LEARNING OBJECTIVES

After completing this chapter, you will be able to explain about:

- Assessment of newborns.
- Nursing problems in newborns.
- Nursing plan for newborns.
- Procedures for newborns' physical examination.
- Action procedures on newborns.

A. ASSESSMENT OF NEWBORNS

Hello everyone. In this session, you will learn what to examine in newborns and how the results show that the newborn is average. Before you learn about the assessment of newborns, you should first know about physiological changes in newborns.

A newborn's physiology is distinct and intricate, changing over minutes, hours, days, and months. After reaching adulthood, a person's physiology usually remains stable and predictable, with any departure having the potential to cause pathology and disease. However, a newborn's quick and constant physiological changes help it adjust to life outside the womb (Tan & Lewandowski, 2020).

The newborn must instantly initiate pulmonary breathing with noticeable circulatory alterations to start life as an autonomous entity. These abrupt and drastic alterations are essential to the survival of life. All other newborn bodily functions are altered or take time to develop in other systems. The nurse conducts an initial assessment to gauge the newborn's postpartum adjustments and the need for additional care.

As previously established, a newborn's physiology constantly changes to accommodate extrauterine life. It is crucial to note these changes to ensure optimal development at the relevant times. For instance, it is crucial for the newborn to rebuild and shut off the intrauterine cardiovascular shunts in its body as it takes its first breath. Failure to do so may result in physiological imbalances, such as insufficient brain oxygenation (Morton & Brodsky, 2016).

Changes in the physiology of newborns, more accurately referred to as newborn adaptations, include cardiovascular, pulmonary, hematological, metabolism, and thermoregulation. Thus, the assessment results on newborns reflect the baby's ability to adapt to the things mentioned (Arce-López et al., 2022; Chen & Chen, 2022).

There are four critical changes in the cardiovascular system of the newborn: 1) decreased pulmonary vascular resistance and increased systemic vascular resistance, 2) closure of the ductus arteriosus, 3) closure of the foramen ovale, and 4) closure of the ductus venosus (DV). The low-resistance circuit is cut with the umbilical cord, resulting in an improvement in systemic circulation. The newborn's lungs fill with air during its first breath, and oxygen diffuses into the blood vessels surrounding the alveoli. Pulmonary resistance decreases, and blood can flow into the lungs due to the pulmonary arteries relaxing. High quantities of prostaglandins, carbon monoxide, nitric oxide, and low oxygen tension contribute to the ductus arteriosus's continued patency in pregnancy. Functional closure of the ductus arteriosus starts as the baby breathes and might last several days. The ductus arteriosus is helped to close by decreased prostaglandins because of the reduced pulmonary arterial resistance and increased oxygen levels. The prostaglandin synthesis also decreases due to the placenta's separation, further causing the ductus arteriosus to close. When a newborn takes its first breath, the pulmonary vasculature's resistance decreases, which results in a rise in left atrial pressure. The foramen ovale starts to close when the left atrial pressure surpasses the proper atrial pressure. It usually takes one to three months for the DV to permanently close; the liver's ligamentum venosum is made up of the connective tissue that is left over. After birth, maternal-fetal circulation is no longer required; therefore, the remainder of the umbilical vein becomes the round ligament of the liver (Leifer, 2019; Tan & Lewandowski, 2020).

It takes careful synchronization between the removal of fetal lung fluid, the release of surfactants, and the start of regular

breathing for the lungs to adjust to the external environment. The airway epithelium secretes fetal lung fluid during intrauterine life, which is necessary for healthy lung development. Early and adequate lung fluid evacuation is the most crucial step in the fetal transition to extrauterine air breathing. A newborn's breathing starts to become robust quickly after birth as a result of the umbilical cord being clamped (which stops the prostaglandin release that suppresses respiration), diffuse tactile and cold stimuli, changes in the blood's oxygen and carbon monoxide levels, and clamping of the umbilical cord. Most term babies will successfully start breathing spontaneously without severe hypoxia. At delivery, physiologically healthy neonates expand their lungs by taking deep breaths with high negative pressure, which forces lung fluid out of the airways and into the distal airspace. With further inflation, the baby's lung fluid clearance continues (Leifer, 2019; Morton & Brodsky, 2016).

When a newborn is delivered vaginally, the "thoracic squeeze," which compresses the fluid in the lungs and promotes fluid evacuation, also helps with fetal lung fluid clearance. One of the reasons neonates have a higher respiratory rate (30 to 60 breaths per minute) is that their task of breathing is typically difficult (i.e., accessory muscle use, intercostal retractions, grunting) to overcome the high surface tension. Perfusion-ventilation discrepancies and compensating for a high metabolic rate are different causes. More importantly, the baby has to work harder to breathe because of the circulatory shunts. The effort required to breathe is diminished as the fluid exits the lungs' alveoli. Due to undeveloped central drive responses, newborns may experience apneic episodes that last less than 5 seconds. Although this is abnormal in adults, apneic infant episodes are common (Chen & Chen, 2022; Leifer, 2019; Morton & Brodsky, 2016). Figures 44 and 45 will explain the adaptation mechanism of the baby's life from intrauterine to extrauterine.

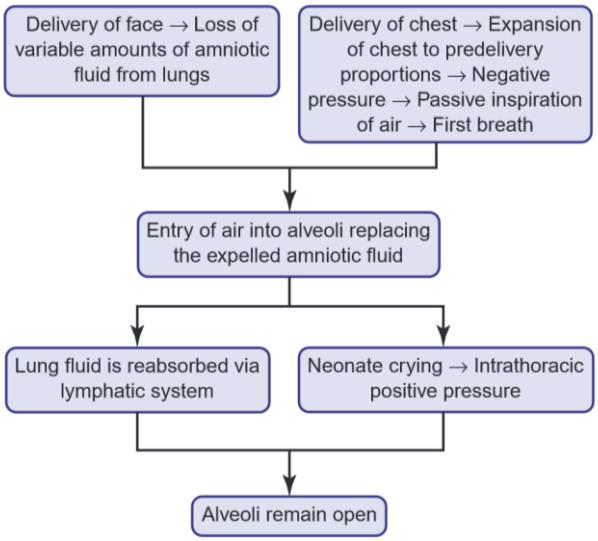


Figure 44. Transition to extrauterine pulmonary function: Mechanical stimuli
(Durham et al., 2014)

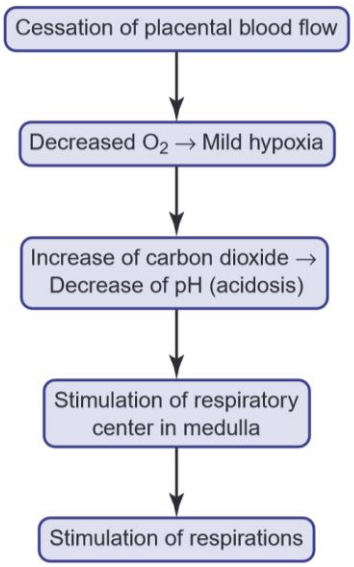


Figure 45. Transition to extrauterine pulmonary function: Mechanical stimuli
(Durham et al., 2014)

Blood is created in utero by the liver and collected by the bone marrow after delivery. Hemoglobin (Hb), carried by red blood cells, carries iron and oxygen from the lungs to the body's tissues and organs. Hemoglobin comes in various forms, but the two relevant for this topic are HbF and HbA. The fetus's primary hemoglobin is HbF, which transports oxygen in low-oxygen situations. Due to its strong affinity for oxygen, HbF can effectively remove oxygen from maternal hemoglobin through the placenta. HbF is crucial for intrauterine development and the newborn period because of the compromised tissue oxygen supply. HbA, commonly known as adult hemoglobin, replaces HbF around six months (Arce-López et al., 2022; Leifer, 2019).

The newborn's body temperature rapidly lowers shortly after birth due to the chilly extrauterine environment. The neonate uses nonshivering thermogenesis (NST), which involves the lipolysis of brown adipose tissue found around the kidneys and back muscles, to increase heat production to counterbalance this temperature shift. Using uncoupled protein and oxidizing fatty acids in the mitochondria makes it possible to produce heat by uncoupling the synthesis of ATP. Because thermogenesis requires adequate oxygenation, a hypoxic newborn cannot generate enough heat to raise its body temperature. Due to their underdeveloped skeletal muscle mass, infants often do not use shivering thermogenesis (an increase in skeletal muscle activity and limb motions) to increase body heat until they are about six months old. Due to the high metabolic rate of activity required to maintain breathing, feeding, and thermogenesis, newborns often have tachycardia (120 to 160 beats per minute) (McCall et al., 2018; Singer, 2021).

So, now that you understand how physical adaptation is in newborns, what critical assessments should be made in newborns? When should the assessment of the newborn be done?

Assessment of newborns consists of subjective assessment and objective assessment. Subjective assessment by anamnesis to the baby's mother is essential to identify the history of pregnancy and childbirth (obstetric's history) that affect the newborn's

condition. Within two hours of delivery, a neonatal examination should be performed. This initial evaluation gives the infant baseline data and helps plan the baby's nursing and medical care (Durham et al., 2014).

The following is an obstetric history review that should be studied in newborns. Look over the prenatal and birth records for anything that would put the newborn at risk for problems. Risk factors include, for instance: maternal age between 16 and 35 years old, maternal malnutrition before and during pregnancy, chronic maternal conditions like diabetes and hypertension, pregnancy-related disorders, the use of forceps or a vacuum extractor during an operation to deliver the baby, long labor lasting more than 24 hours, medications that affect the central nervous system (CNS), such as magnesium sulfate and analgesic/anesthetics, extended membrane rupture (more than 24 hours), the amniotic fluid that is meconium-stained, and anomalies in the placenta (Lagadec et al., 2018; Magnus et al., 2019; Tweet, 2019).

The first objective assessment that must be carried out in newborns is to assess the baby's fitness with Apgar's score. Apgar's score is a standardized way of assessing the newborn's health after delivery. The components of the Apgar score assessment consist of heart rate, breathing, muscle tone, reflexes, and color. The score is taken one minute after birth and once more five minutes later. The Apgar score is examined when a newborn is admitted to the nursery to identify specific birth-related issues (Leifer, 2019).

The Apgar score helps find breathing problems and other health issues. It is part of the special attention given to a baby in the first few minutes after birth. The baby is checked at 1 minute and 5 minutes after birth for heart and respiratory rates, muscle tone, reflexes, and color. A baby who needs help with any of these issues is getting constant attention during those first 5 to 10 minutes. In this case, the actual Apgar score is given after the immediate issues have been resolved. Each area can score 0, 1, or 2, with 10 points as the maximum. Most babies score 8 or 9, with 1 or 2 points taken

off for blue hands and feet because of immature circulation. If a baby has a difficult time during delivery and needs extra help after birth, this will be shown in a lower Apgar score. Apgar scores of 6 or less usually mean a baby needs immediate attention and care (Gantan & Wiedrich, 2022). The procedure assessment of The Apgar score will be explained at the end of this chapter.

Birth weight is a significant indicator of a baby's health. Between 37 and 41 weeks of pregnancy, full-term babies are delivered. Babies born at full term typically weigh around 7 pounds (3.2 kg). In general, newborns who are very small or very huge are more likely to experience issues. Every day, infants are weighed in the nursery to assess growth and the infant's need for nutrition and water. Newborn infants frequently lose between 5% and 7% of their birth weight. Accordingly, a newborn weighing 7 pounds 3 ounces may lose up to 8 ounces in the first several days. Usually, within the first two weeks following delivery, babies regain this weight. Premature or ill babies cannot start gaining weight immediately (Leifer, 2019).

Then complete a general assessment of the neonate before the head-to-toe assessment. Evaluate the breathing patterns, respirations, and breath sounds. When the newborn reacts to being held during the exam (cries), it will be harder to gauge the breathing rate. After that, assess the skin for color, birth trauma, birthmarks, level of alertness/activity, and muscle tone and posture (Durham et al., 2014).

A physical examination of newborns should be done within 2 hours after birth. This initial assessment provides the baseline data for the neonate and assists in determining the course of nursing and medical care(Durham et al., 2014).

Before doing A physical examination of newborns, You should prepare for the assessment. Preparation for the physical examination of newborns; 1) Gather the equipment needed for the assessment, like latex gloves, measuring tape, infant stethoscope, thermometer, scale for weighing, and documentation records; 2) Ensure that assessment is done in a neutral thermal environment

(NTE) by close doors to prevent drafts and regulate room temperature (See Fig.46-1. Mechanisms of Heat Loss.); and 3) Inform the parents of the assessment and invite them to watch, this is especially helpful for new fathers when the initial assessment is done in the labor/delivery/recovery room (Durham et al., 2014; Leifer, 2019).

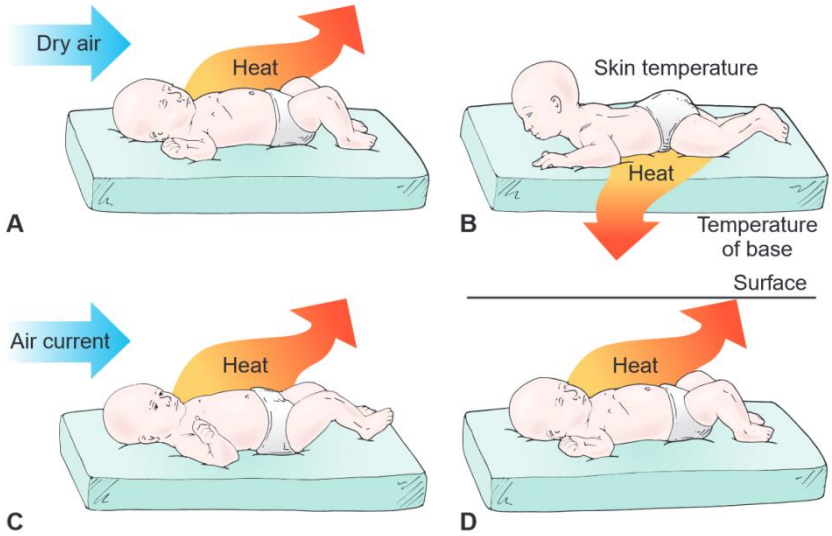


Figure 46-1. The four mechanisms of heat loss in the newborn. A. Evaporation. B. Conduction. C. Convection. D. Radiation.
Adapted from Durham et al. (2014)

1. Skin

Examine the baby's skin tone for any indications of probable pathology. The hue of the baby reveals vital details about numerous bodily systems. For instance, reddish or very red newborns may develop polycythemia and are more likely to have its consequences, such as respiratory distress or hypoglycemia. A baby with central cyanosis, whose tongue and mucous membranes are pale or blue, may be anemic, have a heart condition, or have respiratory issues. For an accurate assessment of color, proper

illumination is necessary. Pulse oximetry can help evaluate if the examiner is worried about central color (Tappero & Honeyfield, 2018).

The skin of newborn Caucasian infants is red to dark pink. The skin of African American infants is reddish brown. Infants of Latin descent may appear to have an olive or yellowish tint. The body is usually covered with fine hair, called lanugo (Figure 46-2), which tends to disappear during the first week of life. This is more evident in premature infants. Vernix caseosa (Figure 46-3), a cheeselike substance that covers the skin of the newborn, is made of cells and glandular secretions; it is thought to protect the skin from irritation and the effects of a watery environment in utero. Preterm infants have poor muscle tone and less subcutaneous fat but more vernix and lanugo than full-term infants. The postterm newborn has little lanugo and vernix, and the skin is dry and peeling (Leifer, 2019).

Figure 46-2. Lanugo.
Adapted from (Leifer, 2019)

Figure 46-3. Vernix is the thick, white, cheesy substance covering the skin of the newborn. Preterm newborns are heavily covered in vernix, whereas postterm newborns have little vernix protection on their skin. Note the heavy covering of vernix on this newborn.
Adapted from Leifer (2019).

Newborns often have a variety of skin conditions that are usually benign. The entire body surface must be examined, and suspicious lesions needing further investigation or referral must be easily distinguished. Erythema toxicum, pustular melanosis, and milia are typical benign papular lesions. Within the first week of life, flesh-colored papules with an erythematous base known as erythema toxicum disappear. Pustules without erythema that can spontaneously burst and leave behind hyperpigmented macules that might remain for months are the hallmark of pustular melanosis. On the face and trunk, erythema toxicum and pustular melanosis are widely dispersed, but milia are most frequently encountered on the nose. White papules called milia might disappear within the first few weeks of life. Nevus simplex, nevus flammeus or port-wine stain, slate grey nevus (sometimes called “Mongolian spots”), and cafe au lait spots are common macular lesions. Because port-wine stains, also known as nevus flammeus, are more clearly defined, typically unilateral, and frequently do not fully blanch, they can be distinguished from nevus simplex. An ophthalmology referral is required if they appear on the eyelid, forehead, or temple, as this may indicate Sturge-Weber syndrome. The lower limbs are frequently affected by port wine stains in

Klippel-Trenaunay-Weber syndrome. Significant nevus simplex lesions on the glabella are linked to Nova syndrome, fetal alcohol syndrome, and Beckwith-Wiedemann syndrome (Gantan & Wiedrich, 2022; Lewis, 2014).

2. Head

The head exam starts by looking at the appearance of the face for dysmorphic features that may suggest any underlying pathology. Ear size, shape, symmetry, and position are essential to assess and may suggest a genetic disorder. For example, low-set ears can indicate Turner syndrome or trisomy 18 or 21. Asymmetric ear size consistent with hemihypertrophy can be seen in Beckwith-Wiedemann syndrome. Some of the more common findings in newborns are preauricular skin tags and ear pits, which can indicate isolated hearing loss. However, if seen in conjunction with other morphologic malformations, they can be a part of congenital anomaly syndromes (Gantan & Wiedrich, 2022; Wang et al., 2019).

As we start with the head and work down, the scalp should be examined for any trauma during delivery. The skull may be molded from a vaginal delivery; however, it should resolve within several days of birth. It is important to palpate the head sutures for craniosynostosis, or early fusion of sutures, which would require surgical intervention to allow for brain growth and development. Anterior and posterior fontanelles should also be open, soft, and flat. The visual exam of the scalp should also include evaluation for hematomas and subcutaneous swelling that can be due to caput succedaneum, cephalohematoma, or even a subgaleal hemorrhage. Caput succedaneum is subcutaneous swelling due to increased uterine pressure on the head during labor (see Fig.46). This pitting edema can cross suture lines and typically resolves spontaneously within a week of birth (Boskabadi et al., 2020; Gantan & Wiedrich, 2022).

On the other hand, cephalohematoma is subperiosteal bleeding that results from the injury of blood vessels (see Fig.47). Suture lines limit it, and it usually resolves after several weeks.

Cephalohematoma increases the risk of jaundice and sepsis. Therefore, identification and monitoring are essential. It is most commonly seen in deliveries with forceps or vacuum extractors. It is important to reassure parents that the cephalhaematoma will gradually reabsorb, often over three months. Cephalhaematomas on both sides may take longer to disappear if they are present. A fracture may be suspected in a very tiny percentage of cases, and if it is, it will be visible on a skull X-ray (Gantan & Wiedrich, 2022)

Deliveries with vacuum extraction can also potentially cause subgaleal hemorrhage, blood between the epicranial aponeurosis and periosteum. A subgaleal hemorrhage crosses suture lines, but it differs clinically from the others in that it is typically more diffuse, can enlarge, and may shift with movement (see Fig.46). This requires close monitoring and following serial hematocrit and occipital-frontal circumference, which can quickly lead to hemorrhagic shock (Gantan & Wiedrich, 2022; Lee et al., 2018; Salman et al., 2017).

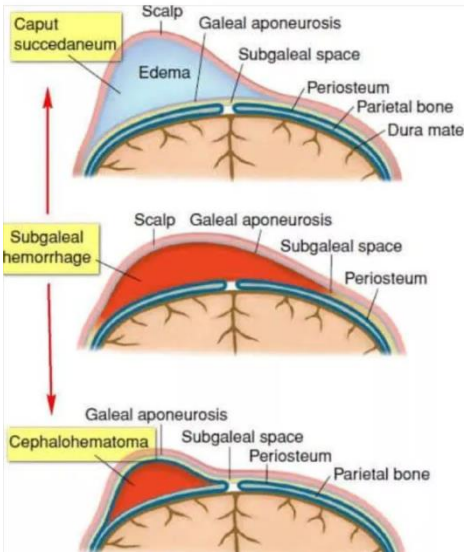


Figure 47. Difference between caput, cephalhematoma, and subgaleal hemorrhage
Adapted from https://medizzy.com/feed/9170436
Retrieved on July 19, 2023

It is important to check the cranial fontanelles for normalcy. The posterior fontanelle, which opens shortly after birth and is typically triangular, is situated at the intersection of the lambdoid and sagittal sutures. The anterior fontanelle typically closes between 18 months and two years, measuring roughly 3-4 cm in diameter at its widest point. While a small anterior fontanelle may be a sign of microcephaly, a large one may be present in the premature baby or be caused by hydrocephalus. A raised or tense fontanelle may indicate hydrocephalus, increased intracranial pressure, infection, or all three. A depressed fontanelle, on the other hand, may indicate that the infant is dehydrated, but this is a sign that typically appears “late” and is quite infrequent at delivery (Durham et al., 2014; Leifer, 2019).

The occipital-frontal circumference (OFC) must be measured to evaluate head size properly. This measurement can wait until the end of the examination if it will disturb the baby. As a result, the head would first be examined and palpated before measuring the OFC. Three measurements of the OFC should be taken using a non-stretchable paper tape measure; the largest of these should be noted. For this measurement to be accurate, the head must be encircled at the broadest occiput prominence, and the biggest frontal prominence should be measured anteriorly 1 to 2 cm above the glabella region. At 40 weeks of gestation, the average OFC is 35 cm (Tappero & Honeyfield, 2018).

Deviations in the baby’s head size can be in the form of macrocephaly and microcephaly. When the OFC is over the 90th percentile despite normal weight and length for gestational age, macrocephaly is identified. Macrocephaly may run in families, be brought on by hydrocephalus, be linked to dwarfism, or be brought on by osteogenesis imperfecta. An OFC with less than two standard deviations (SD) from the gestational age mean or less than the third percentile is considered to have microcephaly. Reduced brain growth is the cause of microcephaly, which is typically accompanied by microencephaly (Tappero & Honeyfield, 2018). For detail about the deviations of the baby’s head, you can see Figures 48 and 49.

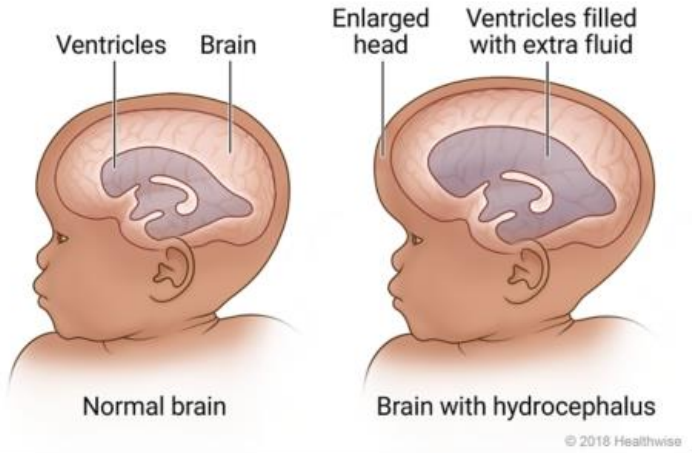


Figure 48. Hydrocephalus
Adapted from https://www.cigna.com/knowledge-center/hw/congenital-hydrocephalus-tp12484. Retrieved on July 19, 2023

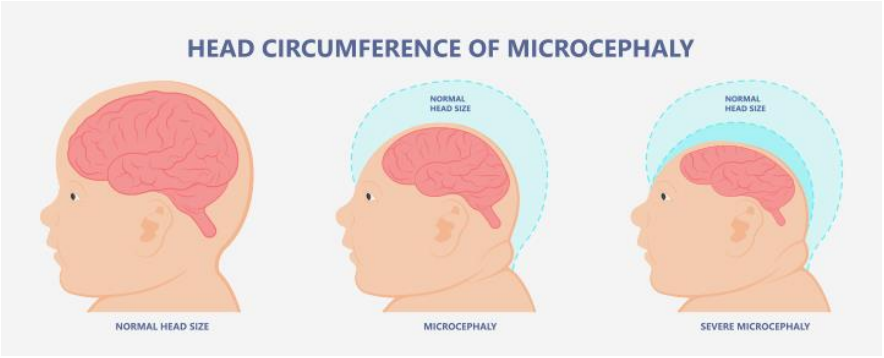


Figure 49. Microcephaly
Adapted from https://www.momjunction.com/articles/macrocephaly-in-babies_00463459/
Retrieved on July 19, 2023

3. Face

The link between the ears, eyes, nose, and mouth should be noted as the first step in any facial examination. A newborn's forehead occupies most of the upper portion of the face, reflecting the considerable cranial capacity required for quick brain expansion. The mid and lower face grows faster than the upper face during

childhood, eventually forming the adult face and skull. It is important to take note of the face's symmetry and shape, as well as any signs of trauma. Face bruises, petechiae, and increasing edema may be brought on by face or brow presentation, a nuchal chord after birth, or both. Long-term intrauterine compression from oligohydramnios may result in unusual flattening of the facial features. Applying forceps might result in bruising, abrasions, or subcutaneous fat necrosis (Tappero & Honeyfield, 2018). In Figure 50, You can see any skin lesions that may be seen on the baby born's face.

