THE UNIVERSITY OF ZAMBIA

INSITITUTE OF DISTANCE EDUCATION

BACHELOR OF SCIENCE IN NURSING

MEDICAL AND SURGICAL NUSING: NRS 5170

MODULE 1: INTRODUCTION TO MEDICINE AND SURGICAL NURSING

January 2015

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Acknowledgements

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Contents

Unit 3

Unit 4

Unit 5

About this module

The BACHELOR OF SCIENCE IN NURSINGSCIENCE IN NURSING NRS 5170: Medical and Surgical Nursing Module has been produced by **Error! No text of specified style in document.**, Institute of Distance Education (IDE).

The module introduces you to the concepts and principles of medical and surgical nursing. As you may already know, the main role of a nurse is that of care giving. The module will equip you with knowledge of common medical conditions and skills to provide comprehensive quality care to clients and their families in different health care settings.

In this module, you will learn the principles of medical and surgical nursing which enable you to manage different medical and surgical conditions. You will study how to conduct health assessment in order to help you identify actual and potential patient problems and plan on how to manage these problems.

How this module is structured:

The module overview

The module overview gives you a general introduction to the module. Information contained in the module overview will help you determine:

- What you can expect from the module.
- How much time you will need to invest to complete the module.

The overview also provides guidance on:

- Study skills.
- Where to get help.
- Assignments and assessments.
- Activity icons.
- Units.

The module content

The module is broken down into 10 units. Each unit comprises:

- An introduction to the unit content.
- Unit objectives.
- New terminology.
- Core content of the unit with a variety of learning activities.
- A unit summary.

- Assignments and/or assessments, as applicable.

Resources

For those interested in learning more on this course, we provide you with a list of additional resources at the end of this; these may be books, articles or web sites.

Your comments

After completing this module, we would appreciate it if you would take a few moments to give us your feedback on any aspect of this module. Your feedback might include comments on:

- Content and structure.
- Reading materials and resources.
- Assignments and assessments.
- Duration.
- Support (assigned tutors, technical help, etc.)

Your constructive feedback will help us to improve and enhance this course.

Overview

Welcome to MODULE 1: INTRODUCTION TO MEDICINE AND SURGICAL NURSINGMEDICAL AND SURGICAL NURSING

Module Learning Outcomes

Learning objectives are statements that tell you what knowledge and skills you will have when you have worked successfully through a module.

Upon completion of this module, you will be able to:

1. Describe the principles of medical and surgical nursing
2. Outline the organisation of the health care system
3. Interpret the legal aspects of nursing practice
4. Conduct health assessment
5. Describe the common medical conditions affecting the different body systems.
6. Identify patient problems and nursing interventions designed to meet patients' needs.
7. Apply the nursing process and theories in nursing patients with medical conditions
8. Outline a health education program specific to patient, family and community needs

9. Develop and implement appropriate patient teaching and discharge plan.

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Timeframe

How long?

Expected duration of this module is 70 hours to work through this study guide and 142 hours to practice in a medical ward, outpatient clinic and specialized medical clinics.

Formal study time required: 4 weeks at the beginning of the term

Minimum Self-study time recommended is 4 hours per week.

Study skills

As an adult learner, your approach to learning will be different to that from your school days: you will choose what you want to study, you will have professional and/or personal motivation for doing so and you will most likely be fitting your study activities around other professional or domestic responsibilities.

Essentially you will be taking control of your learning environment. As a consequence, you will need to consider performance issues related to time management, goal setting, stress management, etc. Perhaps you will also need to reacquaint yourself in areas such as essay planning, coping with examinations and using the internet as a learning resource.

Your most significant considerations will be *time* and *space* i.e. the time you dedicate to your learning and the environment in which you engage in that learning.

We recommend that you take time now—before starting your self-study—to familiarize yourself with these issues. There are a number of excellent resources on the web. A few suggested links are:

- http://www.how-to-study.com/

  The "How to study" web site is dedicated to study skills resources. You will find links to study preparation (a list of nine essentials for a good study place), taking notes, strategies for reading text books, using reference sources, test anxiety.

- http://www.ucc.vt.edu/stdysk/stdyhlp.html

  This is the web site of the Virginia Tech, Division of Student Affairs. You will find links to time scheduling (including a "where does time go?" link), a study skill checklist, basic concentration techniques, control of the study environment, note taking, how to read essays for

analysis, memory skills ("remembering").

- http://www.howtostudy.org/resources.php

  Another "How to study" web site with useful links to time management, efficient reading, questioning/listening/observing skills, getting the most out of doing ("hands-on" learning), memory building, tips for staying motivated, developing a learning plan.

The above links are our suggestions to start you on your way. At the time of writing, these web links were active. If you want to look for more go to www.google.com and type "self-study basics", "self-study tips", "self-study skills" or similar.

Need help?

Help

www.unza.zm

You may contact the Institute of Distance Education at the University of Zambia from 08 00 hours to 17 00 hours. Telephone number *+260 211 290719* Fax: *+260 211 290719*

ide@unza.zm

You could also utilize the services of the phone as well as the email address. For other details, you may visit the website as stated above.

You are free to utilize the services of the University library which opens from 0700 hours to 2400 hours every working day. As for weekends and public holidays, the library opens from 0900 hours to1800 hours. It will be important for you to carry your student identity card for you to access the library and let alone borrow books. Your contact person in the library is the Librarian and the email address is library@unza.zm .

For ICT problems, you may contact the Centre of Information Communication Technology cictdirector@unza.zm

Assignments

There will be one assignment given in this module. These will be given separately from the module.

Assignments

Assessments

Assessments

Your work in this module will be assessed in the following four ways:

1. A case study of a patient with a medical condition. This may be done at the end of module 2 (worth 20 per cent of the final mark).
2. A test (worth 20 per cent of the final mark)
3. A written examination set by the institution in which you are enrolled for this Degree programme (worth 40 per cent of the final mark).
4. A practical examination conducted by the institution in which you are enrolled for the degree programme (worth 20 per cent of the final mark).

Several exercises will be required in the course of your work on each unit. You will probably be required to select a patient for the case study after you complete the module. The details of the assignment are at the end of the module. Note: It is important that you discuss the study and assessment requirements with your tutor before you begin work on the module. If you need any help, consult the Institute of Distance Learning.

You will sit one final examination at the end of the semester. (The dates are as stated on the sessional dates calendar.

Getting around this

Margin icons

While working through this Medical and Surgical Nursing Module you will notice the frequent use of margin icons. These icons serve to "signpost" a particular piece of text, a new task or change in activity; they have been included to help you to find your way around this Module.

A complete icon set is shown below. We suggest that you familiarize yourself with the icons and their meaning before starting your study.

 Activity	 Assessment	 Assignment	 Case study
 Discussion	 Group activity	 Help	 Note it!
 Objectives	 Reading	 Reflection	 Study skills
 Summary	 Terminology	 Time	 Tip

Unit 1

Introduction to Medical and Surgical Nursing

Introduction

This unit begins discusses the general concepts and principles of medical and surgical nursing which encompasses the organisation of the health care system, team work and legal aspects of nursing practice. In the unit as per course outline which has been given to you, there are many concepts and principles that will guide you with the effective provision of medical and surgical nursing to adult patients. However, since this is a bridging course, not all the concepts and principles have been discussed in this module because most of them are dynamic and can best be applied in relation to the current situation and the health care facility attached to. Therefore, you are urged to also study all the other concepts and principles of medical and surgical nursing such as Health, Wellness and Illness, Legislation (such as The General Nursing Council of Zambia and Zambia Union of Nurses Organization), etc. You will be required to submit one written assignment pertaining to this unit.

Aim

The unit aims at equipping you with knowledge and skills in concepts of medical nursing and health assessment.

Objectives

Objectives

Upon completion of this unit you will be able to:

1. Describe the principles of medical and surgical nursing
2. Explain the types of health assessment
3. Conduct clinical interview to obtain Health history
4. Perform a physical examination
5. Identify actual and potential patient problems

Equipment

To study this module, you will need a CD on health assessment to assist visualize how to conduct health assessment.

Other Resources

You may also require using a skills laboratory during your residential School to perfect your health assessment skills.

Time Required

To study this unit, you require 4 hours

1.1 GENERAL PRINCIPLES OF MEDICAL AND SURGICAL NURSING

1.2 How is the health care system organized in Zambia?

Activity 1.1

For the next 5 minutes before you read further, take your notebook and write down what comes to mind when you think about the organization of the health care system in Zambia. Ask yourself these questions; Has the organization of the health care system in Zambia been the same from time in memorial? Do we know the role of the nurse in the health care system? What are the concepts related to an effective functioning of a multidisciplinary Health Care Team? What is Health, Wellness and Illness? Are there any legislative and legal aspects of nursing practice that promote quality delivery of nursing services in Zambia? What are some of the student support, counselling and guidance activities required for nursing students?

In your reflections you might have thought that the organization of the health care system in Zambia changes from time to time depending on the government in power and thus you can only know about this organization if only you get actively involved with issues pertaining to the health care system. You may also have thought that the role of the nurse in the health care system may never change but requires an active participation in the organization of the health care system.

Background

You will recall that Zambia has a mixed type of health care system consisting of both public and private facilities. The private sector includes not-for-profit hospitals that are mainly managed by faith-based organizations under the coordination of Churches Association of Zambia (CHAZ), the private for- profit hospitals and clinics, private pharmacies, drug stores and traditional health practitioners. When the Patriotic Front party gained power in 2011, the Ministry of Health (MoH) together with the newly formed Ministry of Community Development, Mother and Child Health (MCDMCH) manage the public health sector and make all key decisions relating to use of resources, human resource management, service delivery and investments in the sector.

The dominance of the public sector is in the hands of the government delivering about 70% of the health services in the country while the private sector especially the not –for profit mission facilities are also prominent providers of care in many parts of the country. About 35% of the hospitals and 4% of the health centres and health post belong to missions. They are privately owned and managed by respective denominations under the umbrella of CHAZ.

As a nurse, you need to be acquainted with the health care system in order to deliver effective health services.

General Objective

At the end of this study, you should be able to outline the organization of the health care system in Zambia and the role of the nurse.

Specific Objectives

At the end of this study, you should be able to:

a. Define health care system
b. Describe the organizational structure of the health care system in Zambia
c. Describe the factors influencing the health care delivery system in Zambia
d. Discuss the role of a professional nurse.

Definition of Health Care System/Health System

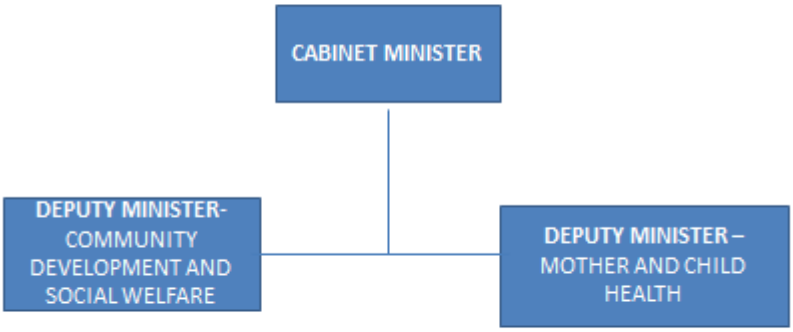
i. This is the organization of people, institutions, and resources to deliver health care services to meet the health needs of target populations.
ii. Health systems can also be defined as comprising all the organizations, institutions and resources that are devoted to producing health actions. A health action is defined as any effort, whether in personal health care, public health services or through intersectoral initiatives, whose primary purpose is to improve health.
iii. The World Health Organization defines health systems as follows: A health system consists of all organizations, people and actions whose primary intent is to promote, restore or maintain health. This includes efforts to influence determinants of health as well as more direct health-improving activities. Thus, you should always bear in mind that a health system is therefore more than the pyramid of publicly owned facilities that deliver personal health services.

Structure of the Ministry of MCDMCH

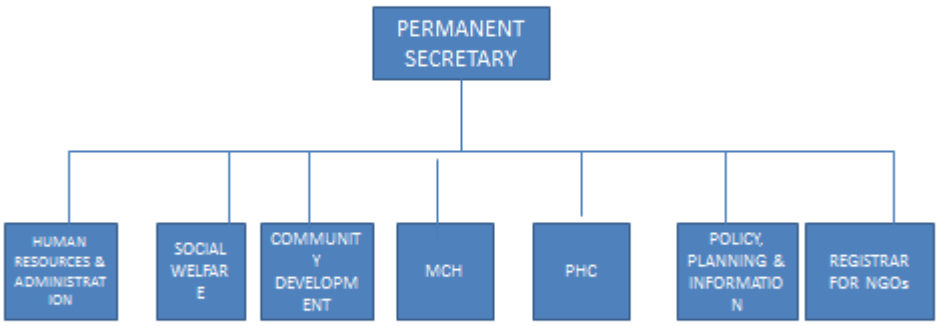
At policy level, the Ministry is headed by the Cabinet Minister and is supported by two Deputy Ministers, one responsible for Community Development and Social Welfare and the other for Mother and Child Health. At executive level, the Ministry is headed by the Permanent Secretary and has six Directors heading the following Departments.

- Human Resources and Administration
- Social Welfare
- Community Development
- Planning and Information
- Mother and Child Health
- Registrar for Non-Governmental Organizations.

STRUCTURE AT POLICY LEVEL



MANAGEMENT LEVEL



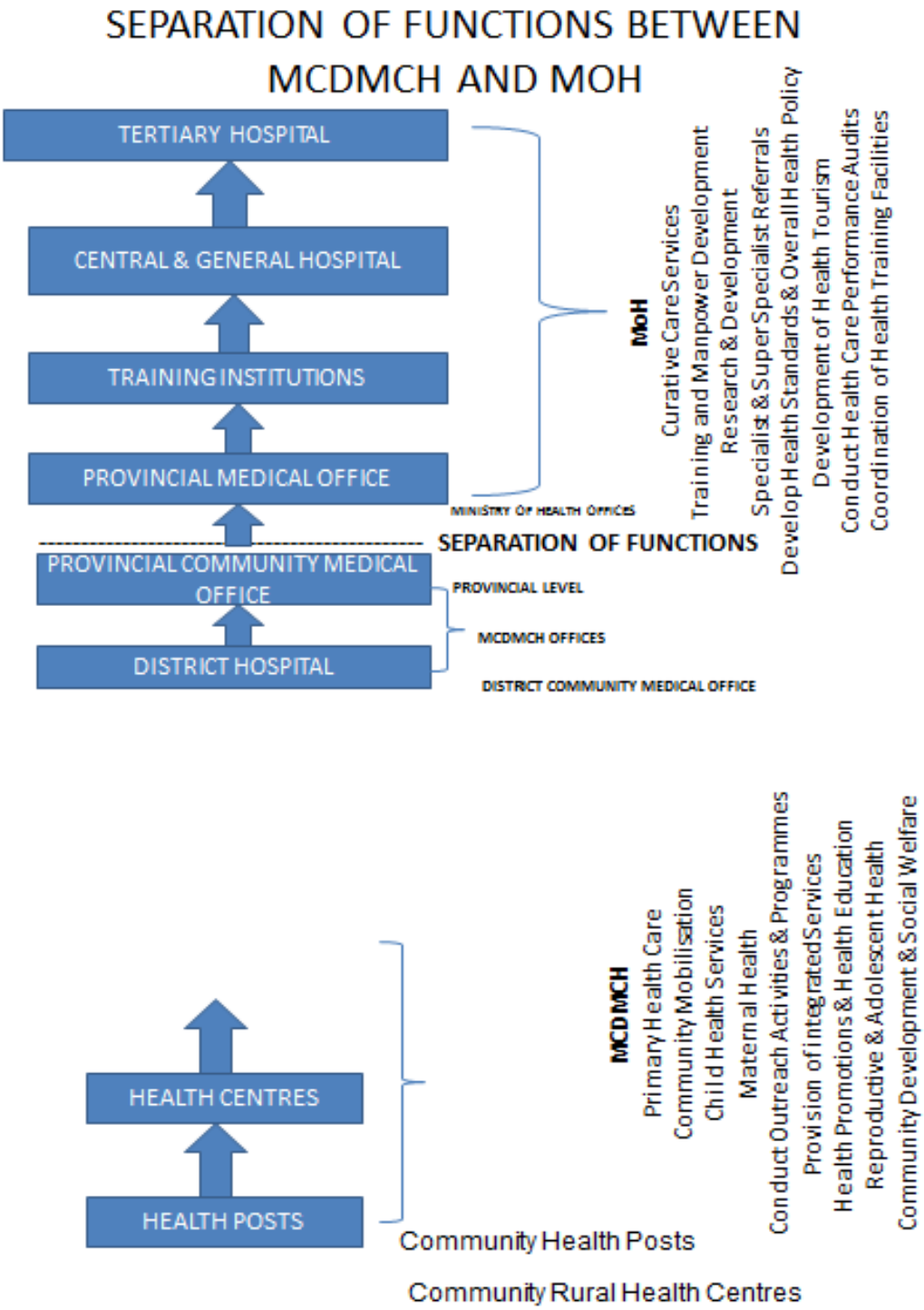
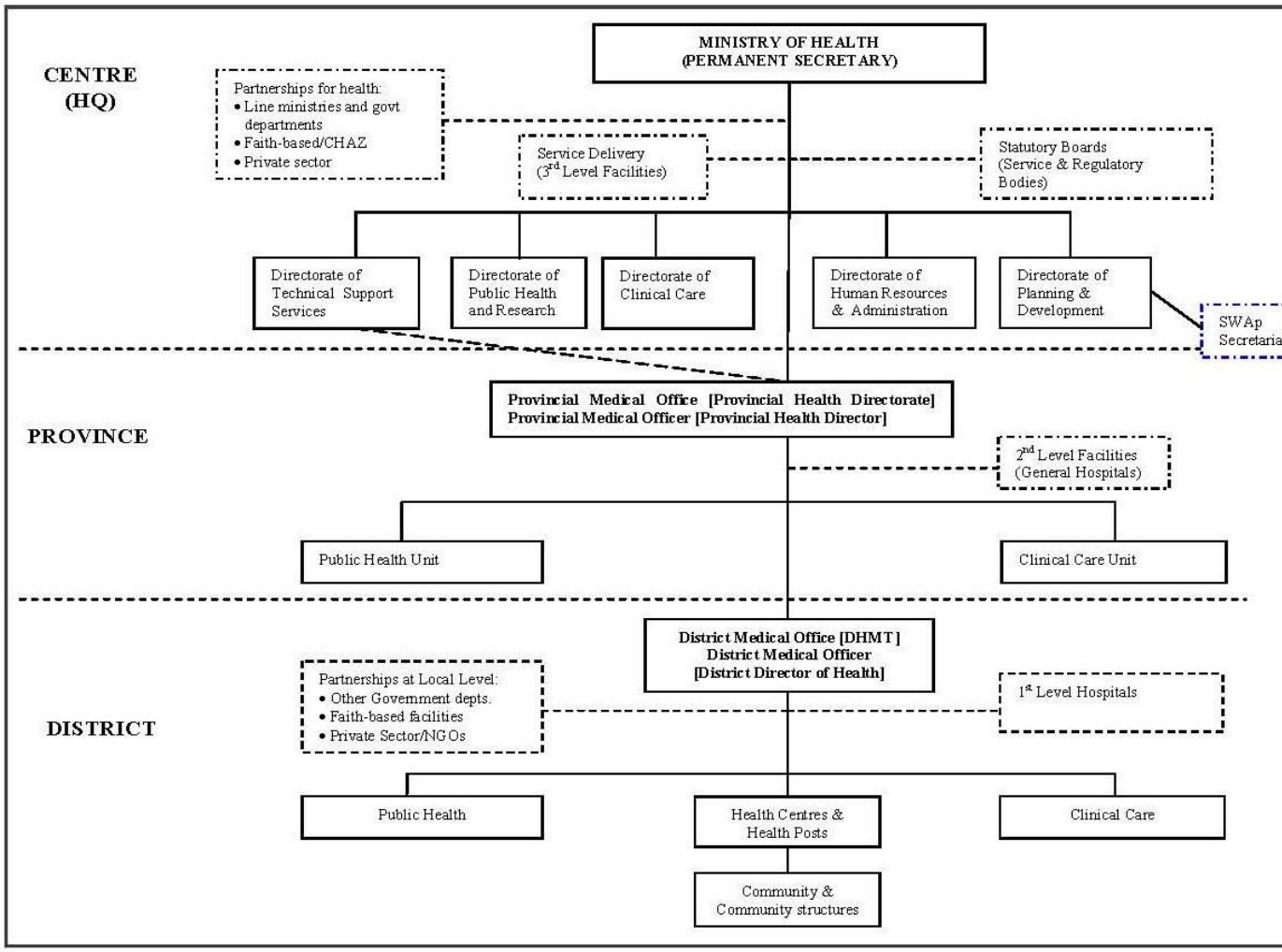

SEPARATION OF FUNCTIONS BETWEEN MCDMCH AND MOH
TERTIARY HOSPITAL
CENTRAL & GENERAL HOSPITAL
TRAINING INSTITUTIONS
PROVINCIAL MEDICAL OFFICE
PROVINCIAL COMMUNITY MEDICAL OFFICE
DISTRICT HOSPITAL
MINISTRY OF HEALTH OFFICES
SEPARATION OF FUNCTIONS
PROVINCIAL LEVEL
MCDMCH OFFICES
DISTRICT COMMUNITY MEDICAL OFFICE
MoH
Curative Care Services
Training and Manpower Development
Research & Development
Specialist & Super Specialist Referrals
Develop Health Standards & Overall Health Policy
Development of Health Tourism
Conduct Health Care Performance Audits
Coordination of Health Training Facilities
HEALTH CENTRES
HEALTH POSTS
MCDMCH
Primary Health Care
Community Mobilisation
Child Health Services
Maternal Health
Conduct Outreach Activities & Programmes
Provision of integrated Services
Health Promotions & Health Education
Reproductive & Adolescent Health
Community Development & Social Welfare
Community Health Posts
Community Rural Health Centres

Figure 1.2: Organizational chart of the public health system at the central, provincial and district level



Levels of Health Care

Health posts are intended to cater to a population of 500 households (3500 people) in rural areas and 1000 households (1000 people) in urban areas or to be established within 5KM radius in sparsely populated areas. Note that the reason for this is that people in rural areas live as extended families and they have larger families. Health posts are the most basic health institution.

Health centres include urban health centres which are intended to serve a population of 30,000 to 50,000 people and rural health centre serving a catchment area within a 29KM radius or population of 10,000.

First level referral hospitals are found in most of the districts of Zambia and are intended to serve a population of 80,000 to 200,000 with medical, surgical, obstetric and diagnostic services including all clinical services to support health center referrals. The country had 74 first level hospitals in 2007 and more hospitals are been built in the newly created districts (105 districts).

General hospitals are 2nd level hospitals at the provincial level and are intended to cater to a catchment area of 200,000 to 800,000 people with services in internal medicine, general surgery, paediatrics, obstetrics, gynaecology, dental, psychiatry and intensive care. These hospitals are also intended to act as referral centres for the first level institutions, including the provision of technical backup and training institutions.

Central hospitals are 3rd level hospitals are for a catchment population of 800,000 and above and have sub specializations in internal medicine, surgery, paediatrics, obstetrics, gynaecology, intensive care, psychiatry, training and research. These hospitals also act as referral centre for 2nd level hospitals. There are currently three in the country namely Kitwe, Ndola and Livingstone.

Tertiary hospital: Currently the country has the University Teaching Hospital in Lusaka which has specialist hospitals such as paediatrics, Eye clinic, psychiatry, Ear, Nose and Throat, intensive care unit, renal unit, and many others.

Specialist Hospitals such as Chainama Hills Hospital, Cancer Diseases Hospital and Arthur Davison Hospital in Ndola.

The design of the layers of the system forms the basis of the referral system that provides for contracting – in and – out at various levels of the health care system. The services provided at each level of care are defined by the basic health care package.

Factors Influencing Healthcare Delivery System

A delivery system is a means or procedure for providing a product or service to the public whereas a system is an organized scheme or method or a set of things working together as a mechanism of interconnecting network.

Health care delivery: This is the furnishing of medical or surgical treatment nursing, dental services, optometric service as well as other services for the purpose of curing, preventing human illness, physical disabilities or injury.

The following factors influence health care delivery system:

- **Medical Equipment**

The quality, efficiency and effectiveness of health service delivery are dependent on the availability of appropriate health care medical equipment in appropriate quantities and varieties. It is therefore desirable that this health care technology is kept in functional order most of the time as non-functioning equipment does not contribute to service delivery. Availability of modern equipment makes the diagnosis of many diseases easy. For example availability of CT scan and CD4 machines will improve the health care delivery system as this will ensure quick diagnosis and monitoring.

- **Infrastructure**

This is very critical in influencing the health care delivery system in that where infrastructure is sufficient and appropriate many people have access to the needed health

service. Infrastructure is also cardinal as it is a major driver of quality of health service delivery. Due to this the ministry of health developed an infrastructure data base and out lined the investment plan for equipment and infrastructure. The plan outlined the major infrastructure projects constructing health facilities, training institutions, officers and staff houses. All this is done in order to ensure that every Zambian should have access to quality health care service through the improvement of infrastructure development. For example expansion of UTH to include a multi modern emergency department which is still under construction.

- **Transport**

Optimal provision of health services requires the existence of an efficient transport system including ambulances for patients, vehicles for the distribution of drugs and supplies and managerial for supervision purposes. Patients have the right to be referred for advanced health care services; this can only be effective with good transport system, thus availability of well maintained or serviced vehicles.

- **Information and Communication Technologies (ICTs)**

ICTs facilitate the sharing of health data, information and resources between stake holders and the delivery of appropriate services to the population. ICT in health care delivery will facilitate the implementation of the national health strategic plan and coordination of health information and decision making as well as effective sharing of scarce resources for optimal health care delivery for all Zambians. Improved technology makes diagnostic procedures very effective. For instance the CT scan at UTH and availability of CD4 machines in many hospitals help in providing quality health care as patients are given the right treatment due to the appropriate diagnosis.

- **Demographic Situation and Trends**

Rapid population growth places an increasing burden on the national economy, particularly the country's capacity to keep pace with health needs of a rapidly increasing population and its dynamics. This may influence health care delivery system in that infrastructure may not be adequate to cater for the rapidly growing population hence the government will need to channel the money for other national projects to infrastructure development for health care service delivery.

- **Essential Pharmaceuticals and Medical Supplies**

Pharmaceuticals are an essential component of health care delivery system. Shortages of essential medicines and surgical supplies greatly influence the health care delivery system as quality of service is compromised as standards are not followed due to lack of things to use to carry out procedures, for example no sterile gauze for wound dressing. Lack of local pharmaceutical manufacturing industries makes drugs expensive to procure from other countries.

- **Disease Burden**

The burden of disease in the country is high and largely influenced by the high prevalence and impact of communicable diseases particularly Malaria, Tuberculosis, HIV and AIDS and sexually transmitted infections (STIs). The country is also faced with increased burden of maternal, neonatal and child health problems and growing problem of non-communicable diseases. This influence health service delivery as more money and resources are channelled to this sector in trying to address the effects of the disease burden.