Milia

Multiple papules

Figure 50. Milia and multiple papules.

Milia are epidermal cysts caused by the accumulation of sebaceous gland secretions. They resolve spontaneously during the first few weeks of life (Cohen, 2013). Transient neonatal pustular melanosis begins with superficial, vesiculopustular lesions, often causing some alarm when present at birth. These vesicles rupture within 12 to 48 hours, leaving small pigmented macules. The macules are often surrounded by a ring of very fine white scales. Any stage or combination of stages (vesicles, pustules, or scaling of ruptured vesicles) may be present at birth (Tappero & Honeyfield, 2018)

The infant will then get a complete eye and ear examination. A common observation is edema of the eyelids, which usually goes away after a few days. Examining the eyes for a pupillary reaction to light is essential. When light is projected onto the eyes

symmetrically, without opacities or spots, a red reflex can be elicited using an ophthalmoscope, which is typical. White reflexes, or leukocoria, are aberrant findings that might be related to retinopathy of prematurity, cataracts, or a tumor. Red reflexes may be diminished or nonexistent as a result of cataracts. Congenital glaucoma may show up in a cornea with a size greater than 1 cm in diameter. Hemorrhages of the conjunctiva frequently disappear with time. Subconjunctival hemorrhage, or bleeding in the white of the eye, is a common, painless disease that affects newborns delivered vaginally. The pressure in the head and neck blood vessels increases during delivery when the head is crushed. Tiny blood vessels burst under the translucent eye lining due to increased pressure. This bleeding typically disappears in 4-6 weeks and requires no treatment. Typically, it does not impact a baby's vision (Fig.51) (Dragosloveanu et al., 2022; Gantan & Wiedrich, 2022; Nagesh et al., 2022).

Figure 51. Subconjunctival hemorrhage (Nagesh et al., 2022)

The term "normal ear" encompasses various sizes and shapes. Still, generally speaking, a normal ear is one in which the heliantihelixlix, tragus, antitragus, scaphoid/triangular fossa, and external auditory canal are all present and properly constructed. A single, small ear tag is an occasional finding on physical

examination. It is often inherited as a familial trait. Preauricular pits, often known as ear pits, are frequently minor physical examination findings. They can be unilateral or bilateral and are found near the pinna's superior connection to the face. Pits can occur in up to 10% of Asian infants; they are less common in Caucasians and African Americans. Although audiological testing of these infants is advised due to a rare relationship between ear pits and Brachio-Oto-Renal Syndrome, this finding is generally considered benign. Renal ultrasounds are typically contraindicated in the presence of an isolated pit. When other anomalies are present, when there is a confirmed family history of deafness, renal pathology, or auricular malformations, or when the mother has a history of gestational diabetes, screening for concomitant renal defects becomes more crucial. Figures 52 and 53 show the type of ear (Gantan & Wiedrich, 2022).

A B C

Figure 52. A. Normal Ear, B. Ear Tag, C. Ear Pit
It is adapted from https://med.stanford.edu/newborns/professional-education/photo-gallery/ears.html. Photo by Janelle Aby, MD. Retrieved on July 13, 2023

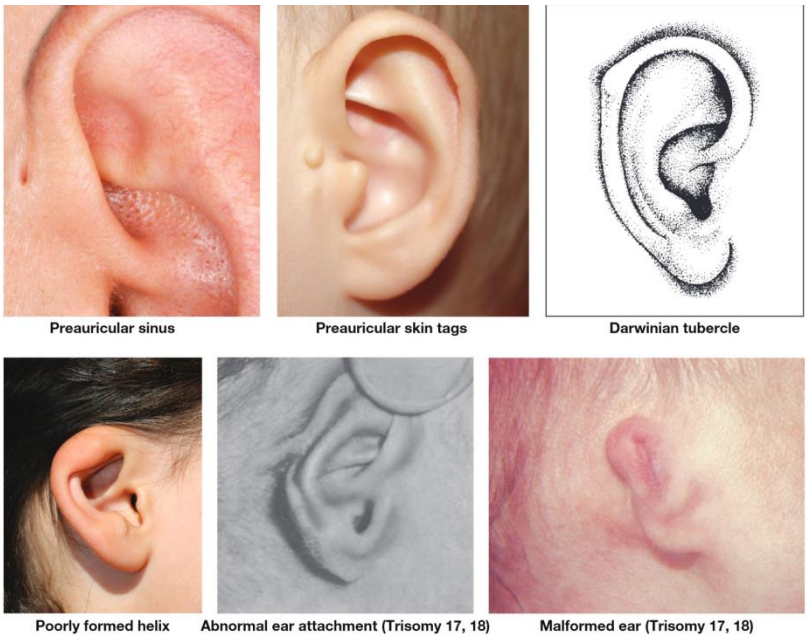


Figure 53. Variations and minor malformations of the ear
(Tappero & Honeyfield, 2018)

Because low-set ears may point to a congenital problem in another body region, the ears are examined for placement. The upper tip of the ear's pinna should be level with an imaginary line drawn from the outer canthus of the eye (Leifer, 2019). Figure 54 describes the normal and abnormal ear positions.

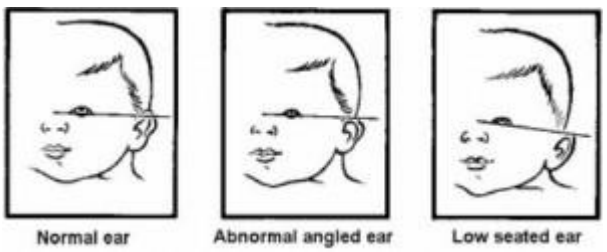


Figure 54. Ear Position. The low-set ears may indicate a congenital abnormality.
Adapted from https://brooksidepress.org/ob_newborn_care_2/?page_id=258
Retrieved on July 19, 2023

Then check the nose. Although the nose's size and shape may be racially and familially distinctive, an infant's nose is typically smaller and flatter than an adult's. The nose should be vertically positioned in the midline and symmetrical. Nasal flare-ups are unnatural and indicate respiratory discomfort. Unless it is heavy or ongoing, sneezing is typical. Nasal congestion during the newborn stage is common, but persistent breathing problems or nasal discharge are abnormal. Down syndrome may be linked to a nasal bridge with a very low bridge and a broad base. Nasal septum deviation to one side might result from a displaced septum or a distortion from the location in utero. The septum is displaced and needs to be treated if it is difficult to straighten, and the nares are asymmetric when the nose tip is pressed toward the midline (Figure 55). To view the nasal septum, the floor of the nose, and the turbinates, the examiner can slightly elevate the tip of the nose. Seal patency can be evaluated by seeing the baby breathing in a peaceful setting. Infants must breathe through their noses exclusively, and thus, if they have bilateral choanal atresia (obstruction of the posterior nasal passages), they will be cyanotic at rest and pink when they cry and breathe through their mouths. Major nose abnormalities, including clefts, single nares, masses, and partial or complete hypoplasia, are usually syndromic or associated with major central nervous system anomalies (Tappero & Honeyfield, 2018).

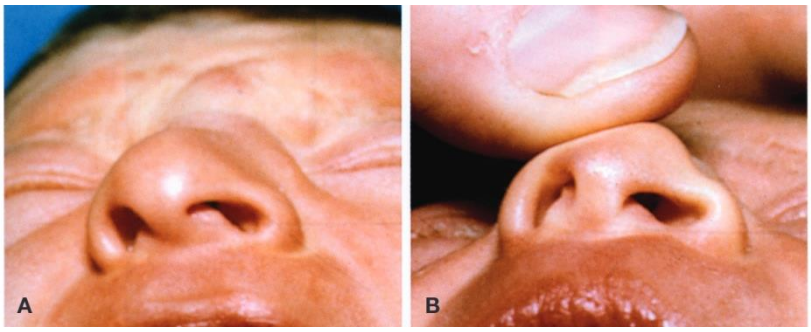


Figure 55. Nasal deformity.

This infant incurred dislocation of the triangular cartilage of the nasal septum during delivery. Inspection of the nose reveals deviation of the septum to the right and asymmetry of the nares (A). When the septum is manually moved toward the midline, the asymmetry persists, confirming the dislocation (B) (Tappero & Honeyfield, 2018)

Next, check the baby's mouth area. A healthy term-infant should have rosy lips and mucous membranes. Mild circumoral cyanosis is typical during the first few days of crying and transition. A condition may be accompanied by abnormalities in the oral aperture, lips, philtrum (the midline groove between the nose and upper lip), and jaw. Microstomia, a small oral aperture, may be seen in various conditions. Storage illnesses like mucopolysaccharidoses, which cause macrostomia, are common. Lip calluses from fetal sucking are common in neonates, and ethnic and familial traits are associated with lip thickness. Lips that are abnormally thick or thin must be further evaluated for trauma or an underlying mass. Fetal alcohol syndrome can manifest as a thin upper lip with a smooth philtrum and short palpebral fissures. The cleft lip may be tiny or reach the bottom of the nose, unilateral or bilateral. The Pierre Robin sequence and some syndromes are characterized by micrognathia, or an unusually small lower jaw (Figure 56). (Tappero & Honeyfield, 2018)

Figure 56. Pierre Robin sequence (micrognathia)
(Tappero & Honeyfield, 2018)

One of the most prevalent congenital craniofacial abnormalities is cleft lip and palate (CL/P). A clinically evident infant malformation results from the typical union of the palate and lip at the midline failing to occur during development. Without proper therapy, cleft lip and palate (CL/P) and cleft palate alone (CPO) are substantial functional morbidities for the baby. CL/P impacts the newborn's capacity to feed in several ways, including increased nasal reflux, an inability to form a good latch, and increased work while feeding, which results in exhaustion. Cleft lip and palate are congenital disabilities when a baby's lip or mouth does not form properly during pregnancy. These congenital disabilities are called "orofacial clefts" (Kirby, 2017; Leifer, 2019; Mai et al., 2019). For detail, see Figure 57.

Cleft Lip Cleft Palate

Figure 57. Cleft lip and cleft palate
Adapted from https://www.cdc.gov/ncbddd/birthdefects/cleftlip.html
Retrieved on July 19, 2023

4. Neck

Infants have short necks by nature. However, extreme shortness may be syndromic. Elevate the shoulders and allow the head to slightly droop back to examine the neck's symmetry and contour. Positioning during pregnancy is most likely the cause of

asymmetry. The neck must be seen and felt anteriorly, laterally, and posteriorly. Unless it is enormous, the thyroid gland is difficult to palpate. Goiter, which is brought on by intrauterine thyroid hormone deficiency, is extremely unusual. The most typical neck tumor is a cystic hygroma (Figure 58). Large cysts are formed as a result of sequestered lymph channels that grow. Cystic hygroma typically appears laterally or over the clavicle, is soft and fluctuant, and transilluminates nicely. Its size might vary from a few centimeters to huge, and it may seriously impair one's breathing ability or cause significant feeding difficulties. Although minor lesions may spontaneously resolve, surgical excision is typically necessary (Damaskos et al., 2017).

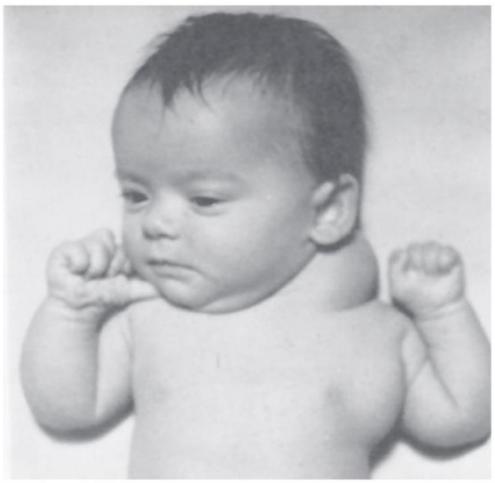


Figure 58. Cystic hygroma, with extension to the axilla
(Tappero & Honeyfield, 2018)

During neck palpation, note redundant skin or webbing of the neck. This is associated with Turner (Figure 59), Noonan, and Down syndrome. If there is a history of shoulder dystocia or macrosomia, it is especially important to check for clavicle fractures. Some babies have non-respiratory tachypnea as a result of pain from the fracture. Crepitus and movement of the bone ends may be

felt shortly after delivery, or a fracture may take weeks to become apparent before the callus forms and can be felt as a lump over the clavicle. Newborns with fractured clavicles experience spontaneous healing (Calanchini et al., 2020; Kruszka et al., 2020; Nakousi Capurro et al., 2020; Tappero & Honeyfield, 2018).

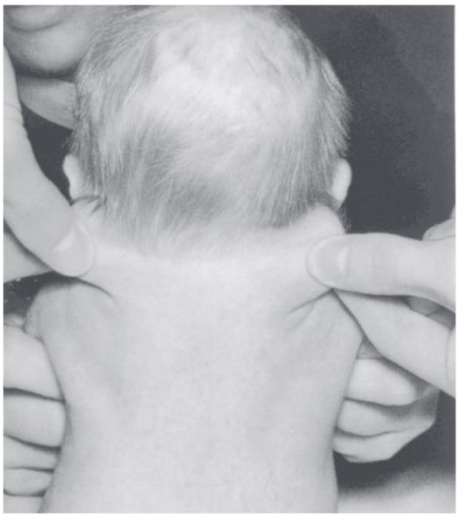


Figure 59. Webbed neck—Turner syndrome
(Tappero & Honeyfield, 2018)

5. Chest, Lung, and Cardiovascular

Examination of the chest includes an examination of the shape, chest muscles, respiration, and cardiovascular. Several techniques that can be used to examine the baby's chest area consist of inspection, palpation, auscultation, and percussion. Inspection of the chest area includes looking at the skin's color, the chest's movement when the baby breathes or cries, and the shape of the chest. Only auscultate in a quiet setting. It is challenging to evaluate body sounds when background stimuli, such as a radio or people conversing, are present. Accurate assessment of the heartbeat and breath sounds is hampered by external interferences (Tappero & Honeyfield, 2018).

Check the chest for symmetry, bulges, and the growth of the muscles. The typical chest wall is relatively smooth and symmetrical. Masses, atrophy, agenesis, and hypertrophy are examples of deviations. Poland syndrome (Fig.60) is characterized by unilateral hypoplasia, or absence of the pectoralis major muscle, rib abnormalities, and hypoplasia of the upper limbs (Tali et al., 2021).

Figure 60. The Poland syndrome
(Tali et al., 2021)

Next, look at the nipples' number, location, shape, and color. Additionally, look for cracks and secretions on the nipples. The areolae are often elevated and stippled in term infants, with 0.75 cm to 1 cm of palpable breast tissue. Less than one-quarter of the chest circumference should separate the outside of each areola from the outside of the other. Additionally, the quantity of breast tissue present at birth can be used to estimate gestational age. Some infants experience swollen breasts engorged with witch's

milk, a creamy fluid, due to the effects of mother estrogen. This liquid may be secreted for one to two weeks, and the enlargement may continue for several months. Wide-spaced nipples are a feature of Turner syndrome; associated findings include lymphedema and redundant skin at the nape of the neck (Tappero & Honeyfield, 2018).

The next step is to assess breath sounds for pitch, intensity, and duration. The following terms are sometimes used to describe normal sounds within the lungs:

- Vesicular breath sounds: Vesicular breath noises, from the Latin word for sac, are low-pitched, brief, and soft during expiration and high-pitched, prolonged, and louder during inspiration. Except the manubrium and trachea, the entire chest often exhibits these sounds.
- Bronchial breath sounds: bronchial noises, the loudest of the breath sounds, are distinguished by a brief inspiration and a lengthier expiration. These noises are located over the trachea in adults, but they may be transmitted more extensively in newborns.
- Bronchovesicular breath sounds: The quality, strength, pitch, and length of bronchovesicular sounds show that an inspiration and an expiration are of identical quality. Bronchovesicular noises are typically heard over the manubrium and intrascapular areas. They are louder than vesicular sounds but less strong than bronchial sounds (Tappero & Honeyfield, 2018).

When examining the newborn, notice signs of respiratory distress syndrome (RDS). The signs of RDS are cyanosis, abnormal respiratory patterns such as apnea and tachypnea, chest wall retractions, grunting, nostrils flaring (nasal flaring), and hypotonia (Chen & Chen, 2022). Fifteen percent of term infants and 29% of late preterm infants admitted to the neonatal intensive care unit develop significant respiratory morbidity, even higher for infants born before 34 weeks gestation. Certain risk factors increase the likelihood of neonatal respiratory disease. These factors include

prematurity, meconium-stained amniotic fluid (MSAF), caesarian section delivery, gestational diabetes, maternal chorioamnionitis, or prenatal ultrasonographic findings, such as oligohydramnios or structural lung abnormalities (Reuter et al., 2014).

Tachypnea is defined as a respiratory rate greater than 60 breaths per minute. Tachypnea is a compensatory mechanism for hypercarbia, hypoxemia, or acidosis (both metabolic and respiratory). Nasal flaring is a compensatory symptom that increases upper airway diameter and reduces resistance and work of breathing. Retractions, evident by using accessory muscles in the neck, rib cage, sternum, or abdomen, occur when lung compliance is poor or airway resistance is high. Noisy breathing may indicate increased airway resistance, and the type of noise auscultated may help localize airway obstruction. Grunting is an expiratory sound caused by a sudden glottis closure during expiration to maintain functional residual capacity FRC and prevent alveolar atelectasis.

The other noisy breathing characteristics in term infants are stertor, stridor, wheezing, and ronkhi. Stertor is a sonorous snoring sound, mid-pitched, monophonic, may transmit throughout airways, heard loudest with a stethoscope near the mouth and nose. Stertor is caused by Nasopharyngeal obstruction like nasal or airway secretions, congestion, choanal stenosis, and enlarged or redundant upper airway tissue or tongue. Stridor is musical, monophonic, and audible breath sounds. Typically, high-pitched. Types of stridor are inspiratory (above the vocal cords), biphasic (at the glottis or subglottis), or expiratory (lower trachea). Stridor is caused by Laryngeal obstruction like laryngomalacia, vocal cord paralysis, subglottic stenosis, vascular ring, papillomatosis, and foreign body. Wheezing is high-pitched, whistling, typically expiratory, polyphonic, and loudest in the chest. Wheezing is caused by lower airway obstruction like MAS, bronchiolitis, and pneumonia. Rhonchi are characterized as having a lower pitch than wheezes. They are of a higher musical caliber than crackles. Rhonchi are rarely described in newborns; however they can be

heard when the big airways contain either secretions or inhaled foreign material (De Luca, 2021; Reuter et al., 2014).

Percussion is only of limited value during the neonatal physical examination due to the small size of the neonatal chest in comparison to the examiner's hands. The thin chest wall of a newborn causes typical hyperresonance. However, if the newborn is in distress and a pneumothorax, pleural effusion, or diaphragmatic hernia is suspected, the expert examiner may find percussion helpful in differentiating between air and fluid or solid tissue. One finger is firmly pressed against the chest wall when performing percussion, and the other hand's index finger is used to tap that finger. Resonance variations reveal alterations in the underlying tissue's consistency (Tappero & Honeyfield, 2018).

The newborn's cardiovascular condition necessitates a high level of proficiency in inspection, palpation, and auscultation techniques. Examination of the neonate's general activity, respiratory patterns, the presence or absence of cyanosis, and precordium activity are all crucial. It is also crucial to feel your pulses, apical impulse, and thrills. The cardiovascular examination, however, primarily focuses on auscultation. The examiner evaluates heart rate, rhythm, regularity, and heart sounds—particularly murmurs—through auscultation. Auscultation is made much easier using a pediatric or neonatal stethoscope that has a bell and a diaphragm. The bell transmits sound without distortion, while maintaining an airtight seal can be challenging. Low-pitched sounds are good for the bell. The diaphragm maintains its own seal if it is the right size and is helpful for high-pitched sounds (Tappero & Honeyfield, 2018).

Cardiovascular assessments should ideally be performed soon after birth, again at 6 to 12 hours of age, then at 1 and 3 days of age, and at regular intervals after that because changes in ductal flow, decreasing pulmonary vascular resistance, and increasing systemic vascular resistance occur over the first few hours and days of life. It is advised that, at the very least, examinations be conducted promptly after birth, at 1 day of age, and at subsequent

routine pediatric office visits because this is uncommonly achievable in the normal infant (McDonald et al., 2020; Tappero & Honeyfield, 2018; Waxman et al., 2016).

Examining the infant's color is the next stage in the neonatal cardiovascular assessment. The ability of the observer, as well as ambient temperature and lighting circumstances, all play a role in an accurate assessment of skin color. A centrally pink child may appear cyanotic in low light, while a cyanotic Caucasian infant may appear pink in high light. The infant should be centrally pink in a well-lit space, meaning that in addition to his overall color, his lips, tongue, earlobes, and (in males) scrotum should all show pink. Due to their copious vascular supply and lack of pigmentation, the tongue and oral mucosa typically serve as the greatest indicators of cerebral cyanosis (McDonald et al., 2020).

Many newborns have a pink appearance when at rest but become deep crimson to purplish when they cry. When an infant's central hematocrit is higher than 65%, a condition called polycythemia, which is frequently associated to it, is present. Neonatal polycythemic/plethoric newborns may appear cyanotic; however, this is uncommon. Due to the fact that neonates with increased hemoglobin levels typically have a higher percentage of unsaturated hemoglobin, the ruddy or reddish color may be misinterpreted for cyanosis. The infants' purplish coloring is caused by the unsaturated hemoglobin, which obscures the saturated hemoglobin (Rincón et al., 2014; Tappero & Honeyfield, 2018).

In a newborn with severe arterial oxygen desaturation, the skin, lips, tongue, earlobes, scrotum (in males), and nail beds have a bluish tint. This condition is known as central cyanosis. When there are at least 5 g of hemoglobin not coupled to oxygen per 100 mL of blood, central cyanosis might be seen. Acrocyanosis, which is the blue color in the hands and feet, and circumoral cyanosis, which is the blue color around the lips, must be distinguished from central cyanosis. Up until they are about two days old, infants typically exhibit peripheral cyanosis, which is thought to be caused by vasomotor instability. Peripheral cyanosis does not require medical

attention. By using a pulse oximeter, evaluate the infant's arterial saturation to determine whether the cyanosis is central or peripheral (Shin et al., 2019).

6. Abdomen

The optimum time to examine a newborn's belly is in the early hours of life, before the intestine is filled with gas. When the baby is calm and the abdominal muscles are relaxed, the examination should be carried out. Observation, auscultation, and palpation are methods that are used.

When observe of the newborn's abdomen, normally pink skin covers the abdomen. Although this is uncommon, there may be bruises from the delivery process as well as newborn rash. On a baby with light skin, a few big veins might be visible, but there shouldn't be any obvious venous distention. Due to less subcutaneous tissue, the usual preterm infant will have more visible vasculature. The skin over the abdomen of the postmature baby may peel and split on the surface. The phrase newborn refers to an individual with a soft, rounded abdomen that moves easily during breathing. The chest and belly move parallel to one another during respiration thanks to the cooperation of the abdominal and diaphragmatic muscles. When the chest and abdomen move in opposition to one another, it may be a sign of respiratory trouble (Tappero & Honeyfield, 2018).

According to how recently the newborn was fed and whether air was ingested while crying, the abdomen might range from being practically flat to being slightly inflated. Up to 30 to 32 weeks of gestation, the belly circumference (measured at the largest diameter, just above the umbilicus), is often smaller than the head circumference. The abdomen and head circumferences will be the same between 32 and 36 weeks of pregnancy. Abdominal circumference will exceed head circumference once a pregnancy has reached 36 weeks. Due to the displacement of stomach contents up into the chest, a sunken or scaphoid abdomen may be an indication of a diaphragmatic hernia. Normal preterm infants may

have their abdomens appear swollen due to a lack of muscle tone; term infants may have diminished muscle tone from the drugs their mothers took during labor (Leifer, 2019).

The newborn's healthy umbilical cord is smooth, pearly white, and gelatinous. It has one vein and two arteries. The base is typically 1.5 to 2 cm in diameter. Wharton's jelly, which shields the vessels and serves as a gauge of the infant's nutritional health, is found in the umbilical cord. Infants that are large for gestational age frequently have thick cords, whereas infants that are tiny for gestational age, postmature, or suffering from placental insufficiency frequently have thin cords. Any unusual herniation or bulging in the cord necessitates further examination and may be a sign of a minor omphalocele. The abdominal (belly) wall birth abnormality known as omphalocele is also referred to as exomphalos. Through the belly button, the infant's intestines, liver, or other organs protrude from the abdomen. A thin, virtually transparent sac that covers the organs is rarely damaged or opened (See Fig. 61) (Abdelhadi & Oheida, 2021).

Figure 61. Omphalocele.
Adapted from https://www.cdc.gov/ncbddd/birthdefects/omphalocele.html
Retrieved on July 19, 2023

On examination, an umbilical hernia could also be visible. It is a frequent discovery in 30% of term African American infants, and it is also seen in men who were born underweight. The somewhat uncommon ailment of hypothyroidism frequently results in an

umbilical hernia. The hernia, which is soft and easily reducible, has abdominal contents protruding into it (Figure 62). Umbilical hernia is not connected to erythema. By the age of two, umbilical hernias typically spontaneously close (Sng et al., 2022).

The umbilical hernia before the umbilical cord is released. Adapted from https://www.healthychildren.org/English/health-issues/conditions/abdominal/Pages/umbilical-hernia-in-children.aspx Retrieved on July 19, 2023

The umbilical hernia after the umbilical cord is released (Tappero & Honeyfield, 2018)

Figure 62. The umbilical hernia.

7. Genital and Perianal

The perianal region should be examined for the presence and positioning of an anus, for the tone of the anal sphincter, and for anomalies such as fistulas. Sphincter tone can be determined by lightly massaging the anal region. There will be an anal wink. The lack of an anal wink indicates a problem with the central nervous system.

If the anus is totally missing or imperforate, this can be readily obvious (Figure 63). But until the passage of the meconium, the patency of the anus cannot be determined since atresia and stenosis can develop at any level of the anorectal canal. Due to the possibility of harming the anal canal, digital examination of the rectum or instrument insertion are not advised. Stool passing normally happens within 24 hours of birth, frequently within 12 hours, but a healthy infant may not squat for 48 hours. The study is not necessary at this time in infants who are otherwise asymptomatic. The persistent lack of stools raises the possibility of

anal atresia. Stenosis is suggested by the passage of very small-calibre stools.

Figure 8.8 Imperforate anus
Adapted from Tappero & Honeyfield (2018). Source: Children's Mercy Hospital, Department of Surgery, Kansas City, MO.

With the male newborn lying on his back, examine the urogenital region. The male genitalia are shown in diagram form in Figure 63. The external genitalia's appearance is significantly influenced by gestational age. Figure 64 shows how external genitalia alter as gestation progresses. At about 36 weeks gestation, rugae (wrinkles or creases) start to develop on the ventral surface of the scrotum. The scrotum is totally rugated and darker in

color than the skin around it at term. Locate the testicles and feel for any lumps by palpating the inguinal canal and scrotal sac. The testes are abdominal organs before 28 weeks of pregnancy; between 28 and 30 weeks, they start to descend into the inguinal canal. The testes should be properly positioned in the scrotum by nature. Normal testes feel firm, smooth, and roughly the same size when palpated. In the case of newborns, they are ovoid, typically mobile, and range in size from 1.4 to 1.6 cm (Gantan & Wiedrich, 2022; Tappero & Honeyfield, 2018).

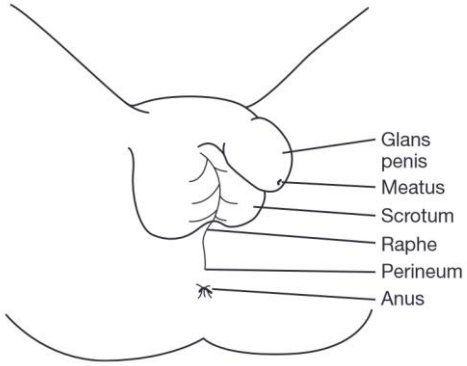


Figure 63. Normal newborn genitalia (male).
Adapted from Tappero & Honeyfield (2018)

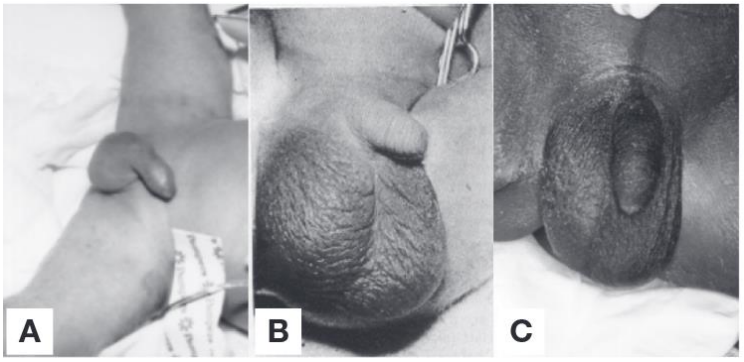


Figure 64. Appearance of genitalia in (A) preterm, (B) term, and (C) postterm male neonates.
Adapted from Tappero & Honeyfield (2018)

For the purpose of finding testes in the inguinal region, Schulman and associates recommend the following method: (a) Lay the baby down on his back, (b) Scrub the examiner's fingers and skin with soap or oil, and (c) Apply light to firm pressure as you move two or three fingers along the inguinal canal in the direction of the scrotum. Before testes can be felt, this maneuver might need to be repeated several times (Witchel, 2018).

In an uncircumcised male infant, the prepuce, or foreskin, completely encloses the head of the penis. The urethral meatus is shielded from slight trauma by the foreskin, which serves this purpose. The prepuce is often tight and has a small hole, but the entrance is normally sufficient to permit urination. In newborns, the prepuce clings to the glans and cannot be retracted without interfering with its regular clinging to the glans' surface. So, it's best to refrain from using force when retracting. Phimosis, or the inability to retract the foreskin, develops normally over the first few years of life but is normal in infants. When the urethral meatus is positioned abnormally on the ventral surface of the penis, the condition is known as hypospadias. The inadequate development of the anterior urethra is what causes the widespread condition known as hypospadias, which affects 8.2 per 1,000 live newborns (Tappero & Honeyfield, 2018). The correct growth of the prepuce is hampered if the urethra fails to mature. Prepuce hooding or malformation are common in babies with hypospadias (Figure 65) When a newborn has a misshapen or hypoplastic prepuce, it's critical to find the urethral meatus and avoid writing off the defect as a "natural circumcision".

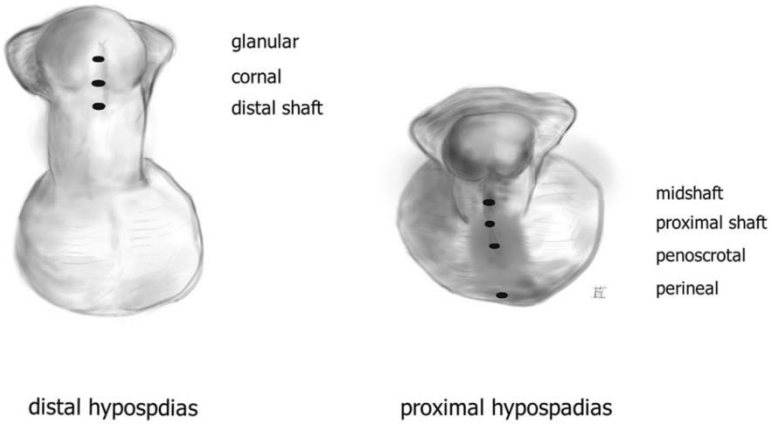


Figure 65. Classification of hypospadias based on preoperative position of the meatus
Adapted from Van Der Horst & De Wall (2017)

The infant is placed in the supine posture while the female genitalia are examined. Figure 66 provides a diagram of the typical external female anatomy. The outermost structures are the labia majora, which run from the mons pubis to the labial commissure. The labia minora are located medially to the labia majora, and they come together anteriorly to create the prepuce of the clitoris. Due to the effects of maternal estrogen during the first eight weeks of life, term female newborns may have prominent labia, a big clitoris, and a difficult-to-see urethral meatus. Exposure to maternal hormones can cause pseudogenes, which are white mucoid vaginal discharge and/or bleeding. These results could last for up to ten days. For several days following birth, the genitalia of large, breech-positioned neonates may be edematous and ecchymotic (Tappero & Honeyfield, 2018).

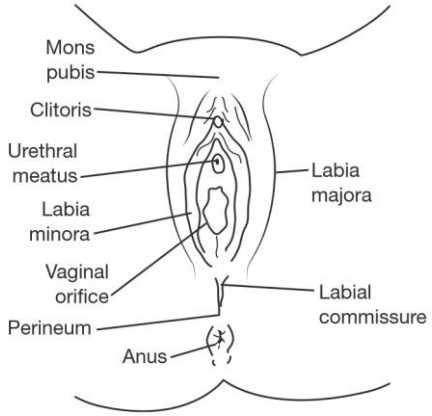


Figure 66. Normal newborn genitalia (female)
Adapted from Tappero & Honeyfield (2018)

The female genitalia's appearance is influenced by gestational age (Figure 67). The labia majora are small in preterm females due to a lack of fat tissue, while the labia minora and clitoris are quite noticeable. In more developed babies, the labia majora are bigger; in term females, they typically cover the clitoris and labia minora. Just ventral to the vaginal entrance should be the urethral meatus. A urogenital sinus or ambiguous genitalia may be indicated by a deviation from this position (Wherrett, 2015).

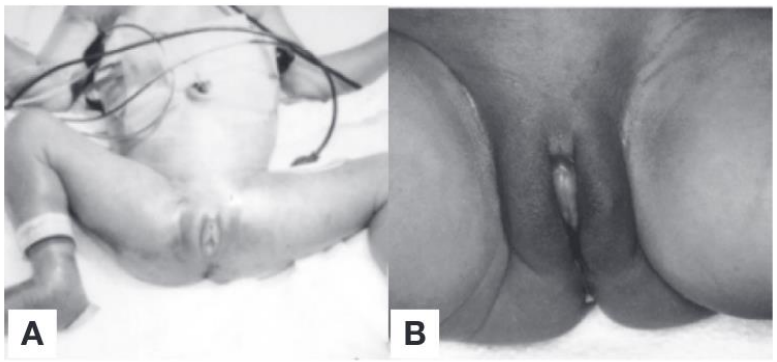


Figure 67. Appearance of genitalia in (A) preterm and (B) term female neonates.
Adapted from Tappero & Honeyfield (2018)

A typical newborn variation called a hymenal tag (Figure 68) normally goes away after a few weeks.

Figure 68. Hymenal tag in a neonate. Adapted from Tappero & Honeyfield (2018).
Adapted from Tappero & Honeyfield (2018)

Figures 69 and 70, which depict ambiguous genitalia, include a phallic structure that is not clearly male or female, an oddly positioned urethral meatus, and a male's inability to palpate one or both gonads. In phenotypic males with bilateral impalpable testes, perineal hypospadias, or a unilateral undescended testis with hypospadias, one should be suspicious of issues with sexual differentiation. Similar to this, phenotypic females with aberrant apertures or dimpling on the perineum, a palpable gonad, inseparably united labia, or clitoral hypertrophy should be assessed (Tappero & Honeyfield, 2018; Witchel, 2018).

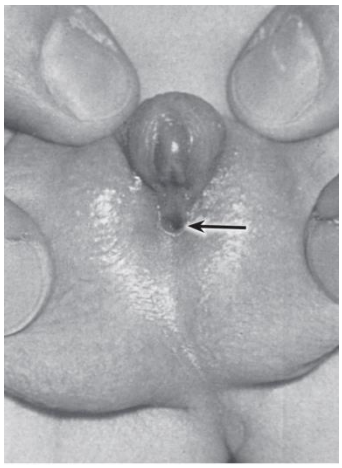


Figure 69. Newborn male infant (46, XY) with ambiguous genitalia.
Adapted from Tappero & Honeyfield (2018)

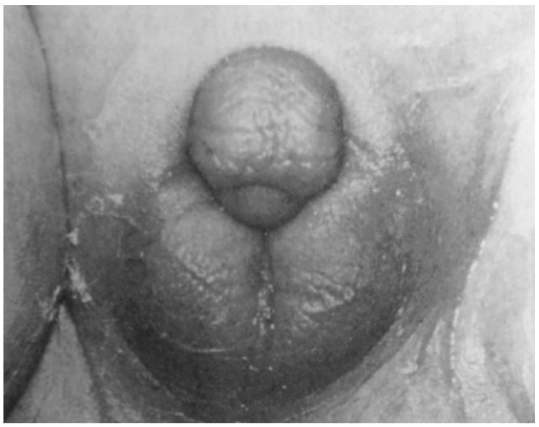


Figure 70. Newborn female with ambiguous genitalia: clitoral enlargement and fusion of labia majora.
Adapted from Tappero & Honeyfield (2018)

8. Extremities

The extremities shouldn't have any length abnormalities, constrictive bands, or asymmetry of length or circumference. Uneven length or circumference has been linked to intra-abdominal neoplasms, tumors, and skeletal abnormalities. Term newborns lie

symmetrically with their limbs extended and their legs partly abducted at the hips so that their feet are almost touching (Figure 71). The head is turned to one side or positioned in the middle with a slight flex. The tonic neck reflex is frequently in the resting position of the infant. Random and uncoordinated flexion and extension movements of the arms and legs occur spontaneously. The thumb is typically positioned beneath the fingers as the fingers are contracted into a fist. During the first 48 hours of life, there may be slight trembling in the arms and legs along with a lot of wailing (Figure 72). It is possible to infer intrauterine location from the position and appearance of the extremities during birth. The newborn's lower extremities frequently seem externally twisted, bent, and have everted feet because the fetus' lower extremities have been folded on the abdomen. The baby born breech frequently has extended knees and flexed, abducted hips (Figures 73).

Figure 71. Posture of a term newborn.
Adapted from Tappero & Honeyfield (2018).

Figure 72. Posture of the preterm infant.
Adapted from Tappero & Honeyfield (2018).

Figure 73 A. Breech presentation showing flexed, abducted hips and extended knees

Figure 73 B. Abducted hips and perineal bruising with breech presentation

Adapted from Tappero & Honeyfield (2018)

The hand should be examined for shape, size, and posture while the fingers are examined for number, shape, and length. The most common congenital anomalies of digits (CAD) were Polydactyly (Figure 74), followed by Syndactyly (Figure 75), Brachydactyly (Figure 76), Adactyly (Figure 77), and Oligodactyly (Figure 78). Upper extremities were four times more frequently affected than lower extremities, while both upper and lower extremities were affected in a quarter of all cases. CAD were

isolated in 64% of patients, while 14% were associated with other anomalies of the extremities and 22% were associated with recognized genetic syndromes (Jurcă et al., 2019).The others anomalies of newborn extremities includes Erb's palsy (Figure 79), Metatarsus adductus (Figure 80), and Clubfoot (Talipes Equinovarus) (Figure 81) (Abuhamda, 2017; Baek & Kim, 2016; Farhadi, 2019; Nakousi Capurro et al., 2020).

Figure 74. Polydactyly.
Adapted from https://www.pobar.org/polydactyly. Retrieved on July 29, 2023

Polydactyly is a condition in which a baby is born with one or more extra fingers. It is a common condition that often runs in families. The extra fingers are usually small and abnormally developed (Farhadi, 2019).

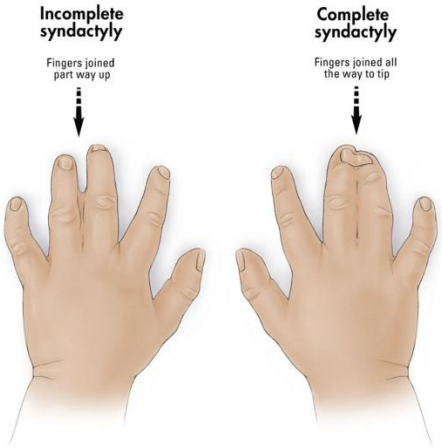


Figure 75. Syndactyly
Adapted from https://www.orthobullets.com/hand/6076/syndactyly.
Retrieved on July 29, 2023

Syndactyly occurs while a baby is still developing in the womb. During the sixth to eighth week of development, an infant's fingers and toes separate. Syndactyly occurs when the digits fail to fully separate into individual fingers and toes. This congenital difference is often passed down through families (Cassim et al., 2022).

Figure 76. Newborn with brachydactyly.
Adapted from Abuhamda (2017)

Brachydactyly (BD) refers to a family of limb malformations characterized by shortening of the hands, feet or both. There are different types of BD; among them, type E (BDE) is a rare type that can present as an isolated feature or as part of more complex syndromes, such as: pseudohypoparathyroidism (PHP), hypertension with BD or Bilginturan BD (HTNB), BD with mental retardation (BDMR) or BDE with short stature, PTHLH type. Each syndrome has characteristic patterns of skeletal involvement (Abuhamda, 2017; Pereda et al., 2013).

Figure 77. Newborn with Adactyly.
Adapted from Farhadi (2019)

Hemimelia as a congenital anomaly is a failure of development of extremities formation in embryonic period. This anomaly is defined as complete absence of the part of extremities and different forms were explained for hemimelia. Adactyly is an alternative name for transverse hemimelia and is a rare disorder in the most of animal species (Jurcă et al., 2019; Rajabioun et al., 2016).

Figure 78. Oligodactyly.
Adapted from Baek & Kim (2016)

Oligodactyly is a rare congenital condition caused by improper differentiation of the apical ectodermal ridge during 1st trimester of pregnancy that presents with absence of one or more toes (Abuhamda, 2017).

Figure 79. Erb's palsy.
Adapted from https://www.safercare.vic.gov.au/clinical-guidance/neonatal/limb-problems-in-neonates. Retrieved on July 29, 2023

Erb's palsy is a form of brachial plexus palsy. It is named for one of the doctors who first described this condition, Wilhelm Erb. One or two of every 1,000 babies have this condition. It is often caused when an infant's neck is stretched to the side during a difficult delivery. The infant may not be able to move the shoulder, but may be able to move the fingers. If both the upper and lower nerves are stretched, the condition is usually more severe than just Erb's palsy. This is called a "global," or total, brachial plexus birth palsy (Berényi et al., 2022).

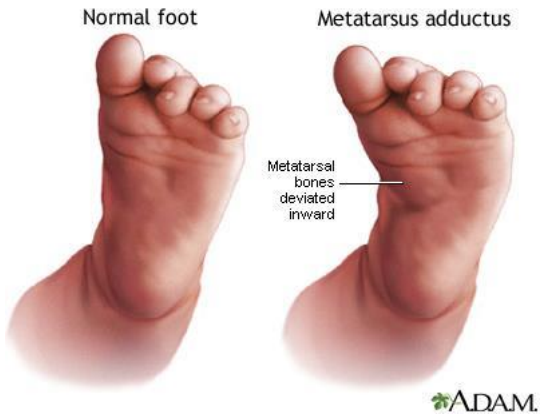


Figure 80. Metatarsus adductus.
Adapted from https://www.safercare.vic.gov.au/clinical-guidance/neonatal/limb-problems-in-neonates. Retrieved on July 29, 2023

Metatarsus adductus is the most common congenital foot deformity in newborns with a reported prevalence of one to two cases per 1000 births. The deformity appears as an adduction or medial deviation of the forefoot at the tarsometatarsal joints (Lisfranc joint) with associated soft tissue contractures that may lead to osseous changes over time. Metatarsus adductus can be differentiated from other congenital foot conditions as it is purely a forefoot condition that does not involve the hindfoot unlike talipes equinovarus or skewfoot. The exact aetiology of metatarsus adductus is unknown, however, it has been suggested that

increased intrauterine pressure, osseous abnormality and abnormal muscle attachments may be potential causes. Between 87 and 90% of flexible metatarsus adductus cases resolve spontaneously without the need for further treatment (Marshall et al., 2018).

Figure 81. Talipes equinovarus.
Adapted from https://www.safercare.vic.gov.au/clinical-guidance/neonatal/limb-problems-in-neonates. Retrieved on July 29, 2023

Congenital talipes equinovarus (CTEV), also known as clubfoot, is a common congenital orthopaedic condition characterised by an excessively turned-in foot (equinovarus) and high medial longitudinal arch (cavus) (Bina et al., 2020). Clubfoot (talipes equinovarus) is a congenital idiopathic foot deformity. Clubfoot is one of the most common congenital foot deformities and can lead to severe disability if left untreated. The malformation consists of 4 components outlined with the mnemonic CAVE (Cavus, Adductus, Varus, Equinus). Clubfoot demonstrates excellent outcomes if treated early; the most commonly used management is the Ponseti method of serial casting (Mousafeiris et al., 2023).

B. NURSING PROBLEMS IN NEWBORNS

- At risk for altered body temperature related to decreased amounts of subcutaneous fat or large body surface

- At risk for infections related to tissue trauma or poor hand washing techniques by health care providers and parents
- At risk for impaired gas exchange related to the transition from fetal to neonatal circulation, cold stress, or excessive mucus production
- At risk for fluid volume deficit related to limited oral intake
- At risk for knowledge deficit related to first-time parenting or limited learning resources (Durham et al., 2014; Leifer, 2019; Tim Pokja SDKI DPP PPNI, 2016)

C. NURSING PLAN FOR NEWBORNS

Nursing Outcomes

- The neonate's temperature will be within normal limits, and the skin will be pink and warm.
- The neonate will not exhibit signs or symptoms of an infection.
- The neonate's respiratory and heart rates will be within normal ranges; the skin will be pink, and the airway will remain clear.
- The neonate will void six times daily.
- Parents will respond to their newborn's needs.

The main goal of nursing care is to safeguard and sustain the neonate as he goes through multiple physiological changes and adjusts to life outside the womb. This is achieved by: maintaining body heat, maintaining respiratory function, reducing infection risk, helping parents understand how to take care of their newborn, and assisting parents in giving proper nourishment and hydration.

High-quality universal newborn health care is the right of every newborn everywhere. Babies have the right to be protected from injury and infection, to breathe normally, to be warm and to be fed. All newborns should have access to essential newborn care, which is the critical care for all babies in the first days after birth. Essential newborn care involves immediate care at the time of birth, and essential care during the entire newborn period. It is needed both in the health facility and at home. Essential newborn care includes:

- Immediate care at birth (delayed cord clamping, thorough drying, assessment of breathing, skin-to-skin contact, early initiation of breastfeeding)
- Thermal care
- Resuscitation when needed
- Support for breast milk feeding
- Nurturing care
- Infection prevention
- Assessment of health problems
- Recognition and response to danger signs
- Timely and safe referral when needed (World Health Organization, 2022)

1. Risk for Impaired Gas Exchange Interventions

- Elevate the head of the bed.
  - Breathing is easier in an elevated or upright position. This position promotes optimal chest expansion. It is also easier to assess the newborn in this position for any symptoms of respiratory distress.
- Suction the airway as needed.
  - A newborn may not be able to clear secretions on their own and may require suctioning if mucus is heard or observed. Measure patient's pulse oximetry and vital signs to check for the effectiveness of suctioning.
- Administer oxygen.
  - Oxygen can be delivered through nasal cannula or face mask to aid in gas exchange.
- Prepare equipment for emergency ventilation.
  - Emergency ventilation supplies should always be available at the bedside. Suction catheters and an ET/tracheostomy set must be suitable for the size of an infant in preparation for opening the airway during an emergency (Salvador & Wagner, 2022).

2. Risk for Hypothermia Interventions

- Keep the newborn dry and tightly wrapped in a blanket.
  - The newborn may lose heat quickly as a result of wet skin. The baby should be quickly dried and swaddled.
- Provide heat loss barriers.
  - Newborns, especially preterm and/or low-birth-weight infants, require barriers to prevent heat loss. Vigorous rewarming while regularly monitoring temperature is needed. Blankets, isolettes, and radiant warmers can be utilized. Encourage skin-to-skin contact of the newborn with the mother. Studies have shown that this helps minimize the risk of hypothermia.
- Provide a warm environment.
  - The newborn has not acquired extra adipose tissue to act as insulation and is not able to shiver to warm the body naturally. Therefore, newborns cannot regulate their temperature. Newborns can lose heat nearly 4 times quicker than an adult. If the room temperature is too low, even healthy, full-term newborns may struggle to stay warm.
- Provide education to the parents/caregiver.
  - Newborns struggle to adjust to temperature changes. The nurse may inform parents/caregivers about the dangers of hypothermia and hyperthermia. Explain the importance of a newborn's thermal protection. Ensure the newborn's routine care includes the prevention of hypothermia. Demonstrate and supervise activities such as bathing and swaddling.

3. Risk for Infection Interventions

- Ensure strict compliance to infection control and hand hygiene.
  - Hand washing is the primary protection against healthcare-associated illnesses. When providing care and especially with invasive interventions, the nurse

must follow strict infection prevention to safeguard the newborn against infection.

- Encourage breastfeeding.
  - While a personal choice, mothers who desire to breastfeed should be encouraged and instructed to do so. Breast milk contains natural immunoglobulins necessary to protect newborns against preventable infections.
- Monitor caregivers and visitors for any existing illnesses.
  - To prevent exposure and transmission risk, encourage sick guests to avoid contact with the newborn. Caregivers or visitors may wear masks to further prevent the transmission of bacteria or viruses.
- Provide health teaching about infection control measures.
  - Educate parents and caregivers to consistently practice infection control measures such as proper hand hygiene. Limit public outings during the first few weeks. Recommend necessary vaccinations. Provide educational materials and demonstrations as necessary.