- **Income and Social Economic Status**

High levels of unemployment and weak social economic status of the population have implications on the health status of the people. High poverty levels and poor access to safe water and sanitation also remain serious factors of health care delivery system. Safe water and good sanitation will prevent outbreaks of infectious diseases such as cholera and dysentery there by reducing cost burden in the health delivery system.

- **Political Decision/Will**

Leadership and governance provides vision and policy direction and ensures efficiency, effectiveness and promotes equity in use of resources, in order to achieve set goals and objectives. For example the increasing number of training institutions and specialties for health workers shows political will. We now have critical nursing, direct midwifery, paediatrics nursing and HIV nurse prescriber. Also the increased enrolment in government nursing schools shows government commitment to increasing competent human resource. In addition government has allowed private sector involvement in delivering health care training for example Apex University, Cavendish University, and Lusaka University.

- **Health Care Financing**

The government has increased the health care budget to enable the smooth running of healthcare delivery system. Donors also supplement the funding to the health care delivery, for example the construction of Community health workers training school in Mwachisompola. Community health workers are mostly involved in preventive part of health care, for example provision of health educations in the community on preventive measures on disease outbreaks.

- **Human Resource**

Human resource plays a key role in health care delivery system. As eluded to under political will the increase in training institutions for health personnel is contributing to the availability of competent human resource which translate in to lower morbidity and mortality rate. For example a pregnant woman under the care of a midwife is most likely to survive the birth than a woman with out. In addition to address inequitable distribution of health workers the government is implementing rural retention scheme for health workers. The scheme is aiming to attract and retain health workers in underserved rural areas in order to provide the basic primary health care to local community.

Challenges to Health Care Delivery System

- **Shortage of Medical Equipment**

Currently there is a critical shortage of key equipment in most hospitals which is hampering provision of quality health care. A lot of health facilities have been constructed but remain unutilized because of lack of equipment hence denying the local community access to health care and Lack of properly qualified maintenance personnel leading to a good number of equipment not in functional order. This is partly due to poor and unattractive conditions of service which makes it difficult to recruit and retain engineers and partly due to inadequate budgets allocated for maintenance of hospital equipment.

- **Inadequate as well as Inequitable Distribution of Health Infrastructure**

In both rural and urban areas, health infrastructure is inadequate making it difficult for many people to access the needed services. This could be attributed to inadequate funding towards infrastructure development, inadequate support in monitoring and management of health infrastructure projects and inadequate infrastructure staff to manage construction projects and contracts. This negatively affects the health care delivery system as many people are denied access to good health care services; wards are congested due to limited space this leading to infringement of patients' rights in various ways.

- **Inefficient and Inadequate Transport System**

This places challenges in referring patients for advanced care and also for outreach activities. Patients that need referral may end up dying at the health facility due to lack of transport at the facility for referral. The communities in hard to reach areas may be denied of health services due to lack of transport for outreach activities. Transport sector is negatively affected partly due to inadequate capacity for transport management and limited budgets for maintenance of vehicles and badly equipped vehicle maintenance workshops.

- **Critical Shortages and Inequitable Distribution of Health Workers**

The country is facing a serious human resources crisis for health workers both in the numbers and skills mix. The critical shortage of manpower is a major obstacle to provision of quality health care services. Skills mix favors urban areas than rural areas. The shortage cuts across all cadres especially profession health workers for example nurses, clinicians, pharmacist, etc. Shortages of qualified health workers especially midwives at all levels contribute to high Mortality rate. Zambia stands at 591/100,000 maternal mortality rate. Unattractive terms and services for health workers, poor remuneration, poor working environment, inadequate housing and housing allowances, poor bonding mechanisms of graduating workers may all contribute to shortage of health workers in the country.

- **Training and Development**

Shortages of teaching staff and unattractive working conditions leading to poorly trained staff with no skill to deliver quality health services to the targeted populations negatively

influence the health care delivery system. Inadequate training aids, models, study materials and information and technology for students in health training institutions may have greatly contributed to poorly trained personnel who are unable to deliver quality care to the community.

- **Erratic Supply of Essential Drugs and Medicines**

This may pose a challenge in the treatment of patient ailments and performing medical and surgical procedures. For instances no surgical groves and oxytocin in the delivery room compromises the health care delivery system. Erratic supply of vaccines poses the risk of communicable diseases to under five children.

Providers of Health Care in Zambia

Health care providers are institutions or individuals providing health care services. Individuals including health professionals and Allied Health Professions who can be self-employed or working as an employee in a public hospital, Clinic, or other health care institution, whether government operated, private for-profit, or private not-for-profit (e.g. non-governmental organization). They may also work outside direct patient care such as in a government Health department or other agency, medical laboratory or health training institution. Examples of health workers are doctors, nurses, midwives, paramedics, dentists, medical laboratory technologists, therapists, psychologists, pharmacists, community health workers, traditional medicine practitioners, and others

Role of a Professional Nurse

A professional nurse is a nurse, who has reached an advanced level of education and training. In general, a professional nurse must diagnose and treat a variety of medical conditions and diseases.

A role is a part one plays or functions performs by virtue of their position or status in the organization or community. The nurse assumes a lot of roles in the health care system; some roles are basic and can be carried out by any nurse regardless of level of training while others are best suited for nurses with advanced education or according to specialization.

ROLES

1. Care giver –This is the basic role of the nurse which involves the provision of direct care and promotion of client/patient comfort. The nurse shows concern for client welfare and acceptance of the client as a person. The nurse enhances healing process and assists the client to regain independence. She should pose attributes of empathy, humbleness and tolerant.
2. Client advocate – The nurse protects the client's human legal rights and helping clients and families to interpret information from other health care providers. Promotes what is best for client ensuring that the client's needs are met and provides explanation in client's language and support clients' decisions.
3. Change agent – The nurse initiates changes or assist clients to make modification in the patient's/client's life or in the system of care. If you advocating for patients, you also should

lead by example in the communities that you live in. For instance, take a leading role in health promotion activities such as undertaking cervical cancer screening, access to family planning, going for voluntary male circumcision. Thus, a nurse should be good role model in the community.

4. Manager – The nurse manager makes decisions, coordinates activities of others, allocates resources, evaluate care and personnel. The nurse plans, gives direction, develop staff, monitor operations, give rewards fairly and represent both staff and administration as needed.

5. Educator – The nurse provides information and helps the clients to learn or acquire new knowledge and technical skills. Encourage as well compliance with prescribed therapy and promote healthy lifestyle. To execute this role effectively you should be knowledgeable and updated with new trends in nursing.

6. Counsellor – Helps the client to recognize and cope with stressful psychological or social problems; to develop improved interpersonal relationships and to promote personal growth. Provides emotional, intellectual and psychological support and focuses on helping client to develop new attitudes, feelings and behaviours rather than promoting intellectual growth. Encourages the client to look at alternative behaviours recognize the choices and develop a sense of control. The nurse should be honest and nonjudgmental.

7. Researcher- Participates in identifying significant researchable problems. Participates in scientific investigation and must be a consumer of research findings.

In addition to managing patients' needs, pay close attention to the effects of disease on patients 'families', as well as their home and work life. Nurses typically place a lot of emphasis on disease prevention, patient education, and welfare.

In general a profession nurse diagnose and treat a wide range of diseases, chronic diseases, infections, and medical and surgical conditions and also obtain patient history and perform physical examinations. As a professional Nurse, you may also perform in-office minor surgical procedures while working in collaboration with physicians and other medical professionals. Nurses commonly provide advice to patients, informing them of treatment options and guide them in developing self-care skills and healthy behaviours.

1.3 Group Dynamics and Team Work

Introduction

Theorists are not of one mind when it comes to defining the word group. Some scholars stress the importance of communication between members while others highlight the key role played by mutual dependence. Still others suggest that a shared purpose or goal is what turns a mere aggregate of individuals into a bona fide group. It is the latter theory of group we will adopt in this presentation. Getting a group of people together does not make a team. A team develops products that are the result of the team's collective effort and involves synergy .Synergy is the property where the whole is greater than the sum of its parts. Thus, the health care team is made up of people whose shared goal or objective is the wellbeing of the patient.

The team include: - nurses, medical officers, laboratory scientists, pharmacists, radiographers, cleaners, counsellors and physiotherapists. The members of the health care team not only have to interact among themselves but also with the patient, family and the community. It is therefore very important for all health workers to be familiar with group dynamics for them to participate fully in the care of the patients.

Definitions

1. A group is two or more individuals who are connected by and within social relationship (Donelson R ., 2006)
2. A group is more than two persons who interact with each other in such a manner that the behavior or performance of one is influenced by the behavior of others (Shaw, 1981)
3. Group dynamics refers to changes which take place within groups and is concerned with the interaction and forces obtained between group members in social settings (Sharma, 2011)
4. A team is two or more people working interdependently towards a common goal (World Health Organisation, 2007)
5. A Team is defined as work done by several associates with each doing a part but all subordinating personal prominence to the efficiency of the whole (Merriam Webster Dictionary)

Types of Groups

According to sociologist Charles Horton Cooley (1909) groups are classified as being either primary or secondary. These groups are generally known as informal (primary) and formal (secondary).

a) **Informal Groups**

These are characterized by small size, face to face interactions, solidarity, and high level of member to group interdependence and identification, and intimacy among the members. The examples are family groups. The individuals become part of these groups involuntarily and they are long term.

b) **Formal Groups**

The secondary groups are characterized by large size and individuals' identification with the values and beliefs prevailing in them rather than actual interactions. These groups tend to be shorter in duration and less emotionally involving. These include work groups, clubs, congregations, unions and professional associations.

Reasons why People Join Groups

People seek to join groups since the groups give the members stability and enhance their achievement capacity. The main reasons individuals choose to join groups are:

- HAVE A SENSE OF SECURITY: The group enables the person to reduce a sense of insecurity and have a stronger feeling with few self-doubts. For example nurses join the union to have a sense of security.
- HAVE A STATUS: The persons in a group can be easily recognized and a status is achieved by them. For example, members of the golf club or lions club.
- DEVELOP SELF-ESTEEM: The groups can help a person develop a sense of "to-belong". This provides a person with a feeling of self-worth and develops confidence in its members.
- AFFLIATION: The groups can fulfil social needs. People enjoy the regular interaction that result from group membership.
- POWER: The power is derived on the strength of closeness of the group members with greater power achieved when in group then if a person is alone or individually. For example, when one joins the ruling part.
- GOAL ACHIEVEMENT: The goal can be achieved more easily when a group effort is present as "UNITED WE STAND, DIVIDED WE FALL".

Stages of Group Formation

There are five stages of group formation. These are:-

1. **FORMING:** This is characterized by a great deal of uncertainty about groups purpose , structure and the leadership . Members get together and get to initially know one another and form as a group. Members of the group set ground rules. This stage continues until the members have begun to think that they are part of the group.
2. **STORMING:** The members accept the existence of the group but they are still resisting the constraints the group poses on them. There is conflict as to who will control the group. In addition conflict between team's natural working styles differences and team members may lead to frustrations. When this stage is completed, there does exist a relatively clear hierarchy of leadership in the group. However, some subgroups would also have formed during this stage.
3. **NORMING**: In this stage, differences are settled, college's strengths are appreciated, authority is respected and there is close relationship between the members and the group demonstrates cohesiveness. There is sense of group identify and this stage is complete when the group structure solidifies and the group has assimilated a common set of expectations defining the behaviour.
4. **PERFORMING**: The structure at this point is fully functional and accepted. The group energy is has moved from getting to know and understand each other to performing a task at hand. It feels easy to be part of the team at this stage and people who join or leave won't disrupt the performance of the team. For permanent work groups this is the last stage. But for the temporary committees, teams, task forces, and similar groups the adjourning stage is the last.
5. **ADJOURNINIG**: Many teams will reach this stage eventually. For example project teams exist for only a fixed period and even permanent teams may be disbanded through organisation restructuring. In the health care system, ward rotations may occur from time to time. The responses of group members vary in this stage. Some are upbeat, basking in the

group's accomplishment while some are depressed over the loss of colleagues and friends made during the course.

Principles of Group Dynamics

1) Since members of the group must have a strong sense of belonging to the group, the barrier between the leaders and followers must be broken down.
2) The more attraction a group is to its members, the greater influence it would exercise on its members.
3) The greater the prestige of the group member in the eyes of the member in the eyes of the members, the greater influence he would exercise on the theme.
4) The successful efforts to change individuals sub parts of the group would result in making them confirm to the norms of the group.
5) The pressures for change when strong can be established in the group by creating a shared perception by the members for the need for the change.
6) Information relating to the need for change, plans for change and the consequence of the changes must be shared by the members of the group.
7) The changes in one part of the groups may produce stress in the other parts, which can be reduced only by eliminating the change or by bringing about readjustments in the related parts.
8) The groups arise and function owing to common motives.
9) The groups survive by placing the members into functional hierarchy and facilitating the action towards the goal.
10) The intergroup relations, group organization, member participation is essential for effectiveness of a group.

Features of Group Dynamics

1 **Group dynamics is concerned with group** .Wherever a group exists the individuals interact and members are continuously changing and adjusting relationship with respect to each other . The members of the group may interact , may be in state of tension , may be attracted or repelled to each other , may seek the resolution of these tensions and return to equilibrium after the resolution.

2 **Changes go on occurring**. For the example, the introduction of the new members, changes in leadership, presence of old and new members. The rate of change differs, fast or slow. The groups may dissolve if the members are not enthusiastic about the goals, they have no faith in the ideology and do not identify themselves with the group. This means that the cohesiveness in the group has decreased.

3 **Rigidity versus flexibility (cohesiveness or conflict)**. If the members get along well there is smooth sailing for the group and if there is conflict it leads to problems.

4 **Group organization is essential.** It leads to greater group effectiveness, participation, cooperation and a constructive morale. The organized group, is one with every member having specific roles and acting towards other members in the prescribed manner

5 **Dynamic groups are always in continuous process** of restructuring, adjusting and readjusting members to one another for the purpose of reducing the tensions, eliminating the conflicts and solving the problems which its members have in common.

Team Work

Teamwork is an essential part of workplace success. There are several types of teams. The choice of type depends on the task to be performed, the organizational context and the resources available. For example the health care team can be known as the surgical team if they are to perform a surgical operation. When everyone in the workplace work together to accomplish goals, everyone achieve more. Teamwork involves building relationships and working with other people using a number of important skills and habits.

Elements of Teamwork

Part of being a good team member is learning how to understand your personal strengths (what you have to offer) and where you might need to draw assistance from others. The following are characteristics of a good team member:-

a. RELIABLE: This means that other team members can count on to get the job done.
b. EFFECTIVE COMMUNICATOR: This means: You express your thoughts and ideas clearly and directly, with respect for others.
c. ACTIVE LISTENER: Means that team members must listen to and respect different points of view. If constructive feedback is given, an active listener does not upset or defensive.
d. PARTICIPATES (team player): A team player is always ready to get involved in team activities. He/she is a regular contributor. This is a positive contribution not one that brings the integrity of the team into disrepute.
e. SHARES OPENLY AND WILLINGLY: Members are willing to share information, experience, and knowledge with the group. This helps the team to solve problems.
f. COOPERATIVE: A corporative member works with other members of the team to accomplish the job no matter what. They put their personal interest aside for the greater good of the team.
g. FLEXIBLE: team members should adapt easily when the team changes direction or are asked to try something new. This is because situations change, what was applicable last year may not work this year. Members avoid being rigid and insisting on doing things only one way.
h. COMMITTED: committed members are self-motivated, responsible and dedicated. They always give their best effort in achieving the team's goals.
i. PROBLEM SOLVER: Always focus on solutions rather than problems. They are good about not going out of their way to find fault in others.
j. RESPECTFUL: This means treating other team members with courtesy and consideration all of the time.

Advantages of Teamwork

1. Encourage collaboration: Create a project environment where problem-solving and decision-making are done in a collaborative and participative manner. This is important for empowering the team and encouraging active involvement in the project.
2. Build trust: Create an environment of trust by modelling the behaviour you desire from your team by communicating openly, supporting win/win approaches, and respecting others. This is important for showing the team that you trust them and encouraging mutual trust among each other
3. Mutual support: Mutual support and co-operation arise from working together on a task, leading to increased commitment to improvement.
4. Supports a more empowered way of working, removing constraints which may prevent someone doing their job properly.
5. Promotes the sense of achievement and equity, essential for a motivated workplace

Disadvantages of Teamwork

- **Unequal Participation**

  With some teams, there can be a tendency for members to sit back and let others do most of the work. Conflict may occur as a result, which can have a detrimental effect on workplace morale.

- **Limiting Creativity**

  Teamwork may also limit creative thinking. Employees may be so focused on working for the overall good of the team and fitting in to the team concept that they put their own ideas on the back burner. This lack of innovative thinking may keep your Team from moving forward, resulting in stagnation.

- **Longer Process**

  A team sometimes take longer to produce a desired result. Teams typically need to go through a variety of processes, such as member selection, organization and socialization on the way to completing the task at hand. Teams can also result in added expense, as they can tie up resources like money, manpower and equipment

- **Inherent Conflict**

  Whenever a group of people is assembled to achieve a goal, at least some conflict is likely to occur. Contrasting personal styles can clash and some members may have difficulty accepting ideas that differ from their own. Peer pressure can also result in a team member going against her better judgment to escape the wrath of other members

1.4 Legal Obligations of Nursing Practice

Introduction

Legal obligations are a tie which binds professionals to pay or to do something agreeable to the laws and customs of the country in which the obligation is made. It is also said to be a bond containing a penalty with a condition annexed for the payment of money, performance of convenience or the like. This implies that the Nurses have to abide by

laws and regulations when practicing nursing. Not abiding by the code of ethics could cost the nurse his or her nursing license and result in a malpractice suit.

In Zambia, The General Nursing Council (GNC) prescribes the scope of nursing practice and the code of ethics within which the nurse is expected to practice, to which he /she is accountable by law. In meeting the patients needs the nurse respects the patient's rights as the patient meets his/or her responsibilities.

Definition of Terminologies

- **Obligation**
  a) A social, legal or moral requirement such as duty, contract or promise that compels one to follow or avoid a particular course of action (**The Free Dictionary.)**

  b) Something by which a person is bound or obliged to do certain things, and which arises out of a sense of duty or results from custom, law, etc. (**Dictionary.com)**

  c) Something as a formal contract, a promise or the demands of conscience or custom that obligates one to a course of action. (**Merriam Webster Dictionary, (2014).**

- **Legal**
  Deriving authority from or founded on law. (Mirriam Webster Dictionary, Encyclopedia Britannica, 2009).

- **Legal obligation**
  It is a term that describes the duty that is enforced by a court of law, it can be a debt and the legal responsibilities to carry out what the law asks (Black's Law dictionary, 2005).

- **Professional Nurse**

  A professional nurse is a person who has acquired substantial knowledge of nursing theory and related scientific, behavioural and humanistic discipline and is allowed to practice (Basavanthappa BT, 2000).

- **Nurse**
  A nurse is a person who has completed a programme of basic nursing education and is authorized by the nursing council to practice nursing (General Nursing Council Regulatory Frame work, 1997).

- **Liability**

  A thing for which someone is responsible by law that is legally answerable **(Oxford 11th Ed, 2014)**

- **Malpractice**

  A dereliction of professional duty or a failure to exercise an ordinary degree of professional skill or learning by one (as a physician) rendering professional

services which results in injury, loss, or damage (**Merriam Webster Dictionary 2014**)

It also implies the idea of improper or unskilful care of a patient by a Nurse. (**Encarta Dictionaries)**

- **Negligence**

  Civil wrong tort causing injury or harm to another person or to a property as a result of doing something or failing to provide a proper or reasonable level of care. (**Encarta dictionaries**)

- **Tort**

  In civil law, a wrongful act for which damages can be sought by the injured part (**Encarta Dictionaries**)

Comparison between Characteristics of Occupation and Profession

	Occupation	**Profession**
1	Training may occur on the job	Education takes place in colleges, units e.g., Nursing
2	Length of training varies	Education is prolonged, when continues to advance e.g., from nurse to become a professor
3	Values, believes and ethics are not prominent	Values beliefs and ethics are an integral part of preparation e.g., in nursing there is code of conduct
4	Commitment and personal identification varies	Commitment and personal identification are very strong e.g., Lawyer dress and behave in a particular manner
5	Workers are supervised	The worker is autonomous e.g., a Professional Nurse is autonomous as she makes her own decisions about patient care and she takes full responsibility
6	People often change a job	Workers are committed to their jobs and do not lose their identity even when they move into fields
7	Accountability rests with the employer	Accountability rests with the individual e.g., the Professional Nurse is accountable to her actions

Legal Obligations for a Professional Nurse

1. The nurse advocates for the rights and responsibilities of providers to make the practice settings safe for nurses and other health care providers and clients. The Nurse ensures that the working environment has adequate equipment and supplies like gloves and aprons, good lighting forceps and sharp boxes to prevent other workers from contracting infections. She also explains the roles of different health providers to the patients.

2. The nurse advocates for upholding of the clients rights in planning, implementing and evaluating nursing and health care aimed at improving the health status of the client.

   The nurse explains the patient's rights to the patients and makes sure they are well displayed in the ward. She involves the patient in the plan of activities e.g., looking at priority care, she allows them to take part in the care activities e.g., doing passive supervised care. In evaluation of care, the Nurse evaluates care with the patient to allow them to have a say. By this doing the patients will build confident in the nurse and it enhances cooperation and adherence in implantation of appropriate care. There also mutual relationship between the caregiver and the client/patient

3. The nurse identifies clients' rights for participating in matters pertaining to their health. The nurse is expected to respect the clients rights like the right for a patient to choose a health care provider whom they want to attend to them, right to privacy. These rights are communicated effectively to the patient on contact with the patient.

4. The nurse participates in the development of guidelines and protocols for implementing and upholding client's rights in health care. During ward meetings the nurses contribute to meetings to develop protocols and these are also shared to other health team members by senior nurses.

5. The nurse informs clients about their right to health and provider's rights in valid settings. Nurses are expected to communicate to all clients about their rights and responsibilities. The nurse is also expected to have patient's rights well displayed in the wards. The nurse orients the patient to the hospital routines and procedures,

the roles of different health care providers and the responsibility of the patients in these. This promotes compliance and good inter personal relationship between the nurse and the patient.

6. The nurse establishes and maintains meaningful community participation in planning and implementation of nursing care activities. The nurse should involve the community in identifying their health problems and arriving at priority health needs; the nurses use influential persons in the community like headmen, Community health workers, and religious leaders. During planning cycles an amount of money is allocated to the community to plan their health. This promotes ownership by the community for the programmes and enhances sustainability of such measures.

7. The nurse participates in the supervision, monitoring and follow up activities aimed at promoting the client's right for care. The nurse ensures that the patient receives all the prescribed drugs, do required investigations and receives all planned nursing care. She ensures that the nursing care plan is implemented as planned; she evaluates care at each level of the nursing care implementation process. This ensures patient care satisfaction and job satisfaction by the nurse and also promotes quality care.

8. The nurse protects client from violation of their privacy and confidentiality. The nurse does not divulge patient's information to other people without patient's consent. She ensures that the patient is not unduly exposed when doing procedures. This promotes the patient's dignity and inspires a sense of security in the patient.

9. The nurse advocates for strategies to promote access to vulnerable groups in the community such as children (including the street children and orphans) adolescents, women, mentally ill and others. The Nurse, especially the community health nurse, connects vulnerable groups to organisations and institutions that can assist like social welfare, NGOs and the government. Youth Friendly corners are encouraged to help adolescents to access health services and support. Some rural health centers work with organizations like Plan International and Africare who offer various kinds of help to vulnerable groups**.**

10. The nurse provides leadership for nursing and health promotion at all levels of health care. The Nurse takes the lead in implementation of health promotion activities like washing hands, boiling of drinking water. She promotes healthy activities at primary level, secondary level and tertiary level of disease prevention.

Legal Obligations of a Nurse

1. **Practice within the specified scope**

Every state/country has a Nurse Practice Act, which states the guidelines and laws for the nurses who are licensed. The Act stipulates the scope of practice for every category of nurses. Practice outside the scope is violation of the act and may result in loss of practicing license.

2. Provision of nursing care/duty of care

The nurse is obliged to provide nursing care to patients placed under him/her. If the patient needs assistance with any issues, such as hygiene, mobility, medication or resuscitation the nurse has the legal responsibility to assist the patient. If a nurse does not monitor and provide care this can be considered as patient neglect, which is unethical and illegal.

3. Patient advocacy

A nurse has the legal responsibility to advocate for patients in all health care instances. The nurse is a liaison between the patient and other members of the health care team. Areas of advocacy include: access to physician for immediate care, interpretation of information from other members of the health care team, support from social worker and access to preventive interventions.

4. Consent forms

Nurses have the legal responsibility to explain all treatments and medications. Before the patient undergoes surgery or certain forms of investigations, he/she or family will need to sign a consent form. It is the nurse's legal obligation to ensure patient or family member signs a consent form acknowledging understanding of procedure. If consent form is not signed and complications occur, the nurse may face legal consequences.

5. Administration of drugs and other therapies

The nurse must administer medication to patients accurately and timely. The nurse has the legal responsibility to interpret the charts and files of a patient and to understand the action and side effects of drugs. If a nurse does not administer the correct dosage or medication to a patient, the patient could suffer major health risks or even death. This is ground for malpractice suit against the nurse.

Legal Obligations of a Student Nurse

1. Patient Care

Students shall not neglect patients in preference for personal care. If a student causes harm to a client as a result of their action or lack of action, the student, Instructor and the Health Care Facility Training Institution generally share the liability. Nursing students should provide care within the limitation of what they have been prepared for. Nursing students should never be assigned to perform tasks for which they are unprepared for and instructors should carefully supervise them as they learn new skills. The students should be encouraged to get enough information and skills before going for clinical practice and the teachers should prepare the students adequately before taking them to the ward. The professional Nurse should always be with the student as they start to perform the tasks in the clinical area. If requested to perform tasks for which they are not prepared/not taught, student nurses should report to supervisors. Nursing students are liable if their action cause harm to a client. Provide care for the client in a timely, compassionate and professional manner. Take appropriate action to ensure the safety of clients, self and others.

2. Communication

The student should communicate client care in a truthful manner. Truthful communication gives the clear picture of the patient's condition and prevents putting the client at risk of injury and harm it also promotes monitoring of patient care and prevention of negligence. Students should not give any press statement to members of the press, the public and other organisations without authority. He/she should assist in ensuring that there is full

disclosure and that consent is obtained from client regarding any form of treatment or research.

3. Patients' Rights

The student is obliged to advocate for rights of all clients. He/she should maintain client confidentiality. The student should treat others with respect and promote environment that respects human rights, values and choice of cultural and spiritual beliefs.

4. Other Obligations

a) Students should observe punctuality at all times.

b) The student promotes excellence in nursing by encouraging lifelong learning and professional development.

c) The student collaborates in every reasonable manner with the academic faculty and clinical staff to ensure the highest quality of client care.

d) The student should refrain from any deliberate action or omission of care in the academic or clinical setting that creates unnecessary risk of injury to clients, self or others.

e) Students are not supposed to steal and sell drugs.

f) Students are obliged to pass all exams

g) Keeping and consuming of alcohol drinks on duty is forbidden; drunken behaviour is unprofessional and therefore warrants disciplinary action.