D. PROCEDURES FOR PHYSICAL EXAMINATION OF NEWBORNS

1. Head to toe examination

Preparation for Assessment. Gather the equipment needed for the assessment: latex gloves, measuring tape, infant stethoscope, thermometer, scale for weighing, and documentation records. Ensure that assessment is done in a neutral thermal environment (NTE) (i.e., close doors to prevent drafts and regulate room temperature. Inform the parents of the assessment and invite them to watch. This is especially helpful for new fathers when the initial assessment is done in the labor/delivery/recovery room.

a. Posture

Unwrap the newborn and observe posture when the neonate is quiet. Normally extremities are flexed. Extension of extremities often related to prematurity; effects of medications

given to mother during labor such as magnesium sulfate and analgesics/anesthesia; birth injuries; hypothermia; or hypoglycemia.

b. Head circumference

Measure by placing tape around the head just above the ears and eyebrows (Figure 82). Measurement is usually recorded in centimeters (normally 33–35.5 cm). Microcephaly: Head circumference is below the 10th percentile of normal for newborns gestational age. This is often related to congenital malformation, maternal drug or alcohol ingestion, or maternal infection during pregnancy. Macrocephaly: Head circumference is >90th percentile. This can be related to hydrocephalus.

Figure 82. Taking Head Measurements
Adapted from Leifer (2019)

c. Chest circumference

Measure by placing tape around the chest over the nipple line (Figure 83). Normally, Chest circumference the newborn is 30.5–33 cm or 2–3 cm less than head circumference.

Figure 83. Taking Chest Measurements
Adapted from Leifer (2019)

d. Length

Measure the length of body by securing tape on a flat surface. Place the top of neonate's head at the top of the tape. Extend the body and one leg. Measurement is taken from the top of the head to the bottom of the heel (normally 5–53 cm). Landmarks Measure from the top of the head to the sole of the foot with the baby lying on the back with hips and knees extended. Instruments Ideally, measuring table with engraved measurements, a firm headblock, and a moveable footblock. Position For this measurement, ideally, two persons work together. One holds the head of the child, while the other straightens the legs of the newborn baby with one hand and

moves the footblock toward the heel of the newborn baby with moveable pressed down gently held gently in position the other hand. The top of the head of the patient should be placed against the headboard, eyes looking upward. The ideal head position is with the Frankfort horizontal position held in a vertical plane (i.e., the lower edge of the bony orbit and the upper margin of the external opening of the auditory canal of the ear are in the same vertical plane). The legs, or at least one leg, should be straightened, the ankle at a right angle to the leg with the toes pointing upward. The moveable footboard should be brought in direct contact with the sole of the foot and the measurement read (Figure 84A). Alternatives A less accurate way, when a measuring table is not available, is to mark the sheet or the paper on which the newborn is lying above the newborn baby's head and at the foot, after stretching the patient out. Remove the patient, and measure the distance on the paper or sheet between the markings.

Alternatively, a tape-measure can be placed under the newborn baby who is positioned supine on top of or beside the tape (Figure 84B). Remarks Ideally each measurement should be taken at least twice. The newborn baby should be repositioned between measurements. The experience in clinics dealing with growth problems has shown this to be necessary to obtain accurate measurements of height and length. Measurements in the age group birth to two years are difficult to obtain because the newborn baby are sometimes not very cooperative. Thus, the measurements may be less accurate in general.

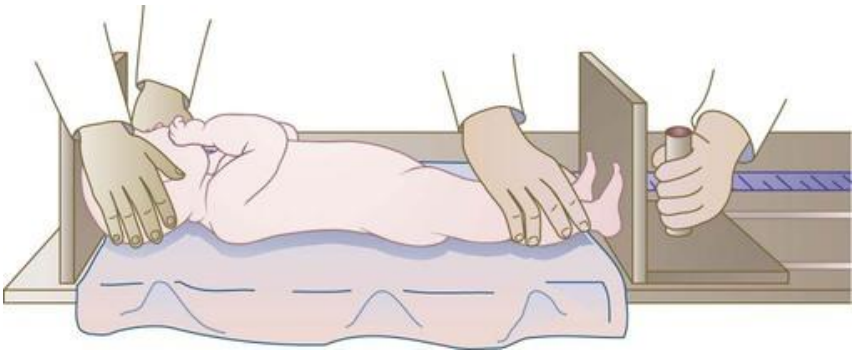


Figure 84 A. Measuring with a measuring table.
Adapted from https://www.guwsmedical.info/head-circumference/total-body-length.html. Retrieved on July 29, 2023

Figure 84 A. Measuring with tape-measure.
Adapted from Leifer (2019)

Molding may interfere with accurate assessment of length. Neonates whose length is <45 cm should be further assessed for causes such as intrauterine growth restriction or prematurity.

e. Weight

Clean scale before use. Place clean paper on the scale. Set the scale at zero. Place the naked neonate on the scale. Record the neonate's weight. Do not leave the neonate unattended while weighing (Figure 85). Normally weight newborn baby is 2,500–4,000 g. Weight loss of 5%–10% of birth weight during the first week is normal. This is due to water loss through urine, stools, and lungs and an increase in metabolic rate. It is also related to limited fluid intake. The neonate will regain birth weight within 10 days. Weight above the 90th percentile are common in neonates of diabetic mothers. Weight below the 10th percentile is due to prematurity, intrauterine growth restriction, malnutrition during the pregnancy (Durham et al., 2014).

Figure 85. Weight measurement
Adapted from https://newbornbaby.com.au/newborn-overview/baby-health/baby-weight/. Retrieved July 30, 2023

f. Temperature

Place a clean temperature probe in the axillary area (Figure 86). Axillary temperatures are preferred because of the risks of tissue trauma, perforation, and cross-contamination associated with the rectal temperature method. The newborn baby axillary temperatures normally 36.5°–37.2°C (97.7°–

99°F). Hypothermia or hyperthermia is related to infection, environmental extremes, and/or neurological disorders.

Figure 85. Axillary temperature measurement.
Adapted from Leifer (2019)

g. Respirations
   Assess respiratory rate by observing the rise and fall of the chest and abdomen for one full minute. Normal if the result is 30–60 breaths per minute, slightly irregular, diaphragmatic, and abdominal breathing. Rate increases when crying and decreases when sleeping. The abnormal condition is periods of apnea >15 seconds. Tachypnea that may be related to sepsis, hypothermia, hypoglycemia, or respiratory distress syndrome. Respirations <30; may be related to maternal analgesia and/or anesthesia during labor.
h. Pulse
   Assess apical pulse rate by auscultating for one full minute. Assess rate and rhythm. Use of a stethoscope designed for neonates is recommended (Figure 86).

- Normal findings: 120–160 bpm, rate increases (to 180 bpm) with crying and decreases (to 100 bpm) when asleep, and murmurs may be heard; most are not pathological and disappear by 6 months.
- Abnormal findings: Tachycardia (> 160 bpm) indicates possible sepsis, respiratory distress, congenital heart abnormality. Bradycardia (<100 bpm) indicates possible sepsis, increased intracranial pressure, or hypoxemia.

Figure 86. Pulse measurement.
Adapted from Leifer (2019).

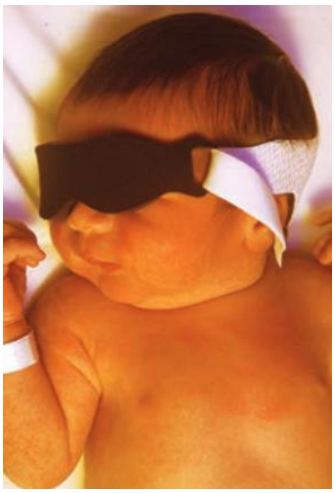
i. Integumen/Skin
Inspect the skin for color, intactness, bruising, birth Lanugomarks, dryness, rashes, warmth, texture, and turgor. Inspect nails.
   - Normal findings: Skin is pink with acrocyanosis (cyanosis of hands and feet). Milia are present on the bridge of the nose and chin (see Figure 50). Lanugo is present on the back, shoulders, and forehead, which decreases with advancing gestation (see Figure 16-2). Peeling or cracking is often noted on infants >40 weeks' gestation. Mongolian spots. Hemangiomas such as salmoncolored patch (stork

bites), nevus flammeus (port-wine stain), and strawberry hemangiomas are developmental vascular abnormalities. Stork bites are found at the nape of the neck, on the eyelid, between the eyes, or on the upper lip. They deepen in color when the neonate cries. They disappear within the first year of life. Nevus flammeus are purple- to red-colored flat areas that can be located on various portions of the body. These do not disappear. Strawberry hemangiomas are raised bright red lesions that develop during the neonatal period. They spontaneously resolve during early childhood.

- Abnormal findings: Jaundice within the first 24 hours is pathological. Pallor occurs with anemia, hypothermia, shock, or sepsis. Greenish/yellowish vernix indicates passage of meconium during pregnancy and/or labor. Persistent ecchymosis or petechiae occurs with thrombocytopenia, sepsis, or congenital infection. Abundant lanugo is often seen in preterm neonates. Thin and translucent skin, and increased amounts of vernix caseosa are common in preterm neonates. Nails are longer in neonates >40 weeks' gestation. Pilonidal dimple: A small pit or sinus in the sacral area at top of crease between the buttocks; the sinus can become infected later in life. For more details, see Figure 87.

Acrocyanosis

Mongolian spots



Jaundice

Hemangiomas

Figure 87. Newborn skin.
Adapted from Leifer (2019).

j. Head

Note the shape of the head. Inspect and palpate fontanels and suture lines. Inspect and palpate the head for caput succedaneum and/or cephalohematoma (see Figure 47).

- Normal Findings: Molding present (Figure 88). Fontanels are open, soft, intact, and slightly depressed. They may bulge with crying. The anterior fontanel is diamond shaped, approximately 2.5–4 cm (closes by 18 months of age). The posterior fontanel is a triangle shape that is approximately 0.5–1 cm (closes between 2 and 4 months). May be difficult to palpate due to excessive molding. There are overriding sutures when there is increased molding.
- Abnormal Findings: Fontanels that are firm and bulging and not related to crying are a possible indication of increased intracranial pressure. Depressed fontanels are a possible indication of dehydration. Bruising and laceration at the site of the fetal scalp electrode or vacuum extractor

Presence of caput succedaneum and/or cephalohematoma.

Figure 88. Molding.
Adapted from Leifer (2019).

k. Neck
   Lift the chin to assess the neck area.
   - Normal Findings: The neck is short with skin folds. Positive tonic neck reflex (Figure 89). With the neonate in a supine position, turn the head to the side so that the chin is over the shoulder.
   - Abnormal Findings: Webbing is a possible indication of genetic disorders. Absent tonic neck reflex is an indication of nerve injury.

Figure 89. Tonic neck reflex.
Adapted from Leifer (2019).

l. Eyes

Assess the position of the eyes. Open the eyelids and assess color of sclera and pupil size. Assess for blink reflex, red light reflex, and pupil reaction to light.

- Normal Findings: Eyes are equal and symmetrical in size and placement. The neonate is able to follow objects within 12 inches of the visual field. Edema may be present due to pressure during labor and birth and/or reaction to eye prophylaxes. The iris is blue-gray or brown. The sclera is white or bluish-white. Subconjunctival hemorrhages related to birth trauma. Pupils are equally reactive to light. Positive red light reflex and blink reflex. No tear production (tear production begins at 2 months). Strabismus and nystagmus related to immature muscular control.
- Abnormal Findings: Absent red light reflex indicates cataracts. Unequal pupil reactions indicate neurological trauma. Blue sclera is a possible indication of osteogenesis imperfecta.

m. Ears

Inspect the ears for position, shape, and drainage. Hearing test is done before discharge.

- Normal Findings: Top of the pinna is aligned with external canthus of the eye. Pinna without deformities, well-formed and flexible. The neonate responds to noises with positive startle signs. Hearing becomes more acute as Eustachian tubes clear. Neonates respond more readily to high-pitched vocal sounds.
- Abnormal Findings: Low-set ears are associated with genetic disorders such as Down's syndrome. Absent startle reflex is associated with possible hearing loss.

n. Nose

Observe the shape of the nose. Inspect the opening of the nares.

- Normal Findings: The nose may be flattened or bruised related to the birth process. Nares should be patent. Small amount of mucus. Neonates primarily breathe through their noses.
- Abnormal Findings: Large amounts of mucus drainage can lead to respiratory distress. A flat nasal bridge is seen with Down's syndrome. Nasal flaring is a sign of respiratory distress.

o. Mouth

Inspect lips, gums, tongue, palate, and mucous membranes. Open the mouth by placing gentle pressure on the lower lip (Figure 90). Test for rooting, sucking, swallowing, and gag reflexes (Figure 91).

- Normal Findings: Lips, gums, tongue, palate, and mucous membranes are intact, pink, and moist. Reflexes are positive. Epstein's pearls are present (Figure 92).
- Abnormal Findings: Natal teeth, which can be benign or related to congenital abnormality (Figure 93). Thrush, a fungal infection, can be contracted during vaginal birth. It appears as white patches on the mucous membranes of the mouth. Cleft lip and/or palate, which is a congenital abnormality in which the lip and/or palate does not completely fuse (Figure 57).

Figure 90. Open the mouth by placing gentle pressure on the lower lip.
Adapted from Leifer (2019).

Rooting reflex
Brush the side of a cheek near the corner of the mouth. The neonate turns his head toward the direction of the stimulus and opens his mouth. Instruct mothers who are lactating to touch the corner of the neonate's mouth with a nipple and the infant will turn toward the nipple for feeding.

Sucking reflex
Place a gloved finger or nipple of a bottle in the neonate's mouth.

Figure 91. Rooting and sucking reflexes.
Adapted from Leifer (2019).

Figure 92. Epstein's pearls (White, pearl-like epithelial cysts on gum margins and palate).
Adapted from Leifer (2019)

Figure 93. Natal teeth (Immature caps of enamel and dentin with poorly developed roots Usually only one or two teeth are present).
Adapted from Leifer (2019).

p. Chest

For lungs inspect shape, symmetry, and chest excursion. Inspect the breast for size and drainage. Auscultate breath sounds. For cardiac auscultate heart sounds; listen for at least one full minute. Palpate peripheral pulses.

- Normal Findings: The chest is barrel-shaped and symmetrical (Figure 94). Breast engorgement is present in both male and female neonates related to the influence of maternal hormones. This resolves within a few weeks. Clear or milky fluid from nipples related to maternal hormones. Lung sounds are clear and equal. Scattered crackles may be detected during the first few hours after

birth. This is due to retained amniotic fluid which will be absorbed through the lymphatics. Point of maximal impulse (PMI) at the 3rd or 4th intercostal space. S1 and S2 are present. Normal rhythm with variation related to respiratory changes. Murmurs in 30% of neonates which disappear within 2 days of birth. Peripheral pulses are present and equal. The femoral pulse may be difficult to palpate.

- Abnormal Findings: Funnel chest is a congenital abnormality (Figure 94). Pigeon chest (Figure 94) can obstruct respirations. Chest retractions are a sign of respiratory distress. Persistent crackles, wheezes, stridor, grunting, paradoxical breathing, decreased breath sounds, and/or prolonged periods of apnea (>15–20 seconds) are signs of respiratory distress. Decreased or absent breath sounds are often related to meconium aspiration or pneumothorax. Dextrocardia: Heart on the right side of the chest. Displaced PMI occurs with cardiomegaly. Persistent murmurs indicate persistent fetal circulation or congenital heart defects.

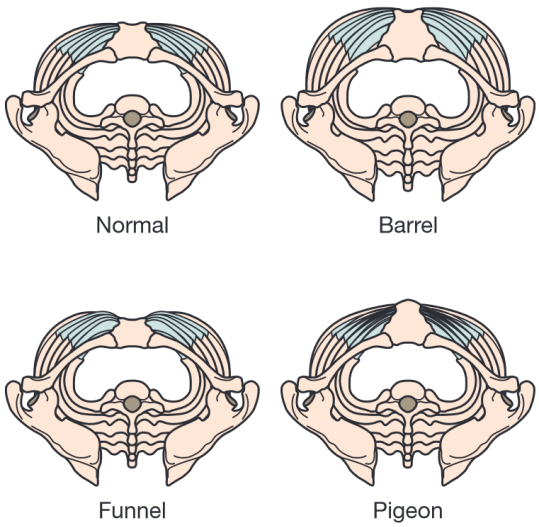


Figure 94. Different chest shapes.
Adapted from Tappero & Honeyfield (2018).

q. Abdomen

Inspect size and shape of the abdomen. Palpate the abdomen, assessing for tone, hernias, and diastasis recti. Auscultate for bowel sounds. Inspect the umbilical cord.

- Normal Findings: The abdomen is soft, round, protuberant, and symmetrical. Bowel sounds are present, but may be hypoactive for the first few days. Passage of meconium stool within 48 hours post-birth. The cord is opaque or whitish blue with two arteries and one vein, and covered with Wharton's jelly. The cord becomes dry and darker in color within 24 hours post-birth and detaches from the body within 2 weeks.
- Abnormal Findings: Asymmetrical abdomen indicates a possible abdominal mass. Hernias or diastasis recti are more common in neonates and usually resolve on their own within the first year. One umbilical artery and vein is associated with heart or kidney malformation. Failure to pass meconium stool is often associated with imperforated anus or meconium ileus.

r. Rectum

Inspect the anus. The normal newborn baby, the anus is patent. Passage of stool within 24 hours. The deviation from normal condition like as imperforated anus and anal fissures or fistulas requires immediate surgery.

s. Genitourinary female

Place thumbs on either side of the labia and gently separate tissue to visually inspect the genitalia. Assess for the presence and position of clitoris, vagina, and urinary meatus.

- Normal Findings: Labia majora covers labia minora and clitoris. Labia majora and minora may be edematous. Blood-tinged vaginal discharge related to the abrupt decrease of maternal hormones (pseudomenstruation). Whitish vaginal discharge in response to maternal hormones. The neonate urinates within 24 hours. The urinary meatus is midline and an uninterrupted stream is noted on voiding.

- Abnormal Findings: Prominent clitoris and small labia minora are often present in preterm neonates. Ambiguous genitalia; may require genetic testing to determine sex. No urination in 24 hours may indicate a possible urinary tract obstruction, polycystic disease, or renal failure.

t. Genitourinary male

Inspect the penis, noting the position of the urinary meatus. Inspect and palpate the scrotum to assess for testicles. With the thumb and forefinger of one hand, palpate each testis while the other thumb and forefinger are placed over the inguinal canal to prevent the ascent of testes during assessment. Start at the upper aspect of the scrotum and move away from the body.

- Normal Findings: The urinary meatus is at the tip of the penis. The scrotum is large, pendulous, and edematous with rugae (ridges/creases) present. Both testes are palpated in the scrotum. The neonate urinates within 24 hours with an uninterrupted stream.
- Abnormal Findings: Hypospadias: The urethral opening is on the ventral surface of penis. Epispadias: The urethral opening is on the dorsal side of penis. Undescended testes are testes not palpated in the scrotum. Hydrocele is enlarged scrotum due to excess fluid. No urination in 24 hours may indicate possible urinary tract obstruction, polycystic disease, or renal failure. Ambiguous genitalia may require genetic testing to determine sex. Inguinal hernia.

u. Musculoskeletal

Inspect extremities, spine, and gluteal folds. Palpate the clavicles.

- Normal Findings: Arms are symmetrical in length and equal in strength. Legs are symmetrical in length and equal in strength. 10 fingers and 10 toes. Full range of motion of all extremities. No clicks at joints. Equal gluteal folds. C curve of spine with no dimpling.

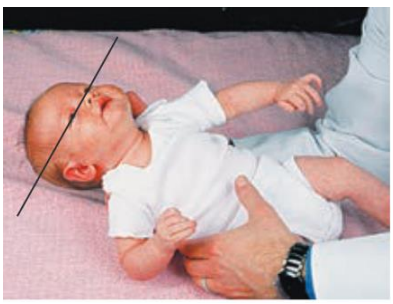
- Abnormal Findings: Polydactyly: Extra digits may indicate a genetic disorder. Syndactyly: Webbed digits may indicate a genetic disorder. Unequal gluteal folds and/or positive Barlow-Ortolani maneuver are associated with congenital hip dislocation. Decreased range of motion and/or muscle tone indicates possible birth injury, neurological disorder, or prematurity. Swelling, crepitus, and/or neck tenderness indicates possible broken clavicle, which can occur during the birthing process in neonates with large shoulders. Simian creases, short fingers, wide space between big toe and second toe are common with Down's syndrome.

v. Neurological

Assess posture. Assess tone. Test newborn reflexes.

Normal Findings: Flexed position Rapid recoil of extremities to the flexed position Positive newborn reflexes (see Figure 95).

Abnormal Findings: Hypotonia: Floppy, limp extremities indicate possible nerve injury related to birth, depression of CNS related to maternal medication received during labor or to fetal hypoxia during labor, prematurity, or spinal cord injury. Hypertonia: Tightly flexed arms and stiffly extended legs with quivering indicate possible drug withdrawal. Paralysis indicates possible birth trauma or spinal injury. Tremors are possibly due to hypoglycemia, drug withdrawal, cold stress.



Moro reflex
Jar the crib or hold the baby in a semisitting position and let the head slightly drop back. Positive if

Startle reflex
Make a loud sound near the neonate. The positive respons same as Moro reflex.

symmetrical abduction and extension of arms and legs, and legs flex up against trunk, and the neonate makes a “C” shape with thumb and index finger.

Palmer grasp

he examiner places a finger in the palm of the neonate’s hand. Positive if the neonate grasps fingers tightly. If the neonate grasps the examiner’s fingers with both hands, the neonate can be pulled to a sitting position.

Plantar grasp

Place a thumb firmly against the ball of the infant’s foot. Positive if Toes flex tightly down in a grasping motion

Babinski

Stroke the lateral surface of the sole in an upward motion. Positive if Hyperextension and fanning of toes

Stepping or dancing

Hold the neonate upright with feet touching a flat surface. Positive if the neonate steps up and down in place.

Figure 95. Newborn reflexes.
Adapted from Leifer (2019)

2. Performing Apgar scoring

Dr. Virginia Apgar devised a system for evaluating the infant’s condition and response to resuscitation that was provided at birth. Apgar scores should be obtained at 1 minute and 5 minutes after birth. If the 5-minute Apgar score is less than 7, additional scores should be assigned every 5 minutes up to 20 minutes.

Temperature, heart and respiratory rates, skin color, adequacy of peripheral circulation, type of respiration, level of consciousness, tone, and activity should be monitored and recorded at least every 30 minutes until the newborn's condition has remained stable for at least 2 hours. The Apgar score is a rapid assessment of five physiological signs that indicate the physiological status of the newborn and includes:

- Heart rate based on auscultation
- Respiratory rate based on observed movement of chest
- Muscle tone based on degree of flexion and movement of extremities
- Reflex irritability based on response to tactile stimulation
- Color based on observation (Durham et al., 2014)

Each component is given a score of 0, 1, or 2. An Apgar score of: 0–3 indicates severe distress 4–6 indicates moderate difficulty with transition to extrauterine life 7–10 indicates stable status. The Apgar score is not used to determine the need for resuscitation, nor is it predictive of long-term neurological outcome of the neonate (Durham et al., 2014). See Figure 96.

Apgar Scoring System

SIGN	SCORE		
	0	1	2
Heart rate	Absent	< 100 beats/min	≥ 100 beats/min
Respiratory effort	No spontaneous respirations	Slow; weak cry	Spontaneous, with a strong, lusty cry
Muscle tone	Limp	Minimal flexion of extremities; sluggish movement	Active spontaneous motion; flexed body posture
Reflex irritability	No response to suction or gentle slap on sole of foot	Minimal response (grimace) to stimulation	Prompt response to suction, with cry or active movement in response to gentle slap on sole of foot or backrub
Color	Blue or pale	Body pink, extremities blue	Completely pink (light skin) or absence of cyanosis (dark skin)

Figure 96. Apgar Scoring System.
Adapted from Leifer (2019)

3. A heel stick

A heel stick is performed to obtain capillary blood for the glucose screening test. The heel stick should avoid the center of the heel, where bone, nerves, and blood vessels are near the surface (see Figure 97) (Leifer, 2019).

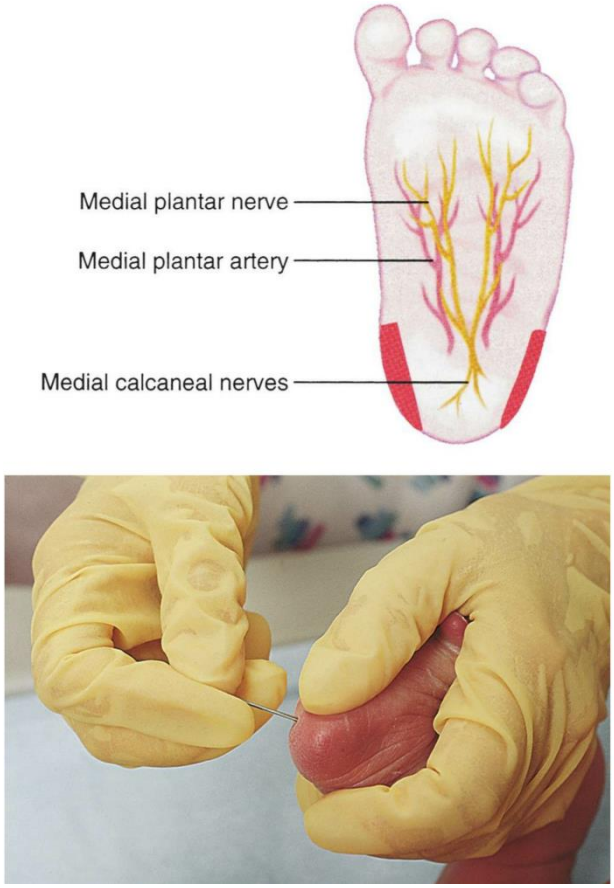


Figure 97. Heel Stick. The shaded areas at the sides of the heel are used for heel sticks in newborns to avoid nerves, blood vessels, and bony areas. Warming the heel before puncture will promote better blood flow.
Adapted from Leifer (2019)

E. ACTION PROCEDURES ON NEWBORNS

1. Promoting Bonding and Attachment

Bonding and attachment are terms often used interchangeably, although they differ slightly. Bonding refers to a strong emotional tie that forms soon after birth between the parents and the newborn. Attachment is an affectionate tie that occurs through time as the newborn and caregivers interact. It is important

for nurses to promote these processes to help parents claim the newborn as their own. Bonding actually begins during pregnancy as the fetus moves and shows individual characteristics on sonograms.