Obligations of a Patient

1. Maintaining health habits

The patient should engage in health promoting activities like getting plenty of exercises, resolving stress, getting enough sleep, moderating alcohol consumption and refraining from smoking so as to remain healthy and reduce chances of getting diseases as the saying goes, "Prevention is better than cure".

2. Being respectful to providers

Just as it is a patient's right to expect respect, it is a patient responsibility to show respect in retain. This promotes mutual understanding between the patient and the client, the nurse will deliver the nursing care effectively and the patient will receive the intended care.

3. Being honest with providers

As an empowered patient, one need to recognize that being totally honest with the practitioner is imperative and this means sharing all information about one's habits and healthy, as holding back can mean not getting the care that one needs.

Being honest also accelerates the delivery of care and thus complications and adverse effects and even death will be prevented.

4. Complying with treatment plans

The patient must comply with treatment plan as she is part of the plan. Treatment plans include TB treatment Plan. Nursing Care Plan, Review dates, Schedule of Medications e.g., treatment with Benzathine Penicillin. This ensures patient receives the required treatment, it promotes healing, drug resistances, prevents complications and long hospitalization.

5. Preparing for emergencies

Patients with emergency and chronic conditions should move with the cards for identity and should disclose their conditions to the health care providers.

For example a patient with epilepsy will be given the right treatment when they go to the hospital in case they are in an epileptic attack. It protects the patient from receiving wrong treatment and it saves time for health workers to investigate known conditions.

6. Making decisions responsibly

In a frightening diagnosis or scary treatment option the client is obliged to make decisions based on solid evidence and proven procedures rather than wishful thinking.

For example, if a patient has been diagnosed with cancer, they should not rash to witchdoctors while avoiding proven treatment. This may worsen the condition and delay

recovery at the time the patient may decide to come to hospital. Wishful decisions easily increase the chances of complications and reduce survival.

7. Understanding prescription drugs and their possible effects

The patient should learn more about the effects and potential side effects of the drugs they are on and to counter check the drugs given to them by the pharmacists with what is prescribed.

The patient should counter check because pharmacists may also make mistakes. Getting wrong drugs may cause problems in the patient like drug reactions. The patient who knows their drugs may even advise the health care provider in providing care for them.

Knowing the side effects and what to do helps the patient to take responsibility and participate in maintaining his health and may help them to make the right decision when such symptoms are seen.

8. Meeting financial obligations

The client should fulfil the financial obligations as promptly as possible. This will help the institution providing care to meet the care of the patient promptly. It helps the institution buy all necessary requirements in time to promote good health and prompt recovery.

9. Reporting fraud and wrong doing

It is the responsibility of the patients who become aware of fraudulent activity to report it to those who can stop it.

This helps to save the institution from loosing finances which should be channeled to buy requirements like medical-surgical supplies that should help the clients. The patients should ensure they get receipts for any payment they make.

10. Avoiding putting others at risk

The patient should not wilfully put other people at risk of getting infection from them. The patient who is HIV positive may deliberately have sex with other people without using a condom or a TB patient may be spiting anyhow and these may infect other people.

The patient with TB should use a sputum mug or specified container, while a patient who knows is HIV positive should disclose his status to his partners.

11. Respect for other patients rights

The patient should be considerate of the rights of other patients and to respect their privacy. Every patient has the right to their own freedom. The patient should not be demanding to know the conditions of other patient or to peep on other patient who could be getting care under screens.

12. Reporting changes in the condition

The patient has an obligation to report any changes in his /her condition or anything that appears unsafe to the responsible health professional. This will help the health care providers provide prompt action to meet their needs. It reduces chances of complications and helps patient to take responsibility for their health.

Potential Liabilities in Nursing Practice

NEGLIGENCE

This refers to the commission or omission of an act, pursuant to a duty, that a reasonably prudent person in the same or similar circumstances would or would not do, and acting or the non-acting of which is the proximate cause of injury to another person or his property. (**slideshare, 2014**)

Common examples of acts of Negligence are:

a) Burns

These may come about if a nurse uses e.g., Hydrogen Peroxide that has not been properly dilutes leading to burning of tissues of the patient. The patient may also be burnt by improperly covered hot water bottles. In both these acts and others the Nurse becomes liable for prosecution.

b) Objects left inside the patient's body

In case where during an operation a forcep or swab is closed up and left in the patient's abdomen, the Theatre Nurse is liable to be charged for negligence as she is the one who is supposed to count all the forceps and swabs before and after the surgery.

c) Falls of the elderly and Children or any vulnerable patient

Most of the elderly patients and children should be nursed in railed beds and are to be supported when moving. In case of falls it means the nurse omitted the act of putting safety measures for the patient like nursing the patient in the railed bed or supporting them.

d) Failure to observe and take appropriate action

If a patient is convulsing, the nurse should prevent tongue biting by putting a spatula in the mouth, aspirations by tilting the patient's head in left or right lateral positions and falls by putting patient of railed bed or floor bed to prevent injuries from falls. In the event that the nurse does not do these things she can be charged for negligence. It may also come about if for example the nurse fails to observe the fluid therapy and blood transfusion such that the patient goes into fluid overload or reacts to transfusion. The nurse will be charged for failure to make right observations.

e) Mistaken Identify

This can happen if for example the patient going to theatre is labeled for a wrong procedure and eventually undergoes surgery for wrong indication. The nurse will be charged for negligence.

f) Wrong medicine, wrong concentration wrong dose, wrong route

For example the nurse may inject Quinine directly into the vein instead of via dextrose infusion. This may cause cardiac arrest for which a nurse in liable to be charged for professional negligence. The nurse must counter check all medications before giving.

MALPRACTICE

This implies the idea of improper or unskilful care of a patient by a nurse. It also refers to a negligent act committed in the course of professional performance. It's a term for negligence or carelessness of professional personnel

a) Injuring a Patient With Equipment

A nurse will be liable for malpractice if he or she injures a patient with a piece of medical equipment. This can happen in a variety of ways, like knocking something heavy onto the patient, burning the patient, or leaving a sponge inside the patient after surgery.

b) Abusing a patient sexually

Sometimes a nurse may take advantage of a patient and have sexual relationships with him/her. This is an act of malpractice for which a patient will be charged for malpractice.

c) Errors in procedures

Nurses perform many routine procedures, such as commencing intravenous fluids, insertion of indwelling catheters and drawing blood. Nurses are held to a standard of care when performing these procedures. They must act as a reasonable nurse in similar circumstances would act. If an error is made, and the patient gets injured e.g., when catheterising, a medical expert will be consulted to determine whether the nurse violated the standard of care.

Conclusion

In the provision of health care all people involved have obligations to meet including the patients. Professional nurses have obligations to meet to which they are accountable to the codes of ethics, the patients' rights and the law that punctuates their practice. Failure to meet these obligations the professional nurse becomes liable to be charged for negligence

Student nurses also have obligations even as they work under the supervision of the qualified staff.

Unit 2

Health Assessment

Introduction

In this unit, we discuss how to obtain health history and conduct physical assessment. We further discuss the nursing theories and models and their application to nursing practice. As you study this module you will undertake various activities to help you effectively go through the module and help you prepare for your written assignment.

Aim

The unit aims at equipping you with knowledge and skills in concepts of medical nursing and health assessment.

Objectives

Objectives

Upon completion of this unit you will be able to:

1. Describe the principles of medicine and medical nursing
2. Explain the types of health assessment
3. Conduct clinical interview to obtain Health history
4. Perform a physical examination
5. Identify actual and potential patient problems

2.1 Health Assessment

What is health assessment?

Activity 2.1

For the next 5 minutes before you read further, take your notebook and write down what comes to mind when you think about taking care of patients with a medical or surgical condition. Ask yourself these questions; How do we know the problems that have brought the patient to hospital? Where is the patient coming from? What is he suffering from? How can we help the patient?

In your reflections you might have thought that you can only find out the patient's problems by asking the patient or carefully observing the patient to see if he has any visible problems such as a swelling or is limping.

Defining Health Assessment

Health Assessment is a systematic method of collecting all types of data that identify the client's strengths, weaknesses, physiologic status, knowledge, motivation, support systems, and coping ability that may influence the client's health either positively or negatively.

When doing health assessment, you are providing a framework which ensures that data gathering will be consistent. It also enables you to provide individualized nursing care. Health assessment also maximises the amount and quality of information that the nurse can obtain from the client in a short time.

Health assessment will provide a decision-making basis with regard to the planning of nursing care and baseline data with regard to the client's functional abilities that can later be used to evaluate both the client's progress and the effectiveness of care. In addition to this, health assessment promotes the early development of a relationship with the patient.

Components of Health Assessment

There are two components of health assessment. These are:

- History (Subjective Data) which includes information provided by clients when asked to describe. This information is commonly called symptoms the patient feels and communicates to the nurse.
- Physical Examination (Objective Data) which is data that the nurse observes. It is obtained using the techniques of inspection, palpation, percussion and auscultation. This information is called signs. Later on in the module we will discuss the components of health history in detail.

Types of Health Assessment

There are 4 types of health assessment.

Comprehensive assessment

This involves a detailed history and physical examination performed at the onset of care in a primary care setting or on admission to hospital or long term care facility. It encompasses health problems experienced by the client, health promotion, disease prevention, and assessment for problems.

Problem-Based/focused assessment

Problem-based assessment involves history and examination that is limited in scope to a specific problem or complaint for example a patient who comes to the hospital complaining of abdominal

pains, history will focus on abdominal pain and physical examination will focus on the abdomen. This type of assessment is commonly used in a walk in clinic such as the outpatient department or emergence care setting.

Episodic/Follow-up assessment

This type of assessment is usually done when a client is following up with a health care provider for a previously identified problem for example when a client comes for review. An example of episodic assessment is shift assessment. Shift assessment is performed in acute care settings to identify changes in condition from baseline for instance a patient's vital signs will be checked and compared to the previous one.

Screening assessment

This is a short inexpensive assessment that focuses on disease detection for example blood pressure screening and glucose screening. This screening is usually performed as a mass screening.

2.2 Health History

We will start by discussing health history and how to obtain health history. By definition health history is the "process of collecting and documenting subjective data about a client through an interview" (Wilson and Giddens, 2005). Health history is obtained through a clinical interview.

Clinical Interview

An interview is a verbal interaction in which the goal of acquiring certain information is achieved through questions and answers. A clinical interview is a process of obtaining health history from the client (Wilson and Giddens, 2005). Clinical interviews are conducted to obtain subjective data about a client's past and present health status. During the interview, the nurse's role is to facilitate the discussion in order to collect and record data. The amount and type of data obtained depends on the setting, purpose of visit and client's needs.

Activity 2.2

(About 10 minutes)

Reflect on the process of interviewing and answer the following questions. This will prepare you as you study the next section.

1. What do you consider before you start an interview with a patient?
2. What type and how do you phrase the questions to get the right information from the patient?
3. How do you ensure that the patient is free to express themselves and tell you all their problems?
4. What are the sources of patient's data?

Compare your answers with those provided at the end of the unit.

Activity 2.3

(About 5 minutes)

Think about the different aspects of health history or the type of information that you are supposed to collect from the patient and write them down in your notebook.

Components of Health History

Health history consists of different components of health status. These include:

- Biographic data (Demographic or Biological Data)
- Reasons for seeking health care (Chief complaints)
- History of present illness
- Past health history
- Family health history
- Personal and psychosocial history (life style and health practices profile)
- Review of systems

Biographic Data

Biographic data includes information that identifies the client. The data are collected at first visit and updated as changes occur. When collecting biographic data include the following:

- Full name, Gender
- Address and phone number
- Date of birth
- Race
- Religion
- Marital status
- Next of kin
- Identification number for example national registration card
- Occupation
- Level of education
- Place of Birth
- Source of referral
- Usual source of health care
- Date of interview
- File number

- Primary language
- Province/tribe

Reasons for seeking health care

This is also known as the chief complaint or the presenting problem. It is a brief statement of the client's purpose for requesting the services of the health care provider. When recording the reason for seeking health care, you should record it in direct quotes for example a patient may tell you that "I have pain in the left side of the chest that moves along the left arm". It is important for you to record the complaint in direct quotes because paraphrasing may lead to changing the real patient problem and may further lead to missing the correct diagnosis.

However, the patient's statement is not diagnostic but their perception of reasons for seeking health care. As a nurse, you should clarify the patient's perception in order to identify potential needs for education, counselling or referral to community resources.

History of present illness or present health status

This is a complete, clear and chronologic account of the problem prompting the patient to seek care. It can be obtained by conducting a symptom analysis. A symptom analysis is a systematic way to collect data about the history and status of symptoms.

The questions that will help you find out about the onset of symptoms include:

Onset of symptoms

- When did the symptoms begin?
- Was it sudden or over a period of time (time and date)?
- Where were you and what were you doing?
- Does any one else you were with have similar symptoms

Location of symptoms

- Is the location in a specific area?
- Are the symptoms vague or generalized?
- Does the symptom radiate to other parts of the body?

Duration

- How long does the symptom last?
- Have the symptoms worsened or still the same since they started?
- Are the symptoms consistent or intermittent?

Characteristics of symptoms

- Describe the characteristics of the symptoms e.g. pain is it stabbing, shooting, squeezing, dull, nagging etc.

Aggravating and alleviating factors

- What affects the symptoms?
- What makes the symptoms worse that is what aggravates the symptoms (activity, eating, walking or sleeping in a certain position)?
- Are there some physical or psychological factors in the environment that aggravates the symptoms (stress chemicals, smoke, dust, pollen etc?

Related symptoms

- What other symptoms are present?
- Have you noted other symptoms that have occurred at the same time?

Treatment (self or prescribed)

- Are there some treatments you have tried self or prescribed, Western medication or traditional?
- Have they worked or not?
- Have you tried any other therapies apart from pharmacological ones?

Severity of symptoms

- How severe are the symptoms?
- Using a 0-10 scale let the patient locate the severity of the symptom.
- Is the symptom so severe that it interrupt your ADLs (work, school, sleep etc)

Past Health History

Past health history will help you to identify certain risk factors that may have a bearing on the current health status of the patient.

Data from this component of history will include diseases suffered from in childhood such as measles, mumps or streptococcal sore throat. Such childhood illness may have complications in later life.

Also find out if the patient has undergone any surgeries, if yes, type of surgery, date it was performed, and the outcome.

Ask the patient if they have been hospitalized before. If yes, what was the reason for the admission, date of admission and outcome.

Find out from the patient if they have been involved in an accident before. If yes when the accident was and what type of injury they sustained.

Ask the patient if he has ever suffered from a chronic condition such as hypertension, epilepsy diabetes mellitus etc

Ask whether they are on any medication and if yes, is it prescribed, over the counter or herbal, reasons for taking, dose, duration, side effects, and how they perceive the effectiveness of the medicine.

Find out if they are allergic to any drugs, food, environmental factors etc if yes ask them to describe what happens when they are exposed to these factors.

Find out the last time they had a full medical examination, dental check up, vision testing, hearing and in case of women when they last had a Papanicalou (pap) smear etc

Find out if they have been vaccinate against some common childhood illnesses such as tetanus, diphtheria, poliomyelitis etc

Family Health History

Activity 2.4

Take 5 minutes to think about all the diseases that run in families. Additionally think about problems in the families that may affect the illness or recovery of a patient. Write them down in your note book.

Why Collect Family History?

It is also important to obtain a family history of the client's blood relatives and these are biological parents, aunties, uncles, siblings, spouse and children. This is done to identify illnesses of genetic, familial, and environmental nature that may affect client's current or future health.

In obtaining this history, you should trace at least two generations to parents and grandparents.

Ask for the presence of any of the following diseases among family members; cancer all types, hypertension, mental illness, epilepsy, diabetes mellitus, sickle cell disease and many others etc.

Family history can be documented in a narrative form or in form of a genogram.

A genogram is a tool consisting of a family tree diagram depicting members within a family over several generations. When drawing a genogram, use a standard format so that others can understand the information and provide a key to the symbols used.

Usually female relatives are indicated by a circle and male relatives by a square.

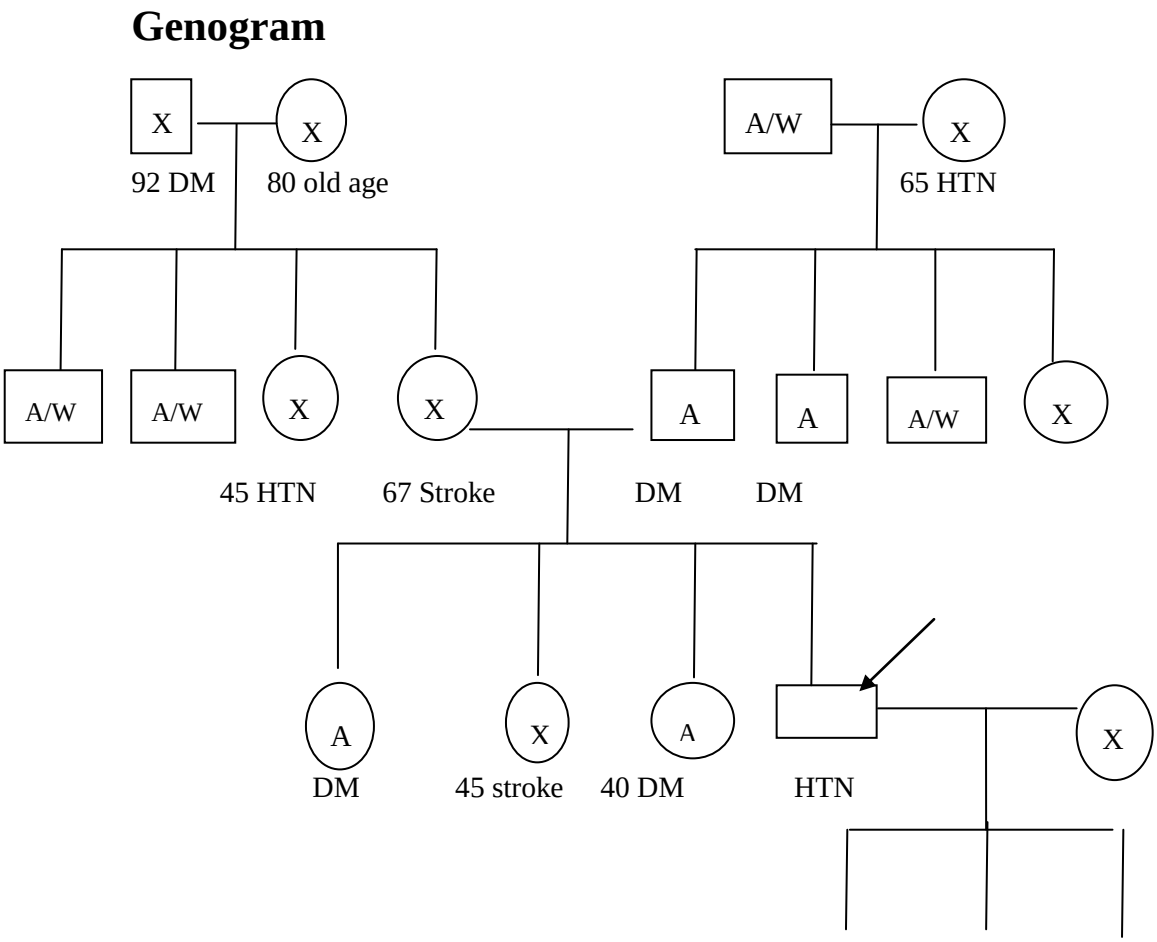
Deceased relative is noted by marking an X in the circle or square and listing the age at death and cause.

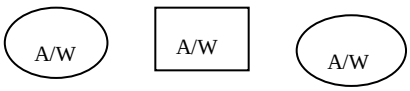
Identify all relatives living or dead by age and provide a brief list of diseases or conditions affecting them.

If relative has no problem indicate A/W (alive and well)

After the diagrammatic family history, prepare a summary of the kinds of health problems present in the family.

Below is an example of a genogram.





Key

○	Female
□	Male
↙	Patient
A/W	Alive and Well
X	Dead
DM	Diabetes mellitus
HTN	Hypertension
TB	Tuberculosis

Activity 2.5

(About 10 minutes)

Draw a genogram of your family starting from 2 generations and trace any diseases that run in your family.

Personal and Psychosocial History (Life Style and Health Practices Profile)

In personal and psychosocial history you explore issues that affect and reflect the client's physical and mental health.

Personal status

Ask the client for a general statement of feeling about self, cultural and religious affiliation and practices, educational preparation, occupational history, satisfaction with work, hobbies and interests.

Family and social relationships

Ask about general satisfaction about interpersonal relationships, with family members and significant others. Ask about participation in social organizations for example spiritual and religious groupings. If social interaction is limited ask why.

Diet and nutrition

Let the client describe his/her appetite, food intake, use of beverages. Ask for any changes in appetite and gastro intestinal problems.

Functional ability

Ask about the person's ability to perform self care activities such as personal cleansing and dressing and ask for possession of skills needed for independent living for example cooking and house keeping

Mental health

Ask client about personal stress, sources of stress if any such as family members, finances or self.

Personal habits

Ask for habits which are detrimental to health such as smoking, drinking alcohol, and use of illicit drugs.

Health promotion activities

Ask the client for activities they regularly perform to maintain health such as exercises, breast self examination and many others.

Environmental

Assess client's environment for safety, ask for environment hazards within the home and the community, any overcrowding, violent behaviours at home, noise, air and water pollution.

Review of Systems

Systems are assessed depending on client's condition and urgency in initiating care.

General presentation of symptoms

Ask the patient if they are experiencing any fever, chills, malaise, pain, disturbances in sleep patterns, fatigability.

On diet, find out if the patient has lost appetite, what they like to eat and dislikes, food restrictions, written diary of food intake.

Ask the patient if they have any rash or eruption, itching, colour or texture change, excessive sweating, abnormal nail or hair growth.

Musculoskeletal

Ask the patient if they have joint stiffness, pain, restricted motion, swelling, redness, heat, deformity.

Head and neck

- Eyes: find out about their visual acuity, blurring, diplopia, photophobia, pain, recent change in vision
- Ears: ask about hearing loss, pain, discharge, tinnitus, vertigo.
- Nose: ask about the sense of smell, frequency of colds, obstruction, epistaxis, sinus pain, or postnasal discharge.
- Throat and mouth: ask about hoarseness or change in voice, frequent sore throat, bleeding or swelling of gums, recent tooth abscesses or extractions, soreness of tongue or mucosa.

Endocrine and Genital Reproductive System

Find out from the patient if they have thyroid enlargement or tenderness, heat or cold intolerance, unexplained weight change, polyuria (excessive urination), polydipsia (excessive thirst), changes in distribution of facial hair.

Male: ask about the puberty onset, difficulty with erections, emissions, testicular pain, libido, infertility,

Females: ask about the menses (onset, regularity, duration, and amount, dysmenorrhoea, Last menstrual period (LMP), date of last Pap smear, frequency of intercourse, age at menopause, pregnancies (number, abortions), type of delivery, complications, use of contraceptives, breasts (pain, tenderness, discharge, lumps)

Chest and Lungs

Ask the patient if they are experiencing pain related to respirations, dyspnoea, cyanosis, wheezing, cough, sputum (character and quantity), exposure to Tuberculosis (*for example the patient in the genogram was exposed to TB because the wife died from TB*), last chest X-ray.

Heart and Blood Vessels

Ask about any chest pain or distress, precipitating causes, timing and duration, relieving factors, dyspnoea, orthopnoea, oedema, hypertension, exercise intolerance.

Gastro intestinal

Find out about appetite, digestion, food intolerance, dysphagia (difficulty in swallowing), heartburn, nausea or vomiting, bowel regularity, change in stool colour in contents, constipation or diarrhoea, flatulence, haemorrhoids.

Genitourinary

Ask if the patient is experiencing any dysuria, flank or suprapubic pain, urgency, frequency, nocturia, hematuria, polyuria, hesitancy, loss in force of stream, oedema, STIs.

Neurological

Find out if the patient is experiencing syncope, seizures, weakness or paralysis, abnormalities of sensation or coordination, tremors, loss of memory.

Psychiatric

Find out if the patient experiencing depression, mood changes, difficulty concentrating, nervousness, tension, suicidal thoughts, and irritability.

2.6 Physical Examination

In this component of health assessment, you will learn how to obtain objective data through physical examination. Physical examination requires that the examiner develops technical skills and a knowledge base. These technical skills are the tools to gather data. You will relate those data to your knowledge base and to your previous experience.

By definition, physical examination is a process of collecting observable data by the nurse using techniques of inspection, palpation, percussion and auscultation (Wilson and Giddens, 2005). In physical examination, you will use your senses, that is, sight, smell, touch and hearing to gather data.

In order for you to master physical examination, you will need repeated practice and focus your senses. Before conducting physical examination, you must be familiar with the assessment techniques, best patient positions for examinations, equipment used to perform the examination, and infection control measures. The assessment techniques requisite for physical examination are: inspection, palpation, percussion and auscultation.

Inspection

Wilson and Giddens (2005) define inspection as a visual examination of the body, including movement and posture. Inspection is the initial step in the process of physical examination. It helps to note the normal physical characteristics before distinguishing from abnormal ones. During inspection, the nurse closely and carefully scrutinizes first the individual as a whole and then each of the body system. In inspection, the nurse uses the sense of sight though data obtained through smell is included.

Inspection begins the moment you first meet the patient and continues through out the examination. Start the assessment of each body system with inspection. As you inspect,

expose adequately only the part you are inspecting. For accurate inspection, you require adequate lighting. If natural lighting is not adequate, additional artificial lighting is used e.g. a penlight.

Although most of the inspection uses only sense, a few body part/system require the use of special equipment e.g. the otoscope, ophthalmoscope and vaginal speculum. During inspection, note the colour, position, texture movement, size, shape and symmetry of organs

Palpation

Palpation follows inspection and often confirms points you noted during inspection. Palpation applies your sense of touch to assess texture (rough or smooth), temperature (warm or/cold), moisture (dry/wet), mobility (fixed, movable or vibrating), consistence (soft/ hard/fluid filled) strength of pulses (strong/weak/thready/bounding) size (small/medium/large) shape (well defined/irregular) and degree of tenderness.

Different parts of the hands are best suited for assessing different factors:

- Finger tips- are best suited for fine tactile discrimination, as of skin texture, swelling, pulsation, and determining presence of lumps.
- A grasping action of the fingers and thumb-to detect the position, shape, and consistency of an organ or mass.
- The dorsal (backs) surface of the hands and fingers- best for determining temperature because the skin here is thinner than on the palms.
- Base of the fingers (metacarpophalangeal joints) or ulnar surface of the hand- best for vibrations, thrills and fremitus.

Your palpation technique should be slow and systematic. Use a calm, gentle approach. Warm your hands by kneading them together or holding them under warm water. Your nails must be short.

Before you start the palpation, explain the purpose of the touch. Wear gloves when palpating mucous membranes and areas where contact with body fluids is possible.

Types of Palpation

Palpation can be deep or light. The depth of the structure being palpated and thickness of the tissues overlying it determines the type of palpation. Light palpation is accomplished by palpating to a depth of 1cm and is used to assess the skin pulsations, surface skin texture, moisture and tenderness. Deep palpation is accomplished by using one or both hands to press up to 4 cm to determine organ size and contour.