2. Bathing the Newborn

- Purpose: to cleanse the skin and interact with the newborn. A sponge bath may be given until the umbilical cord site and circumcision site are healed; however, tub baths can be given before the cord falls off without risk of infection.
- Essentials concept:
  - Give bath between feedings at most convenient time for baby and family.
  - Complete baths are not necessary more than two or three times a week because specific areas are washed after diaper changes and when milk is spit up.
  - After the bath, the baby will likely want to sleep.
  - A bath should not be given immediately after feeding, because excessive handling may cause regurgitation.
  - Carefully wash and dry each area to prevent heat loss.
  - Keep the baby warm by exposing only the area you are washing.
- Steps
  - Sponge Bath
    - ✓ Test bathwater–it should be approximately 37.2° to 38° C (99° to 100.4° F). A bath thermometer should be used; many have preset temperature alerts.
    - ✓ Proceed from the cleanest to the most soiled area of the body: from eyes and face to the trunk and extremities and finally to the diaper area. Shampooing the hair is always done last to prevent excessive heat loss from the head.
    - ✓ Wash the baby's face with clear water. Use a separate clean area of the washcloth (or use a cotton ball) to wipe each eyelid. Use a clean area to wash the outer ear (do not put anything inside the ear or nose).

- ✓ Wash behind the ears, where milk that is spit up may accumulate.
- ✓ If necessary, clean the nose with a clean corner of the washcloth.
- ✓ Put one hand under the baby's shoulders and lift slightly. This allows the creases of the neck to be washed.
- ✓ Wash the vulva of a female newborn by wiping from front to back to prevent contamination of the vagina or urethra by rectal content. In the male newborn, do not force back the foreskin of the uncircumcised penis. Clean the penis and scrotal area gently. It is important to clean under the scrotum and the folds of the scrotum.
- ✓ The easiest way to wash the hair is to hold the baby (wrapped in a towel to prevent chilling) in one arm, using the football hold, over the basin of water. Soap the hair and rinse by pouring water from a container over the head. Then dry the hair to prevent chilling.

➢ Tub Bath

- ✓ Use a plastic tub or a clean sink for the bath.
- ✓ Place a small blanket or pad on the bottom of the tub for comfort and to prevent slipping.
- ✓ Place approximately 3 to 4 inches of warm water in the tub–the water temperature should be 36.6° to 37.2° C (98° to 99° F).
- ✓ Using a clean, dampened washcloth, wash the eyes and face with plain water.
- ✓ Place the baby in the tub. The baby may seem frightened and cry when first put in the water. Holding the baby securely and talking with a soft voice will often help the infant adjust to the bath, which is a new experience.
- ✓ Be sure all soap is rinsed off the baby before removing him or her from the tub.
- ✓ Remove the newborn from the tub and immediately wrap him or her in a dry towel.

- ✓ With the baby wrapped in a towel and held in a football hold, gently shampoo the hair; rinse thoroughly with warm water and dry with a clean towel (Leifer, 2019).

3. Swaddling the Newborn

- Purpose: To provide warmth and a sense of security to the newborn
- Steps: 1). Place a small blanket flat on the bed in the shape of a diamond, with the top corner folded down slightly. 2). Place the newborn with the shoulders at the upper edge of the blanket. The arm may be placed at the infant's side or positioned so the hand is near the mouth. Wrap the right corner of the blanket around the newborn and tuck it under the left side of the infant. Fold the left corner of the blanket over the newborn and tuck it under the right side of the infant. 3). Pull the bottom of the blanket up to the infant's chest and secure each corner around the newborn and under his or her back (snugly, not tightly). 4). The infant's hips and knees should be maintained in flexed abduction while swaddled. Abduction is important in preventing hip dysplasia. See Figure 98.

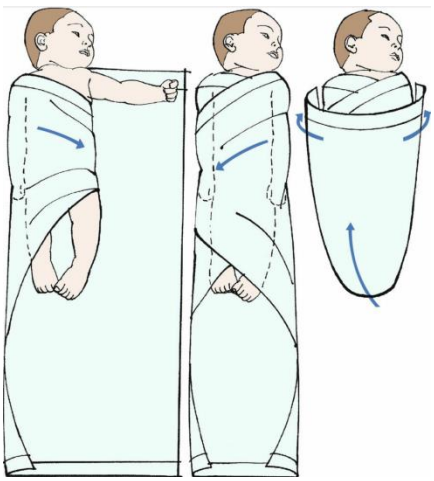


Figure 98. Swaddling the Newborn.
Adapted from Leifer (2019)

Summary

A newborn's physiology is complex and constantly changing, requiring immediate pulmonary breathing and significant changes in circulation to start life as an autonomous entity. These changes are essential for survival and are reflected in the nurse's initial assessment.

Nature's physiology includes changes in cardiovascular, pulmonary, hematological, metabolism, and thermoregulation. These changes are crucial for optimal development and should be noted during the newborn's first breath. The ductus arteriosus, foramen ovale, and ductus venosus (DV) are four critical changes in the newborn's cardiovascular system.

The newborn's breathing becomes robust quickly after birth due to the umbilical cord being clamped, diffuse tactile and cold stimuli, changes in blood's oxygen and carbon monoxide levels, and clamping of the umbilical cord. The "thoracic squeeze" compresses the fluid in the lungs and promotes fluid evacuation.

Blood is created in utero by the liver and collected by the bone marrow after delivery. Hemoglobin (Hb) is carried by red blood cells and carries iron and oxygen from the lungs to the body's tissues and organs. Hemoglobin comes in various forms, including HbF and HbA. HbF is crucial for intrauterine development and the newborn period, while HbA replaces HbF around six months.

The newborn's body temperature rapidly lowers shortly after birth due to the chilly extrauterine environment. The neonate uses nonshivering thermogenesis (NST) to increase heat production to counterbalance this temperature shift. However, hypoxic newborns cannot generate enough heat to raise their body temperature.

Assessment of newborns consists of subjective and objective assessments. Subjective assessment by anamnesis to the baby's mother is essential to identify the history of pregnancy and childbirth that affects the newborn's condition. A neonatal examination should be performed within two hours of delivery to provide baseline data and help plan the baby's nursing and medical care.

Nursing problems in newborns can arise from various factors, including altered body temperature, infections, impaired gas exchange, fluid volume deficit, and knowledge deficits. The primary goal of nursing care is to safeguard and sustain the newborn as they go through multiple physiological changes and adjust to life outside the womb. This is achieved by maintaining body heat, respiratory function, reducing infection risk, helping parents understand how to take care of their newborn, and assisting parents in giving proper nourishment and hydration.

Essential newborn care is critical for all newborns in the first days after birth, including immediate care at birth, thermal care, resuscitation when needed, support for breastfeeding, nursing care, infection prevention, assessment of health problems, and timely and safe referral when needed. Risks for impaired gas exchange include elevating the head of the bed, suctioning the airway, administering oxygen, preparing equipment for emergency ventilation, preventing hypothermia, providing a warm environment, and educating parents/caregivers about the dangers of hypothermia and hyperthermia.

Strict compliance to infection control and hand hygiene is essential, as well as encouraging breastfeeding. Monitoring caregivers and visitors for any existing illnesses and providing health teaching about infection control measures is crucial. Limiting public outings during the first few weeks and recommending necessary vaccinations are essential steps in providing quality nursing care for newborns.

Exercise

1. The best way to maintain the newborn's temperature immediately after birth is to:
    a. Dry the newborn thoroughly, including the hair.
    b. Give the newborn a bath using warm water.
    c. Feed 1 to 2 ounces of warmed formula.
    d. Limit the length of time that parents hold the newborn.

2. The mother of a newly born infant reports to the nurse that her infant has had a black, tarry stool. The nurse would tell the mother that:
   a. This is most likely caused by blood the infant may have swallowed during the birth process.
   b. The health care provider will be promptly notified.
   c. The infant will be given nothing by mouth (remain NPO) until a stool culture is taken.
   d. This is a normal stool in newborn infants.
3. Infections in the newborn require prompt intervention because:
   a. They spread more quickly.
   b. Infections that are relatively harmless to an adult can be fatal to the newborn.
   c. The portals of entry and exit are more numerous.
   d. The newborn has few defenses against infection.
4. The mother states that her newborn has white pinpoint “pimples” on his nose and chin, and she plans to squeeze them to make them disappear. The best response of the nurse would be:
   a. “Be sure to wipe the area with an alcohol sponge to avoid infection.”
   b. “Ask your health care provider to prescribe an antibiotic ointment for the pimples.”
   c. “These pimples are called ‘Epstein’s pearls’ and are a normal occurrence.”
   d. “These pimples are called ‘milia’ and will disappear on their own in a week or two.”
5. Which observation of the newborn should be reported to the health care provider as soon as possible?
   a. A swelling beneath the scalp on one side of the head
   b. A respiratory rate of 60 breaths/min
   c. A unilateral Moro reflex
   d. Cyanosis of the hands and feet

6. The nurse documents the following observations on a newly born infant. Which of the following should be immediately reported to the health care provider? a. unilateral Moro reflex b. small, blood-tinged mucous discharge from the vagina c. drooling d. acrocyanosis
   a. a and c
   b. b and d
   c. a and b
   d. b and c

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CHAPTER 6.

CONCEPT OF NURSING CARE FOR POSTPARTUM MOTHERS

INTRODUCTION

Maternal mortality can occur during the postpartum period because in the postpartum period, there are both physiological and psychological changes that require adaptation to changes including the presence of a new family. If there is a failure in the adaptation process, postpartum complications can occur.

The nursing process approach you learned in year I is applied in studying nursing care in postpartum mothers through sequential steps from assessment, nursing diagnosis, intervention, implementation and evaluation.

This section describes the definition of post-partum, physiological and psychological changes experienced in normal and operative labor, as well as from each change there are steps of the nursing process. After reading the material, you are certainly very good at determining the next step of the nursing process.

KEY WORDS

Postpartum Physiological Adaptation
Postpartum Psychological Adaptation
Uterine Fundus Height (UFH**)**
REEDA (Redness, Edema, Ecchymosis, Discharge, Approximation*)*
Sub Involution
Transition to Parenthood
Bonding and Attachment

Maternal Phase
Post-Partum Blues
PPH (Post-Partum Haemorrhage)

LEARNING OBJECTIVES

General Learning Objectives:

After studying this topic, students have an understanding of nursing care for normal postpartum and complications.

Specific Learning Objectives:

After studying this topic, students are able to:

- Explain nursing care for normal postpartum mothers
- Explain nursing care for postpartum mothers with complications

A. POST-PARTUM OR PUERPERIUM

Post-partum or puerperium is the period after the placenta is born and ends when the gynaecological organs return to their pre-pregnancy state. The puerperium begins 1 hour after the birth of the placenta until 6 weeks (42 days) after that. There are 3 stages of the puerperium period, namely: early puerperium, intermedial puerperium and remote puerperium.

Early puerperium is a period of early recovery where the mother is allowed to stand and walk around. Women who deliver vaginally without complications within the first 6 hours after delivery are encouraged to mobilize immediately.

The intermedial puerperium is a recovery period where the reproductive organs will gradually return to their pre-pregnancy state. This period lasts for approximately six weeks or 42 days.

Remote puerperium, the time needed to recover and be healthy again in perfect condition, especially if the mother during pregnancy or childbirth experiences complications. The time span of remote puerperium is different for each mother, depending on the severity of the complications experienced during pregnancy or childbirth.

B. POST-PARTUM PHYSIOLOGICAL CHANGES

Mothers in the postpartum period experience physiological changes. After placental discharge, circulating levels of the hormones HCG (human chorionic gonadotropin), human placental lactogen, estrogen and progesterone decrease. Human placental lactogen will disappear from the mother's blood circulation within 2 days and HCG within 2 weeks after delivery.

Estrogen and progesterone levels are similar to those found in the follicular phase of the menstrual cycle at around 3 and 7 days, respectively.

Physiological changes that occur in postpartum women are:

1. Reproductive System

The reproductive system including the uterine, cervix, vagina and perineum undergoes changes during the 6 weeks after delivery.

a. Uterine

After childbirth, involution occurs, where the uterine returns to its pre-pregnancy size due to uterine contractions and uterine muscle atrophy. Multiparous and breastfeeding mothers may experience *"*afterpain*"* for several days postpartum. Afterpain is pain associated with uterine contractions and increased oxytocin for milk ejection, uterine contractions during postpartum to reduce the risk of bleeding.

The involution process is as follows:

1) The baby was born uterine fundus at center height with a uterine weight of 1000 g.
2) At the end of the third stage of labor, the uterine fundus was palpated 2 fingers below the center with a uterine weight of 750 grams.
3) One week postpartum uterine fundus height palpable mid-center with symphysis, uterine weight 500 gr.
4) Two weeks postpartum, the uterine fundus was not palpable above the symphysis with a uterine weight of 350 grams.
5) Six weeks postpartum uterine fundus increased in size with a uterine weight of 50 gr

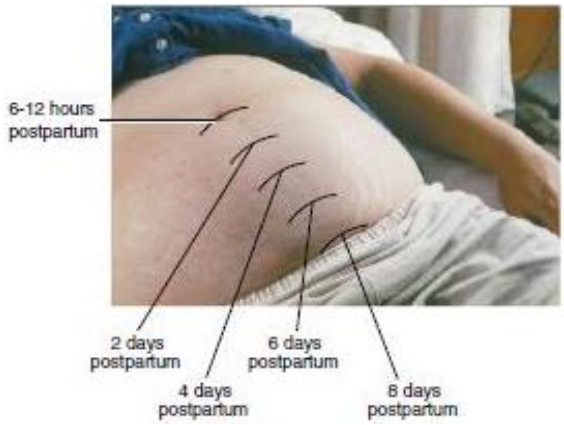

Image 1. Fundus location *6-12* hours postpartum; 2,4,6,8 days postpartum.

Uterine examination includes noting the location, size and consistency among others:

1) Determination of uterine location
   Performed by noting whether the fundus is above or below the umbilicus and whether the fundus is in the midline of the abdomen/shifted to one side.
2) Determination of uterine size
   It is done through palpation and measuring the UFH at the apex of the fundus by the number of finger widths from the upper or lower umbilicus.
3) Determination of uterine consistency
   There are 2 characteristics of uterine consistency, namely hard uterine palpable as hard as stone and soft uterine.

b. Cervix

Immediately after labor, the cervix will gape like a funnel. This is due to the corpus uteri contracting while the cervix does not. The color of the cervix turns blackish red because it contains many blood vessels with a soft consistency.

Immediately after the fetus is delivered, the cervix can still be passed by the examining hand. After 2 hours of labor the cervix can only be passed by 2-3 fingers and after 1 week of

labor can only be passed by 1 finger, after 6 weeks of labor the cervix closes.

c. Vagina

During labor the vagina undergoes enormous pressure and stretching, especially during the delivery of the baby. The first few days after the process, the vagina remains in a loose state. After 3 weeks the vagina returns to its non-pregnant state and the rugae in the vagina will gradually reappear.

The vagina also functions as a channel through which secretions from the cavum uteri are released during the puerperium, called lochea. The following describes the stages of lochea changes and its characteristics.

Table 1. Stages and Characteristics of Lochea

Stage	Time	Expected findings	Deviation from normal
Lochea Rubra	Day 1-3	➢ Blood with small clots. ➢ Increased number of lohia when standing and breastfeeding. ➢ Fishy odor	➢ Blood with large clots ➢ Within 15 minutes the pad is full (sign of bleeding) ➢ Foul odor (sign of infection) ➢ Placenta fragments
Serous Lochea	Day 4-10	➢ Pink or brown color. ➢ A small amount. ➢ Fishy odor.	➢ Continuation of the rubra stage after day 4. ➢ Within 15 minutes the pad is full (sign of bleeding). ➢ Foul odor (sign of infection).
Lochea Alba	Day 10	➢ Yellow to white. ➢ A small amount. ➢ Fishy odor	➢ Bright red blood (a sign of postpartum hemorrhage). ➢ Foul odor (sign of infection).

Lochea should be assessed when checking the Uterine Fundus Height. When the client uses a sanitary napkin, see

the amount of lochea that comes out. Here is an illustration of the amount of lochea on the sanitary napkin.

Image 2. Very little: blood stain measuring 2.*5-5* cm = 10 ml.

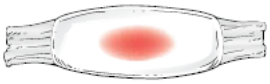

Image 3. Small: blood stains ≤ 10 cm in size = *10-25* ml.

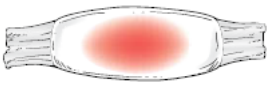

Image 4. Medium: blood stain < 15 cm = *25-25* ml.

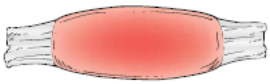

Image 5. Many: Full pad = *50-80* ml.

d. Perineum

The perineum undergoes changes associated with the birthing process, ranging from minor injuries due to stretching to episiotomy. The mother will experience mild to severe pain depending on the extent and type of vaginal and/or perineal trauma.

The main complication is infection of the wound or episiotomy wound. Healing and recovery during the postpartum period.

The perineum that needs to be assessed is redness, edema, ecchymosis, discharge, approximation and is abbreviated as REEDA.

e. Breast

Day 3 postpartum all breastfeeding and non-breastfeeding mothers experience breast engorgement, the breasts become larger, firmer, warmer, softer, and painful. Colostrum, a yellowish fluid that precedes breast milk production, is higher in protein and lower in carbohydrates and contains immunoglobulins G and A which provide protection for the newborn during the first few weeks of life.

2. Respiratory System

The return of the chest position after delivery of the baby due to decreased pressure on the diaphragm. The respiratory system returns to its pre-pregnancy state by the end of the puerperium.

3. Cardiovascular System

Heart rate, volume and cardiac output increase immediately after delivery due to the cessation of blood flow to the placenta resulting in increased cardiac load which can be overcome by haemoconcentration until blood volume returns to normal, and blood vessels return to their original size.

Vaginal childbirth loses an average of 400 to 500 ml of blood. This has minimal effect because there is hypervolemia during pregnancy.

White blood cells will increase to 25000/ml within hours after delivery and return to normal within 7 days. Laboring mothers are at risk of thrombosis related to the increase in circulating clotting factors during pregnancy. Clotting factors gradually decrease after the placenta is delivered and return to normal ranges 2 weeks postpartum.

4. Digestive System

Childbirth by surgery takes about 1-3 days for the gastrointestinal function and appetite to return to normal. Spontaneous labor is hungrier because it has expended so much energy during the birthing process.

Defecation usually changes within 1-3 days postpartum, due to decreased muscle tone during labor. In addition, prenatal enemas, lack of nutrition and dehydration, as well as the mother's expectation of pain around the anus/perineum every time she defecates also affect spontaneous defecation. Regular defecation habits need to be re-trained after muscle tone returns to normal.

5. Urinary System

Urination is often difficult during the first 24 hours. There may be sphincter spasms and edema of the bulbous neck after it is compressed between the fetal head and pubic bone during labor. Large amounts of urine will be produced within 12 to 36 hours after delivery. After the placenta is delivered, levels of the water-retaining hormone estrogen decrease. This causes diuresis. The dilated uterine will return to normal within 6 weeks.

6. Integumentary System

Skin changes during pregnancy in the form of hyperpigmentation on the face, neck, mammary glands, abdominal wall and some folds themselves due to the influence of hormones will disappear during the postpartum period.

7. Musculoskeletal System

Ambulation is generally started 4-8 hours postpartum. Early ambulation is helpful to prevent complications and speed up the involution process.

8. Endocrine System

After the placenta is delivered there are changes in the endocrine system. Estrogen, progesterone and prolactin decrease. Estrogen begins to increase after the first week after delivery. Non-breastfeeding mothers proclactin levels continue to decline in the first 3 weeks postpartum, menstruation begins 6 to 10 weeks after delivery.

The first menstruation is usually anovulatory and ovulation usually occurs in the fourth cycle. For breastfeeding mothers, prolactin levels increase for milk production. Lactation suppresses

menstruation, the return of menstruation depends on the duration and amount of breastfeeding. Ovulation will return in a longer time than mothers who do not breastfeed.

Diaphoresis occurs in the first week postpartum as estrogen levels decrease. Profuse sweating at night, to flush out fluids in the body due to increased fluid accumulated during pregnancy.

9. Immune System

Postpartum women generally experience an increase in body temperature during the first 24 hours after delivery. This is related to the mother using a lot of energy when delivering the baby and then experiencing fatigue, dehydration and hormonal changes. If the temperature is more than 38°C after the first 24 hours of delivery, there may be an indication of postpartum infection and requires further assessment.

C. POST-PARTUM PSYCHOLOGICAL CHANGES

In primiparas, becoming a parent is an experience in itself and can cause stress if not handled immediately. The change in role from an ordinary woman to a mother requires adaptation so that the mother can perform her role well. Hormonal changes that are very rapid after childbirth also affect the emotional state and adaptation process of mothers in the postpartum period. The phases that will be experienced by mothers in the postpartum period are as follows.

Table 2. Maternal Phases

This Taking Phase	Taking Hold Phase	Letting Go Phase
Period dependent behavior, occurs during 24-48 first hour after birth and **maternal behavior**	Period transition from dependent to independent behavior, last until	Time from independent to role New. **Characteristics of the mother** during this phase is:

This Taking Phase	Taking Hold Phase	Letting Go Phase
as follows: ➢ The mother focuses on her personal, physical comfort and change. ➢ The mother recounts the birth experience. ➢ Mothers adjust to psychological changes. ➢ The mother is dependent on others for her and her baby's needs. ➢ Mothers have a decreased ability to make decisions. ➢ Mother concentrates on the person for physical healing	weeks and **mother's behavior** as The following: ➢ The focus moves from self to baby. ➢ Mom started to become independent. ➢ Mothers have an increased ability to make decisions. ➢ The mother is interested in the newborn and can meet the needs. ➢ Mom started to take on the role of a mother. ➢ This is an excellent time to provide health education about postpartum. ➢ Mom started to like the role of "Mom." ➢ Mothers may have feelings of being overworked and overwhelmed. ➢ The mother needs verbal assurance of meeting the newborn. ➢ The mother may show signs and symptoms of baby blues and fatigue. ➢ Mom starts to see the outside world	➢ Grieving and letting go of old behaviors switch to new, supportive behaviors. ➢ Incorporating the newborn into her own life where the baby becomes inseparable from her. ➢ Receive the newborn with care. ➢ Fantasize if you will/can have a new role. ➢ Independence again; perhaps going back to work or school. ➢ May have feelings of grief, guilt, or anxiety. ➢ Return to harmony in your relationship with your partner.

The transition to parenthood is a dynamic process. It is influenced by the following factors:

1. Previous life experience. Previous experience with caring for babies and children can create a harmonious transition for parents.
2. Strength of the relationship between partners. A strong relationship between partners can foster the transition to parenthood.
3. Financial Considerations. Financial issues can hinder the transition to parenthood.
4. Education level. A decreased ability to read and understand information on infant care may prevent couples from gaining knowledge on infant care.
5. Support system. Lack of positive support in maternal and infant care can hinder the transition to parenthood.
6. Desire to become a parent. Lack of desire to become a parent can hinder the transition to parenthood.
7. Age of parents. Teenage parents may find the transition to parenthood more difficult.

The process of becoming a mother begins during pregnancy, but is common before pregnancy. Some women start preparing for this role when they fantasize about motherhood and role-play motherhood with dolls and friends. The process of "becoming a mother" is influenced by: How the mother experiences mothering, her life experiences, her unique characteristics, pregnancy experiences, childbirth experiences, support from partner, family, and friends, the woman's desire to assume the role of mother and the baby's characteristics such as appearance and temperament.