Start with light palpation to detect surface characteristics and to accustom the person to being touched, then perform a deeper palpation.

Bimanual technique uses both hands; one anterior called sensing hand and one posterior called to entrap an organ or mass between the finger tips to assess size and shape. This technique is used to assess the kidneys and the uterus.

Percussion

Percussion is tapping the person's body part with short, sharp strokes to assess underlying structures. Percussion is used for the following:

- Mapping out the location and size of an organ by exploring where the percussion note changes between the borders of an organ and its neighbours.
- Signalling the density (air, fluid, or solid) of a structure by a characteristics note.
- Detecting an abnormal mass if it is fairly superficial; the percussion vibrations penetrate about 5cm deep- a deeper mass would give no change in percussion.
- Eliciting pain if the underlying structure is inflamed, as with areas or over the kidney.
- Eliciting a deep tendon reflex using the percussion hammer

Two types of percussion can be used:

Direct (immediate) percussion

This type of percussion involves striking a finger or hand directly against the patient's body. It is used to evaluate sinuses of an adult or chest wall of an infant. Direct fist percussion can be used to assess the kidneys by percussing the loin region.

Indirect (mediate) Percussion

Indirect percussion is used more often and involves use of both hands. When performing indirect percussion place the extended middle finger (sometimes called the pleximeter) of the non dominant hand firmly against the patient's body part under examination. Avoid bone structures because it always yields dull sound. Lift the rest of the finger off the patient's body.

Use the finger of your dominant hand as the striking finger (sometimes called the plexor). Hold your forearm close to the skin surface, with your upper arm and shoulder steady. Scan your muscles to make sure they are steady but not rigid. Spread your fingers, swish your wrist, and bounce your middle finger off the stationary one. Flex the striking finger so that its tip, not the finger pad, makes the contact. Percuss two times in this location using even, staccato blows. Then move to a new body location and repeat, keeping your technique even. The tapping produces vibrations 4-5cm in the body tissues

Strong percussions are required for obese or very muscular patients because the thickness of the tissues can impair the vibrations. All sounds results from vibration of some structures. Percussing over a body structure causes vibrations that produce characteristic waves and are heard as "notes".

Table 2.1 Characteristics of Percussion Notes

AREA PERCUSSED	TONE	INTENSITY	PITCH	DURATION	QUALITY
Lungs	Resonant	Loud	low	long	Hollow
Bone and Muscle	Flat	Soft	High	short	Extremely high
Visceral and liver border	Dull	Medium	Medium high	Medium	Thud like
Stomach and gas bubbles in the intestine	Tympanic	loud	High	Medium	Drum like
Air trapped in lung emphysema	Hyper resonant	Very loud	Very low	Longer	Booming

Auscultation

Auscultation is an act of listening to sounds produced by the body, such as the heart and blood vessels, the lungs and abdomen. Although some sounds such as respiratory stridor and severe wheezing are audible to the naked ear, some require the use of a stethoscope to be heard. A stethoscope is used during auscultation to block out some extraneous sounds. The head of the stethoscope consists of two parts; the bell and diaphragm.

The bell is used to listen to soft low pitched (low frequency) sounds such as vascular sounds and extra heart sounds while the diagram is used to listen to high pitched sounds such as breath and bowel sounds. When auscultating, hold the diaphragm firmly against the patient's skin stabilizing it between the index and middle finger.

When using the bell, avoid pressing too firmly against the skin this will stretch the skin so that it acts like the diaphragm and thus inhibiting the sounds. Ensure that you warm the stethoscope before placing it on the patient.

Setting for Physical Examination

The examination room should be warm and comfortable, quiet, private and well lit. When possible, stop any distracting noises such as humming machinery, radio or television, or people talking that could make it difficult to hear body sounds.

Avoid interruptions from other health care personnel. Use natural or artificial lighting. Position the examination table so that both sides of the person are easily accessible.

Equipment

Equipment is used to facilitate the collection of data and type varies depending on the type of examination and problem being faced.

The common equipment used in health assessment includes:

- Thermometers-used to measure body temperature
- Stethoscopes-used to auscultate sounds within the body that are not audible with a necked ear
- Sphygmomanometer-used to measure arterial blood pressure
- Pulse oximeter-used to estimate arterial oxygen saturation in the blood
- Measuring scales-used to measure body weight and height
- Snellen's Chart- used to test visual acuity and colour perception
- Ophthalmoscope-used to inspect internal structures of the eye
- Otoscope-used to inspect the external auditory canal and the tympanic membrane
- Penlight-to provide focused light source to facilitate inspection.
- Ruler and tape measure-Used to measure the size of body organs or size of skin lesions
- Nasal speculum-facilitate inspection of interior surface of the nose
- Tuning fork-for assessing hearing acuity
- Percussion or reflex hammer- used to elicit reflex response
- Goniometer-Helps to determine the degree of flexion or extension of the joint
- Calipers-used to measure the thickness of subcutaneous tissue to estimate the amount of body fats
- Vaginal speculum- to facilitate the inspection of vaginal wall and the cervix
- Tongue depressor
- Reflex hammer
- Sharp pin
- Cotton balls
- Clean gloves
- Lubricant

Positions Used During Physical Examination

When doing physical examination, you can use several positions. These positions depend on the type of examination to be done and the condition of the patient. The following positions can be assumed to assess the mentioned areas:

- Sitting position for the head, neck, posterior and anterior thorax, lungs, breasts, axillae, heart, vital signs and upper extremities
- Supine for the head, neck, anterior thorax, lungs, breasts , axillae, heart, abdomen, extremities and pulses
- Dorsal recumbent, for the head, neck, anterior thorax, lungs breasts, axillae, heart and abdomen
- Lithotomy for female genitalia and genital tract
- Sims' for rectum and vagina
- Prone for musculoskeletal
- Knee-chest for rectum

The patient should be drapped as appropriate as possible.

General Survey, Measurement, Vital Signs

In physical examination, you should consider physical appearance, body structure, mobility and behaviour.

Physical Appearance

- Observe and take note of the following:
- Age of the patient, whether the patient appears his or her age
- Sex- sexual development is appropriate for gender and age
- Level of consciousness- the person is alert and oriented, attends top your questions and responds appropriately.
- Skin colour- colour tone is even, pigmentation varying with genetic background, skin is intact with no obvious lesions.
- Facial features- facial features are symmetric with movement.

Body Structure

Take note of the following:

- *Stature*- the height appears within normal range for age, genetic heritage
- *Nutrition*- the weight appears within normal range for height and body build, body fat distribution is even.
- *Symmetry*- body parts look equal bilaterally and are in relative proportion to each other.
- *Posture*-the person stands comfortably erect as appropriate for age.
- *Position*- the person sits comfortably in a chair or on the bed or examination table, arms relaxed at sides, head turned to examiner.

Mobility

Gait-normally the base is as wide as the shoulder width; foot placement is accurate; the walk is smooth, even, and well-balanced; and associated movements, such as asymmetric arm swing, are present.

Range of motion-note full mobility for each joint, and that movement is deliberate, accurate, smooth, and coordinated.

Behaviour

Facial expression-the person maintains eye contact (unless a cultural taboo exists), expressions are appropriate to the situation, e.g. thoughtful, serious, or smiling.

Mood and affect-the person is comfortable and cooperative with the examiner and interacts pleasantly.

Speech-articulation (the ability to form words) is clear and understandable.

Measurement

Height
Height is influenced by genetics and dietary intake. Height is measured on a platform scale with a height attachment. Ask the patient to stand on the scale (without shoes) and then lower the attachment until it touches the head. Measure the patient's height.

Weight
Measure the weight using a balance scale by asking the patient to stand in the middle of the scale platform and measure the weight.

Measure the patient's skin fold thickness, if appropriate

Vital Signs
Assess the patient's radial pulse, respirations and temperature. Measure the patient's blood pressure and document vital signs in both arms.

Skin, Hair and Nails

Inspect the skin for general colour and uniformity of colour. The skin colour should be consistent over the body surface, with the exception of vascular areas such as the cheeks, upper chest and genitalia.

Inspect the skin for localised variations in skin colour such as striae, patches and freckles.

Palpate the skin for texture, temperature, moisture, mobility, turgor, and thickness. The skin should be smooth, soft, and intact with an even surface. It should be warm with minimal perspiration or oiliness.

Test for skin turgor by picking up and slightly pinching the skin on the forearm or under the clavicle. The skin should move easily when lifted and should return to place immediately when released. Palpate for oedema

Inspect, palpate, measure and describe skin lesion. Use a centimetre ruler to measure the size of the lesions. The lesion is documented based on its characteristics, including location, distribution, colour, pattern, edges, flat or raised and size.

Inspect the hair growth, thickness, texture and moisture. Inspect the amount of body hair. Palpate the texture of the hair.

Inspect and palpate the nails for shape, contour, consistency, colour, thickness and cleanliness. The nails should be smooth and rounded. They should be flat in the centre and

slightly curved at the edges. Inspect tissue surrounding nails and palpate fingertips to test capillary refill.

Head and Face

Head

Inspect the patient's face for facial features, symmetry, movement, and appropriateness of facial expression. The patient should be alert and responsive. The facial features (eyes and eyebrows, palpebral fissures, nasolabial folds, and sides of the mouth) should appear symmetrical with a calm facial expression.

Inspect and palpate the skull for contour, tenderness, and intactness.

Inspect the skull for configuration, size, shape and symmetry
- Inspect and palpate scalp and hair for texture, distribution and quantity of hair
- Inspect the facial features for symmetry
- Palpate facial bones
- Palpate temporomandibular joint while patient opens and closes mouth
- Palpate and percuss sinus regions; if tender, transilluminate
- Inspect ability to clench teeth, squeeze eyes tightly shut, wrinkle forehead, smile, stick out tongue, puff out cheeks (CN V, VII)
- Test light touch sensation of forehead, cheeks, chin (CN V)

Eyes and Vision
- ***External examination***
- Inspect eyelids, eyelashes and eyebrows
- Determine alignment of eyebrows
- Inspect the bulbar and palpebral conjunctivae for colour, texture and lesions
- Inspect cornea for clarity and texture, sclera, conjunctiva, iris
- Inspect and Palpate lacrimal apparatus for oedema, redness and tenderness
- Inspect pupils for colour, size, shape and equality
- ***Near vision screening: Rosenbaum chart (CN II)***
- ***Eye function***
- Test papillary response to light and accommodation
- Perform cover-uncover test and corneal light reflex
- Test extra ocular eye movements (CN III, IV, VI)
- Assess visual fields (CN II)
- Test corneal reflex (CN V, VII)
- ***Ophthalmoscopic examination***
- Test light reflex through the pupil
- Optic disc and cup for colour size and shape
- Retinal blood vessels for size, colour, pattern and arterial venous crossings
- Retinal background for colour and surface characteristics
- Macula and fovea centralis for colour and surface characteristics

Ears and Hearing

- Inspect alignment and placement
- Inspect the auricles for texture, elasticity and areas of tenderness
- Palpate auricle
- Using an otoscope, assess the internal ear structures
- Inspect canals
- Tympanic membrane for colour and gloss, landmarks, deformities, inflammation
- Appearance of annulus, pars flaccida, pars tensa, malleus, umbo and light reflex
- Test hearing acuity with voice tests (whisper test or ticking watch) and turning folk tests (Rinne and Weber tests for CN VIII)

Nose and Sinuses

- Assess olfactory function: test sense of smell (CN I)
- Note structure, position of nose
- Determine patency of each nostril
- Using a nasal speculum, inspect the nasal mucosa, septum and turbinates for redness, swelling, growths, discharge, polyps and septal deviation
- Palpate the external nose for tenderness
- Palpate the maxillary and frontal sinuses for tenderness
- Transilluminate the maxillary and frontal sinuses for the presence of fluid or air

Mouth and Throat

- Inspect the lips for colour, texture and symmetry
- Using a penlight, inspect
- The inner and buccal mucosa for colour, moisture, texture and lesions
- The teeth for colour, presence of fillings, dental caries, partial or complete dentures and tartar
- The gums for bleeding, colour, shape, texture and presence of bony prominences
- The tongue for colour, size, texture, position, mobility and coating
- The hard and soft palates for colour, shape, texture and presence of bony prominences
- The salivary gland openings for swelling and redness
- The palatine arches for redness, lesions and plaques
- The tonsils for colour discharge and size
- The oropharynx for oedema, inflammation, lesions or exudates
- Test the sense of taste (CN VII)
- Wearing gloves, palpate the mucosa, the gums, the tongue, the floor of the mouth
- Observe the uvula for position and mobility as the client phonates “ah” and test the gag reflex (CN IX, X)
- Observe as the client sticks out the tongue (CN XII)

Neck

- Inspect the neck for symmetry, pulsations and swellings or masses
- Assess neck movement, range of motion and strength of muscle against resistance: observe as the client moves the head forward and back and side to side, and shrugs the shoulders (CN XI)

- Palpate the lymph nodes of the neck
- Palpate the trachea position
- Moving behind the client, palpate the thyroid gland for symmetry and masses
- Inspect the jugular veins for pulsations and distension
- Auscultate carotid arteries and thyroid

Upper Extremities

- Observe and palpate hands, arms and shoulders
- Skin and nail characteristics
- Muscle mass
- Musculoskeletal deformities
- Joint range of motion and muscle strength: fingers, wrists, elbows and shoulders
- Assess pulses, radial and brachial
- Palpate epitrochlear nodes

Back and Posterior Chest

- The client may sit on the examination couch with the gown open in the back, exposing the posterior chest, cover breasts of female clients. The examiner stands behind the client
- Inspect the posterior chest for symmetry of shoulders, musculoskeletal development and thorasic configuration
- Inspect and palpate the scapular and spine
- Palpate and percuss the costovertebral angle, noting any tenderness

Lungs

- Observe the client's respirations for excursion, depth, rhythm and pattern
- Palpate the client's chest for expansion and tactile fremitus
- Percuss over all lung fields, scapular, sub scapular nodes, posterior chest, lateral walls systematically for resonance
- Percuss for diaphragmatic excursion
- Auscultate breath sounds, noting characteristics and adventitious sounds

Anterior Chest

- The client may sit on the examination couch, the female's gown is lifted to drape on the shoulders, and the male's gown is lowered to the lap. The examiner stands in front of the client
- Inspect the anterior chest for symmetry and musculoskeletal development
- Inspect the supraclavicular and infraclavicular areas
- Palpate the chest for stability, lumps or tenderness

Heart

- Determine the location of atria and ventricles of the heart
- Inspect and palpate the aortic, pulmonic, tricuspid and apical areas for the presence of pulsations or lifts or heaves
- Palpate the chest wall for the presence of abnormal pulsations or lifts or heaves
- Use both the diaphragm and bell of the stethoscope to auscultate for heart sounds at the aortic, pulmonic, tricuspid and apical areas

- Auscultate the aortic, pulmonic, tricuspid and apical areas for heart sounds
- At each area of auscultation, distinguish rate, rhythm and location of both S1 and S2 sounds

Breasts and Axillae

- The client may recline on the examination couch with the head at a 30 to 45 degree angle. The anterior chest is still exposed. A drape is over the client's abdomen. The examiner stands at the client's right
- Inspect the male or female client's breasts symmetry, mobility, masses, dimpling and nipple retraction. Ask the female client to lift her arms over her head, press her hands on her hips and lean forward as you perform the
- Palpate the nipples and observe discharge (except in an expecting mother)
- Palpate the axillary lymph nodes
- Lift each of the female client's arms over her head and palpate each breast, including the tail of Spence and the areola for masses, teach the client breast self-examination

Abdomen

- The client may be in supine on the examination couch, with the abdomen exposed from the nipple line to the pubis and the drape covering the legs. The examiner is on the client's right.
- Inspect the abdomen for skin integrity, contour and symmetry
- Observe any movements associated with respiration, peristalsis or aortic pulsations
- Auscultate the abdomen for bowel sounds, vascular sounds and any peritoneal friction rubs
- Percuss the abdomen for tympany and dullness
- Percuss the abdomen to determine liver and spleen size
- Percuss the abdomen to define the outline of a distended bladder
- Palpate the liver, spleen and kidneys to determine position and size
- Palpate the abdomen to detect tenderness, presence of masses and distension

Inguinal Region

- Palpate for inguinal lymph nodes, pulses and to detect any hernias

Lower Extremities

- Inspect the legs and feet for skin integrity, colour, symmetry and hair distribution
- Inspect for muscle mass and musculoskeletal configuration
- Palpate for temperature, texture and oedema
- Palpate the popliteal, posterior tibial and dorsalis pedis pulses
- Palpate the toes to test for capillary refill

Musculoskeletal

- Assist the client to a sitting position, with legs dangling off the examination couch. The examiner moves in from of the client and to the client's right during the following assessments as appropriate
- Test range of motion and muscle strength in the hips, knees, ankles and feet
- Observe the client's ease of movement, muscle strength and coordination as client moves from supine to sitting position
- Test range of motion and muscle strength in the shoulders, elbows, wrists and hands
- Assist the client to a standing position and observe the client's standing posture

- Perform the Romberg test. Stand nearby in case the client begins to fall
- Observe the client's natural gait
- Observe as the client walks heel-to-toe
- Observe as the client stands on the right foot, then the left with eyes closed
- Ask the client to hold onto the edge of the examination table, then observe as the client performs a right knee bend then a left knee bend
- Standing behind the client, observe the spine as the client touches the toes
- Test range of motion of spine

Neurologic

- Assess the client's sensory function including:
- Light touch sensation and tactile location
- Temperature sensation
- Vibratory sense
- Kinesthetic sensation
- Tactile discrimination
- Assess the client's fine motor function in both the upper and lower extremities
- Client touches nose with alternating index fingers
- Client performs rapid alternating movements
- Client runs heel down opposite shin
- Conduct the gross motor and balance tests
- Test tendon reflexes bilaterally and compare
- Biceps
- Triceps
- Brachioradialis
- Patellar
- Achilles
- Plantar (Babinski)

Male Genitals and Rectum

- The male client remains standing. The examiner sits in front of the client and lifts the examination gown
- Observe the amount, distribution and characteristics of pubic hair
- Inspect the penile shaft, glans and urethral meatus for lesions, nodules, swelling, inflammation and discharge
- Observe the colour and position of the urethral meatus
- Inspect the scrotum for appearance, general size and symmetry
- Palpate the scrotum for appearance, general size and symmetry
- Palpate the scrotum, testicles, epididymis and spermatic cord for swelling, irregularities and tenderness
- Palpate to detect any inguinal hernias
- Teach testicular self-exam
- Assist the male client in leaning over the examination table, with the examination gown drapped to expose the sacrococcygeal and perianal regions

- Inspect the sacrococcygeal and perianal regions
- Palpate the rectal walls and prostate gland with the lubricated index finger
- Observe any stool on the glove and test for occult blood
- Wipe the perianal area with tissues

Female Genitals and Rectum

- The female client into lithotomy position. The client is wearing the examination gown and her lap is drapped. The examiner stands on the right
- Inspect the amount, distribution and characteristics of pubic hair
- Inspect the pubic skin for parasites, swelling, inflammation and lesions
- Palpate the inguinal lymph nodes for enlargement and tenderness
- Inspect the clitoris, urethral orifice and vaginal orifice for lesions, discharge and inflammation
- Palpate Bartholin's glands
- Assess the integrity of the pelvic musculature, insert a vaginal speculum and examine the internal genitals
- Inspect the cervix for shape of the os, colour, size and position
- Obtain a specimen for a Papanicolaou smear
- Inspect the vaginal walls for colour, texture and secretions
- Palpate the rectum and rectovaginal walls
- Observe any stool on the glove and test for occult blood, wipe the perianal area with tissues
- Assist the client to a sitting position

Conclusion

At the conclusion of the health assessment, answer any questions the client might have and provide health teaching as appropriate. Before leaving the room, make sure the client is not experiencing any discomfort from the examination. Record your assessment data as soon as possible, preferably immediately after the examination.

Documentation

Content

1. Enter information in a complete, accurate relevant and factual manner
2. Record findings rather than interpretations
3. Avid generalisations
4. Note problems as they occur in an orderly sequential manner
5. Document in a legally prudent manner

Timing

1. Chart in a timely manner, follow hospital policy on frequency of documentation
2. Indicate in each entry the date, time of observation and of intervention
3. Document nursing intervention as closely as possible to time of intervention
4. Never document interventions before carrying them out

Format

1. Chart on the designated form
2. Print or write legibly, use standard terminology
3. Date and time each entry
4. Chart nursing interventions chronologically

Accountability

1. Sign your first initial, last name in each entry. Do not sign interventions performed by others that you have no way of verifying
2. Do not use erasures or correcting fluid
3. Identify each page of the record with the client's name and identification number
4. Recognise that the client's record is permanent.

Confidentiality

1. Clients have a moral and legal right to expect that the information contained in their client health record will be kept private
2. Students are allowed access to records for educational reasons. Students using client records are bound professionally and ethically to keep strict confidence all the information they learn by reading client's records. Actual client names and other identifiers should not be used in written or oral reports.

2.7 Nursing Models and Theories

Introduction

Theory offers structure and organization to nursing knowledge. They also provide a systematic means of collecting data to describe, explain, and predict nursing practice. The use of theory also promotes rational and systematic practice by challenging and validation of intuition.

Definitions

Assumption

An assumption is a belief about phenomena that one must accept as true to accept a theory about phenomena as true. Assumptions may be based on accepted knowledge or personal beliefs and values.

Concept (An image or idea held in the mind). These are elements or the components of a phenomenon necessary to understand the phenomenon. They are abstract and derived from impressions the human mind receives about phenomenon through sensing the environment.

Conceptual model/framework

This is a set of interrelated concepts that symbolically represents and conveys a mental image of a phenomenon. Conceptual models of nursing identify concepts and describe their relationships to the phenomena of central concern to the discipline.

Model

Models are graphic or symbolic representations of phenomena that objectify and present certain perspectives or points of view about nature or function or both. Models can also be described as symbolic representation of concepts or variables and interrelation among them.

Theory

A theory refers to a set of logically interrelated concepts, statements, propositions, and definitions, which have been derived from philosophical beliefs of scientific data and from which questions or hypotheses can be deduced, tested, and verified.

Nursing Theory

This is a conceptualization of some aspects of nursing communicated for the purpose of describing, explaining, predicting and or prescribing nursing care (Meleis, 1997).

Paradigm

A paradigm is an organizing framework that contains concepts, theories, assumptions, beliefs, values, and principles that form the way a discipline interprets the subject matter with which it is concerned.

Elements of the Nursing Metaparadigm

The elements of the metaparadigm directs the activities that you do as a Nurse professional, including knowledge development, philosophy, theory, educational experience, research and practice. The nursing's paradigm includes four linkages which are; *Person, Health, Environment/situation and Nursing.*

Person refers to the recipient of nursing care including individual clients, families and the community.

Health defined as "dynamic state of being in which the developmental and behavioral potential of the individual is realized to the fullest possible (American Nurses Association, 1995).

Environment/situation "Includes all situations affecting the client and the setting in which health care needs occur.

Nursing includes "Diagnosis and treatment of human responses to potential and actual health problems (American Nurses Association, 1995).

Scope of Theory

Metatheory

This refers to a theory about theory. In nursing, metatheory focuses on broad issues such as the processes of generating knowledge and theory development, and it is a forum for debate within the discipline.

Grand theory

Grand theories attempt to explain broad areas within a discipline and may incorporate numerous other theories.

Middle Range Theories

These lie between the nursing models and more circumscribed concrete ideas. They are specific and encompass a limited number of concepts and a limited aspect of the real world.

Practice Theories

These are also called micro theories. They are prescriptive theories and are least complex. They contain fewest concepts and refer to specific, easily defined phenomena e.g. Infant bonding, oncology pain management.

Activity 1.5

(10 minutes)

- Think and reflect on the way we do nursing and take your note book. Write down what comes to your mind when you think about the way we nurse patients and what directs the way we care for patients.
- Write down the purposes of nursing theories in Nursing practice, education, research and management. Compare your answers with those at the end of the unit.

Aspects of Patient Care Addressed By All Models/Key Components of Care When Used with the Nursing Process

- The nature of people
- Causes of problems likely to require Nursing care
- The nature of assessment process
- Nature of planning and goal setting process
- Focus of intervention during the implementation of the care
- Nature of the process of evaluating the quality and effects of the care given
- The role of the nurse.

Henderson's Model of Nursing (1955)

Henderson's model of Nursing emphasizes the existence of both biological and psychological even social needs that can sometimes lead to a need for nursing care.

Key Components of care

The nature of people

Henderson indicates that individuals are seen as human beings who share certain fundamental needs. Whether sick or well, individuals have needs such as food, shelter, clothing and love. Under conditions of well being, people have little difficulties in satisfying these needs by themselves. However in times of sickness and at certain points in the life cycle such as childhood, pregnancy, old age or when death is approaching, an individual may fail to satisfy these needs. It is at this point in time that the unique role of the nurse comes into play as they assist the individual sick or well in performing those activities contributing to health or its recovery or (to a peaceful death) that he/she would perform unaided, if he/she had the necessary strength, will or knowledge.

Fundamental needs shared by all persons

- To breath normally
- To eat and during adequately
- To eliminate body waste
- To move and maintain desired posture
- To sleep and rest
- To Select suitable clothing (dress and undress)
- To Maintain body temperature within normal range
- To keep body clean and well groomed
- To avoid changes in environment: injuring others
- To communicate with others
- To worship according to one's faith
- To work in such a way that there is a sense of accomplishment
- To play and participate in recreation
- To learn, discover and satisfy curiosity

Causes of problems likely to require nursing care

According to Henderson, nursing care is required when an individual is unable to carry out activities contributing to health, its recovery or a peaceful death. Nursing care is also required during certain stages in the life cycle e.g. childhood and old age where one is unable to satisfy basic needs due to physical, psychological or social factors.

Temperaments and emotional states may also affect an individual's ability to satisfy certain needs. Further more social and cultural status of an individual can create difficulties in satisfying basic needs. Physical and intellectual capabilities may affect an individual's ability to carry out activities e.g. the physical and mental handicapped as well as those who have lost special sense, motor, capacity may require nursing care to satisfy basic needs.

The nature of the assessment process

Henderson's assessment is divided into two phases:

Phase 1

Assess all the fundamental needs to determine the ones not being satisfied.

Phase 2

Determine the cause leading to non-satisfaction of the identified needs. The cause could be due to age, temperament, social and cultural status or physical or intellectual capacity.

Nature of planning and goal setting

Henderson advocates that, long, intermediate and short term goals be set relating to helping the patient regain independence. The goal should address physical, psychological and social problems. Examples of physical problems are pain, fluid volume deficit or excess; social problems (withdraw and rejection) while psychological problems could be anxiety. During planning, a care plan is written and modified according to patient's condition.

Focus of intervention during the implementation of the care plan

According to Henderson, interventions are nursing actions aimed at achieving long, intermediate and short term goals. Nursing care plans should include drugs and treatments prescribed by the physician. Nursing care plan should also involve the client, family and other members of the health care team.

The nature of the process of evaluating the quality and effects of care given

Formative evaluation involves enquiring the extent to which set goals have been met. The ultimate goal of nursing, according to Henderson is to assist the patient gain independence. Summative evaluation is meant to assess the usefulness of the model within a particular nursing setting.

The role of the Nurse

When working with a patient using this model, your role as a nurse is a complementary one, where you substitute for what the patient lacks to make him whole and independence. You are also a physician's helper.

Advantages of the model

- The model assumes a holistic approach; considers physical, psychological and social aspects of an individual
- Patient and family are involved in care
- It allows for administration of drugs in situations where nursing actions can not suffice
- Involves interventions up to a peaceful death.

Disadvantages

The ultimate goal of independence cannot be attained by the elderly and the very young.

Application

The model can be applied in nursing acute and sub-acute patients.

Orem's Self Care Theory

The theory was proposed by Dorothea Elizabeth Orem in 1971. The theory has three related theories; the theory of self-care, the theory of self-care deficit and the theory of nursing systems.

Concepts in Orem's Self-Care Deficit Theory

Self-care

Self care is a human regulatory function that is a deliberate action to supply or ensure the supply of necessary materials needed for continued life, growth, and development and maintenance of human integrity

Self care requisites

These are part of self-care and are expressions of action to be performed by or for individuals in the interest of controlling human or environmental factors that affect human functioning or development

Universal self-care requisites

These are self care requisites that are common to all humans.

Theory of Self-Care

The theory of self care comprises the practice of activities that maturing and mature persons initiate and perform on their own behalf in the interest of maintaining life, healthful

functioning, continuing personal development and well-being through meeting known requisites for functional and developmental regulations

Theory of Self-Care Deficit

Requirements of persons for nursing are associated with subjectivity of persons to health related or health-care related action limitations. Self care deficit provides guides for the selection of methods for helping and understanding patient roles in self care.

Theory of Nursing Systems

The theory proposes that nursing systems are action systems formed by nurses for the persons with health-derived or health associated limitations in self-care or dependent care.

Key Components of Care

The nature of people

A person is functional integrated whole with a motivation to achieve self-care. For a healthy individual, Orem identifies eight Universal self care needs that require satisfaction.

Universal Self-Care Needs (Requisites)

- The maintenance of a sufficient intake of air
- The maintenance of a sufficient intake of food
- The maintenance of a sufficient intake of water
- The provision of care associated with elimination processes and excrements
- The maintenance of balance between solitude and social interaction
- The maintenance of balance between activity and rest
- The prevention of hazards to human life, human functioning and human well being
- Promotion of human functioning and development within social groups in accordance with human potential, known human limitations and the human desire to be normal 'Maintaining normalcy'

The Causes of Problems Likely to Require Nursing Interventions

Nursing intervention is required only when individuals (or their relatives and significant others) are unable to achieve or maintain a balance between self care abilities and self-care demands.

The Nature of the Assessment Process

Orem calls assessment 'investigative operation'. Assessment seeks five types of information from patients. These are:

- Assessment of those demands being made on the individual for self care
- Individual's ability to meet these demands
- Assessment of the self care deficit and reasons for it which could be insufficient knowledge to respond to self care demands, insufficient skill to carry out the self care activities or motivation to achieve self care
- Assessment of whether the individual's present state allows for safe involvement in self-care
- Assessment of the patient's potential for re establishing Self-care in the future.

Orem also emphasises the importance of involving the family and significant others.

The Nature of the Planning and Goal Setting

The *g*oals are patient-centered. They goals can be short term, intermediate or long term. When setting the goals, you should negotiate with the patient whether the nursing interventions should be; wholly compensatory where you are acting for the patient completely, partly compensatory where you share certain tasks with the patient or supportive educative where your role is consultative and facilitative.

The Focus of Intervention during the implementation of care

Intervention involves both the nurse and patient. Patient should participate in the care. There are six broad ways in which to intervene:

- Doing for or acting for another
- Guiding or directing another
- Providing physical support
- Providing psychological support
- Providing an environment which supports development
- Teaching another

The Nature of the Process of Evaluating the Care Given

The effectiveness of the theory is evaluated in terms of the patient's or family's subsequent ability to perform self care.

The Role of the Nurse

The major role of the nurse is a complementary one. Nurses may intervene in the lives of patients in order to help the individual to sustain health, recover from disease and injury or cope with the effects of disease and injury.

Roper, Logan and Tierney: Model of Nursing Based on Activities of Living

Major Assumptions

Living can be described as an amalgam of activities of living (ALs). The way ALs are carried out by each person contributes to individuality in living. The individual is valued at all stages of the lifespan. Through the lifespan until adulthood, the majority of individuals tend to become increasingly independent in the ALs.

An individual's knowledge about, attitude to, and behaviour related to the ALs are influenced by a variety of factors that can be categorized broadly as biological, psychological, socio-cultural, environmental, and politico-economic factors. The way in which an individual carries out the ALs can fluctuate within a range of normal for that person.

When the individual is "ill", there may be problems (actual or potential) with ALs. During the lifespan, most individuals experience significant life events or untoward events which can affect the way they carry out ALs, and may lead to problems, actual or potential. The concept of potential problems incorporates the promotion and maintenance of health, and the prevention of disease; and identifies the role of the nurse as a health teacher, even in illness settings.

Nurses are part of a multi professional health care team who work in partnership for the benefit of the client/patient, and for the health of the community. The specific function of nursing is to assist the individual to prevent, alleviate, or solve, or cope positively with, problems (actual or potential) related to ALs.

Key Components of Care

The nature of people

When using the model, you understand people in terms of the activities they perform. Originally Roper identified 16 activities of daily living (ADLs) and later revised them into 12 ALs. Some are behaviours essential for the maintenance of life, others increase the quality of life and one is singled out for special attention.

Activities of Living (ALs)

- Maintaining a safe environment
- Communicating
- Breathing
- Eating and drinking
- Eliminating
- Personal cleansing and dressing
- Controlling body temperature

- Mobilising
- Working and playing
- Expressing sexuality
- Sleeping
- Dying

The Causes of Problems Likely to Require Nursing Interventions

Childhood, pregnancy, and old age may require nursing intervention. Other states that may require intervention are disability and disturbed physiology, pathological and degenerative tissue change, accident, infection and effects arising from a person's physical, psychological or social environment.

The Nature of the Assessment Process

Activities of Living are used as a basis to assess the patient.

The Nature of the Planning and Goal Setting

The goals are negotiated between the patient and nurse. When planning and setting goals, you should consider available resources both human and equipment in order to suggest alternative interventions.

The Focus of Intervention during the implementation of care

When using this theory, three broad patterns of response include acting to prevent certain situations from arising, comfort the patient physically and mentally and minimising the dependence of the patient to allow a fuller expression of desires to seek responsibility for self care

The Nature of the Process of Evaluating the Care Given

Patient behaviour decided upon at the planning and goal setting stage should be the criteria used in formative evaluation. Summative evaluation looks at the effectiveness of the whole model.

The Role of the Nurse

Using this model, you play a caring and comforting role. You also act as an independent practitioner, dependent role where you assist the doctor with procedures and an interdependent role where you work with others in the health care team.

As you progress in this module and the other 2 modules, you will be required to apply these models in the nursing care of patients with different medical and surgical conditions.

Unit summary

Summary

In this unit, you have worked through a number of concepts that provide underpinning knowledge for your work as a nurse as you manage patients with medical conditions. You have studied the following main points:

Health assessment: how to prepare the patient for health assessment and concepts relating to interviewing a patient to obtain health history and various components of health history.

Physical examination; the different examination techniques, and examination of a patient from head to toe.

Nursing theories and models. In the unit, we have discussed three important theories that are widely used in nursing care practice and these are Henderson's model, Orem's self care theory and the Roper, Logan and Tierney model of Nursing.

Now look back at the learning outcomes at the beginning of this unit. See if indeed you are now able to do all the things listed in the five bullets. Look through your learning journal again and take this chance to review all your entries.

Congratulations! This means that you are now ready to advance to Unit 3, which focuses on cardiovascular conditions.

Readings

1. Wilson. S.F. and Giddens J. F. (2005). Health Assessment for Nursing Practice. Mosby Inc. St. Louis.
2. Mosby's Guide to Physical Examination
3. Phipps, W.J. et al., (2007). **Medical-Surgical Nursing**, C.V. Mosby CO., St Louis.
4. Roper, N. et al. (1996). **The Elements of Nursing, a Model for Nursing Based on a Model of Living**. Churchill Livingstone, Edinburg
5. Phillips, W.J. et al. (2005). **Medical surgical Nursing**, Mosby Co. St Louis.

6. Tomey, A.M. and Alligood, M.R. (2006). **Nursing Theorists and Their Work,** 6th Edition. Mosby, Elsevier. St. Louis, Missouri.

7. MOH (2004) **Management of opportunistic infections and Neoplasms reference material for health workers in Zambia**

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Answers to Activity 2.1

1. What do you consider before you start an interview with a patient?

- Preparation of Physical Setting
- Preparation of physical setting is very important as it can influence the exchange of information between client and the nurse
- The room should be private, quiet, comfortable, and free from distraction
- Without privacy, the client may not be free to share sensitive information such as use of drugs and sexual activities
- If family members are present, ask if they would like them to be present, if yes let them choose
- Ask client to remain in own cloths for comfort and ask them to change into a gown just prior to physical exam
- Sit at a distance that allows comfortable flow of information and eye contact.

2. What type and how do you phrase the questions to get the right information from the patient?

- Start by asking broader questions e.g. how have you been feeling in the past 6 months.
- Broad questions allows client to describe onset and progression of symptoms.
- Ask open ended questions which allows free flow of information.
- If patient sways away from topic be quick to bring them back to the topic
- To gain specific responses ask direct specific closed ended questions e.g. do you bleed with defecation.

3. How do you ensure that the patient is free to express themselves and tell you all their problems?

- Active listening ie concentrating on what client is saying and message being conveyed-avoid formulating another question while client is answering
- Facilitation- use of phrases that encourages client to continue talking e.g. ‘go on’ ‘Uh-hh’ ‘then’ and non-verbal responses such as nodding of head and forward leaning.
- Clarification- used to get more information on vague, conflicting or ambiguous statements
- Restatement-repeating what client says using different words-to confirm you got him right e.g. did you say stomach pains are worsened or relieved by eating
- Confrontation-use when you notice inconsistence between what client says and your observation or other data about a client e.g. you are saying the rash started two days ago but i can see some dark spots-you voice should not be accusatory but sound confused

4. What are the sources of patient’s data?

- Client is usually the best source of information. An adult oriented pt can provide information on health care needs, past illnesses, life style etc.
- Family and significant others-Family members and significant others can provide information about infants, young children, the critically ill, disoriented, mentally ill or the unconscious pts. Family members and significant others are secondary source of information and can confirm information provided by the client.
- Heath care team members. Other health care team members such as the physician, social workers or any other who has been in contact with the patient. They provide information about the way client interact with health care environment and his copying mechanisms.
- Medical records
    - Medical records provide data about the client's past medical history, laboratory tests and treatments.
    - Literature review of medical, nursing and pharmacology about client's illness

Answers to Activity questions 2.5

Importance of Theory in Nursing

1. Identify certain standards for nursing practice
2. Identify settings in which nursing practice should occur and the characteristics of what the model's author considers recipient's of nursing care
3. Identify distinctive nursing processes to be used and technologies to be used including parameters for client assessment, labels for client problems, a strategy for planning, a typology of intervention, and criteria for evaluation of intervention outcomes.
4. Direct the delivery of nursing services
5. Serve as the basis for clinical information systems including the admission database, nursing orders, care plan, progress notes, and discharge summary
6. Guide the development of client classification systems

Unit 3

Nursing Patients with Cardio-Vascular Disorders

Introduction

In unit 3, we will discuss principles of nursing patients with cardiovascular disorders. The unit begins with a brief overview of the Anatomy and Physiology of the cardiovascular system followed by a discussion on investigations done in cardiovascular disorders. In the unit, we further discuss different blood, heart and vascular disorders and how to manage them. As you study this module there are several activities that you will undertake that will help you effectively go through the module and help you prepare for your written assignment.

Aim

The unit aims at equipping you with knowledge and skills in nursing patients with cardiovascular disorders.

Objectives

Upon completion of this unit you will be able to:

Objectives

1. Describe the anatomy and physiology of cardiovascular system
2. Describe how to conduct health assessment on a patient with a cardiovascular disease
3. Outline the common signs and symptoms of cardiovascular conditions.
4. State the common disorders of the cardiovascular system.
5. Discuss the management of a patient with cardiovascular conditions

Other Resources

Anatomy and Physiology Module, Biochemistry Module

Time Required

To study this module, you will require 3 hours.

3.1 Review of the Anatomy and Physiology of the Cardiovascular System

The cardiovascular system consists of the heart and great vessels, as well as the arteries and veins of the peripheral vascular system. The primary purpose of the cardiovascular system is to pump the blood and distribute it to all areas of the body. This section reviews the anatomy and physiology of the CVS.

Reading

(about 25 minutes)

Review the Anatomy and physiology of the cardiovascular system. Use the following points to guide you. You may wish to do this on your own, or use the points as a basis for a discussion with your friends or fellow students.

1. Structures of the heart and blood vessels
2. Coronary circulation
3. Conduction system
4. Vascular system
5. Regulation of the cardiovascular system

Keep this information in mind. You will use this information in later sections of this unit.

3.2 CARDIOVASCULAR ASSESSMENT

Systematic cardiovascular assessment provides you with baseline data useful in identifying the physiologic and psychosocial needs of the patient and in planning appropriate nursing interventions to meet these needs.

Health History

A complete health history must be collected. Biographic data should include age, gender, occupation, marital status, source of the history, source of referral, because a written report may be needed.

Present illness

This will include the common signs and symptoms that the patient is likely to present with. Some of these are outlined below.

Common Signs and Symptoms

There are several signs and symptoms that the patient may cause the patient to seek health care.

Chest pain

This is a cardinal symptom commonly associated with cardiac disorders. The pain of angina pectoris (true manifestation) and myocardial infarction is due to myocardial ischemia (hypoxia).

The pain is felt as crushing, gripping or heavy pain behind the sternum in the centre of the chest, radiating to the neck, shoulder or jaw, or more rarely to the teeth, back or abdomen. It may be associated with pain or heaviness in one (commonly the left) or both arms.

The pain of angina pectoris is provoked by exercise and promptly relieved by rest or short-acting nitrate. Central chest pain radiating to the back may be due to cardiac ischemia but a dissecting or enlarging thoracic aortic aneurysm also produces the similar pain and sometimes ECG changes.

Pericarditis pain is also felt at the centre of the chest. Its character is similar to pleuritic pain, i.e sharp, exacerbated by movement, respiration and coughing. Some relief may be afforded by sitting forward.

The left stabbing pain called precardial catch is usually associated with anxiety –called effort syndrome or Da costa's syndrome.

The differential diagnosis of chest pain includes pulmonary infarction, pneumonia, oesophageal disease, pneumothorax, lung cancer and pulmonary embolism.

To evaluate the chest pain accurately, you should assess:

- Onset: when was the chest pain first noticed?
- Manner of onset: did the pain or discomfort start suddenly or gradually (e.g. quick, slow, vacillation)?
- Duration: how long did the pain last (e.g. sounds, minutes, hours)?
- Precipitating factors: include environmental factors, personal activities, emotional reactions, or other circumstances that may have contributed to the illness.
- Remitting or aggravating factors: - Does anything make it better or worse?
- Associated manifestations: - Have you noticed anything else accompanies it?
- Alleviating factors: - such as medication, rest, position change etc.

Dyspnoea

This is an abnormal awareness of breathlessness and it is most commonly due to left ventricular failure (LVF). Dyspnoea is a subject experience and is associated with anxiety and a variety of disease processes.

LVF causes dyspnoea due to oedema of the pulmonary interstitium and alveoli. This makes the lungs stiff (less compliant), thus increasing the respiratory effort required to ventilate the lungs.

Tachypnoea (increased respiratory rate) is usually present owing to stimulation of pulmonary stretch receptors.

Orthopnoea (breathlessness on lying flat)

Orthopnoea refers to dyspnoea in the recumbent position. This occurs when blood is redistributed from the legs into the torso leading to an increase in central and pulmonary blood volume, thus worsening pulmonary oedema. It is overcomed by the patient using an increasing number of pillows to sleep; the number of pillows required indicates the severity.

Paroxysmal nocturnal dyspnoea (PND)

This occurs when a patient is woken from sleep fighting for breath, a dramatic and frightening experience. The patient sits up, stands or opens the window for fresh air. In severe heart failure, alternate episodes of hyperventilation and apnoea may occur (Cheyne-strokes respiration).

Palpitations

Palpitation is a common subjective phenomenon defined as an unpleasant awareness of the heartbeat or the sensation of slow, rapid or irregular heart rhythms. They are most common felt as palpitations are premature ectopic beats and paroxysmal tachycardias - premature beats are felt by the patient as a pause followed by a forceful beat. Some patients experience tachycardia on standing, associated with a mild drop in blood pressure and symptoms of dizziness or near syncope.

Syncope

This is generalised muscle weakness with an inability to stand upright, accompanied by loss of consciousness. The transient loss of consciousness is due to inadequate cerebral blood flow and may be due to a variety causes. Any condition that results in a sudden reduction of cardiac output and thus reduced cerebral blood flow could potentially cause a syncope episode.

Fatigue

This may be a symptom of inadequate systemic perfusion in heart failure. Other factors may be responsible, such as direct side-effect of medication e.g. beta blockers, electrolyte imbalance due to diuretic therapy and as a systemic manifestation to infection such as endocarditis.

Cyanosis

This is a blush discolouration of the mucous membranes or skin caused by decreased haemoglobin level or decreased blood perfusion. Cyanosis can be central (result of decreased arterial O_2 saturation caused by impaired pulmonary function) or peripheral cyanosis (result of decreased blood flow to the extremities caused by cutaneous vasoconstriction).

Oedema

This is excessive accumulation of fluids in the tissues.

Unilateral oedema is most commonly caused by deep vein thrombosis, cellulitis, or lymphatic blockage.

Cardiac oedema is generally symmetrical and progresses. It starts in the feet or ankles and ascends to the thighs, genitalia, and abdomen.

Anasarca is usually associated with nephrotic syndrome, severe heart failure, or hepatic cirrhosis.

Past health history

The various components of past health history are linked to heart pathology and related information. These include;

Past Medical History

Childhood illness**:-** such as rheumatic fever, viral, Scarlet fever, Streptococcal Infections.

Find out about any history of congenital abnormalities, renal diseases, neurology disorders, vascular disease.

Ask the patient about any previous hospitalisations (outcomes and treatment).

One important aspect that you should consider is the cardiovascular factor analysis (Age, gender, family history, hypertension, diabetes mellitus, obesity, elevated cholesterol, tobacco use).

Past Surgical History

Find out about history of Cardiac valve replacement, Cardiac transplant, Carotid artery surgery, use of heart-lung bypass during surgery and any other major surgeries that the patient may have had.

Allergies

Investigate any environmental, food, medication, Iodine or contrast dye allergy.

Medications

Find out whether the patient is on any medication and whether it is prescribed or over the counter. Find out history of use of vitamins, herbal, aspirin, Nitroglycerin, anti-acids, laxatives, nasal sprays or any similar medicines.

Dietary Habits

Find out whether the patient has any restrictions such as cholesterol, salt, fluids, sugar, dietary supplements, caffeine intake. Inquire also about any dietary education that the patient has received.

Family history

This outlines age and health, or age and cause of death, of siblings, parents, and grandparents. It also documents presence or absence of specific illnesses in family, such as hypertension, coronary artery disease, and diabetes mellitus.

Social history

The components of social history that you will collect are linked to heart and peripheral vasculature pathologies.

Alcohol: prolonged use of alcohol can interfere with the normal pumping function and electrical activity of the heart leading to cardiomegaly, ventricular dilatation, palpitations, peripheral oedema, fatigue and shortness of breath.

Drug use: intravenous drugs increase the risk for contracting infective endocarditis because of non sterile needles and the embolization of the localized infection from the injection site.

Tobacco use: Nicotine increases catecholamine release, leading to elevated cardiac output, heart rate and blood pressure. Nicotine also inhibits the development of collateral circulation, causes peripheral vasoconstriction, and thickens cardiac arterioles, platelet aggregation.

Health maintenance activities

Find out about any of these:

Sleep: any dyspnoea, orthopnoea, or paroxysmal nocturnal dyspnoea.

Diet: - caffeine containing drinks increases the blood pressure and heart rate.

Exercise: - physical exercise may have a beneficial or risk effects on the heart depending on the condition of activity performed.

Stress management: - exercise, reading, time management, listening to music, eating, imagery, massages or participation in a variety of support groups.

Physical examination

After obtaining a full comprehensive history, you should conduct a systematic physical examination with particular attention to the heart. The cardiac physical examination is performed with the patient in three positions; sitting, supine, and lying on the left of side.

Assessment should include the precordium (the area on the anterior surface of the body overlying the heart, great vessels, pericardium, and some pulmonary tissue) and assessment of the periphery.

Inspection

An overall evaluation of the patient should be made during the interview process. Pale or cyanotic skin or nail colour, increased work of breathing, prominent vascular pattern, and dependent oedema are some of the abnormal objective data related to cardiac function that can be collected during inspection.

During inspection, also include visual assessment of the shape of the patient's chest and observe the six heart areas (cardiac landmarks) Aorta area, pulmonic area, right ventricular area, left ventricular area, epigastric area and sternoclavicular area for visible pulsation

Normally, pulsations are not visible unless patient is thin. The finding of an abnormal pulsation in any area requires further assessment via palpation and auscultation.

Palpation

Palpation is used to detect pulsation or vibration (thrills) that may not have been identified with inspection or to further assess pulsation seen during inspection. The same cardiac landmarks of the chest are assessed.

Use the palmer surfaces of fingers to detect vibrations and then the pads of the middle and index fingers to make finer assessments. Detection of vibrations suggests the presence of a pathologic condition and requires further evaluation through auscultation.

Heart rate: - palpation includes determining the heart rate using a peripheral site such as the radical or femoral artery. If the rhythm of the pulse is irregular, auscultate the heart rate at the apex because early or ectopic beats can be missed when palpating peripherally.

Arterial pulses: - evaluates the quality of the peripheral circulation by examining the pulses. It is important to compare the vessels on the right and left sides. The carotid, radial, brachial, femoral, popliteal, dorsalis pedis, and posterior tibial blood vessels are mostly commonly assessed.

Hands and feet that are cool and pale suggest arterial vessel involvement, where as warm, cyanotic extremities indicate venous problem. Quality of pulse is another palpation finding to consider.

Percussion

Percussion has limited usefulness in the cardiovascular assessment because x- rays and other diagnostic tests provide the same information in a much more accurate manner. It can be used to determine cardiac borders, landmarks and overall size.

Auscultation

Heart sounds:-The movement of the heart valves causes turbulent blood flow. Normally the heart has two distinct sounds, S1 and S2.

Additional sounds S3 and S4 may be present as heart murmurs. Using a stethoscope, listen systematically in five auscultatory areas surrounding the heart first with the diaphragm of the stethoscope and with the bell.

The diaphragm picks up high- pitched sounds (systolic murmurs, early diastolic murmur, ejection clicks and opening snaps and the bell picks up low- pitched sounds (heart sounds and the middle diastolic murmur of mitral stenosis).

When evaluating the heart use a quiet environment and concentrate to distinguish normal and abnormal heart sounds. Use the supine, sitting, and lying on the left side to listen to sounds. The positions help in identifying abnormal sounds that may be heard in only one position.

Murmurs are vascular sounds that produce vibrations within the heart or great blood vessels (aorta and pulmonary vein).

Check the blood pressure: - with the patient in lying, sitting, and standing positions. Anxiety can raise blood pressure; you should try to have the patient relax.

Other areas of assessment

Peripheral veins: - Thrombosis, varicose veins, and oedema are signs of venous insufficiency. Tenderness, thickening, or redness over a superficial vein may indicate thrombophlebitis.

Venous measurement: - The jugular venous pulse is a good indicator of the hemodynamics (forces resulting in blood circulation) of the right side of the heart and the central venous pressure. Jugular pulsation reflects atrial contractions. The internal jugular veins give a more accurate pressure measurement than do the external jugular veins, which are more visible

Oedema: - oedema is the accumulation of excess interstitial fluid. Systemic causes include congestive heart failure and kidney diseases while local causes are venous or lymphatic stasis. Oedema most commonly is found in dependent parts of the body that is lower extremities in ambulatory patients and the sacral area in patients in the supine position.

Oedema is not a normal finding and is suggestive of chronic heart failure. It may also be a sign of venous disease, arterial occlusion, or lymphatic obstruction. Oedema of one extremity suggest a local cause, where as bilateral oedema indicates a systemic cause.

INVESTIGATIONS IN CARDIO-VASCULAR DISORDERS

It is usually important to conduct several laboratory investigations to establish an accurate diagnosis or to follow the course of cardiovascular disease:

Laboratory Tests

Complete Blood Count (FBC)**:**- Red Blood Cell count, White Blood Cell Count, Differential count, Haemoglobin. FBC is helpful in diagnosing infectious heart diseases and myocardial infarction.

Blood lipids: - check for cholesterol, triglycerides, phospholipids, and free fatty acids levels, elevations will indicate cardiovascular disease.

Liver biochemistry: - urea and electrolytes, cardiac enzymes in acute heart failure to diagnose myocardial infarction, thyroid function.

Urinalysis: - a routine urinalysis is performed to determine the effects of cardiovascular diseases on renal function.

Radiologic Tests

Chest x- ray: - reveals cardiac size and evidence of pulmonary congestion, fluid accumulation and pulmonary oedema.

Electrocardiogram (ECG): - the ECG will evaluate the conduction system, and evidence of ischemia, hypertension or arrhythmia.

Echocardiography: - Establish the presence of systolic and/or diastolic impairment of the left or right ventricle.

Magnetic Resonance Imaging: - a non invasive imaging technique that does not involve harmful radiation. It is used to obtain information on the cardiac tissue integrity, aneurysms, ejection fractions, cardiac output, and patency of proximal coronary arteries.

Computed Tomographic Scan: - This quantifies calcium deposits in coronary arteries

Other investigations include cardiac catheterization and coronary angiography.

3.3 BLOOD DISORDERS

Management of persons with problems of the hematologic system is challenging to the nurse because of the diversity and vagueness of the presenting symptoms. Interventions focus on supporting the patient's return to optimal function and resolution of the haematologic alteration.

In this section, you will learn different hematologic disorders and how they can be managed. You will however, learn Anaemia and Sickle cell anaemia in detail and how to use a nursing care plan to manage these conditions.

PLATELET AND COAGULATION DISORDERS

The common disorders associated with platelets and coagulation includes:

Platelet

- Thrombocytopenia-decreased number of platelets
- Thrombocytosis- increased number of platelets
- Bleeding syndromes- disorders of platelet function

Coagulation

- Congenital
- Haemophilia A-deficiency of factor VIII
- Haemophilia B-deficiency of factor IX

Acquired

- Vitamin K deficiency-decrease of factors II, VII, IX, and X
- Disseminated intravascular coagulation-stimulates first the clotting process, then the fibrinolytic process.