Table 3. Clinical Pathway for Transition to Parenthood

Care Focus	Postpartum Hospital Admission	Postpartum 4-24 hours	Postpartum 24-48 hours	Desired result
Emotional status	Taking-in phase	Towards the phase taking-hold	➢ Taking- Hold phase. ➢ Mothers are able to take care of themselves and show	➢ Mothers can perform self-care. ➢ Mothers showed increased confidence in

Care Focus	Postpartum Hospital Admission	Postpartum 4-24 hours	Postpartum 24-48 hours	Desired result
			independence in baby care.	caring for the baby.
Action nursing	➢ Provide Care and comfort to the mother. ➢ Provide positive reinforcement for appropriate behavior. ➢ Discussion of baby's ability. ➢ Allow the mother consistent contact with the baby to build attachment.	➢ Encourage women and their families to participate in self-care and infant care. ➢ Encourage frequent contact with the baby. ➢ Observe the mother's behavior and attachment to her baby. ➢ Start providing health education after delivery.	➢ Observe Mother's bonding and behavior. ➢ Record signs of maladaptive behavior. ➢ Provide written/visual information on infant behavior and characteristics. ➢ Teach methods to comfort the baby	➢ Positive engagement and behavior. ➢ Parents show understanding to the baby's behavior. ➢ Parents show understanding in handling the baby. ➢ Provide information resources if patients need them
Dynamics family	Parents show there starts to be a bond behavior and introduced baby to family.	➢ Parents show positive bonding and behavior. ➢ Families show positive support for the newborn.	➢ Parents continuously demonstrate bonding and attachment behaviors. ➢ Families show positive behavior towards the newborn and parents.	Parents show behavior adaptation that Positive.

Bonding and Attachment Behaviors

Bonding and Attachment are influenced by timing, the closeness of parent and baby, whether the pregnancy was planned/wanted and the parents' ability to process through the developmental tasks required of parents.

Other factors that influence attachment bonding and behavior are: knowledge base of the partner, past experiences with children, maturity and educational level of the partner, extended support, mother/father expectations from this pregnancy, mother/father expectations from the baby and cultural expectations.

Risk Factors for Delayed Bonding and/or Attachment:

1) Maternal illness during pregnancy and/or the postpartum period may interfere with the mother's ability to interact with the baby.
2) Neonatal illnesses such as prematurity that necessitates separation of baby and parents.
3) Prolonged or complicated labor and birth leading to exhaustion for both the woman and her partner.
4) Fatigue during the postpartum period is associated with lack of rest and sleep.
5) Physical discomfort experienced by the mother after childbirth.
6) Mothers are in a developmental age such as adolescence.
7) Stress unrelated to pregnancy or childbirth (e.g., concerns with finances, poor social support systems, or needing to return to work soon after giving birth.

Types of Psychological Disorders in Postpartum Mothers

Did you know that postpartum mothers can also experience psychological disorders when their social support is not optimal? Here are the types of psychological disorders of postpartum mothers that are often experienced by couples, especially women after giving birth.

1. Postpartum blues (Baby blues)

Postpartum blues is a feeling of sadness experienced by a mother in relation to her baby. It usually occurs about 2 days to 2 weeks after the birth of the baby. This situation is caused by changes in feelings experienced by the mother during pregnancy so that it is difficult to accept the presence of her baby. Mothers who experience baby blues will experience emotional changes, crying, anxiety, loneliness, excessive worry about the baby, decreased sexual desire, and lack of confidence in their ability to become a mother. If this happens, mothers are advised to do the following:

a. Ask your husband or family to help with baby care or chores around the house stairs so that mom can get enough rest to relieve fatigue.

b. Communicate with your husband or family about what you are feeling, ask them to help you support and help.
c. Discard excessive anxiety and worry about your ability to care for your baby.
d. Seek entertainment and take time to rest and please yourself, for example by watching, reading, or listening to music.

2. Postpartum depression

Primiparous mothers are more at risk of experiencing postpartum sadness or depression because they have no experience in caring for and breastfeeding their babies. Sadness or depression that occurs at the beginning of the postpartum period is common and will disappear on its own within two weeks after childbirth after the mother goes through the adaptation process. There are times when mothers feel sad because their freedom, autonomy, social interaction, and independence are reduced after having a baby. This can lead to postpartum depression.

Mothers who experience postpartum depression will show the following signs: difficulty sleeping, no appetite, feelings of helplessness or loss of control, over-anxiety or no attention to the baby, dislike or fear of touching the baby, frightening thoughts about the baby, little or no attention to the baby's appearance, little or no attention to personal appearance, physical symptoms such as difficulty breathing or palpitations. If the mother experiences some of the above signs, counseling should be done immediately with the mother and family.

D. NORMAL POSTPARTUM NURSING CARE

After you understand the concept of physical and psychological changes in postpartum women, then you can integrate these concepts in understanding nursing care in postpartum women both through normal and operative labor. The following is briefly discussed starting from assessment, nursing diagnosis, intervention, implementation and evaluation. You can develop through various references independently.

1. Assessment

a. Identity

Patient biodata consists of name, age, religion, education, ethnicity/nation, occupation and address

b. Health History

Health history consists of the place of pregnancy examination, frequency, immunization, complaints during pregnancy, health education obtained.

c. Labor History

Delivery history consists of place of delivery, birth attendant, course of delivery.

d. Physical Examination

1) Vital Sign

Vital signs that need to be checked are: temperature, pulse, respiration, and blood pressure. Body temperature is measured every 4 to 8 hours for several days postpartum as fever is is usually an early symptom of infection. A body temperature of 38ºC may be caused by dehydration in the first 24 hours after delivery or due to the onset of lactation within 2 to 4 days. Persistent or recurrent fever beyond the first 24 hours may indicate infection.

Bradycardia is a normal physiologic change during 6 to 10 days postpartum with a pulse frequency of 40 to 70 beats/min. Frequencies above 100 beats/min may indicate infection, hemorrhage, pain, or anxiety; a rapid and shallow pulse associated with hypotension may indicate hemorrhage, shock, or embolism.

Blood pressure is generally within normal limits during pregnancy. Postpartum women may experience orthostatic hypotension due to dieresis and diaphoresis, which causes a shift in cardiovascular fluid volume, persistent or severe hypotension may be a sign of shock or embolism. Elevated blood pressure indicates pregnancy-induced hypertension, which may first appear in the postpartum period. Eclamptic

seizures have been reported up to more than 10 days postpartum.

2) Head and Face

   Inspection of cleanliness and hair loss (normally hair is clean, there are no lesions on the scalp and hair does not fall out), cloasma gravidarum, sclera (normally sclera is white), conjunctiva (normally conjunctiva is pink, if pale, it is anemic), dental and oral hygiene (normally mouth and teeth are clean, no odor, red lips), caries. Palpate palpebrae, eye and facial edema; palpate lymph node enlargement (normally no swelling), JVP, thyroid gland.

3) Chest

   Inspect the rhythm of breathing, listen to breath sounds and heart sounds, count the frequency. Breast: breast assessment in *postpartum* mothers includes inspection of size, shape, color, and symmetry and palpation of consistency and whether there is tenderness to determine lactation status. Normally the nipples are prominent, the areola is brownish in color, there is no tenderness, no scars, the breasts are symmetrical and there are no lumps or masses when palpated.

4) Abdomen

   Inspect for striae or not, presence of wounds/incisions, presence of linea or not. Uterine involution is measured by assessing the height and consistency of the uterine fundus, massaging and squeezing the fundus and the character and number of lochia 4 to 8 hours. UFH on the first day is at the level of the center, on the second day 1 finger below the center, on the third day 2 fingers below the center, on the fourth day 2 fingers above the symphysis, on the seventh day 1 finger above the symphysis, on the tenth day at the level of the symphysis. The consistency of the uterine fundus should be firm with a smooth round shape. A soft or loose fundus indicates atony or subinvolution. The bladder should be empty for accurate fundus

measurement, a full bladder displaces the uterine and increases the fundus height.

5) Vulva and Vagina

   Inspection of whether the vulva is clean or not, signs of infection. Lochea: the character and amount of lochea indirectly reflects the normal healing progress, the amount of lochea gradually decreases with characteristic color change indicating the decrease of blood component in lochea flow. The amount of lochea is very little blood stain reduced by 2.5-5 cm= 10 ml, while the blood stain is ≤ 10cm= 10.25 ml.

6) Perineum

   Assess the perineum and perineal area to identify normal or deviations from normal characteristics such as hematoma, bruising, edema, redness, and tenderness. If there are wound sutures, assess for integrity, hematoma, bleeding and signs of infection (redness, swelling and tenderness).

   The anal region is assessed for hemorrhoids and fissures. Women with spontaneous vaginal delivery without lacerations often have milder perineal pain. Haemorrhoids appear as protrusions of grapes at the anus and are the most frequent source of perineal pain. Haemorrhoids are caused by pressure of the pelvic floor muscles by the lowest part of the fetus during late pregnancy and labor due to straining during the expulsion phase.

7) Breasts and Limbs

   Breast assessment includes shape, size, color, and symmetry as well as palpation of consistency and detection of tenderness in preparation for breastfeeding. The first and second postpartum days will see a lot of colostrum secretion. Assessment of the limbs is intended to determine the presence or absence of thrombophlebitis. The breasts and legs are assessed every one hour up to 8

hours after delivery, then assessed every four hours up to 24 hours after delivery.

8) Elimination

Assessment of elimination includes assessment of bowel sounds, inspection and palpation of abdominal distension. Postpartum women are encouraged to micturate as soon as possible to avoid bladder distension. Elimination is assessed every 9 hours, also assess defecation every day

e. Psychosocial Assessment

This psychosocial assessment focuses on the interactions and adaptations of the mother, newborn and family. The nurse looks at the mother's emotional status and response to the birth experience, interactions with the newborn, breastfeeding the newborn, adjustment to new roles, new relationships within the family, and increased understanding of self-care.

2. Nursing Diagnosis

You have learned the assessment of postpartum women, then you can analyze and determine the nursing diagnosis. Here is a list of nursing diagnoses that can occur in postpartum women.

a. Postpartum Discomfort
b. Acute pain
c. Ineffective breastfeeding
d. Sleep pattern disorder
e. Knowledge deficit
f. Risk of infection associated with tissue trauma
g. Risk of fluid volume deficit associated with uterine atony
h. Risk of impaired urine elimination associated with decreased sensation
i. Risk of constipation associated with hormonal effects on smooth muscle

3. Intervention

You have learned to implement assessment, nursing diagnosis in postpartum mothers, then the next step you plan

nursing actions to overcome the problem or nursing diagnosis, of course through the priority scale of the problem. The following are interventions from some of the nursing diagnoses that have been presented. You can develop and find interventions independently through literature review.

Table 4. Nursing Interventions

No.	Nursing Diagnosis	Nursing Interventions
1.	Acute Pain	Observation: a) Identify the location, characteristics, duration, frequency, quality, intensity of pain b) Identify the pain scale Therapeutic: a) Provide non-pharmacologic techniques to reduce pain Education: a) Describe pain relief strategies b) Teach non-pharmacological techniques to reduce pain Collaboration: a) Collaborative administration of analgesics, if necessary
2.	Ineffective Breastfeeding	Observation: a) Readiness and ability to receive information b) Identify breastfeeding goals or desires Therapeutic: a) Provide health education materials and media b) Schedule health education as agreed c) Provide an opportunity to ask questions d) Support moms to boost their confidence in breastfeeding Education: a) Provide breastfeeding counseling b) Explain the benefits of breastfeeding for mom and baby c) Teach the 4 (four) correct breastfeeding positions and attachments d) Teach postpartum breast care
3.	Sleep Pattern Disorder	Observation: a) Identify activity and sleep patterns b) Identify sleep disruptors

No.	Nursing Diagnosis	Nursing Interventions
		Therapeutic: a) Set a regular sleep schedule b) Perform procedures to improve comfort Education: a) Encourage sticking to bedtime habits
4.	Risk of Infection	Observation: a) Monitor local and systemic signs and symptoms of infection Therapeutic: a) Wash hands before and after contact with the patient and the patient's environment Education: a) Describe the signs and symptoms of infection b) Teach how to wash your hands properly c) Teach how to check the condition of a wound or surgical wound Collaboration: a) Immunization collaboration, if necessary
5.	Knowledge Deficit	Observation: a) Identify readiness and ability to receive information Therapeutic: a) Provide health education materials and media b) Schedule health education as agreed c) Provide an opportunity to ask questions Education: a) Teach clean and healthy living behaviors b) Teach strategies that can be used to improve clean and healthy behaviors.

4. Implementation

Nursing implementation is the implementation of nursing plans by nurses and patients. Nursing implementation is the management and realization of the nursing plan that has been prepared at the planning stage.

5. Evaluation

Nursing evaluation is assessing the patient's response after nursing interventions and reviewing the nursing care that has been

provided. Nursing evaluation is a continuous activity to determine whether the nursing plan is effective and how the nursing plan is continued, revise the plan or stop the nursing plan.

E. POSTPARTUM NURSING CARE WITH COMPLICATIONS

You have understood the changes that occur in physiological postpartum women. Most women do not experience complications during puerperium, but when complications occur, they can be life-threatening and require the family to seek help. The focus of postpartum nursing care is to reduce the risk of complications and recognize complications as early as possible so that they can get help as soon as possible. The following describes post-partum cases that often occur in the community.

1. Bleeding

Postpartum hemorrhage (PPH) is classified into primary and secondary hem*orrhage*. Primary PPH occurs within 24 hours postpartum and secondary PPH 24 hours after postpartum. Primary PPH is defined as blood loss of more than 500 ml in the first 24 hours. Causes of primary PPH are uterine atony, laceration and hematoma. Causes of secondary PPH are hematoma, subinvolution and placental remnants.

Nursing Assessment and Action

a. To reduce the risk, we can look at prenatal and intranatal history documents (anemia, prolonged labor, episiotomy).
b. Assess for early signs of complications, and intervene as soon as possible.
c. Maintain hand hygiene for patients, staff, and visitors.
d. Promote health about proper diet, fluids and activity.
e. Provide emotional support from parents and family.

2. Uterine Atony

Uterine atony is decreased uterine contractions and the main cause of primary postpartum hemorrhage. Uterine contractions constrict the blood vessels of the placenta which helps in reducing the amount of bleeding.

Assessment:

a. Flaccid uterine fundus.
b. The pad was full of blood within 15 minutes.
c. Slow and steady bleeding suddenly large, blood clots present.
d. Pale conjunctiva and cold skin.
e. Anxiety and confusion.
f. Tachycardia and hypotension

Medical management

a. Medications to stimulate uterine contractions.
b. Infusion to reduce the risk of hypovalemic shock.
c. Blood substitutes/blood transfusions to reduce the risk of hemorrhagic shock.
d. Hysterectomy surgery may be indicated, when all treatments have failed.

Nursing actions

a. View prenatal and intranatal history documents for risk of uterine atony.
b. Assess the uterine, make sure the bladder is empty, if difficult, place a catheter.
c. Assess the amount and characteristics of the lochea, if there are blood clots interfering with contractions.

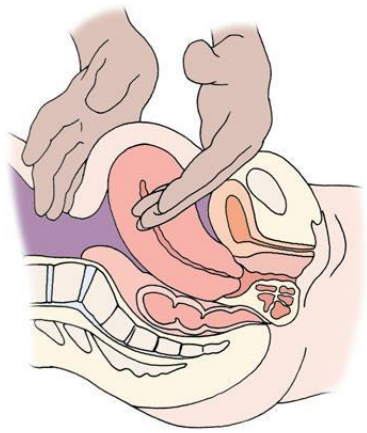

Image 6. Fundus Massage

3. Lacerations

Laceration is the second most common cause of primary PPH, which can occur during labor. The most common areas of laceration are the cervix, vagina, labia and perineum. Lacerations can be caused by labor with forceps or vacuum extraction.

Assessment found:

a. The uterine is above the midline.
b. Bleeding with clots.
c. Tachycardia.
d. Hypotension.

Medical management

a. Examination of the cervix, vagina, perineum and labia.
b. Suture the laceration.
c. Medications to reduce pain.

Nursing actions

a. See note on cause of laceration.
b. Observation of vital signs.
c. Observe the amount of bleeding.
d. Report to your doctor if bleeding increases.
e. Prepare pain medications according to the rules.
f. Provide emotional support to the mother and her family.

4. Hematoma

A hematoma occurs when blood collects within the connective tissues of the vagina or perineal region, as a blood vessel bursts and continues to bleed. It is difficult to determine the amount of blood loss, as blood is retained in the tissues. Therefore, PPH cannot be diagnosed until the puerpera goes into hypovolemic shock. Contributing factors to hematoma are labor with episiotomy, forceps and prolonged labor.

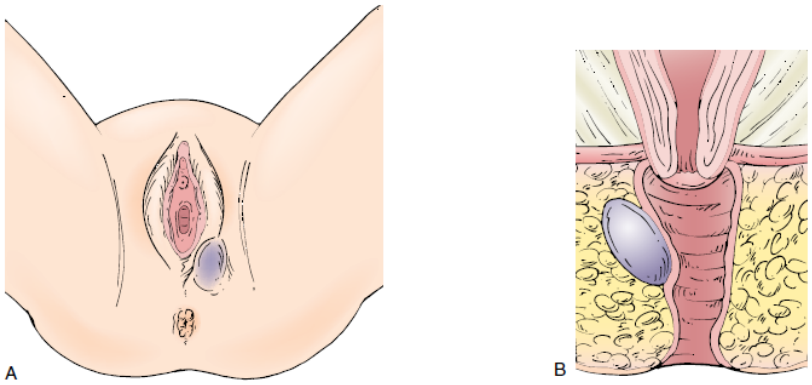

Image 7. Vulvar hematoma (A), and vaginal wall hematoma (B)

Assessment found:

a. Severe pain in the vagina and perineum.
b. Tachycardia and hypotension.
c. Hematomas located inside the vagina are not visible from the outside.
d. Hematoma in the perineal region appears swollen, discolored and tender.
e. Hematomas with blood accumulation of 200 to 500 ml are quite large.

Medical management:

a. Small hematomas are observed and no surgery is performed.
b. Large hematomas are dissected and blood is removed.
c. Medications to reduce pain.

Nursing action:

a. Observation of hematoma risk.
b. Ice packs on the perineum in the first 24 hours to reduce the risk of hematoma.
c. Assess the degree of pain with a pain scale (1-10).
d. Observation of vital signs.
e. Prepare analgesia medications to reduce pain.
f. Report any irregularities to your doctor.

5. Subinvolution

Uterine subinvolution is the term used when the uterine does not decrease in size, this occurs in the late postpartum period, before the diagnosis of subinvolution, the state of the uterine and lochia in a state of normal involution. Risk factors: fibroids, endometritis and residual placental tissue.

Assessment found:

a. The uterine is soft and larger than normal after delivery.
b. Lochia returned to the rubra stage.
c. Presence of pain.

Medical management

a. Medical intervention depends on the cause of subinvolution.
b. Curettage to remove the remaining placenta.
c. Treatment to prevent bleeding and infection.

Nursing actions

a. Refer to prenatal documentation and risk factors.
b. Observation of predisposed mothers may result in subinvolutions.
c. Provide information on actions to be taken if bleeding.
d. Provide health education on uterine involution and increased lochia.
e. Provide health education on how to reduce the risk of infection such as: frequent dressing changes, hand washing, adequate nutrition and fluid intake and adequate rest.

6. Residual Placental Tissue

Residual placental tissue is the most common cause of secondary bleeding. This can occur when a small portion of placental remnants such as cotyledons remain attached to the uterine during the third stage of labor. If not removed, the remnant placenta will interfere with uterine involution and may cause endometritis. This can be caused by manual removal of the placenta.

Assessment found:

a. Severe bleeding suddenly occurs after the first week postpartum.
b. Uterine subinvolution, pale skin, tachycardia and hypotension.
c. Increased body temperature and uterine pain if endometritis has occurred.

Medical Management

a. Curettage to remove the remaining placenta.
b. Administration of medication to prevent infection.

Nursing Actions

a. See risk factor notes.
b. Observation if the mother is likely to be at risk.
c. See laboratory results (indicative of blood loss).
d. Health education for mobilization to allow the remaining placenta to exit.
e. Advise the mother to report any increase in lochia, bright red bleeding, high temperature or flaccid uterine contractions.

Nursing actions after PPH

a. Assess the fundus and lochia every hour for the first four hours after bleeding.
b. Teach how to evaluate the fundus and how to perform fundus massage and signs of PPH.
c. Encourage heavy drinking or IV to reduce the risk of hypovolemia.
d. Encourage not to hold urine, so that the bladder is empty to reduce the risk of bleeding.
e. Assist ambulation as there is increased orthostatic hypotension associated with blood loss.
f. Explain the importance of rest to reduce the risk of fatigue associated with blood loss.
g. Provide opportunities for clients to share their PPH experiences, to reduce stress.
h. Providing information on iron-containing foods to reduce the risk of anemia

7. Blood Clotting

Thrombosis is a blood clot in a blood vessel. During pregnancy and the first 6 weeks after delivery, the mother is at risk of developing blood clots. This is related to the physiological changes that occur during pregnancy. During pregnancy, there is an increase in clotting factors I, II, VII, IX, X and XII along with an increase in fibrinogen. The components of blood coagulation remain elevated during the postpartum period. Thrombosis during pregnancy and/or after delivery, usually occurs in the veins of the legs and is referred to as *deep vein thrombosis*. It is important to note that the clot will dislodge as an embolism and enter important organs such as the lungs.

Risk factors:

a. Normal physiologic changes in coagulation associated with pregnancy.
b. Giving birth via cesarean section has five times the risk of vaginal birth.
c. Endometritis that can spread to the vascular system causes thrombophlebitis.
d. Decreased mobility which increases the risk of static venous.
e. Obesity results in extra pressure on the pelvic vessels resulting in static venous.
f. Increased parity.

Assessment found:

a. Homans' sign is positive.
b. Tenderness and heat in the affected area.
c. Legs hurt when walking.
d. Swelling of the affected leg.

Medical Management

a. Doppler ultrasonography to diagnose.
b. Compression stockings to reduce venous static and deep vein thrombosis.
c. IV heparin therapy prevents clotting.
d. Antibiotic therapy if the thrombosis is related to infection.

e. Rest with the affected leg elevated.

Nursing Actions

a. Focus on reducing the risk of thrombosis formation and embolism risk.
b. Refer to prenatal documentation and risk factors.
c. Monitor mothers at risk of thrombosis.
d. Recommend using stockings for compression.
e. Assisting ambulation, early ambulation improves circulation and reduces the risk of static veins.
f. Prepare analgesia drugs for pain and anticoagulants.
g. Evaluate for signs of possible thrombosis and record

8. Infection

a. Endometritis

Endometritis is the most common postpartum infection; it is an infection of the endometrium that usually starts at the placenta and spreads throughout the endometrium. Approximately 2% of mothers who deliver vaginally and 15% who deliver by cesarean section experience endometritis.

Risk factors:

Mothers who experience prolonged rupture of membranes, prolonged labor, childbirth by cesarean section, anemia, malnutrition, postpartum hemorrhage and diabetes.

Assessment found:

1) Temperature increase from 39.5 0C or higher with or without chills.
2) Tachycardia.
3) Pain in the uterine region.
4) Subinvolution.
5) Malaise.
6) Lower abdominal pain.
7) Lochia has a foul odor.

Medical Management:

1) Leukocytosis > 20,000/mm3.

2) Endometrial culture.
3) Blood culture.
4) Urinalysis.
5) Antibiotic therapy.

Nursing Action:

Refer to prenatal records and risk factors, monitor clients at risk of endometritis, prepare for laboratory tests, recommend drinking plenty (at least 3000 ml/day), recommend cleaning the perenium from front to back. Change sanitary napkins after urination or defecation, wash hands to reduce spread, early ambulation, recommend a diet high in protein and vitamin C, provide pain management measures, provide emotional support to the mother and her family, prepare antibiotics as ordered and report any irregularities.

b. Mastitis

Mastitis is an inflammation or infection of the breast of a breastfeeding mother. It usually occurs in one of the breasts and within the first 2 weeks postpartum after milk has been expressed. The infection will improve within 24 to 48 hours with antibiotic therapy, if treatment is delayed abscess formation may occur.

Risk factors**:** previous experience of mastitis in infants, sore and/or cracked nipples and use of anti-fungal nipple creams.

Assessment found:

1) The mass feels solid and flabby.
2) Redness in the area around the mass.
3) Acute pain in the affected breast.
4) Increased temperature.
5) Tachycardia.
6) Malaise.
7) Pus discharge.

Medical Management

Safe use of antibiotics for breastfeeding.

Nursing Actions

1) Examine the breasts and palpate for signs of mastitis.
2) Teach methods to prevent nipple irritation and damage, such as proper breastfeeding, cleaning the area around the breast and drying it after breastfeeding. properly, clean the area around the breast and dry it after breastfeeding.
3) Wash your hands before and after feeding your baby to reduce the spread of bacteria.
4) Use a supportive bra for comfort.
5) Preparing analgesia as ordered.
6) Teach the signs of mastitis, so that it can be identified early.
7) Advise the importance of a healthy breastfeeding mother's diet and adequate fluid intake to reduce the risk of infection.
8) Apply a warm compress to the affected area for comfort and to improve circulation.
9) Preparing antibiotics to order.
10) Record the findings of possible mastitis and inform the doctor. □□
11) Encourage continued breastfeeding or massage milk out of the affected breast

c. Wound Infection

Wound infection can occur in the areas of episiotomy, SC incision and laceration.