DISORDERS ASSOCIATED WITH WHITE BLOOD CELLS

- Neutropenia
- Neutrophilia
- Leukaemia

DISORDERS ASSOCIATED WITH THE LYMPH SYSTEM

- Lymphoedema
- Hodgkin's disease
- Non-Hodgkin's Lymphoma
- Infectious Mononucleosis

DISORDERS ASSOCIATED WITH ERYTHROCYTES

The common disorders associated with erythrocytes (mature red blood cells) include:

- Underproduction (anaemia)
- Overproduction (erythrocytosis)
- Impaired haemoglobin synthesis (haemoglobinopathies).

Anaemia

Anaemia is a deficiency in the number of erythrocytes (red blood cells), the quantity of haemoglobin, and/or the volume of packed RBCs (haematocrit) (Lewis et al, 2004). It refers to a deficiency in the number of circulating RBCs available for oxygen transport. Anaemia is not a specific disease; rather it is a manifestation of a pathologic process. It is identified and classified by laboratory diagnosis.

Classification of Anaemia

- *Decreased Erythrocyte Production*
  - Decreased Haemoglobin Synthesis
    - Iron deficiency anaemia
    - Thalassemias (decreased globin synthesis)
    - Sideroblastic anaemia (decreased porphyrin)
  - Defective DNA Synthesis
    - Cobalamin (Vitamin B_{12}) deficiency
    - Folic acid deficiency
  - Decreased Number of Erythrocyte Precursors
    - Aplastic anaemia
    - Anaemia of leukaemia and myelodysplasia
    - Chronic diseases or disorders
  - Chemotherapy

- *Blood Loss*
  - Acute
    - Trauma
    - Blood vessel rupture
  - Chronic
    - Gastritis
    - Menstrual flow
    - Haemorrhoids
- *Increased Erythrocyte Destruction*
  - Intrinsic
    - Abnormal haemoglobin (HbS-sickle cell anaemia)
    - Enzyme deficiency (G6PD)
    - Membrane abnormalities (paroxysmal nocturnal haemoglobinuria)
  - Extrinsic
    - Physical trauma (prosthetic heart valves, extracorporeal circulation)
    - Antibodies (isoimmune and autoimmune)
    - Infectious agents and toxins (malaria)

Thalassemia

This is an autosomal recessive genetic disorder of inadequate production of normal haemoglobin. It commonly affects persons of Mediterranean descent, but it also occurs in those of Southeast Asian, Chinese and African descent.

Thalassemia has two presentations; the heterozygous state, thalassemia minor, is associated with a mild anaemia which is usually asymptomatic. No therapy is required.

On the other hand, the homozygous condition, thalassemia major is characterized by a severe anaemia.

Signs and symptoms

- Frequently asymptomatic
- Mild to moderate anaemia with microcytosis and hypochromia
- Occasional splenomegaly

Management

The common treatment for thalassemia is transfusion therapy.

Megaloblastic Anaemia

These are a group of disorders caused by impaired DNA synthesis and characterized by the presence of large RBCs. When DNA synthesis is impaired, defective RBC maturation results. The two common forms of megaloblastic anaemia are cobalamin deficiency and folic acid deficiency.

Cobalamin Deficiency

The most common cause of cobalamin deficiency is pernicious anaemia. The other causes include poor dietary intake and mal absorption syndrome.

Pernicious anaemia is caused by an absence if intrinsic factor from either gastric mucosal atrophy or autoimmune destruction of parietal cells. This results in a decrease in hydrochloric acid secretion by the stomach hence there will be no secretion of intrinsic factor which causes impaired binding of vitamin $B_{12.}$

Cobalamin deficiency can occur in patients who had GIT surgery, such as gastrectomy, small bowel resection involving the ileum and those with auto antibodies directed against parietal cells resulting in their loss, as well as against the intrinsic factor itself (rendering it unable to bind vitamin B_{12}).

Clinical symptoms

It is characterized by a triad of symptoms:

1. Anemia with bone marrow promegaloblastosis (megaloblastic anemia)
2. Gastrointestinal symptoms
3. Neurological symptoms

Each of those symptoms can occur either alone or along with others. The neurological complex, defined as myelosis funicularis, consists of the following symptoms:

1. Impaired perception of deep touch, pressure and vibration, abolishment of sense of touch, very annoying and persistent paraesthesia
2. Ataxia of dorsal cord type
3. Decrease or abolishment of deep muscle-tendon reflexes
4. Pathological reflexes

Treatment

Parenteral administration of cobalamin (cyanocobalamin or hydroxocobalamin) is the drug of choice.

Folic Acid Deficiency

Folic acid is required for DNA synthesis leading to RBC formation and maturation. Common causes of folic acid deficiency include the following:

- Poor nutrition, especially a lack of leafy green vegetables, liver, citrus fruits, yeast, dried beans, nuts, and grains.
- Mal absorption syndromes, particularly small bowel disorders
- Drugs that impede the absorption and use of folic acid (e.g. methotraxate, oral contraceptives) as well as anti seizure drugs (e.g. phenobarbitone, diphenylhydantoin)
- alcohol abuse and anorexia
- haemodialysis patients because folic acid is lost during dialysis

The clinical manifestations of folic acid deficiency are similar to those of cobalamin deficiency. GI disturbances include; dyspepsia, and a smooth, beefy to tongue.

Treatment

The deficiency is treated with 1mg of folic acid per day by mouth.

Iron Deficiency Anaemia

Iron is a fundamental part of the haemoglobin (Hgb) molecule, and its deficiency leads to production of RBCs with a decreased amount of Hgb and ultimately to fewer RBCs. The body loses approximately 1.5mg of iron daily; this loss is usually compensated for daily dietary intake. Iron deficiency anaemia is common in young women who have poor nutrition, older adults, and those in lower socioeconomic areas.

Pathophysiology

The balance between intake and losses of Iron may be compromised by chronic blood loss, either physiologic (such as menstruation) or pathologic (from gastrointestinal or other bleeding), as well as by poor nutrition, especially in older adults. This compromise results in iron deficiency anaemia.

Iron deficiency anaemia develops when the dietary supply of iron does not meet the growth demands of the infants after the stores have been depleted

Iron loss exceeds intake developing iron reserves primarily in bone marrow. Blood levels of ferriti, a protein that stores iron progressively decrease. Because depleted iron reserves can't meet the needs of developing red blood cells, fewer red blood cells are produced. Anemia will then begin to develop. Early in this stage, the red blood cells appear normal but there are fewer of them. This leads to hemoglobin levels and haematocrit are reduced. The bone marrow tries to compensate the lack of iron by speeding up cell division and producing very small (microcytic) red blood cells,

which are typical of iron deficiency anemia. As iron deficiency and anaemia progress the symptoms of iron deficiency may develop and symptoms of anemia worsen.

Other symptoms and signs of iron deficiency anemia include:

- Inability to concentrate
- Headache
- Breathlessness on exertion
- Anxiety.
- Irritability.
- Angina
- Constipation
- Sleepiness
- Mouth ulcers
- Palpitations
- Hair loss
- Fainting or feeling faint
- Depression
- Twitching muscles
- Tingling, numbness, or burning sensations
- Slow social development
- Glossitis (inflammation or infection of the tongue).
- Angular cheilitis (inflammatory lesions at the mouth's corners).
- Koilonychia (spoon-shaped nails) or nails that are weak or brittle.
- Poor appetite.
- Pruritis (Itchiness).

Diagnosis

Blood studies and characteristic blood study results include:

- Low haemoglobin levels (males, less than 12g/dl; females, less than 10g/dl)
- Low haematocrit (males, less than 47ml/dl; female, less than 42ml/dl)
- Low serum iron levels, with high binding capacity
- Low serum ferritin levels
- Low RBC count, with microcytic and hypochromic cells (in early stages, RBC count may be normal, except in infants and children)
- Decreased mean corpuscular haemoglobin in severe anaemia
- Bone marrow studies reveal depleted or absent iron stores
- GI studies, such as barium swallow and enema, endoscopy, and sigmoidoscopy, rule out or confirm diagnosis of bleeding causing the iron deficiency

Medical Treatment

- Determine the underlying cause of anaemia
- Oral Iron Ferrous Sulphate 150mg to 200mg in three or four daily doses
- Iron dextran IM or IV
- Diet rich in foods containing iron
- Transfusion of packed RBCs.

Sickle Cell Disease

Sickle cell disease is an umbrella term for a group of inherited hemoglobinopathies in which abnormal sickle hemoglobin (Hb S) partially or completely or completely replaces normal adult hemoglobin (Hb A) (Monahan et al, 2007).

Two of the commonest states are sickle cell trait (SCT) and sickle cell anaemia (SCA). SCT is the heterozygous form of the disease in which the affected individual has both normal (Hb A) and sickle (Hb S) hemoglobin. Sickle cell anaemia, also known as hemoglobin SS disease, is the homozygous form in which the affected individual has predominantly sickle cell hemoglobin (Hb SS). In addition to the classic disease of sickle cell anaemia, a group of sickling syndromes is also associated with Hb S. Haemoglobin S results from substitution of valine for glutamic acid on the β-globin of hemoglobin.

TYPES OF SICKLE CELL DISEASES

1. **Sickle cell trait**

   The red blood cells contain both HbA and HbS. This is the heterozygous form of sickle cell disease.

2. **Sickle cell anemia**

   Red blood cells contain abnormal HbS. This is the homozygous form of sickle cell disease.

3. **Sickle cell hemoglobin C**

   RBCs contain both HbS and HbC but no HbA.

4. **Sickle cell Thalassemia**

   RBCs contain predominantly HbS with smaller fractions of HbA. This condition resembles sickle cell anemia but is less severe.

However, in this section, we will concentrate on sickle cell anaemia (HbS) which is the commonest and most severe form of the sickle cell disease syndromes.

Definitions

1. Sickle cell anemia is an in born disease involving red blood cells which become deformed (sickled) and they easily burst or block the small blood vessels (CBoH, 2002)

2. Sickle cell anemia is a congenital hemolytic disease that results from a detective hemoglobin molecule (HbS) that causes red blood cells to become sickled resulting in chronic ill health (Springhouse 1993).

Causes of Sickle Cell Anaemia

Sickle cell anaemia results from homozygous inheritance of haemoglobin S producing gene. A heterozygous inheritance of the same gene results in sickle cell trait, a condition with minimal or with no symptoms.

Pathophysiology

In sickle cell anaemia, the defective HbS when exposed to a decrease in oxygen, becomes viscous, has decreased solubility, and forms a gel-like substance containing haemoglobin crystals within the affected RBCs. As a result, the RBCs become rigid, rough and elongated forming a crescent or sickle shape. Such sickling cells may fail to pass through the capillaries or other smaller blood vessels hence occluding them leading to acute or chronic tissue injury. The resulting hemostasis promotes a self-perpetuating cycle of local hypoxia, deoxygenation of more erythrocytes, and more sickling. The body will also respond by trying to remove these abnormal cells from circulation resulting in RBC destruction. The affected cells have a shortened lifespan. They survive in the circulation only 7 to 20 days, compared with the normal 105 to 120 days, because they are identified as abnormal and destroyed by the spleen. In addition, the sickled cells may accumulate in capillaries and small blood vessels making blood more viscous. This further leads to impairment in circulation resulting in pain, tissue infarctions and swelling. An increase in blood viscosity, circulatory stasis and the resultant hypoxia leads to further sickling. When the occlusion is extensive, tissue necrosis and extreme pain occurs, which is also called sickle cell crisis. If this process (occlusion of blood vessels) occurs repeatedly, progressive organ failure and chronic hemolytic anemia results and painful sickle cell crisis. Sickle cell crisis is an acute, episodic exacerbation of the disorder instigated by reduced oxygen levels and associated crises.

Clinical Manifestation of Sickle cell anaemia

Signs and symptoms usually develop after 6 months of age because of large amounts of fetal hemoglobin that protects the infant for the first few months after birth.

- Acute episodes characterized by fever: low grade, 1 to 2 days after onset of pain and Vaso occlusive crises: occlusion of blood vessels by the sickled cells; may occur in areas such as the brain (cerebral vascular accidents), chest, liver, or penis (priapism)
- Chronic fatigue because the muscles don't receive the required amount of blood.
- Dyspnoea on exertion because of reduced oxygen
- Joint swelling resulting from blockage of blood vessels causing stasis of blood.
- Aching bones
- Pain: usually in the back, chest, or extremities; may be localized, migratory, or generalized.
- Ischemic leg ulcers especially around the ankles resulting from reduced venous return and blood supply
- Increased susceptibility to infection due to impairment of the immune system due to auto-splenectomy
- Delayed growth and puberty- because of chronic anemia, the body is not receiving enough blood and nutrients and also it affects the production of hormones.
- Jaundice: caused by increased red blood cell destruction and the release of bilirubin.
- Pallor
- Tachycardia
- Renal problems: renal insufficiency from repeated infarctions
- Ocular problems: micro infarctions of the peripheral retina leading to retinal detachment and blindness
- Musculoskeletal: necrosis of the femoral head

TYPES OF CRISES

1. **PAINFUL CRISIS (VASO-OCCLUSIVE CRISIS OR INFARCTIVE CRISIS)**

   This is the most common crisis and the hallmark of this disease. It usually appears periodically after the age of five (5). It results from blood vessel obstruction by rigid, tangled sickle cells leading to anoxia and possibly necrosis.

   The crisis is characterized by severe abdominal pain, thoracic, muscle or bone pain, increased jaundice, dark urine; low grade fever may also be present. There may also be auto-splenectomy in

which the spleen is extensively damaged resulting in scaring and shrinkage. This renders the patient more susceptible to infection.

Other signs may appear after the crisis has subsided (usually in 4 days to several weeks). Infection may set in producing lethargy sleepiness, fever and apathy.

2. **APLASTIC CRISIS (MEGALOBLASTIC CRISIS)**

This results from bone marrow depression and is associated with infection (usually viral). It's characterized by pallor, lethargy, sleepiness, dyspnoea, and possible coma.

3. **ACUTE SEQUESTRATION CRISIS**

This occurs in infants between 8 months and 2 years and may cause sudden and massive entrapment of RBCs in the spleen and liver. This is a rare crisis and may be evidenced by lethargy, pallor. If untreated, it commonly leads to hypovolaemic shock and death.

4. **HEMOLYTIC CRISIS**

This is rare and usually affects patients with glucose 6-phosphate dehydrogenase (G6PD) deficiency with sickle cell anemia. It is believed to result from complications of sickle cell anemia such as infections. In hemolytic crisis, degenerative changes cause liver congestion and hepatomegally. Chronic jaundice may also worsen.

PREDISPOSING FACTORS TO SICKLE CELL CRISIS

i. ***Illness*** e.g. malaria where there is hemolysis of RBCs leading to hypoxia.
ii. ***Exposure to cold;*** It causes vaso-constriction making it difficult for the sickled cells to pass through.
iii. ***Stress****;* It increases oxygen demand leading to hypoxia
iv. ***Dehydration***; Increases blood viscosity and this in turn increase the rate of occlusion of the blood vessels by the sickled cells.

MANAGEMENT OF SICKLE CELL ANAEMIA

Investigations

1. History

When you obtain history, the patient/care taker may give complaints of fatigue, dyspnoea, pain in the legs, back and fever, retarded growth both in height and weight. There may also be a positive family history of sickle cell.

2. Blood for sickling test which will reveal the presence of sickled blood cells.

3. Blood for hemoglobin electrophoresis to detect homozygous and heterozygous types

4. Chest x-ray to rule out cardiomyopathy

Medical Treatment

Although sickle cell cannot be cured, treatment can alleviate symptoms and prevent crisis. Treatment is started at 4 months with prophylaxis of penicillin:

- Blood transfusion with packed cells
- In acute sequestration crisis, the patient may be sedated
- Analgesics may also be given e.g. pethidine 50mg IM whenever necessary
- Oxygen therapy to relieve dyspnoea
- Large amounts of oral or I.V. fluids to correct haemo-concentration

Nursing Care

You can nurse the patient using any nursing model of your choice depending on the patient's presentation and the urgency of the problem. Below is an example of how you can nurse a patient with sickle cell anaemia using the Roper, Logan and Tierney Model of living. When assessing a patient using the model, you will assess each activity of living with the aim of identifying actual and potential problems that requires nursing intervention. Refer to the unit on Nursing Theories and Models.

PROBLEM ANALYSIS USING THE ROPER, LOGAN AND TIENEY MODEL OF NURSING CARE

1. **Maintaining a safe environment**

- Patient will need a lot of fluids because of haemo-concentration: - to dilute the blood.
- Risk of fall due to painful joints and restlessness
- Prone to fractures due to osteoporosis, widening medullary spaces and thinning cortices
- Prone to infection.

2. **Communicating**

- Patient may be unable to communicate with the care giver due to pain and dyspnoea.
- Patient may also fail to communicate effectively due to anxiety resulting from being in strange environment.

3. **Breathing**

- Dyspnoea due to reduced Haemoglobin and chest pains

4. **Eating and drinking**

- Patient may not eat due to anorexia and abdominal pains when in crisis
- Patient may vomit due to abdominal pain

5. **Elimination**

- There may be reduced urine output due to haemo-concentration
- The patient may also experience constipation due to immobility during crisis

6. **Personal cleansing and dressing**

- The patient may not be able to bath due to pain and fatigue
- The patient may be overdressed because of fear of exposure to cold.
- May not wear the right type of shoes because of swelling of the feet

7. **Controlling body temperature**

- Child will be overdressed to prevent exposing the child to cold
- Fever due to infections

8. **Mobilizing**

- Reduced mobility due to pain and fatigue
- Restricted movements due to swollen joints and IV line

9. **Work and play**

- Limited activity due to weakness, pain and dyspnoea
- Play may also be affected due to strange environment

- Activities will be restricted to reduce hypoxia

10. **Expressing sexuality**

- Male patient may have impaired sexual function due to priapism
- Due to delayed sexual development, the patient may have impaired self image and low self esteem.

11. **Sleep and rest**

- Insomnia due to pain, change of environment and dyspnoea
- May be confined to bed during the crisis thus being prone to constipation and stiff joints

12. **Dying**

- The patient may be anxious due to dyspnoea
- May be worried and prognosis and fear of death

Problems Identified

Actual problems

1. Pain
2. Impaired gaseous exchange
3. Anxiety
4. Knowledge deficit
6. Impaired mobility
7. Low self esteem

Potential Problems

1. Risk of infection

Table 1.2 NURSING CARE PLAN

PROBLEM	NURSING DIAGNOSIS	OBJECTIVE	NURSING INTERVENTION	EVALUATION
Pain	Pain related to vaso-occlusive crisis hypoxia secondary to stasis of RBCs evidenced by verbalization, tenderness and restlessness	-Patient will be relieved of pain within 12 – 24 hours	• Assess for pain characteristics such as severity, location, type and duration to assess the severity of pain and determine the treatment. • Monitor laboratory values (e.g. Haemoglobin and RBC count to determine need for replacement transfusion. • Administer the prescribed analgesics e.g. pethidine or Morphine sulphate to relieve the pain. • Administer prescribed intravenous fluids to promote hemodilution to reverse agglutination of sickled cells within the microcirculation. • Allow the patient to assume a comfortable position and use splints for joint discomforts • Apply warm compresses to painful areas of the body to increase circulation to the area • Use distraction methods and	Patient verbalizes relief of pain within 12 – 24 hours. Patient appears relaxed and comfortable.

			relaxation techniques to facilitate comfort, sleep and relaxation.	
Dyspnoea	Impaired gas exchange related to altered oxygen carrying capacity of blood secondary to increased destruction of RBCs manifested by breathlessness and restlessness	Patient will maintain normal gas exchange	• Assess the respirations noting the quality, rate, pattern, depth, and breathing effort. • Assess the lung/breath sounds and signs of hypoxaemia, tachycardia, restlessness, lethargy and confusion • Check the vital signs i.e. pulse, respirations and blood pressure to monitor respiratory failure. • Administer oxygen in severe dyspnoea only. • Encourage bed rest to decrease oxygen demand. • Assist the patient to assume a comfortable position. • Administer blood transfusion and intravenous fluids as prescribed.	Patient maintains optimal gas exchange as evidenced by normal blood gases. Patient has improved breathing and resting.
Anxiety	Anxiety related to the condition and its prognosis manifested by expressions of helplessness and restlessness.	Patient will verbalize a reduction in the level of anxiety experienced	• Assess the patient's level of anxiety to enhance the patient's awareness and ability to identify and solve problems. • Establish a working relationship with the patient through continuity of care to form a basis for comfort in communicating anxious feelings. • Encourage the patient and family	Patient shows some signs of allayed anxiety

			to talk about their fears and concerns to increase the awareness the patient. • Stay with the patient during the crisis to give emotional support • Provide reassurance when possible, but always answer questions honestly. • If possible, psychological counseling can be arranged to help the patient cope	
Risk of Infection	Risk of infection related to altered immunity due to auto-splenectomy	Patient will be free of infection.	• Assess for signs of infection such as redness, swelling, increased pain or purulent drainage fever. • Use and maintain aseptic technique when doing invasive procedures such as intravenous insertion, wound care. • Wash hands and teach other caregivers to wash hands before contact with patient, and between procedures with patient. • Encourage intake of a well balanced diet to maintain optimal nutritional status. • Give prophylactic antimicrobial drugs as prescribed e.g. antibacterials, antifungals, antiparasitics • Encourage prompt treatment of	Risk of infection prevented

			any infection • Avoid drugs which may lead to vaso-constriction e.g. adrenaline.	
Knowledge deficit	Knowledge deficit related to the condition, its management, and prognosis manifested by frequent questioning and inaccurate follow through of instruction.	Patient will verbalize an understanding of the condition, management and prognosis.	• Assess motivation and willingness of the patient and caregivers to learn to determine the need or purpose for learning. • Assess the ability to learn the desired health related care. • Give clear, thorough explanations about the disease process to the patient and caretaker. • Explain the cardinal signs of a crisis so that the family will recognise and treat it or seek medical attention early. • Explain and educate the family on the predisposing factors and prevention of sickle cell crisis e.g. avoiding strenuous exercise, light clothes that restrict circulation, cold temperatures, medications that cause vaso-constriction. • Teach them about importance of meticulous wound care, good oral hygiene and a balanced diet as safeguards against infection. • Explain the need to increase fluid	

			intake to aid in haemo-dilution. • Refer parents or children with sickle cell for genetic counselling. • Explain the importance of follow up care. • Explain the importance of jointing support groups e.g. National Association for Sickle Cell.	

3.4 Disorders of the Cardiovascular System

In this section we will not go in details of discussing all the diseases of the cardiovascular system. Only one condition will be discussed in detail. However, you are advised to read on the following conditions; Cerebro-vascular accident, Deep vein thrombosis, thrombophlebitis, Myocardial infarction, Mitral stenosis and Congenital cardiovascular defects. The management of all the conditions of the cardiovascular system uses the same principles.

Atherosclerosis (Coronary Artery Disease)

This is a complex, chronic disease of the arteries characterized by endothelial injury, accumulation of lipids and fibrous tissue in the form of atheromatous plaques, and thickening and hardening of the vessel walls with resultant loss of elasticity. Atherosclerosis is derived from two Greek words: *athere,* meaning "fatty mush" and *skleros,* meaning "hard". The word combination indicates that atherosclerosis begins as soft deposits of fat that harden with age.

Aetiology

The cause is unknown. However there are several predisposing factors;

- Age- usually occurs after age 40
- Sex- men are eight times more susceptible than premenopausal women.
- Hereditary- a positive family of coronary artery disease increases the risk
- Race- white men are more susceptible than non white men while non white women are more susceptible than white women
- High Blood Pressure
- Increased serum cholesterol levels
- Smoking
- Obesity
- Stress
- Diabetes mellitus

Clinical Manifestations

The signs and symptoms of Atherosclerosis include:

- Pain-midsternal, jaw or left arm
- Pain radiation to the scapula, neck, jaw or arm
- Indigestion, heart burn
- Dizziness, Dyspnoea, Nausea, Anxiety, Shortness of breath
- Feeling of doom
- Clutching, rubbing, or stroking the chest
- Vomiting
- Tachycardia, Bradycardia
- Elevated blood pressure (or hypotension in some patients)

- Dysrhythmias

Treatment

1. Investigations
- ECG
- Coronary angiography reveals coronary artery stenosis or obstruction
- Myocardial perfusion imaging

The goal of treatment is to reduce myocardial oxygen demand or increase the oxygen supply and reduce pain.

Medications include:

1. Antiplatelet agents – e.g. Aspirin 81mg once daily.
2. Thrombolytics – e.g. Alteplase (recombinant t-PA) (Activase)
3. Anticoagulants- e.g. Heparin
4. Nitrates- e.g. Nitroglycerin for coronary vasodilatation.
5. Beta blockers- e.g. Atenolol
6. Calcium Channel Blockers- e.g. Verapamil
7. Angiotensin Converting Enzyme Inhibitors- e.g. Captopril
8. Analgesics- e.g. Morphine Sulphate
9. Cholesterol Lowering Agents- e.g. Niacin

Specific points to include in the nursing care

1. Assess and manage the acute pain
2. Assess the levels and manage the anxiety
3. Decrease the oxygen demand by ensuring adequate rest for the patient. Help promote the activity tolerance.
4. Ensure that you prevent the injury
5. Patient teaching should include; home walking programme, use and storage of medications, risk factor modification, resumption of activity and guidelines for sexual activity.

Myocardial Infarction (MI)

Myocardial Ischaemia is a condition in which oxygen deprivation to the heart muscle is accompanied by inadequate removal of metabolites because of reduced blood flow or perfusion (Zevits, 2004). MI occur when ischaemic intracellular changes become irreversible and necrosis results. Angina as a result of Ischaemia causes reversible cellular injury, and infarction is the result of sustained ischemia, causing irreversible cellular death.

Clinical Manifestations

- Pain- severe immobilizing chest pain not relieved by rest or Nitrate administration is the hallmark of an MI.

- Nausea and vomiting - resulting from reflex stimulation of the vomiting center by the severe pain
- Sympathetic stimulation – release of catecholamines leads to diaphoresis, ashen, clammy and cool skin.
- Fever – systemic manifestation of the inflammatory process caused by the infracted myocardium.
- Elevated blood pressure and pulse which may later drop because of decreased cardiac output

Management

Diagnosis

- History and physical examination
- Serum enzyme levels (e.g. creatine kinase (CK), lactic dehydrogenase (LDH), and Aspartate aminotransferase (AST)
- ECG to note areas of ischaemia or infarction
- Chest X-ray
- CBC, thyroid profile
- Nuclear Imaging Studies
- Echocardiography

Treatment

- Intravenous therapy
- Morphine Sulphate IV or Mepedrine
- Oxygen therapy
- Monitor vital signs every 1 to 4 hours
- Lidocaine IV drip infusion to prevent ventricular fibrillation.
- Bed rest with progressive activity
- Record intake and output
- Anticoagulant therapy (e.g. Heparin IV)
- Nitroglycerine IV

Specific points to include in the nursing care

1. Assess and manage the acute pain
2. Assess the levels and manage the anxiety
3. Decrease the oxygen demand by ensuring adequate rest for the patient. Help promote the activity tolerance.
4. Provide stool softeners to facilitate and promote the comfort of bowel evacuation and prevent straining at stool
5. Ensure that you prevent the injury

6. Patient teaching should include; home walking programme, use and storage of medications, risk factor modification, resumption of activity and guidelines for sexual activity.

Group Discussion

In a group, discuss how the management of cardiac ischaemic pain might differ between the person cared for in the Intensive Care Unit and someone cared for on a general medical ward.

Rheumatic Fever and Heart Disease

Rheumatic fever is an inflammatory disease of the heart potentially involving all layers (endocardium, myocardium, and pericardium). The resulting damage to the heart from rheumatic fever is called Rheumatic heart disease. This is a chronic condition characterized by scarring and deformity of the heart valves.

Aetiology

Group A β-haemolytic streptococcal infection of the upper respiratory system.

Other predisposing factors include; poor socioeconomic factors, familial factors, and the presence of an altered immune response.

Clinical Manifestations

- Carditis
- Polyarthritis
- Chorea
- Erythema marginatum
- Subcutaneous nodules
- Fever
- Arthralgia

Management

Diagnosis

- Antistreptolysin O (ASO) titre
- Blood for WBC, RBC, ESR
- Throat Culture
- Chest X-ray
- Echocardiography

- ECG

Treatment

- Bed rest
- Benzathine penicillin (1.2mega units IM) or procaine penicillin (600,000 units IM) 6 hourly for 10 days
- Acetylsalicylic acid
- Corticosteroids

Heart Failure

This is a complex syndrome that can result from any structural or functional cardiac disorder that impairs the ability of the heart to function as a pump to support physiological circulation. Congestive heart failure is an abnormal condition involving impaired cardiac pumping. It is not a disease but is associated with numerous types of heart disease, particularly with long-standing hypertension and coronary artery disease.

Congestive heart failure is characterised by ventricular dysfunction, reduced exercise tolerance, diminished quality of life, and shortened life expectancy (Lewis et al., 2004).

Aetiology

The causes of chronic CCF are:-

- Coronary Artery Disease
- Hypertensive heart disease
- Rheumatic heart disease
- Congenital heart disease
- Cor pulmonale
- Cardiomyopathy
- Anaemia
- Bacterial endocarditis
- Valvular disorders

Acute CCF:-

- Acute myocardial infarction
- Arrhythmias
- Pulmonary emboli
- Thyrotoxicosis
- Hypertensive crisis
- Rupture of papillary muscle
- Ventricular septal defect
- Myocarditis

Precipitating factors include:-

- Anaemia
- Infection
- Thyrotoxicosis
- Hypothyroidism
- Arrhythmias
- Bacterial endocarditis

Pathophysiology

Any factor that increases myocardial work may aggravate existing heart failure or initiate failure such as anaemia, arrhythmias, thyrotoxicosis, pregnancy, infective endocarditis, pulmonary infection, obesity, and change in heart failure therapy including poor compliance.

When the heart fails, considerable changes occur to the heart and peripheral vascular system in response to the haemodynamic changes. These physiological changes are compensatory and maintain cardiac output and peripheral perfusion.

As heart failure progresses, these mechanisms are overwhelmed and become pathophysiological. Development of pathological peripheral vasoconstriction and sodium retention in heart failure by activation of the renin-angiotensin-aldosterone system is a loss of beneficial compensatory mechanism and represent cardiac decompensation. Factors involved are venous return, out flow resistance, contractility of myocardium and salt and water retention

Venous return (preload)

Myocardial failure leads to a reduction of the volume of blood ejected with each heartbeat and an increase in the volume remaining after systole. The increased diastolic volume stretches the myocardial fibres. The sinus tachycardia also ensures that any reduction of stroke volume is compensated for by the increase in heart rate, therefore maintaining cardiac output.

Preload

When there is more severe myocardial dysfunction the increased venous pressure contributes to the development of dyspnoea. Accumulation of interstitial and alveolar fluid and the occurrence of hepatic enlargement leads to ascites and dependent oedema due to increased systemic venous pressure. The inadequate cardiac output is redistributed to maintain perfusion of vital organs, such as the heart, brain and kidneys at the expense of the skin and muscle.

Outflow resistance (after load contracts) - is formed by:-

- Physical characteristics of the vessel walls
- The volume of blood that is ejected
- An increase in after load decreasing the cardiac output

This results in a further increase of end diastolic volume and dilatation of the ventricle walls.

Myocardial contractility

The sympathetic nervous system is activated in heart failure as an early compensatory mechanism which provides support and maintains cardiac output. Chronic sympathetic activation and myocardial contractility has a negative effect of ventricular hypertrophy.

Salt and water retention

The increase in venous pressure that occurs when the ventricles fail leads to retention of salt and water and their accumulation in the interstitium, producing many of the physical signs of heart failure. Reduced cardiac output also leads to diminished renal perfusion, activating the renin-angiotensin system and enhancing salt and water retention, which further increases venous pressure.

Clinical syndrome of heart failure (CCF)

- Biventricular or congestive heart failure is the most common manifestation of heart failure.
- It is clinically useful to divide heart failure into the syndromes of left and right cardiac failure, but it is rare for any part of the heart to fail in isolation.
- CCF occurs when the cardiac out put can no longer meet the needs of the body tissues.
- CCF is not in itself a disease, rather, it is the result of many underlying problems.
- CCF is a complication of almost all types of heart diseases and can be caused by conditions that reduce the heart's ability to pump blood.
- CCF can be either an acute or chronic process, depending on the underlying cause and the rate at which the problem develops.
- Myocardial infarction is the most common cardiac cause of acute congestive heart failure, where as ischaemic heart disease is the most common cause of chronic heart failure.

Types of Congestive Heart Failure

Left- sided failure

The causes include-: ischaemic heart disease (most common cause), systemic hypertension (chronic or malignant), mitral and aortic valve disease, and cardiomyopathies.

Clinical features include fatigue, exertion dyspnoea, orthopnoea, and paroxysmal nocturnal dyspnoea, cardiomegaly, tachycardia, pulmonary oedema, mitral regurgitation which is the last sign in severe cases.

Right-sided failure

This syndrome occurs in association with:-

- Left heart failure.
- Chronic lung disease (cor-pulmonale)
- Pulmonary embolism or pulmonary hypertension
- Tricuspid valve disease

- Pulmonary valve disease
- Atrial or ventricular septal defects
- Mitral valve disease with pulmonary hypertension

Clinical features

Fatigue- one of the earliest symptoms of chronic CCR is caused by decreased cardiac output, impaired circulation, decreased oxygenation of the tissues and anaemia.

Oedema – caused by increased pulmonary pressures secondary to interstitial and alveolar oedema.

Orthopnoea – shortness of breath when the patient is in recumbent position

Paroxysmal Nocturnal Dyspnoea – occurs when the patient is asleep. It is caused by the reabsorption of fluid from dependent body areas when the patient is recumbent. The patient awakens in a panic, has feelings of suffocation, and has a strong desire to seek relief by sitting up.

Tachycardia – may be the first clinical manifestation of CCF. One of the body's first mechanisms to compensate for a failing ventricle is to increase the heart rate. Because of diminished cardiac output, there is increased sympathetic nervous system stimulation, which increases heart rate.

Oedema – it may occur in the legs (peripheral oedema), liver (hepatomegaly), abdominal cavity (ascites), lungs (pulmonary oedema and pleural effusion), and other parts of the body.

Nocturia – a person with CCF who has decreased cardiac output will also have impaired renal perfusion and decreased urinary output during the day. However, when the person lies down at night, fluid movement from the interstitial spaces back into the circulatory system is enhanced causing increased renal blood flow and duresis.

Skin changes – because tissue capillary oxygen extraction is increased in a person with chronic CCF, the skin appears dusky.

Behavioural changes – cerebral circulation may be impaired with chronic CCF secondary to decreased cardiac output. Patient may report restlessness, confusion, decreased attention span or memory.

Chest pain – decreased coronary perfusion from decreased cardiac output and increased myocardial work precipitate chest pain.

Weight changes – initially there may be a progressive weight gain from fluid retention. Overtime the patient is often too sick to eat. Abdominal fullness from ascites and hepatomegaly frequently causes anorexia and nausea.

Jugular venous distension

Management of Congestive Heart Failure

Treatment is aimed at relieving the symptoms, prevention and control of disease leading to cardiac dysfunction and heart failure, and improving quality and length of life.

Pharmacological therapy

Diuretics: - these act by promoting the renal excretion of salt and water by blocking tubular re-absorption of sodium and chloride.

The resulting loss of fluid reduces ventricular filling pressure (preload), produces consistent haemodynamic and sympathetic benefits in patients with heart failure, and rapidly improves dyspnoea and peripheral oedema.

Diuretic act in various ways:

- Loop diuretics e.g. frusemide have a rapid onset of action.
- Thiazide diuretic e.g. bendroflume thiazide has a mild diuretic effect.

Potassium: - sparing diuretics e.g. spironolactone is a specific competitive antagonist to aldosterone, producing a weak diuresis but with a potassium-sparing action.

Vasodilators therapy

Diuretics and sodium restriction activates the renin-angiotensin system promoting formation of angiotensin (a potent vasoconstrictor) and increase in afterload.

Angiotensin converting enzyme inhibitors provide symptomatic improvement.

Angiotensin receptor antagonists e.g. Losartan, are angiotensin II receptor antagonists.

Arteriolar vasodilators: – though not very effective in heart failure e.g. prazosin.

Venodilators: - short and long-acting nitrates e.g. glyceryl trinitrate. These act by reducing preload and lowering venous pressure, with resulting reduction in pulmonary and dependent oedema.

Inotropic agents - Epinephrine (adrenaline), dobutamine, dopexamine and dopamine

- Dobutamine also causes peripheral vasodilatation by an anti-alpha adrenergic effect.

- Digitalis glycosides (e.g. digoxin), improve contractility and reduces sympathetic activity and circulating renin.

Anticoagulants: - because heart failure is associated with a four fold increase in risk of a stroke, anticoagulants such as Aspirin are given.

Anti arrhythmic agents:- precipitating factors should be treated in particular electrolyte disturbance.

Nursing Management

Using Orem's self care model of nursing (1985) 8 universal self care needs, the patient may present with the following problems;

Sufficient intake of air

- Breathlessness especially on exertion,
- May have respiratory distress as a result of LVF
- Paroxysmal nocturnal dyspnoea due to pulmonary congestion and may not sleep.

Sufficient intake of water

- Fluid restrictions due to oedema
- May have excessive urine output due to diuretic effect leading to failure to rest.
- Need for maintenance of strict intake and output

Sufficient intake of food

- May have anorexia and nausea as a result of abdominal fullness due to fluid retention

Activity balanced with rest.

- Activity intolerance due to reduced cardiac output
- Bed rest may lead to constipation and pressure sore formation.
- May have insomnia due to nocturnal dyspnoea

Prevention of danger to the self

- Patient is at risk of pressure sore formation due to the oedema
- Patient is at risk of injuries due to fall resulting from confusion.

Being normal

- Patient will be anxious due to condition and prognosis
- The patient may have fear due to dyspnoea and lack of knowledge.

Problems identified

1. Activity intolerance
2. Impaired gaseous exchange

3. Ineffective tissue perfusion
4. Excess fluid volume
5. Anxiety
6. Risk for impaired skin integrity

Table 1.2 NURSING CARE PLAN

PROBLEM	NURSING DIAGNOSIS	OBJECTIVE	NURSING INTERVENTION	EVALUATION
Activity Intolerance	Activity intolerance related to fatigue secondary to cardiac and pulmonary congestion as manifested by dyspnoea, shortness of breath, weakness, increase in heart rate on exertion.	Patient will tolerate activity and report performance of activities of daily living (ADLs)	- Encourage alternate rest and activity periods to reduce cardiac workload. - Provide emotional and physical rest to reduce oxygen consumption and relieve dyspnoea and fatigue. - Monitor cardiorespiratory response to activity to determine level of activity that can be performed. - Teach patient and significant other the techniques of self care to minimise oxygen consumption. - Assist to choose activities consistent with physical, psychological, and social capabilities to determine level of activity that can be performed. - Collaborate with occupational, physical and/or recreational therapists to plan and monitor activity programme. - Determine patient's commitment to increase the	Patient verbalizes relief of pain within 12 – 24 hours. Patient appears relaxed and comfortable.

			frequency and/or range of activities to provide patient with obtainable goals.	
Dyspnoea	Impaired gas exchange related to increased preload, mechanical failure, or immobility as manifested by increased respiratory rate, shortness of breath, dyspnoea on exertion.	Patient will maintain normal gas exchange evidenced by ease of breathing, reduced respiratory rate.	- Monitor the rate, rhythm, depth and effort of respirations. - Auscultate breath sounds, noting the areas of decreased/absent ventilation, and presence of adventitious sounds to assess congestion - Monitor for dyspnoea and events that improve and worsen it to detect events that can influence ADLs. - Administer supplemental oxygen as prescribed to maintain oxygen levels. - Change oxygen delivery levels from mask to nasal prongs during meals as tolerated to sustain oxygen levels. - Position to alleviate dyspnoea (e.g. semi fowler's position) as appropriate, to improve ventilation by decreasing venous return to the heart and increasing thoracic capacity. - Monitor effectiveness of oxygen saturation to identify	Patient maintains optimal gas exchange as evidenced by normal blood gases. Patient has improved breathing and resting.

			hypoxemia and establish range of oxygen saturation.	
Anxiety	Anxiety related to dyspnoea or perceived threat of death as manifested by restlessness, irritability, and expressions of feelings of life threat	Patient will verbalize a reduction in the level of anxiety experienced	- Assess the patient's level of anxiety to enhance the patient's awareness and ability to identify and solve problems. - Establish a working relationship with the patient through continuity of care to form a basis for comfort in communicating anxious feelings. - Use a calm, reassuring approach to increase confidence in caregiver and relieve anxiety. - Explain all procedures, including sensations likely to be experienced during a procedure, to promote sense of security. - Encourage the patient and family to talk about their fears and concerns to increase the awareness the patient. - Provide reassurance when possible, but always answer	Patient shows some signs of allayed anxiety

			questions honestly. - Instruct the patient on the use of relaxation techniques to help alleviate anxiety. - If possible, psychological counselling can be arranged to help the patient cope	
Excess fluid Volume	Excess fluid volume related to cardiac failure as manifested by oedema, dyspnoea on exertion and increased weight gain	Patient will maintain normal fluid volume	- Weigh the patient daily and monitor trends to monitor fluid retention and weight reduction. - Monitor for serum electrolyte levels to assess as a response to treatment - Monitor respiratory pattern for symptoms of respiratory difficulty for early recognition of pulmonary congestion. - Monitor haemodynamic status including central venous pressure (CVP) to guide therapy. - Monitor renal function and intake and output to monitor fluid balance. - Monitor for therapeutic effect of diuretic (increased urine output, decreased CVP, reduced adventitious breath	Patient maintains normal fluid volume evidenced by reduction in oedema and stable body weight.

			sounds) to assess response to treatment. - Give prescribed medication (diuretics) - Restrict fluid intake.	
Disturbed sleep pattern	Disturbed sleep pattern related to nocturnal dyspnoea, inability to assume favoured sleep position, Nocturia as manifested by inability to sleep throughout the night	Patient will be able to have uninterrupted sleep throughout the night	- Determine patient's sleep/activity pattern to establish routine. - Encourage patient to establish a bedtime routine to facilitate transition from wakefulness to sleep in order to establish a pattern and decrease number of waking periods. - Adjust environment to promote sleep. - Regulate environmental stimuli to maintain normal day-night cycles to help promote sleep cycle. - Adjust medication administration schedule to support patient's sleep cycle. - Monitor patient's sleep pattern and number of sleep hours to determine hours of sleep.	Patient sleeps 6 to 8 hours and verbalizes feelings of rejuvenation after sleep.
Knowledge deficit	Knowledge deficit related to disease process, its management, and prognosis as manifested by frequent questioning about the disease and inaccurate follow	Patient will verbalize an understanding of the condition, management and	- Assess motivation and willingness of the patient and caregivers to learn to determine the need or purpose for learning.	

	through of instruction.	prognosis.	- Assess the ability to learn the desired health related care. - Give clear, thorough explanations about the disease process to the patient and caretaker. - Instruct the patient on measures to prevent/minimise side effects of treatment for the disease so that the patient may be able to decrease number of acute episodes of CCF.	

Complications of CCF

- Pleural effusion
- Arrhythmias
- Left ventricular thrombus
- Hepatomegaly

Discharge Planning

As you plan for discharge, include the following points:

Rest

Encourage the patient to:

1. Have a regular daily rest and activity program
2. After exertion, such as exercise and ADLs, plan a rest period
3. Shorten working hours or reschedule rest period during working hours
4. Avoid emotional upsets. Listen to concerns, fears and provide encouragement.

Drug therapy- teach the patient to:

1. Take each drug as prescribed
2. Develop check-off system (e.g. checklist) to ensure that all drugs are taken.
3. Take pulse rate each day before taking medications. Know the parameters that your health care provider wants for your heart rate.
4. Learn to take own BP at determined intervals. Know your acceptable limits.
5. Know the signs and symptoms of orthostatic hypotension and how to prevent them.
6. Know signs and symptoms of internal bleeding; bleeding gums, increased bruises, blood in stool or urine, and what to do if on anti coagulants.

Dietary therapy- encourage the patient to

1. Consult the written diet plan and list of permitted restricted food.
2. Avoid using salt
3. Weigh self in the early morning after rising and emptying the bladder. Use the same scale and wear the same or similar clothes everyday
4. Eat small frequent meals.

Activity program tell the patient to increase walking and other activities gradually, provided they do not cause fatigue and dyspnoea.

Ongoing monitoring

1. Know the signs and symptoms of recurring or progressing heart failure
2. Report immediately to the health facility any of the following:
   a. Difficulty in breathing especially with exertion or when lying flat
   b. Waking up breathless in the night
   c. Frequent dry hacking cough, especially when lying down

d. Fatigue, weakness
e. Swelling of ankles, feet and abdomen
f. Nausea with abdominal swelling, pain, and tenderness

3. Encourage them to join local support group with the family members

Activity

Mr. J.T. a 65 year old Chief Executive Officer is admitted to your ward with complaints of headache, heart palpitations and poor vision for 1 month. A diagnosis of Hypertension is made.

Explain 5 points you will include in his discharge plan.

Unit summary

Summary

In this unit, you have covered conditions of the cardiovascular system and how you can manage patients who have such conditions. You have studied the following main points: Assessment of the cardiovascular system, nursing care of patients with different cardiovascular conditions using the Orem's self care theory.

Now look back at the learning outcomes at the beginning of this unit. See if indeed you are now able to do all the things listed in the five bullets. Look through your learning journal again and take this chance to review all your entries.

Congratulations! This means that you are now ready to advance to Unit 4, which focuses on Respiratory conditions.

Unit 4

Nursing Patients with Respiratory Disorders

Introduction

This unit includes a discussion of the anatomy and physiology of the respiratory system, assessment of the respiratory system, conditions of the upper and lower respiratory system.

Aim

The unit aims at equipping you with knowledge, attitude and skills in managing the patients with respiratory conditions.

Objectives

Upon completion of this unit, you will be able to:

1. Describe the anatomy and physiology of the respiratory system.
2. Identify subjective and objective data needed to obtain a complete respiratory assessment.
3. Describe the common diagnostic tests and related nursing care used to evaluate respiratory conditions.
4. Discuss the nursing management principles and priorities in caring for a patient with a respiratory disorder.
5. Describe the incidence, preventive measures, and current challenges in the diagnosis and treatment f tuberculosis.

Equipment

To study this module, you will need a CD on health assessment to assist visualize how to conduct health assessment.

Time Required

3 hours

4.1 Anatomy and Physiology of the Respiratory System

The primary purpose of the respiratory system is gas exchange, which involves the transfer of oxygen and carbon dioxide between the atmosphere and the blood. It is divided into two parts; the upper respiratory tract and the lower respiratory tract. Refer to the module of Anatomy and Physiology.

Reading

Read and revise on the structure and functions of the Respiratory system in the Anatomy and Physiology Module.

4.2 Assessment of the Respiratory System

Respiratory assessment should be tailored to the patient's health status. The health assessment should focus on the health history and physical examination of the respiratory system.

Present Health Status

On the general health history, ask whether the patient has had any chronic illnesses that cause symptoms affecting the respiratory system, including heart diseases, renal diseases, and diabetes mellitus.

Find out whether the patient is currently taking any medications and if so, which medication, when they started taking the medications.

Ask the patient if they have any allergies and if so, what are they allergic to? Find out what type of symptoms the patient has presented with.

Find out from the patient whether they use an inhaler and if so, what kind of inhaler, when it is used and often it is used.

Ask the patient whether they smoke or whether they have smoked. How many cigarettes they smoke per day and if they have tried to stop

Past Medical History

Find out from the patient whether they have ever had any problems with the lungs. Also find out whether they have been diagnosed with a respiratory disease such as asthma, bronchitis, bronchiectasis, emphysema, lung cancer tuberculosis or pneumonia.

Find out if the patient has had any injury or any surgery to the chest.

Family history

Find out if there is any family history of lung disease, cancer, tuberculosis, cystic fibrosis asthma.

Home Environment

Ask the patient whether there are any environmental conditions that may affect their breathing at home such as air pollution, possible allergens, heating and air conditioning, smoke.

Occupational Environment

Find out from the patient about their occupation, where they work whether in a factory, chemical plant, on a farm or anywhere where they are exposed to smoke or fumes.

Problem focused history

The commonly reported signs and symptoms related to the lungs and respiratory system include:

Cough

Ask the patient when they first noticed the cough, whether the cough is constant or it comes and goes. Find out the frequency of the cough; whether it is related to time of day, the type of cough; hacky, dry, bubbly, throaty, barky, horse, congested, sputum production or non-productive. Ask the patient to describe characteristics of sputum; mucoid or purulent, colour, odour, amount, blood tinged (some medications such as those containing catecholamines may cause pink-tinged sputum.

A cough can be acute or chronic. Common causes of acute cough are viral infections, allergic rhinitis, acute asthma, acute bacterial sinusitis, or environmental irritants. Chronic cough commonly caused by conditions such as postnasal drip, asthma, chronic bronchitis, bronchiectasis and many others.

Shortness of Breath

Ask the patient how long they have experienced the shortness of breath. If intermittent how often these episodes occur, any history of asthma, TB, bronchitis, emphysema, let patient describe what these mean personally and to family. Find out what the patient do when they experience ‘breathing attack’ (positioning, breathing aids) and whether the breathing interfere with the patient’s activities of daily living or work.

Shortness of breath, or dyspnoea, occurs when breathing is difficult such as at rest or with limited exertion. Some conditions such as pneumonia, may cause sudden onset of shortness of breath; other conditions such as chronic heart failure, may be associated with a more gradual onset. Some patients may experience shortness of breath at intervals over a period of time.

Chest pain with breathing

Find out when the chest pain started. Let the patient point at exactly where the pain is. Find out whether the pain comes and goes or whether it is there constantly. Find out whether the pain radiates to other areas, such as the neck or arms.

Chest pain caused by respiratory disease is usually associated with chest wall or parietal pleura e.g. pneumonia. A sharp, abrupt pain associated with deep breathing may be an indication of pleural lining irritation.

Hoarseness or Voice change

Find out for how long the patient has had the hoarseness or voice change whether it is constant or whether it comes and goes. Ask the patient whether they have to clear the throat often and what makes the hoarseness worse, and whether the hoarseness is associated with a cold or sore throat.

Find out when the patient had a last chest x-ray, TB test, pulmonary function test. Ask whether the patient is currently on medication for breathing or allergy problems, whether they are subjected to work or environmental conditions that could irritate the respiratory system. Find out the history of pollution exposure or systematic irritation. If the patient reports a pollution exposure history as well as these symptoms, be alert to their interrelationship e.g. Carbon monoxide may cause dizziness, headache or fatigue, Sulphur oxide may cause irritation of the respiratory tract resulting in cough or congestion, Nitrogen oxides may irritate the mucous membrane resulting in cough or congestion

If patient smokes;

- What does he smoke
- How long has he smoked
- How much does he smoke each day
- Does he inhale
- Does he have cough related to smoking
- When did cough begin and has it gotten worse, same or better
- What techniques has patient used in an attempt to stop
- If patient has tried to quit and has but failed, what does he see as reason for failure

If patient formerly smoked but has quit

- What had patient been smoking
- How long did patient smoke
- How much each day did patient smoke
- Why did he quit

Physical Examination

Back and Posterior Chest

The patient may sit on the examination couch with the gown open in the back, exposing the posterior chest, cover breasts of female patients. The examiner stands behind the patient.

Inspect the posterior chest for symmetry of shoulders, musculoskeletal development and thoracic configuration. Inspect and palpate the scapular and spine

Palpate and percuss the costovertebral angle, noting any tenderness

Lungs

Observe the patient's respirations for excursion, depth, rhythm and pattern. Palpate the patient's chest for expansion and tactile fremitus.

Percuss over all lung fields, scapular, sub scapular nodes, posterior chest, and lateral walls systematically for resonance. Percuss for diaphragmatic excursion

Auscultate breath sounds, noting characteristics and adventitious sounds

Anterior Chest

The patient may sit on the examination couch, the female's gown is lifted to drape on the shoulders, and the male's gown is lowered to the lap. The examiner stands in front of the patient.

Inspect the anterior chest for symmetry and musculoskeletal development. Inspect the supra clavicular and infra clavicular areas. Palpate the chest for stability, lumps or tenderness

4.3 Upper Respiratory Tract Disorders

Upper respiratory disorders are common conditions that affect most people on occasion. Some of these conditions are acute, with symptoms that last several days; others are chronic, with symptoms that last a long time or occur repeatedly. The common upper respiratory disorders are:

- Common Cold
- Herpes Simplex Infection
- Sinusitis
- Rhinitis
- Pharyngitis
- Tonsillitis
- Peritonsillar abscess
- Laryngitis

- Cancer of the Larynx

Pharyngitis

Pharyngitis is inflammation of the pharynx (tonsils, palate, and uvula) and may be viral, bacterial, or fungal in origin. Beta-haemolytic streptococci are the most common infecting organisms.

Clinical Manifestations

- Sore throat
- Difficulty in swallowing
- Fever
- Malaise
- Cough
- Hoarseness
- Enlarged and tender cervical lymphnodes

Management

Diagnostic

Throat culture of the pharyngeal mucosa

Treatment

- Antimicrobials e.g. antibiotics such as penicillin or erythromycin for bacterial pharyngitis
- Bed rest
- Fluids
- Warm saline irrigations or gargles
- Analgesics
- Antipyretics

Nursing Care

- Instruct the patient to stay in bed during the febrile stage of the illness and to rest frequently.
- Any tissues should be disposed of properly to prevent the spread of infection.
- The skin is examined once or twice daily for possible rash because acute pharyngitis may precede some other communicable diseases.
- Warm saline gargles or irrigations are used depending on the severity of the lesion and the degree of pain.
- Do mouth care to improve the patient's comfort.

Laryngitis

This is inflammation of the larynx often caused by abuse of the voice, exposure to dust, chemicals, smoke, and other pollutants, or as part of the upper respiratory tract infection. The cause of the

inflammation is usually a virus, and bacterial invasion may be secondary. Laryngitis is usually associated with acute rhinitis or nasopharyngitis. The onset of infection may be associated with exposure to sudden temperature changes, dietary deficiencies, malnutrition, and lack of immunity.