Risk factors**:**

Obesity, diabetes, prolonged parturition, malnutrition, premature rupture of membranes, pre-existing infection, immunodeficiency, corticosteroid therapy and poor suturing technique.

Assessment found:

1) Erythema.
2) Redness.
3) Heat.
4) Swelling.

5) Gentleness.
6) Pus discharge.
7) Mild fever.
8) Pain increases at the wound.

Medical Management:

Take specimens from wounds or abrasions, for mild to moderate wound infections with no pus, oral antibiotic therapy, warm compress, wound infection with pus and wound opened and dried.

Nursing Actions

1) View prenatal records and risk factors.
2) Observe the wound condition.
3) Wash hands before and after contact with the wound.
4) Health education on proper diet and fluid intake to reduce the risk of infection and help speed up the healing process.
5) Preparing laboratory specimens as ordered.
6) Prepare antibiotics and analgesia for fever as ordered.

Summary

Postpartum is the period of 6 weeks after delivery, with involution and afterpain associated with uterine contractions and increased oxytocin for milk production. Non-breastfeeding mother's prolactin levels continue to decline in the first 3 weeks postpartum, menstruation begins 6 to 10 weeks after delivery. Ovulation will return in a longer time than non-breastfeeding mothers. Diaphoresis occurs in the first week of postpartum due to decreased estrogen levels. There is a decrease in gastrointestinal muscle tone and intestinal motility after childbirth and function will return to normal two weeks after delivery. Assessment of uterine fundus height and uterine consistency and changes in lochia provide information about uterine involution.

Psychological changes in postpartum mothers, focusing on psychological, emotional, and developmental changes that occur during the transition to parenthood, including: transition to

parenthood, parental roles, bonding and attachment behavior, post-partum blues (baby blues).

Cultural components and previous parenting experiences should be identified and incorporated into the nursing care plan. The taking in phase, when the mother is still dependent can occur during the first 24-48 hours after birth, the taking hold phase, the transition from dependent to independent can last for weeks and the letting go phase, the transition from independent to a new role. Discomfort in the perineal area due to episiotomy, laceration, edema and in the breast due to nipple wounds, swelling, afterpain, incisional pain, hemorrhoids, back pain and fatigue can be one of the problems in the change to parenthood.

Nursing care for postpartum women is to reduce the risk of complications and find out as early as possible complications so that they can get help as soon as possible. Postpartum hemorrhage (PPH) is classified into primary and secondary bleeding. Primary PPH occurs within 24 hours postpartum and secondary PPH 24 hours after postpartum. Primary PPH is defined as blood loss of more than 500 ml in the first 24 hours. Causes of primary PPH are uterine atony, laceration and hematoma**.** The causes of secondary PPH are hematoma, subinvolution and placental remnants. Uterine atony decreased uterine contraction is the main cause of primary postpartum hemorrhage. Uterine subinvolution is the term used when the uterine does not decrease in size, this occurs in the late postpartum period.

Most infections that occur during puerperium are easily treated if detected early. Commonly affected areas are the uterine, bladder, breasts and incisional areas such as episiotomy wounds.

Test/Exercise

Answer the questions below by choosing one of the most appropriate answers.

1. A 28-year-old mother P2A0 1 week after delivery, the estimated uterine fundus height is:
   a. As high as the center

b. 2 fingers below center
c. mid-center and symphysis
d. 3 fingers below center
e. not palpable

2. A 30-year-old mother P1A0, 1 hour after giving birth, uterine contractions are not good, the nursing actions that the nurse will take are:
   a. perform massage on the uterine
   b. encouraging postpartum women to walk
   c. teaching deep breathing
   d. guiding the mother to the left side
   e. early mobilization
3. A 32-year-old mother P3A0, 2 hours after giving birth complains of pain because there are uterine contractions, the nursing actions you will provide are:
   a. guiding relaxation techniques
   b. encourage regular micturition
   c. administer analgesics
   d. recommend using a warm blanket
   e. assess the pain level
4. A 25-year-old mother is under observation within 24 hours after delivery, to prevent bleeding, what you can inform the mother so that she can take immediate action is:
   a. assess uterine contractions
   b. observe for signs of bleeding
   c. count the amount of blood in the pad
   d. changing pads regularly
   e. feeling a heavy discharge of blood
5. The amount of blood loss in ml after delivery for a bleeding mother is:
   a. 100 ml
   b. 200 ml
   c. 600 ml
   d. 300 ml
   e. 400 ml

6. At the stage of psychological changes in postpartum women, the right time to provide health promotion to be well received is when:
   a. Taking in
   b. Taking hold
   c. Letting go
   d. 2 hours after delivery
   e. mom wants to go home
7. In order for the mother to adapt to the changes that occur, what you can recommend for the mother is:
   a. taking care of herself and her baby
   b. eat and drink a lot
   c. spend time exercising
   d. unscheduled recreation
   e. take the baby for a walk frequently
8. To find out the psychological changes that the mother is experiencing and will experience in the 24 hours after giving birth, you can conduct an assessment:
   a. birth experience
   b. self-concept
   c. parent-infant interaction
   d. adaptive behavior
   e. maladaptive behavior
9. In order for a postpartum mother to be independent in caring for her baby, the action you will provide is:
   a. monitoring physiological adaptation
   b. monitoring psychological adaptation
   c. improve the relationship between parents and their babies
   d. provide health education to care for the baby
   e. taking care of himself
10. A 38-year-old mother in the hospital after giving birth to her 4th child vaginally had post-partum bleeding with signs of poor uterine contractions, the cause of post-partum bleeding in the mother was:
   a. cervical tear

b. atony uteri
c. vaginal laceration
d. perineal tear
e. episiotomy wound

11. A 33-year-old mother in the hospital gave birth to her third child but the placenta had not been delivered for almost half an hour, the cause of postpartum hemorrhage in this mother was:
    a. episiotomy wound
    b. atony uteri
    c. vaginal laceration
    d. placental retention
    e. perineal tear
12. A puerperal mother is bleeding after giving birth. The type of bleeding is:
    a. Heavy bleeding
    b. Delayed bleeding
    c. Secondary hemorrhage
    d. Primary hemorrhage
    e. Massive bleeding
13. A 37-year-old mother in the hospital after two days of giving birth has an infection due to lack of red blood cells and nutrients so that white blood cells are lacking to inhibit the entry of bacteria, which causes infection in the mother is:
    a. premature rupture of membranes
    b. trauma
    c. anemia
    d. bacterial contamination
    e. blood loss
14. A 25-year-old mother, P2A0, 4 hours postpartum in the hospital, complained of pain when used to tilt. The most appropriate nursing diagnosis in this case is:
    a. Risk of Infection
    b. Postpartum Discomfort
    c. Knowledge Deficit

d. Ineffective breastfeeding
e. Impaired mobilization

15. A mother post-partum day 3, the results of the vital signs examination obtained Tension 110/70 mmHg, Pulse 80 x/min, RR 16 x/min, Temperature 37 0C. Next you will assess the involution process. What is the most appropriate data for you to assess in the above case?
    a. REEDA
    b. Lochia Alba
    c. Lochia Rubra
    d. Lochia Serosa
    e. Breast Consistency

Test Answer Key

1. C
2. A
3. A
4. E
5. C
6. B
7. A
8. A
9. C
10. B
11. D
12. D
13. C
14. B
15. C

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CHAPTER 7.

FAMILY PLANNING AND FEMALE REPRODUCTIVE DISORDERS

INTRODUCTION

A paradigm change has occurred, and family planning has become one of the therapies to lower maternal and newborn mortalities and morbidities. It is commonly known that states with high contraceptive prevalence rates experience decreased mother and newborn mortality rates. By assisting women in achieving the desired family size and preventing unwanted and inappropriate births, more spending on family planning can thus help lessen the effects of high population growth. Family planning helps people have the desired number of children, which improves mothers' health and contributes to the nation's social and economic development (WHO et al., 2018).

Additionally, using contraceptives can stop women from resorting to induced abortions and stop the majority of these deaths. Studies indicate that we could save 35,000 maternal fatalities and 1.2 million child deaths if the unmet family planning needs could be satisfied over the next five years (Al-Khraif et al., 2020).

Numerous factors influence family planning, including cultural practices and preferences, religious beliefs, personal preferences, cost, knowledge of various methods, and the country's human rights laws. The nurse is responsible for educating and guiding the woman or couple regarding available options, benefits, drawbacks, adverse effects, and long-term effects. The ultimate decision resides with the involved parties (Leifer, 2019).

KEY TERMS

- Disorders
- Infertility
- Gynecology
- Reproductive age
- Hormonal contraception
- Contraceptive methods
- Oral contraceptive pills
- Implants
- Injectables
- Patches
- Vaginal rings
- Iuds
- Condoms
- Male and female sterilization
- Lactational amenorrhea techniques
- Withdrawal
- Fertility awareness

LEARNING OBJECTIVES

After completing this chapter, students are expected to be able to:

- Explain the basic concepts of family planning
- Describe the women's health assessment
- Determine the nursing diagnosis of patients with reproductive health disorders and family planning.
- Develop a nursing care plan for patients with reproductive health disorders and family planning.
- Describe the procedures performed on patients with reproductive health disorders and family planning.

1. The Basic Concepts of Family Planning

a. Definition of Family Planning and Female Reproductive Disorders

What is family planning? Family planning is the process through which couples, jointly or separately, decide on the

number of children they want to have in their lifetime and the age gap between them. Family planning allows people to attain their desired number of children, if any, and to determine the spacing of their pregnancies. It is achieved through contraceptive methods and infertility treatment (WHO et al., 2018).

Based on Law No. 52 of 2009, Family Planning is an effort to regulate the birth of children, the ideal spacing and age of childbirth, and regulate pregnancy through promotion, protection, and assistance by reproductive rights to create quality families. Therefore, family planning is one of the most effective methods for enhancing family life and welfare, reducing unwarranted population growth, and promoting national development. Information and services on contraception are essential for protecting everyone's health and human rights.

Based on some of these definitions, it can be concluded that family planning services are a form of promotive and preventive health efforts that implement the life cycle approach and the continuum principle of care to increase the degree of Mother and Child Health (MCH). Family planning services are provided to adolescents and prospective brides, providing information regarding reproductive health), as well as couples of childbearing ages, providing information, contraceptive counselling, and services with the aim of planning and spacing or limiting pregnancies.

Contraception (birth control) may fall under the nurse's purview in family planning clinics, health care provider practices, or in an acute hospital's postpartum or gynaecology departments. In addition, family members and friends may consult the nurse for answers to their contraception-related concerns. The nurse can assist couples in selecting and using contraceptive methods that allow them to have desired and well-timed children. The optimal interval between pregnancies is between 18 and 24 months (Leifer, 2019).

Reproductive disorders are diseases that affect the reproductive tracts, including infections, congenital malformations, cancer, and sexual dysfunction. Female reproductive system disorders may impact the vagina, uterus, or ovaries. The breasts may also be affected. Disorders of the female reproductive system include vaginitis, ovarian cysts, myoma, and breast and cervix cancer. Diseases of the female reproductive system are a severe problem for women of reproductive age since they may eventually lead to infertility. The failure to become pregnant after two years of consistent unprotected sexual activity is known as infertility (WHO et al., 2018).

b. Types of Contraception

There are several methods of contraception, namely non-hormonal and hormonal contraception. Non-hormonal contraceptives are lactation amenorrhea method (LAM), coitus interuptus, condom, intrauterine devices (IUDs), periodic abstinence (abstinence/calendar), and surgical contraception (tubectomy dan vasectomy) (WHO et al., 2018).

Hormone contraceptives contain progestin (containing only synthetic progesterone) and a combination (containing estrogen and synthetical progesterone) packed in pills, injections, implants, and intrauterine contraceptive devices with progestins (WHO et al., 2018).

In this case, contraceptive methods are also classified as long-term and non-long-term. Long-term contraceptive methods include implants, intrauterine devices (IUDs), and surgical or permanent contraception (male and female sterilization) because these new methods will be replaced over a long time, i.e., at least three years, unless requested earlier for particular reasons (Chen et al., 2017).

Oral contraceptive pills, implants, injectables, patches, vaginal rings, IUDs, condoms, male and female sterilization, lactational amenorrhea techniques, withdrawal, and fertility awareness-based approaches are among the favorable

contraceptive methods. These techniques work through various mechanisms and successfully avoid unwanted pregnancy (Suprihatin, 2021; WHO et al., 2018).

Pregnancies per 100 women who use a method each year are used to gauge a method's Effectiveness. The Effectiveness of methods is divided into four categories based on how frequently they are used: very effective (less than or equal to 0.9), practical (between 1 and 9 pregnancies per 100 women), moderately effective (10 to 19 pregnancies per 100 women), and less effective (20 or more pregnancies per 100 women) (Suprihatin, 2021).

In 2019, there were 1.9 billion women globally of reproductive age (15–49). Of those, 1.1 billion need family planning because they currently use contraceptives or have an unmet need. Eighty million of these 1.1 billion women utilize traditional methods of contraception, compared to 842 million who use modern techniques (United Nations, 2019).

2. Natural Family Planning

Recognizing ovulation-related signs and symptoms is necessary for natural family planning. During the time that is thought to be fertile, the pair either refrains from having a sexual activity or adopts a barrier device. The sperm is viable in the fallopian tube for 48 to 72 hours, although most perish within 24 hours, and the ovum are feasible for up to 24 hours following ovulation. The vast majority of religions approve of natural family planning techniques. They don’t require the insertion of devices or the delivery of systemic hormones. When a couple wants to have a child, they are reversible and can be used to improve the chances of getting pregnant. Natural family planning necessitates thoroughly analyzing and recording all menstrual cycle variations. The woman must be highly driven to keep track of the numerous ovulation indicators. If the procedure is to avoid pregnancy, both partners must be willing to refrain from sexual activity for a significant portion of the woman’s cycle. Additionally, they must be prepared to

tolerate the 20% failure rate, which is relatively substantial. Most women combine the four measures listed below to improve the prediction value over each method alone to determine when they will become pregnant (Leifer, 2019).

a. Body's Baseline Temperature

The basal body temperature (BBT) is measured when you first wake up and before you do anything. This method is based on the observation that the basal temperature increases significantly (around 0.2° C or 0.4° F) at ovulation and stays higher throughout the latter half of the cycle. Sadly, BBT is less accurate at forecasting when ovulation will happen and is better at detecting when it has already occurred. The day before ovulation, not the actual day of ovulation, is the crucial period to note while trying to conceive or use contraception (Fehring et al., 2008).

A basal thermometer calibrates in tenths of a degree to identify these minute variations or uses an electronic digital format. To determine the temperature trend of the women, the woman logs her daily temperature. When the BBT increases over the last 14 days of the cycle, ovulation has most likely occurred. Some electronic devices display the temperature pattern on a small screen and feature a memory that stores daily data. The BBT's ability to predict ovulation accurately can be affected by various events. The BBT can become unreliable due to insufficient sleep, illness, jet lag, sleeping late, drinking alcohol the night before, or resting on a heated waterbed or beneath an electric blanket (Leifer, 2019).

b. Cervical Mucus

The Billings method is another name for the cervical mucus ovulation prediction technique. Because estrogen and progesterone affect the cervix's mucus-secreting glands, cervical mucus changes in both type and quantity during the menstrual cycle. The cervical mucus is sticky, thick, and white right after menstruation. The mucus thickens and gets thinner, slipperier, and clearer as ovulation approaches to make it

easier for sperm to enter the cervix. The slick mucus has the consistency of egg white and can be stretched 6 cm or more. Spinnbarkeit describes the mucus' ability to stretch. The mucous again thickens after ovulation. Antihistamine use, vaginal infections, the use of contraceptive foams or jellies, sexual excitement, and recent coitus are all factors that can affect how accurately cervical mucus is assessed. The observable changes in vaginal mucous prior to ovulation can help with fertility awareness and natural family planning. Women with erratic menstrual periods can utilize this technique (Leifer, 2019).

c. Calendar (Rhythm) Method

For several months, the lady records the dates of her monthly cycles on a calendar. Her ability to predict ovulation may be possible if the periods are regular. The rhythm approach is based on the observation that ovulation often occurs around 14 days before the next menstrual cycle. On day 18 of a 32-day cycle, this would be roughly halfway through a 28-day process. Barrier methods of contraception can be utilized to avoid pregnancy during a woman's fertile period, which lasts five days before and one day after ovulation. If the menstrual cycles are regular, this procedure works (Leifer, 2019).

d. Abstinence

Pregnancy and STIs can only be prevented through abstinence. However, most couples think that having a sexual connection improves one's quality of life. Therefore, the pair won't often consider abstinence as an option. Most religions encourage teens and single persons to abstain from sexual activity (Leifer, 2019).

e. Lactational Amenorrhea Method (LAM)

It is a transitional contraceptive method before the spouse decides to use another form of contraception that is concerned will interfere with milk production. LAM can prevent pregnancy through the ovulation delay mechanism. When the baby breastfeeds continuously, then the infusion reaction of

the baby will increase the levels of prolactin and oxytocin (let down reflex, read Nutrition and breastfeeding in the newborn in the next chapter) so that the irregular secretion of GnRH interferes with the release of hormones FSH and LH, the effect does not occur ovulation(WHO et al., 2018).

The Effectiveness of LAM is very high, about 98%, when used correctly and meets the requirements, i.e., used during the first six months after delivery, not having menstruated after delivery, and breastfeeding exclusively (No supplementary food or drink to babies aged 0-6 months). LAM will fail or cannot be performed if the mother and baby have conditions that cause breast milk not to be the primary nutrient in the baby and the frequency of administration is less than eight times a day with intervals of breast emptying more than 4 hours (Suprihatin, 2021).

The advantages of this method are that it starts immediately after birth, there are no special procedures, tools, or medications, no need for medical supervision, it does not interfere with sex, it is easy to use, there is no need to cost, It has no systemic side effects, It is not contrary to culture or religion, and babies will receive various benefits as a result of exclusive breastfeeding (Suprihatin, 2021).

It is essential to communicate to the spouse that this method of contraception is temporary and should immediately plan to choose another appropriate contraceptive method when the three main criteria of LAM are no longer met. Contraindications to the LAM (Suprihatin, 2021; WHO et al., 2018) are:

1) For women with conditions that make pregnancy an unsafe risk acceptable, it should be advised that the lactational amenorrhea method is unsuitable due to the relatively higher failure rate of use.
2) Women with HIV because HIV can be transmitted from mother to baby through breastfeeding. Hence, in the United States, where formula feeding is biased affordable,

feasible, acceptable, sustainable, and safe, then breastfeeding for women with HIV is not recommended.

3) Women with untreated active TB disease, untreated brucellosis, varicella, influenza H1N1, had herpes simplex lesions on the breast, and infants with classic galactosemia, because in that condition the American Academy of Pediatrics (AAP) recommends that they do not breastfeed.
4) LAM cannot be used as a contraceptive if the baby is older than six months old, the mother has already had a period, and the child is not given exclusive breastfeeding.

Women must know that the lactational amenorrhea method does not protect against sexually transmitted diseases (STDs), including human immunodeficiency virus (HIV), and women who use this method should be notified that using male latex condoms consistently and correctly reduces the risk of HIV and another transmission. Female condoms can protect against STD transmission, although the data is limited (United Nations, 2019).

f. Coitus Interruptus

Coitus interruptus, also known as withdrawal, is a method of contraception in which the man accidentally removes his penis from the vagina and keep it away from the external genitalia of his partner (female) before ejaculating. Coitus interruptus prevents sperm from entering the woman's vagina, thereby preventing contact between the spermatozoa and the egg (Chen et al., 2017).

Before he ejaculates, the male partner withdraws the entire penis from the female partner's vagina and moves away from her external genitalia (coitus interruptus, often known as "pulling out"). Theoretically, the spermatozoa are unlikely to get to the ovum and fertilize it. Coitus interruptus has some real benefits over employing no method, even though its efficiency largely hinges on the man's ability to resist the strong temptation to keep thrusting. This procedure can be

challenging for adolescents and men who ejaculate too early (Demir et al., 2021).

This readily available approach costs nothing and doesn't use chemicals or hormonal changes. The Effectiveness of this birth control approach is comparable to barrier strategies. Approximately 27% of women will become pregnant unintentionally in the first year of regular use (failure rate of withdrawal). Some cultures and faiths forbid this method. Coitus interruptus does not offer immunity from HIV or sexually transmitted infections (STIs) (Demir et al., 2021).

This method can be used with couples who are: highly motivated and able to use this method effectively; for religious or philosophical reasons, not using another contraceptive method; need immediate contraception and have having sexual intercourse without an available contraceptive method; require a temporary method while waiting for another method to start; or partners who rarely have sex (WHO et al., 2018).

Some benefits of coitus interruptus are that if used correctly, this method does not affect breastfeeding and is always available as a primary or alternative method. Besides that, coitus interruptus doesn't involve economic costs or chemical use and carries no risk-related health (Division of Reproductive Health, National Center for Chronic Disease Prevention and Health Promotion, 2023).

Coitus interruptus does not protect against sexually transmitted diseases (STDs), including the human immunodeficiency virus (HIV), so partners who are using this method should be notified that the use of male latex condoms consistently and correctly reduces the risk of transmission of HIV and other STDs. Female condoms can protect against STD transmission, although the data is limited. Coitus interruptus fails if the technique is incorrect, and its Effectiveness depends on the partner's willingness and ability to perform penile withdrawal at any time during sexual intercourse (Chen et al., 2017).

The contraindications for coitus interruptus are women with conditions that lead to pregnancy as unacceptable risk should be notified that coitus interruptus is not suitable for them because of the failure rate of its use relatively higher (WHO et al., 2018).

3. Hormonal Contraception

Hormonal contraception is one of the most common methods of contraception that is desirable and effective for preventing unplanned pregnancies, cause in general, the woman controls its use. It is easy to obtain and use, can be started at any time (make sure you are not pregnant), can stop at any time, and does not interfere with sexual activity. Hormonal contraceptives combine estrogen, progestin (progesterone), and progestins only, packaged as implants, pills, and injections (WHO et al., 2018).

Nearly all women can use hormonal contraceptives safely and effectively, including women with HIV, except in certain circumstances where Synthetic hormone content (especially estrogen) can interfere with or exacerbate the condition of women. Hormonal contraceptives are generally not given to women with a history of or who are suffering from cancer, stroke, hypertension, diabetes, cardiovascular disease, liver disease, gallbladder disease, and women who are consuming anti-epileptic and anti-tuberculosis drugs. Heavy smokers over 35 years of age and mothers who are breastfeeding are also avoided from using contraception hormones that contain estrogen (Chen et al., 2017).

Hormonal contraception prevents pregnancy through the following mechanisms: preventing ovulation, complicating conception, and avoiding nidation/implantation (Read Mechanism of action hormonal contraception) (WHO et al., 2018).

At the correct use and according to the specified time or schedule, the Effectiveness of hormonal contraception can reach 95%–100% (Read Effectiveness hormonal contraception). The Return of fertility after the use of hormonal contraception varies, namely: in the packaging, the fertility pills will return immediately

after stopping taking the pills without there is a time lag, whereas, in injection packaging, fertility can return between 4–5 months after the injections have stopped (Read Return of fertility). In general, hormonal contraception can be started at any time of your choice, or the user needs to provide it is confirmed that they are not pregnant (WHO et al., 2018).

What are the common side effects of hormonal contraception are the presence of bleeding (irregular menstrual cycles, prolonged bleeding, spotting/spotting between menstrual cycles, or no menstruation), physical discomfort (headache, dizziness, breast tightness, nausea, bloating), mood swings liver, weight gain, increased blood pressure, and physical changes another (Malmborg et al., 2016). In this case, not all women experience the same side effects. Varies is highly individual and requires a more extensive study of the number of occurrences of each side effect.

Prospective users of hormonal contraception must obtain information regarding possible side effects and the importance of discipline in using hormonal contraception. The important thing that needs to be conveyed to the woman is that when she doesn't get regular periods, tell her that it's not dangerous and can help prevent anemia. They must be given that understanding blood does not accumulate inside the woman. If a pregnancy occurs, it does know. Then this contraception does not interfere with the existing pregnancy, and other than that, This contraception does not make women infertile (Lesnewski, 2021).

Counseling about side effects before hormonal contraception is essential because counseling pretends these side effects are not dangerous. There are solutions to overcome them. Counseling minimizes users' worry about using contraception, thus preventing users from using hormonal contraception (dropping out), resulting in an unwanted pregnancy (WHO et al., 2018).

Discipline in using hormonal contraception is the key to the effectiveness of contraception the:

a. The pill will be effective if taken at the same time every day until the packet runs out and take the next package on time (Read How to Take the Pill)
b. Injections will be effective if injected in the right way and repeated at a predetermined time or a few days before the time (Read Providing Injectable Contraception)
c. The implant will be effective if the rod remains under the woman's skin until time to retract. Teach women to finger the implant capsule's presence periodically and ensure it doesn't change position. If it happens, it has to be immediately returned to the health worker for action to be taken and replaced with new. In these conditions, women need to use condoms until they return to using a new implant or contraception. For the fat woman, the effectiveness of the Jadelle and Levoplant brands may decrease over time at the end of the duration of use stated on the label, so it needs to be replaced their implants faster.
d. Insertion and removal of implants required specialized expertise of trained personnel.

1) Combined Hormonal Contraceptives

Combined contraceptives consist of pills and injections containing two doses of low hormones, estrogen, and progesterone, which resemble estrogen and natural progesterone in the female body. Most women can use combined oral contraceptives safely and effectively, including women who: have or have not had children, aged any person, including women over 40 years of age, who have recently had an abortion, miscarriage, or ectopic pregnancy, smokers under 35 years of age, have anemia now or have in the past, have varicose veins, live with HIV, whether on antiretroviral therapy or not (Lesnewski, 2021).

Contraindications for combined contraceptives:

a) Women in the postpartum period of less than six weeks, especially are breastfeeding, should not use combined oral contraceptives. On women in the postpartum period

that exceeds six weeks but less than six months, especially while breastfeeding, combined oral contraceptives are usually not recommended unless no other method is suitable or other existing methods cannot be used.

b) Women with a history of or thromboembolic disorders, coronary artery disease or cerebrovascular disease, valvular heart disease, breast cancer, or other tumors affected by estrogen, impaired liver function, liver tumors, age over 35 years, and smokes more than 15 cigarettes per day, severe hypertension, and headache accompanied by focal neurological symptoms, experiencing blood clots in deep vein thrombosis, or VTE, previous VTE, thrombophilia, cesarean delivery, blood transfusion during delivery, postpartum haemorrhage, pre-eclampsia, obesity (> _30 kg/m2), bedridden in time age, diabetes over 20 years, stroke, and gallbladder disease (Lesnewski, 2021).

2) Progesterone Contraception

Progesterone contraception consists of progestin pills/mini-pills, implants, and injections; progestin contains low doses, like the natural hormones progesterone in the female body. Progestin injection consists of a depot medroxyprogesterone acetate (DMPA; 150 mg intramuscularly or 104 mg subcutaneously) and Noristerat (Lesnewski, 2021)

Progesterone contraception can be used during breastfeeding and by women who cannot use methods with estrogen (combined contraceptives) (WHO et al., 2018). Women who experience (history) or present blood clots in the blood vessels or lungs or breast cancer, liver disease, infection, tumor, systemic lupus erythematosus, stroke (cerebrovascular injury), and ischemic disease heart are contraindications for progestin contraceptives (Lesnewski, 2021).

The Medroxyprogesterone acetate should not be administered to pregnant women or women who are considered pregnant, women with persistent and recurrent bleeding from the vagina that is undiagnosed, breast malignancy known or suspected, women with active thrombophlebitis, history of thrombophlebitis, or disease cerebral vascular, significant hepatic impairment or disease such as cirrhosis severe, hepatocellular carcinoma or other malignant tumors, hepatocellular carcinoma or other malignant tumors (Suprihatin, 2021).

Be careful using progestin injections in women with osteoporosis, diabetes mellitus, decreased vision, sudden partial or complete abdominal pain (suspect ectopic pregnancy), history of medication for depression, stroke, myocardial infarction, pulmonary embolism, epilepsy, and kidney dysfunction (WHO et al., 2018).

4. Intrauterine Devices Contraception (IUD)

An intrauterine device contraception (IUD) is a contraceptive device made of flexible plastic installed in the uterus for a certain period and released according to the label on the packaging or faster for some reason. The most widely used type of IUD is CuT-380A, slight in frame from flexible, T-shaped plastic sheathed by a fine wire made of copper (Cu)(WHO et al., 2018).

IUD works immediately after IUD insertion, is very effective, reversible and long-term (can be up to 10 years: CuT 380A), and can be used by all women of reproductive age, but should not be used by exposed women to sexually transmitted infections (STIs). The IUD can be inserted within the first 10 minutes to 48 hours after delivery of the placenta. So mothers who have given birth or miscarried go home already using any contraceptive at any time (United Nations, 2019).

Nurses must inform prospective acceptors that: an IUD can come out of the uterus spontaneously, especially during the first few months. Possibility of irregular bleeding, spotting/spots a few days

after installation, and during menstruation, there will be more bleeding than usual, longer, and cramps or pain during menstruation. Tell them that a change in the bleeding is not a sign of disease. Bleeding will decrease after the first few months of installation. Ensure they can come back for help if the problem bothers them or they have another problem (WHO et al., 2018).

Insertion and removal of the IUD require the expertise of a trained professional trained. Things to note that opening the sterile packaging that contains the IUD, or inserting the IUD sleeves into the inserter tube, is only done if it is certain that the client's IUD insertion (i.e., after completion of a pelvic exam, including speculum and bimanual examination). Do not insert the IUD sleeve in the tube inserter more than 5 minutes before insertion into the uterus. When entering IUD sleeves in sterile packaging, you do not need to wear sterile gloves or DTT, and there is no need to open the package (this is done in the box). Ensure the IUD stem is fully inserted in the inserter tube because the IUD stem often sticks out of the inserter tube though the packaging has not been opened. Ensure that the end of the inserter tube is opposite the end containing the IUD near the package's opening (WHO et al., 2018).

After IUD insertion, the woman should be given written information on a reminder card about the type of IUD she used, the IUD insertion date, the month and year when the IUD should be removed or replaced, and where to go if she has problems or questions about their IUD. Women are recommended to control after the first month of menstruation or 3 to 6 weeks after IUD insertion, or whenever needed (Suprihatin, 2021).

The IUD should not be inserted (contraindicated) in women with:

a. Currently or suspected of being pregnant
b. Postpartum infections, post-abortion, persistent pelvic inflammatory disease active, have a sexually transmitted infection (e.g., Chlamydia infection, gonorrhea), pelvic tuberculosis

c. Neoplastic disease, i.e., cervical cancer, a trophoblastic disease with persistently high beta HCG hormone levels, and endometrial cancer
d. Heavy vaginal bleeding outside the menstrual cycle
e. The shape of the uterus is not normal
f. Are allergic to copper or have Wilson's disease (especially for prospective IUD users who contain copper)

5. Permanent Contraception

a. Male sterilization

Making a cut in each side of the scrotum and cutting each vas deferens, the tube via which the sperm travel, is how a male sterilization procedure known as a vasectomy is carried out. Sterility is delayed because sperm are already in the system distal to the ligation site. It is necessary to use another method of birth control until all sperm have left the body, which typically takes 1 to 3 months. The man should revisit his doctor so that his semen can be examined to ensure it is no longer sperm-filled. Many men require knowledge of the structure and function of their genital organs. They need confirmation that they will continue to have erections, ejaculations, and enjoyable sex. A local anesthetic is used during the outpatient procedure, which lasts about 20 minutes. Following the process, there is some pain, bruising, and swelling. Comfort methods include rest, a moderate analgesic, and an ice pack. The patient should note the following, like with other surgeries:

1) Significant bruising or bleeding
2) Suture line separation, drainage, or escalating pain

b. Female sterilization

1) Tubal ligation

The fallopian tubes are blocked or tied during a tubal ligation. Clips or electrocautery can be used to achieve this. The fundus, to which the tubes are linked, is significant and close to the surface during the first few days

after delivery, making tubal ligation simple to complete. Three techniques are available (Leifer, 2019):

a) A mini-laparotomy, sometimes known as 'Band-Aid surgery,' makes an incision just above the symphysis pubis or close to the umbilicus at other times. Each tube is brought through a small incision made by the surgeon, then tied and cut.
b) Similar procedures are performed using a lighted tube called a laparoscope during laparoscopic surgery.
c) The conventional method is used for additional abdominal surgery, typically a cesarean delivery.

The pain following laparoscopy or mini-laparotomy is typically quickly alleviated with oral analgesics. The anesthesia causes nausea in some women. The woman needs one or two days to recover even though this procedure is not significant. As with the male vasectomy, she should report any bleeding or infection symptoms (Leifer, 2019).

2) Hysteroscopic sterilization

Through the vagina, a hysteroscope can be inserted to examine the cervix. The uterus is dilated with saline, and the fallopian tubes are implanted with an Essure micro insert. Within three months of the onset of mild inflammation, the fallopian tubes permanently close. The woman benefits from avoiding hospitalization, anesthetic, and abdominal scars with this treatment. Until the beginning of tubal fibrosis, contraceptives must be used for three months. A hysterosalpingogram can verify that the tubes are closed (Leifer, 2019).

6. Emergency Contraceptive Pills

One way to avoid getting pregnant after unprotected sexual activity is to take the "morning after" pill. It can be used in rape instances when contraceptives fail (such as when a condom tear) and in other circumstances as needed. The simple emergency

method of contraception Plan B, sold over-the-counter in pharmacies, contains the progestin levonorgestrel in a 1-dose "morning after" regimen. It is most effective if used within 72 hours of unprotected intercourse, while it can still work if used within 120 hours. In obese women, the one-step emergency contraception method might not be as successful. Ulipristal acetate (Ella), an emergency contraception, needs a prescription. It can be taken within five days (or 120 hours) after unprotected sex and delays ovulation, preventing conception. Following the use of the emergency contraceptive, the lady should be referred for counseling and follow-up care. Another efficient postcoital contraceptive is the placement of a copper IUD within five days of unprotected sexual contact (Zieman et al., 2015).

a. Benefits of Family Planning

Pregnancy is not always prevented by contraception. Failure probability is a crucial factor for patients to consider. A contraceptive technique may fail if the method is ineffective or the user misuses it. Two proposed Healthy People 2030 objectives are especially pertinent to delivering family planning services: bring the rate of unintended pregnancies to no more than 30 percent, and reduce to no more than seven percent the number of women who become pregnant despite using a contraceptive method (Leifer, 2019).

The other advantages of family planning are: reduced maternal illness and the number of pregnancy-related fatalities (preventing pregnancies among older women 40s), delayed pregnancies in young girls until their 20s (increased risk of health issues from early childbearing and help girls' education), prevent abortions (as a result of an unplanned pregnancy), and the spread of HIV from mothers to neonates, and the end give women a chance to participate in society more fully, mainly through paid jobs (Suprihatin, 2021).

b. Family Planning Counseling

Good counseling assists clients in selecting and utilizing family planning techniques that work for them. Each client is

unique, has unique needs, and is uniquely positioned. The best counseling is individualized for each client. Give clients who require it your time. Numerous consumers are returning with no issues and little need for counseling. The most time is typically required by returning clients with problems and brand-new clients without a plan (WHO et al., 2018).

The following are guidelines for effective counseling (WHO et al., 2018):

1) Respect every client and make them all feel at ease.
2) Encourage clients to describe their requirements, voice their worries, and ask questions.
3) Let the client's requirements and wishes lead the conversation.
4) Be aware of related requirements, such as support for condom use and preventing sexually transmitted diseases (STDs), including HIV.
5) Conversation with the client in a quiet area where no one else can overhear about contraception.
6) Assure the customer that your interaction with them and any decisions they make will remain private.
7) Pay close attention to what you hear. Just as crucial as providing accurate information is listening.
8) Give only the most essential details and directives. Use words that your client is familiar with.
9) Respect and encourage the client's well-informed choices.
10) Mention any potential adverse effects and pay attention to the client's worries.
11) Verify the client's comprehension.
12) Offer the customer a free return visit at any time.

Counseling has succeeded when clients feel they got the help they wanted, know what to do and feel confident that they can do it, feel respected and appreciated, come back when needed, and, most importantly, use their methods effectively and with satisfaction (United Nations, 2019).

7. Assessment

a. Assessment Before Using Family Planning Methods

Both men and women use contraceptives to avoid getting pregnant. Each person has a different preference for the type of contraceptive they wish to take, so you must first determine their preferences before offering the best method for them.

1) Identify of the woman's and her partner's identity regarding age, education, religion, economic status, and marital status.
2) Review the information the woman and her partner have obtained about contraception and how cultural views and beliefs religion of women and their partners regarding contraception. Assess the client's family planning needs, preferences, desires, and feelings subjectively.
3) Ask the woman and her partner about life sexuality, whether they have ever had a sexually transmitted disease, the client's obstetric history, history of pregnancy and childbirth, if any, and plans for future pregnancies. Then, ask the couple to explain the motivation for using contraception. Respect all opinions, partner
4) If the couple has used contraception, ask them to share their experiences with using contraception and whether they have tried a family planning strategy that did not work.
5) Assess the woman's medical history and perform a physical examination and laboratory tests according to the need for contraception chosen by the couple, such as blood pressure measurement and examination breast, as well as genital examination (internal examination) and examination diagnostic to determine whether the woman is pregnant (if the results of the interview suspected pregnancy).
6) A pregnancy test, this test to ensure that the lady seeking birth control is not currently pregnant, so it must be done first.

b. The Women's Health Assessment

1) Anamnesis:

a) Menstrual history

- Identify the last menstrual period (LMP)–the date of the first day of bleeding.
- Identify cycle length and frequency–e.g., 5/28, five days of bleeding every 28 days.
- Identify the heaviness of bleeding (number of tampons per day/clots/flooding/need for double protection.)
- Identify the presence or absence of intermenstrual bleeding (IMB).
- Identify the presence or absence of postcoital bleeding (PCB).
- Identify the age of menarche/menopause.
- Identify the presence or absence of postmenopausal bleeding (PMB).

b) Pregnancy history

- Identify several children, pregnancy details, labor and delivery, birth weights, and complications.
- Identify miscarriages/terminations.
- Identify any postnatal problems–e.g., depression.
- Identify conception difficulties/subfertility.
- Identify contraception.

c) Complaints of reproductive disorders

The specific details to elicit from the presenting complaint include:

- Type and site of symptoms
- Timing:
  - Onset and duration
  - Cyclical–are symptoms associated with menstruation?
  - Intermittent or continuous
- Exacerbating and relieving factors

- Previous episodes–including any investigations and treatments
- Other associated symptoms
  - Identify dyspareunia–pain during sexual intercourse, which can be divided into superficial or deep pain.
  - Identify vulval itching and anogenital skin changes.
  - Infertility–inquire about duration, whether any investigations have been performed, and whether assisted conception has been attempted.

A complete gynecology history should enquire about the typical signs of gynecological disease after looking into the account of the presenting complaint. These consist of the following (Piryani & Piryani, 2015):

- Vaginal Bleeding. The three main types of abnormal vaginal bleeding are as follows:
  - Between menstrual cycles or intermenstrual, symptoms can be caused by pregnancy, hormonal contraception, endometriosis, fibroids, cancer, and infection.
  - Cervical ectropion, infection, vaginitis, and cancer are some postcoital (after sexual interaction) causes.
  - Malignancy, vaginal atrophy, and the use of hormone replacement therapy are among postmenopausal (after menopause) causes.

2) Vaginal examination

- They are usually done with the patient lying on their back.
- Use a good examination light positioned over your shoulder.

- Look at the vulva for skin texture abnormalities, lumps, rashes, blisters, excoriation, lichenification, and whitening.
- Look for atrophic changes (if menopausal).
- Choose an appropriately sized speculum–usually Cusco's bivalve speculum–for the patient.
- Warm the speculum before use (usually with warm water, as lubrication jelly may interfere with swabs or smear results).
- Part the labia with your hand from above, introduce the speculum at a slight tilt to the vertical, and twist it gently to the horizontal.
- Point the speculum downwards, at about 45°; open, ensuring the handle is not impinging on the clitoris.
- Look at the vaginal mucosa and locate the cervix.
- Note any discharge. Take a vaginal swab if there is discharge present. Consider a cervical swab for chlamydia.
- Check for any retained tampons.
- If no cervix is visualized:
- Try partially withdrawing and try again.
- Perform a bimanual examination to establish the position of the cervix.
- Ask the patient to hold on to her knees or put her hands under the sacrum to tilt the pelvis. A pillow could also be used.
- The left lateral position may be more successful.
- If you are still unsuccessful, try on a different occasion (Piryani & Piryani, 2015).

3) Bi-manual testing

- If you are inspecting from the right, use your right hand for the internal and your left hand for the abdomen.
- Examine the vagina for any abnormalities.

- Look for lumps, lumpy spots, or rough patches on the cervix. Take note of any cervix arousal.
- Determine the uterus's location, size, motility, lumpiness, and soreness.
- Bimanually feel the adnexa for swelling or soreness (Piryani & Piryani, 2015).

8. The Nursing Problems of Patients with Reproductive Health Disorders

Infections

A woman's risk of developing cancer, persistent discomfort, systemic infections, and infertility can all be boosted by reproductive system infections. Early therapies can reduce the woman's risk of consequences from persistent or recurrent pelvic infections (Durham et al., 2014).

Pelvic Inflammatory Disease (PID)

PID is an acute infection of the upper genital tract that can extend to the peritoneum and affect the uterus, fallopian tubes, and ovaries. Chlamydia trachomatis and Neisseria gonorrhoeae are the most prevalent anaerobic and aerobic bacteria that cause disease. Bacterial infections move up the body from the cervix and vagina to the uterus, fallopian tubes, and ovaries before spreading to the peritoneum. Infertility, ectopic pregnancies, and chronic pelvic pain are all effects of acute PID. Due to scarring and adhesions in the fallopian tubes, the risk of ectopic pregnancy is ten times higher in women with a history of PID. The inflammatory response to the infection, which kills cells, and the subsequent healing of the injured tissue cause scarring and adhesions (Durham et al., 2014).

The likelihood of a wrong diagnosis rises due to the vast range of nonspecific signs and symptoms that PID in women presents with. Women may show no symptoms. The most typical characteristics are severe abdominal, uterine, and ovarian pain and discomfort. Improper menstruation Fever (100.4°F or 38°C), abnormal vaginal discharge with a foul odor, pain during sex,

elevated white blood cell (WBC) and erythrocyte sedimentation rate (ERS), and pain during sexual activity (Jennings & Krywko., 2023; Terzić & Kocijancić, 2010).

Risk factors for PID include a history of STIs, several sexual partners, being under 25 and sexually active, and being a woman. PID affects 75% of women under 25 and is the most severe prevalent infection among women between 16 and 25. Douching, which can force bacteria through fallopian tubes and into the uterus, is also a risk factor for PID. Intrauterine devices (IUDs) are at a higher risk of PID during the IUD insertion process and for three weeks afterward (Curry et al., 2019).

9. The Nursing Problems Related to Contraception

Some nursing diagnoses related to contraception:

a. Conflict in decision making related to a lack of understanding of the various types of contraceptive options, the existence of beliefs and religion about contraception, and differences in the desire of partners to use contraception.
b. Fear related to side effects of contraceptive methods, information wrong about contraception, and experience using contraception failure.
c. Risk for infection related to the insertion of contraceptives in utero, having scars from sterilization, having sexual intercourse alternately partner.
d. The pattern of ineffective sexual intercourse related to fear of pregnancy; fear interfere with the IUD.
e. Acute pain related to postoperative healing of sterilization, post IUD insertion.

Expected Treatment Results

The desired result is that the couple will do the following:

a. Stating his understanding of contraceptive methods correctly
b. Declare stable with contraception options that have been mutually agreed upon

c. Expressing comfort and satisfaction with the contraceptive method used has been selected and used
d. Using contraception methods perfectly and continuously consistent
e. Able to adapt to the side effects of contraceptive methods that have been chosen
f. Able to plan a healthy pregnancy

Nursing Plan

a. Provide education to clients in simple language easily understood by partners regarding how to use, side effects, and solutions or ways to overcome them.
b. Ask partners to demonstrate their understanding of the education given and express everything that affects learning.
c. Provide additional explanations if the partner still does not understand.
d. Allow couples to discuss contraception options offered and give them time to decide.
e. Perform contraceptive installation according to the procedure.

10. The Procedures Performed on Patients with Reproductive Health Disorders and Family Planning

Taking a Smear

- For screening purposes, smears are recommended. Most laboratories won't process them if taken earlier than the advised interval. Consequently, they are not typically included in gynecological examinations.
- Smears are best performed in the middle of a cycle.
- The preferred technique today is liquid-based cytology (LBC).
- The squamocolumnar junction (often in the cervical canal) is turned with a brush rather than a spatula. There are two LBC systems in operation. Both systems employ brushes with a similar appearance. One involves breaking off the brush's cell-containing head and placing it in a pot with a liquid preservative. The brush head is delivered to the lab in the

pool using the SurePath® brand procedure. In the alternative approach, the preservative is rinsed with a brush before washing the cells into the pot. After that, the meeting is thrown away (this is the ThinPrep® brand).

- Nationally, LBC is now in use. Due to the liquid's treatment to remove other cells like pus or blood and the spinning of the sample, the frequency of insufficient smears has been significantly reduced. When LBC was implemented, inadequate spots decreased from almost 9% to 2.6%.
- The Papanicolaou (Pap) smear test is one of the more traditional procedures; it rotates the ectocervix twice through 360° using a brush or an Ayre spatula to collect a sample. These techniques include spreading the collected material onto a microscope slide, which is then sprayed with or submerged in a fixative solution before being transported to the lab (Piryani & Piryani, 2015).

Summary

Family planning is a process where couples decide on the number of children they want and the age gap between them. It involves contraceptive methods and infertility treatment to achieve desired pregnancies. Law No. 52 of 2009 promotes reproductive rights and promotes quality families. Family planning services are essential for enhancing family life, reducing population growth, and promoting national development. They provide information, contraceptive counseling, and services to adolescents, prospective brides, and couples of childbearing age.

Nurses play a crucial role in family planning clinics, healthcare providers, and acute hospitals, providing contraception advice and assisting couples in selecting suitable methods. They also address reproductive disorders affecting the female reproductive system, including infections, malformations, cancer, and sexual dysfunction. These disorders can lead to infertility, a severe problem for women of reproductive age who fail to conceive after two years of unprotected sexual activity.

Contraception methods include non-hormonal methods like lactation amenorrhea, coitus interuptus, condoms, and IUDs, while hormonal methods contain progestin and a combination. Long-term methods like implants and IUDs are considered non-long-term. Some favorable contraceptive methods include oral contraceptives, implants, injectables, patches, and vaginal rings. The effectiveness of a method is measured by the number of pregnancies per 100 women who use it. In 2019, 1.9 billion women globally needed family planning, with 80 million using traditional methods compared to 842 million using modern techniques.

Nurses play a crucial role in family planning clinics, healthcare providers, and acute hospitals, providing contraception advice and assisting couples in selecting suitable methods. They also address reproductive disorders affecting the female reproductive system, including infections, malformations, cancer, and sexual dysfunction. These disorders can lead to infertility, a severe problem for women of reproductive age who fail to conceive after two years of unprotected sexual activity.

Hormonal contraception is a popular method for preventing unplanned pregnancies, as it is controlled by the woman and can be started or stopped at any time. It combines estrogen, progestin, and progestins and is available in implants, pills, and injections. However, it is not suitable for women with a history of cancer, stroke, hypertension, diabetes, cardiovascular disease, liver disease, gallbladder disease, anti-epileptic drugs, heavy smokers, and breastfeeding mothers.

Review Questions

1. A 35 year old postpartum woman and her husband came to the clinic. They want to use suitable contraceptives, because so far they often fail. The woman is currently breastfeeding her 3 month old baby. The baby looks healthy and is currently being fed only breast milk. Results of physical examination, blood pressure: 120/70 mmHg, no edema, and no anemia. What is the right thing for the nurse to do?

a. Show different types of contraception
b. Conduct a thorough physical assessment
c. Ask about past history of contraceptive use
d. Determine contraception that suits the woman's condition

Answer: C

2. A woman called the nurse who had helped her decide to use the combined pill contraception 2 weeks ago. She said that she had been nauseous and often dizzy for one week, as a result her husband told her to stop taking the pills. How should the nurse respond to this woman?
   a. Allow them to stop taking pills in order to maintain harmony in their household
   b. Prohibit and provide an explanation that it is normal
   c. Ask the woman to tell how to take pills that have been done so far
   d. Ask the woman to switch to another contraceptive

   Answer: C

3. A 30 year old woman who has experienced breast cancer comes to the clinic to ask for a contraceptive method, because she feels she no longer wants to have children. What is the ideal method of contraception offered to these women?
   a. Any contraceptive method according to the woman's wishes
   b. The method of operative contraception, namely tubectomy
   c. Hormonal contraception methods, namely 3-month injections
   d. Barrier method of contraception, namely the IUD

   Answer: D

4. In the delivery room, a woman is seen chatting with another woman, they are discussing the contraception they will use while they are breastfeeding. One of them said that it is best not to use contraception when breastfeeding, because by fully breastfeeding they are guaranteed to avoid getting pregnant. How should the Nurse speak to them?
   a. Validate their talk and support for use

b. Justify their conversation by explaining that if there is a risk of pregnancy it is their responsibility
c. Provide an explanation that the opinion is correct with full breastfeeding ecords
d. Provide an explanation that their opinion is not correct

Answer: C

5. A 45 year old woman who has just given birth has decided which contraception to use, namely using progestin pills. How should the nurse respond to this?
   a. Prohibit it because progestin pills should not be given to women aged 40 years and over
   b. Allow the mother to breastfeed to avoid the possibility of things that interfere with breast milk production
   c. Forbid it because its effectiveness is low and the healthiest age for women to give birth is 20 – 30 years
   d. Accept that whatever contraception you choose is better than none at all

   Answer: B

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