Clinical manifestations

- Hoarseness or complete loss of the voice (aphonia)
- Severe cough

Management

- Antibiotics if bacterial infection is suspected
- Systemic steroids if severe to reduce the inflammation and oedema
- Supplemental humidification
- Voice rest to rest the vocal cords
- Bed rest

Nursing Care

- Humidified environment
- Encourage fluid intake
- Voice rest

4.4 Lower Respiratory Tract Disorders

There are several conditions of the lower respiratory tract. The common ones are:

- Bronchitis
- Bronchiectasis
- Asthma
- Tuberculosis
- Chronic obstructive pulmonary disease
- Pneumonia
- Cancer of the lungs

Bronchitis

Bronchitis can be acute or chronic. Acute bronchitis is the inflammation of the bronchi and usually the trachea. Acute bronchitis occurs most frequently in people with chronic lung disease but it may occur as an extension of an upper respiratory infection. It may therefore be communicable.

Aetiology

- Bronchitis may be caused by physical or chemical agents such as dust, smoke, or volatile fumes.

- Viral – rhinovirus, Adenovirus, Influenza A and B, and Para influenza
- Bacterial pathogens - Streptococcus Pneumoniae, Haemophilus Influenzae, Bordetella Pertussis

Pathophysiology

In the healthy person the defense mechanisms of the respiratory tract usually destroy or remove inhaled microbes. When defenses are weakened, the potentially pathogenic bacteria that normally reside in the nose and pharynx may colonize the mucosa of the trachea and bronchi. As part of the inflammatory process, blood flow to the affected area increases, causing an increase in pulmonary secretions.

A painful cough with sputum production, low grade fever, and malaise are common symptoms. The patient may have pain beneath the sternum caused by inflammation of the tracheal wall. Symptoms usually last 1 to 2 weeks but may continue for 3 to 4 weeks. Rhonchi and wheezes are heard on chest examination. If symptoms worsen and the patient has high fever, shortness of breath, pleuritic chest pain, rapid respirations, and rales or signs of consolidation on physical examination of the chest, pneumonia is suspected.

Management

Diagnosis

- Based on history and symptoms

Treatment

- Symptomatic and supportive
- Increase the fluid intake to 2 to 3 litres per day
- Analgesics such as Acetaminophen
- Antipyretics

Pneumonia

Pneumonia is acute inflammation of the lung parenchyma usually associated with a marked increase in interstitial and alveolar fluid.

Aetiology

There are many causes of pneumonia, including viruses, mycoplasmas, fungal agents, and protozoa. The common bacteria include:

- Streptococcus pneumonia
- Haemophilus influenza
- Mycoplasma pneumonia
- Staphylococcus aureus

- Tuberculosis (TB) pneumonia
- Chlamydia pneumonia
- Other opportunistic infections e.g. PJP

The major risk factors for pneumonia include:

- Advanced age
- History of smoking
- Upper respiratory tract infection
- Tracheal intubation
- Prolonged immobility
- Immunosuppressive therapy
- Malnutrition
- Dehydration
- Chronic disease states (such as diabetes Mellitus, heart disease, chronic lung disease, renal disease and cancer).

Pathophysiology

Inoculation of the respiratory tract by infectious organisms leads to an acute inflammatory response in the host that is typically 1-2 weeks in duration. This inflammatory response differs according to the type of infectious agent present.

Viral infections

These are characterized by the accumulation of mononuclear cells in the submucosa and perivascular space, resulting in partial obstruction of the airway. They clinically manifest as wheezing and crackles. Disease progresses when the alveolar type II cells lose their structural integrity and surfactant production is diminished, a hyaline membrane forms, and pulmonary oedema develops.

Bacterial infections

The alveoli fill with proteinaceous fluid, which triggers a brisk influx of red blood cells and polymorphonuclear cells (red hepatization) followed by the deposition of fibrin and the degradation of inflammatory cells (gray hepatization). During resolution, intra-alveolar debris is ingested and removed by the alveolar macrophages. This consolidation leads to decreased air entry and dullness to percussion. Inflammation in the small airways leads to

crackles. Wheezing is less common than in viral infections. Inflammation and pulmonary edema resulting from these infections causes the lungs to become stiff and less distensible, thereby decreasing tidal volume. The patient must increase his respiratory rate to maintain adequate ventilation. Poorly ventilated areas of the lung may remain well perfused, resulting in ventilation/perfusion (V/Q) mismatch and hypoxemia. Tachypnoea and hypoxia are common.

Clinical Manifestations

- Fever, chills, sweat
- Fatigue
- Cough with copious purulent sputum
- Exhalatory rales
- Dyspnoea, tachypnoea
- Haemoptysis
- Headache
- Pleuritic chest pain

Management

Diagnosis

- History and physical examination
- Chest X-ray
- Sputum for culture analysis and sensitivity or serological testing
- Bronchoscopy

Treatment

- Depends on results of culture
- Broad spectrum antibiotic therapy
- Respiratory support
- Nutritional support
- Fluid and electrolyte management
- Oxygen therapy
- Bronchodilators
- Chest physiotherapy
- Postural drainage

Specific Nursing Care

- Oxygen therapy to improve gaseous exchange
- Ensure and maintain clear airway through frequent suctioning

- Ensure adequate fluid intake
- Encourage effective coughing
- Schedule activities after treatments or medications
- Provide psychological support and a quiet environment to reduce anxiety and promote rest.

Tuberculosis

Introduction

Tuberculosis is a major public health problem in Zambia. It is caused by the tubercle bacillus bacteria which forms lesions called tubercles. The tubercle bacilli remains dormant in the body tissues and persist for many years. With the emergence of HIV/AIDS the prevalence and incidence rates, as well as the case fatality rate has greatly increase worldwide.

Definition of Tuberculosis

Tuberculosis is an infectious disease that primarily affects the lungs, but can affect any part of the body, commonly caused by mycobacterium tuberculosis and occasionally caused by mycobacterium bovis or mycobacterium avium (Suzanne and Brenda, 1992).

Black, m, et al, (2001) defined tuberculosis as a chromic granulomatous infection characterised by caseous necrosis primarily affecting the lungs, but it can affect any other part of the body.

Mode of Transmission

Transmission is from person to person by air (Micro droplets), confined spaces and poor ventilation increase risk of exposure.

Once infected, a person remains infected for life and can develop the active tuberculosis at anytime. HIV infection facilitates progression to active tuberculosis.

Prevalence

In 1964, Zambia had a tuberculosis prevalence rate of approximately 100 cases per 100, 000 population. This figure remained constant for the next 20 years. In 1984, the first HIV case was diagnosed in Zambia and since then the prevalence rate of tuberculosis has steadily been rising.

According to 2002 World Health Organization data, Zambia ranks 11th in the world in mortality rate due to tuberculosis (WHO, 2005).

INCIDENCE

In Zambia, the incidence of tuberculosis has also greatly increased in the last 10 years. Tuberculosis now accounts for one of every six adult deaths in Zambian hospitals.

COMORBIDITY WITH HIV / AIDS

Zambia is one of the countries also acutely affected by the HIV/AIDS epidemic. Tuberculosis and HIV/AIDS have become overlapping epidemics as many tuberculosis patients are also co-infected with HIV. It is estimated that 70% of tuberculosis patients are HIV positive and over 60% of adults aged 15 – 49 years suffering from tuberculosis are HIV positive (CBoH, 2004). Therefore, tuberculosis is the commonest cause of mortality and morbidity in HIV infected people. Tuberculosis and HIV/AIDS are thought to be a synergistically lethal combination with each disease exacerbating effects of the other. TB is the leading cause of death in individuals who are HIV positive and is also the cause of death for 13% of patients with AIDS (WHO, 2005).

Pathophysiology

The first time an individual is infected with the mycobacterium bacilli, the disease is said to be a primary infection. The initial response of the body to the infection is an influx of neutrophil polymorphs, but these are unable to kill mycobacterium. Then the macrophages come in to surround the bacilli there by forming the tubercle. And in the process some bacilli pass along the lymphatic to the hilar lymph nodes and induce a similar necrotizing granulomatous inflammation there. The combination of the tubercles and the hilar granulomatous lesion is called the primary complex/ghon focus/Ashman focus. The primary infection site may/may not under go a process of necrotic degeneration (caseation), which produces cavities filled with a cheese like mass of tubercle bacilli and white blood cells and necrotic lung tissue. In time the material liquifies and the tubercle breaks in which case the caseous material may drain into the tracheal bronchial tree and may be coughed up. The air filled cavities remain and may be detected on an x-ray. Most primary tubercles heal over a period of a month by forming scars and then calcified lesions, also known as ghon tubercles. These lesions may contain living bacilli that can be reactivated even after many years and cause secondary infection.

From the ghon/Ashman focus two things can happen:

- Infection may remain under check indefinitely.
- Infection can break away and spread to the neighbouring cells; into blood vessels and spread systemically

If infection breaks away and spread to the neighbouring cells it is called secondary infect. The following factors may contribute to the breaking away of the infection from the ghon Ashman focus

- Advanced age
- HIV infection
- Pretence of other disease such as diabetes mellitus or malignancy
- Malabsorption syndromes
- Prolonged corticosteroid therapy.

Signs and Symptoms of Tuberculosis

Since tuberculosis can affect any part of the body, the sign and symptoms will vary depending on which part of the body is infected. However the following are some of the general signs and symptoms of tuberculosis:

- Low grade fever
- Pallor
- Chills
- Night sweats
- Easy fatigability
- Weight loss
- Loss of appetite
- Cough productive with scanty mucoid sputum
- Dyspnoea
- Chest pain

POLICY STATEMENT

The diagnosis and treatment of tuberculosis is free, and tuberculosis is a notifiable disease. To implement the above policy the government came up with five (5) pillars /strategies which are

- Pillar 1 Political will.
- Pillar 2 Diagnosis of TB by sputum smear.
- Pillar 3 Availability of TB drugs at all times.
- Pillar 4 Recording and Reporting.
- Pillar 5 Dot implementation TB treatments.

MANAGEMENT

1. Mitigation and Diagnosis

Zambia being in a low resource-setting region the diagnosis of tuberculosis is made by both clinical diagnosis techniques and the confirmatory laboratory instigations. The following are some of the investigations used in the diagnosis of tuberculosis.

Sputum Examination FOR AAFB

AAFB stands for Alcohol Acid Fast Bacilli, in which the sputum smears are prepared using the Zilch- Nielsen, stain technique or carmines stain. For children who are unable to submit sputum samples gastric savage is done and the test ravage examined for AAFB. This test is reliable in the sense that the actual bacilli is detected.

Chest X-ray

From the chest x – ray hilary adenopathy, pleural effusion focus infiltrates, multicolor infiltrates, interstitial infiltrates and cavitations may be seen. However a normal chest x –ray in HIV infected patents does not exclude diagnosis of tuberculosis (CBoH, 2004)

Treatment

Treatment of tuberculosis can be divided into four categories;

Category 1 Sputum Positive

Category 2 Relapses and treatment flexure

Category 3 Extra pulmonary TB (sputum smear negative).

Category 4 Paediatrics tuberculosis (TB patients of ages 12 years or below)

Nursing Care Using the Nursing Process

Assessment

A complete history and physical examination are performed. Clinical manifestations of fever, anorexia, weight loss, night sweats, fatigue, cough, and sputum production prompts a more thorough assessment of the respiratory function.

Any change in temperature or respiratory rate, amount and colour of the secretions, frequency and severity of cough, and chest pain are assessed for consolidation by evaluating breath sounds (diminished, bronchial, or bronchovesicular sounds, crackles), fremitus, egophony, and results of percussion (dullness). The patient may also have enlarged, painful lymphnodes. The patient's emotional readiness to learn, as well as perceptions and understanding of tuberculosis and its treatment are also assessed. The results of the physical and laboratory evaluations are also reviewed.

Nursing Diagnoses

Based on the assessment data, the nursing diagnoses may include:

- Ineffective airway clearance related to copious tracheobronchial secretions evidenced by purulent expectorations
- Ineffective breathing pattern related to decreased lung volume evidenced by tachypnoea, use of accessory muscles to breath.
- Knowledge deficit about treatment regimen and preventive health measures evidenced by verbalization and frequent questioning
- Activity intolerance related to fatigue, altered nutritional status and fever
- Risk for Non adherence to treatment regimen related to lack of knowledge on disease process and long therapy
- Risk for impaired nutrition less than body requirements related to anorexia
- Risk for multiple drug resistance
- Risk for spread of TB infection

Planning and Implementation

Goals

The major goals for the patient include maintenance of a apatent airway, knowledge about the disease and treatment regime, adherence to the medication regimen, increased activity tolerance, and absence of complications.

Nursing Interventions

Promoting Airway Clearance

Copious secretions can block the airways in many ways in many patients with TB and interfere with adequate gas exchange. You should increasing fluid intake to provide systemic hydration which serves as an effective expectorant. Instruct the patient about the best position to assume to facilitate drainage. Encourage the patient to use a high humidity face mask or a humidifier at home to assist in liquefying secretions.

Advocating Adherence to Treatment Regimen

The multiple and long term drug regimen that a patient must follow can be quite complex. Understanding the medications, schedule, side effects is important.

Educate the patient on TB, how it spreads and the treatment and prognosis. Inform them that taking the medications consistently is the most effective means of preventing transmission.

Carefully instruct the patient about the important hygienic measures, including covering of the mouth and nose when coughing or sneezing, proper disposal of tissues and sputum, and hand washing.

Promoting Activity and Adequate Nutrition

Patients with TB are often debilitated due to a prolonged chronic illness and impaired nutritional status. Plan a progressive activity schedule is, which focuses on increasing activity tolerance.

Anorexia, weight loss, and malnutrition are common in patients with TB and the patient's willingness to eat may be altered by fatigue from excessive coughing, sputum production, chest pain,

or a generalized debilitated state. In consultation with the Dietician, plan nutritious small frequent meals for the patient.

Patient Education and Homecare Considerations

You have an important role in the care of the patient with TB and the family, including assessing the patient's ability to continue therapy at home. You need to assess the patient for adverse drug reactions and participate in surveying the patient's home and work environment to do contact tracing during the infectious stage. Arrange for follow up screening for the contacts.

Instruct the patient and family about infection control procedures, such as proper disposal of tissues, covering the mouth and nose during coughing and sneezing and hand washing.

Identify a family member who will support the patient in taking medication. In cases where the ability of the patient to comply with treatment regimen is in question, refer the patient to the nearest community TB supporter at the health centres.

Evaluation

Expected Outcomes

1. Maintains a patent airway by managing secretions with humidification, fluid intake, coughing, and postural drainage.
2. Demonstrates an adequate level of knowledge evidenced by listing medications by name, correct schedule and side effects.
3. Adheres to treatment regimen by taking medications as prescribed and reporting for follow up screening.
4. Participates in preventive measures such as disposal of used tissues properly.
5. Exhibits no complications.
6. Maintains adequate weight

Unit summary

Summary

In this unit, you have learnt respiratory disorders. You have studied the following main points:

Assessment of a patient with a respiratory disorder: history, common signs and symptoms that a patient with a respiratory disorder my present with and physical examination including common investigations that are done in a patient with a respiratory disorder.

Common conditions of the upper respiratory tract and also conditions of the lower respiratory tract. Tuberculosis and how to manage a patient who has TB.

Now look back at the learning outcomes at the beginning of this unit. See if indeed you are now able to do all the things listed in the five bullets. Look through your learning journal again and take this chance to review all your entries.

Congratulations! This means that you are now ready to advance to Unit 5, which focuses on Urinary Tract conditions.

Unit 5

Nursing Patients with Urinary Tract Disorders

At the end of the unit, you should be able to:

1. State the structures that make up the urinary and renal system and describe the major functions of the urinary and renal system
2. Identify the subjective and objective data essential to the assessment of renal function
3. Describe diagnostic tests used to determine renal and urinary function
4. Use the nursing process to formulate a plan of care for patients with Urinary Tract Infection

5.1 Anatomy and Physiology of the Renal System

The upper urinary tract is made up of the kidneys and ureters while the lower urinary tract is made up of the bladder and urethra. The main functions of the kidneys are to; regulate the body fluid volume and osmolality, regulate electrolyte balance, regulate acid-base balance, excrete metabolic waste products, toxins, and foreign substances and produce and secrete hormones. The bladder collects urine while the urethra serves as an outlet for urine from the bladder.

Reading

For the next 20 minutes before you read further, read the Anatomy and physiology of the Urinary and Renal system in the Anatomy and Physiology Module. Take your notebook and write down brief notes as you will refer to them as you progress working through the unit. Concentrate on the following points:

- Structure of the kidney
- Functions of the kidney- electrolyte balance, maintenance of acid base balance, blood pressure regulation and excretion of metabolic wastes and toxins.

5.2 Assessment of Renal and Urinary Function

Health History

Baseline renal assessment begins with an assessment of the patient's subjective overall state of health and perception of what constitutes good health and then exploration of any patient concerns or health problems.

Clinical Manifestations of Urinary and Renal Dysfunction

The following signs and symptoms are suggestive of urinary tract disease: pain, changes in voiding pattern, gastrointestinal symptoms.

Pain

Genitourinary pain is not always present in renal disease but it generally occurs in the more acute conditions. Pain associated with urinary tract disorders may be referred to different anatomic locations depending on the aetiology and innervations of the area affected.

Changes in voiding pattern

Urinary frequency- voiding that occurs more often than usual when compared with the patient's usual pattern or the generally accepted norm of once every 3 to 6 hours. It may result from a variety of conditions; infection, diseases of the urinary tract, metabolic disorders, hypertension, and certain medications such as diuretics.

Urgency (strong desire to void) may be due to inflammatory lesions in the bladder, prostate, or urethra; acute bacterial infections or chronic prostatitis in men.

Burning on urination- is seen in patients with urethral irritation or bladder infection. Urethritis frequently causes burning during the act of voiding, whereas cystitis may produce burning both during and after urination.

Hematuria- (red blood cells in the urine) is considered a serious sign because it may indicate cancer of the genitourinary tract, acute glomerulonephritis, or renal tuberculosis. The colour of bloody urine depends on the pH of the urine and the amount of blood present.

Oliguria- (a small volume of urine; output between 100 and 500ml/24hr) and anuria absence of urine) indicate a serious renal dysfunction requiring immediate medical intervention.

Other signs and symptoms include; hesitancy, urinary incontinence, stress incontinence, enuresis, polyuria, proteinuria.

Physical Examination

Inspection

Assess for changes in the following:

Skin: check for pallor due to anaemia, changes in turgor, bruises, texture (e.g. rough skin), skin colour changes due to accumulated pigmented metabolites or a gray discoloration due to transfusion-mediated haemochromatosis; ecchymosis and haematomas due to clotting abnormalities; and pruritus and excoriations due to calcium deposits from secondary hyperparathyroidism

Mouth: inspect for stomatitis and note ammonia breath odour

Face and Extremities: check for generalized oedema, peripheral or oedema, bladder distension, masses, enlarged kidneys

Abdomen : take note of any skin changes described earlier as well as striae, abdominal contour for midline mass in lower abdomen (may indicate urinary retention) or unilateral, mass (occasionally seen in adult indicating enlargement of one or both kidney from large tumour or polycystic kidney.

Weight: take note of the weight gain secondary to oedema, weight loss and muscle wasting in renal failure.

General state of health: observe for fatigue, lethargy and diminished alertness

Palpation

The kidneys are posterior organs protected by the abdominal organs, the ribs, and the heavy back muscles. A landmark useful in locating the kidneys is the cost vertebral angle (CVA) formed by the rib cage and the vertebral column. The normal sized left kidney is rarely palpable because the spleen lies directly on top of it. Occasionally the lower pole of the right kidney is palpable.

To palpate the right kidney, place your left hand behind and support the patient's right side between the rib cage and the iliac crest. Elevate the right flank with the left hand, and use the right hand to palpate deeply for the right kidney. The lower pole of the right kidney may be felt as a smooth, rounded mass that descends on inspiration. If the kidney is palpable, its size, contour, and tenderness should be noted. Kidney enlargement is suggestive of neoplasm or other serious renal pathological conditions.

Percussion

Tenderness in the flank area may be detected by fist percussion. This technique is performed by striking the fist (kidney punch) of one hand against the dorsal surface of the other hand, which is placed flat along the posterior CVA margin. Normally a firm blow in the flank area should not elicit pain. If CVA tenderness and pain are present, it may indicate a kidney infection or polycystic kidney disease.

Normally a bladder is not percussible until it contains 150ml of urine. If the bladder is full, dullness is heard above the symphysis pubis. A distended bladder may be percussed as high as the umbilicus.

AUSCULTATION

The diaphragm of the stethoscope may be used to auscultate over both CVAs and in the upper abdominal quadrants. With this technique, the abdominal aorta and renal arteries are auscultated for a bruit (an abnormal murmur), which indicates impaired blood flow to the kidneys.

DIAGNOSTIC STUDIES

Urine Studies

Urinalysis - general examination of urine to establish information or provide data to establish a tentative diagnosis and determine whether further studies are to be ordered

Creatinine clearance - Creatinine is a waste product or protein breakdown (primarily body muscle mass). Clearance of Creatinine by the kidney approximates the Glomerular filtration rate (GFR). Normal finding is 85-135 ml/min

Urine culture ("clean catch", "midstream") - Done to confirm suspected urinary tract infection and identify causative organisms. Normally, bladder is sterile, but urethra contains bacteria and a few WBCs. If properly collected, stored, and handled: <10,000 – 100,000ml is usually not diagnostic, and test may have to be repeated; >100,000/ml indicates infection.

Fishberg Concentration test – done to evaluate renal concentration ability. Concentration is measured by specific gravity readings Normal finding is 1.020 – 1.035.

Residual urine- To determine amount of urine left in bladder after urinating. Finding may be abnormal in problems with bladder innervations, sphincter impairment, BPH or urethral strictures. Normal finding is < 50mls urine (increase with age).

Protein determination Dipstick (Albustix, Combistix) Quantitative test for protein Test detects protein (primarily albumin) in urine. *Normal finding* is 0-trace

A 12 or 24 hr collection gives a more accurate indication of the amount or protein in urine. Persistent proteinuria usually indicates glomerular renal disease. *Normal finding* is < 150 mg/24 hr (<0.15g/24 hr), consisting mainly of albumin

Urine cytology - Study is used to identify changes in cellular structure indicative of malignancy, especially bladder cancer.

Blood Tests

Serum creatinine- indicates the ability of the kidneys to excrete creatinine. It gives a rough estimate GFR.

Blood urea nitrogen (BUN) - the test indicates the ability of the kidneys to excrete nitrogenous wastes.

Radiologic Tests

X-ray films of the urinary tract may be done in conjunction with the other abdominal studies.

Retrograde Pyelography – to visualise the urinary tract.

Intravenous Pyelography – to determine the size and location of the kidneys, degree of obstruction, demonstrate cysts, renal stones, or tumours.

Kidney, Ureter, and Bladder (KUB) X-ray Films – this is done for gross visualization of the KUB and location of calcifications and stones.

Computed Tomography Scan – visualises the kidneys and renal circulation using an X-ray beam rotated around the body. It is the gold standard for diagnosing renal stones. The test also stages and evaluates renal cell carcinoma and renal venous thrombosis.

Magnetic Resonance Imaging (MRI) – uses electromagnetic energy to provide visualisation of the structures.

Renal Angiography – visualization of the renal circulation mainly the renal artery stenosis and polyarteritis nodosa.

Ultrasound – uses sound waves to determine the size and texture of the kidneys. Its the test of choice to exclude urinary tract obstruction.

Other investigations include; kidney biopsy and cystoscopy.

5.3 Common Urinary and Renal Disorders

- Cystitis
- Urethritis
- Ureteritis
- Bladder cancer
- Urinary calculi
- Nephrolithiasis
- Hydronephrosis
- Renal cancer
- Glomerulonephritis
- Renal failure

5.4 Urinary Tract Infections

Urinary Tract Infections (UTIs) are among the most common infections affecting humans throughout their lifespan. Lower UTIs affect the urinary blabber (cystitis), prostate (prostatitis), or urethra (urethritis) while upper UTIs affect the renal parenchyma and renal pelvis (pyelonephritis) (Monahan et al, 2007). Urinary tract infection (UTIs) are caused by pathogenic micro-organisms in the urinary tract (the normal urinary tract is sterile above the urethra). UTI's are generally classified as infectious in involving the upper or lower urinary tract (Smeltzer and Bare, 2004).

The upper urinary tract infections are most commonly ascending, that is, they originate in the urinary bladder and ascend through the ureters to the kidneys. Normally the vesico urethral valve prevents reflux of the urine from the urinary bladder into the ureters (Koneman et al., 1997).

Inflammation of the urinary tract may be attributable to a variety of disorders, but **bacterial infection** is by far the most common in the majority of healthy persons. About 80% of UTIs are caused by the gram negative rod E.Coli, which is normally in the intestines.

UTIs occur more frequently in women than men until after 50 years of age, when the incidence is similar. Nevertheless, a minority of otherwise healthy individuals, including many young adult women and men have some bacteria colonizing the bladder. This condition is called *asymptomatic* bacteraemia and does not justify treatment. In contrast, an infection of the bacteria invasion of the urinary tract occurs. (Lewis at al., 2004).

Instrumentations allow bacteria that are normally present at the opening of the urethra or bladder. Sexual intercourse promotes 'milking 'of bacteria from the vagina and perineum and may cause minor urethra trauma that predisposes women to UTIs.

UTIs result from haematogenous routes where blood-born bacteria secondarily invade the kidneys, ureters, or bladder. For haematogenous transmission, there must be prior injury to the urinary tract, such as obstruction of the ureter damage caused by stones, or renal scars.

An important source of UTIs is hospital acquired, or nosocomial infection, the cause of nosocomial infection is often Escherichia coli and less frequently, pseudomonas organisms, Urologic instrumentation particularly with an indwelling catheter predisposing factor

AETIOLOGY

Common organisms include:

- Escherichia coli (80%)
- Staphylococcus saprophyticus

Less common organisms include

- Proteus mirabilis
- Klebsiella pneumoniae
- Enterococcus spp

Predisposing Factors

Women

- Sexual intercourse
- Pregnancy
- Diaphragm use
- Spermicides

- Diabetes mellitus
- Delayed postcoital voiding

Men

- Lack of circumcision
- Prostatic hypertrophy
- AIDS
- Homosexual activity

Others include:

- Obstruction of urinary flow due to congenital abnormalities, renal calculi, ureteral occlusion.
- Residual urine in the bladder as a result of neurogenic bladder and urethral stricture.
- Instrumentation of the urinary tract e.g. indwelling urinary catheter, intermittent catheterization, urethral dilatation and cystoscopy.

PATHOPHYSIOLOGY

The mode of entry of bacteria into the genitourinary tract cannot always be traced, however, four major pathways exist;

Ascending infection from the urethra- this is the most common cause of genitourinary tract infection in adults. Because the female urethra is short and rectal bacteria tend to colonize the perineum and vaginal vestibule, women are especially prone to ascending UTIs.

Haematogenous spread – this occurs infrequently, except in case of tuberculosis, renal abscess, and perinephric abscesses.

Lymphatogenous spread – rarely bacteria are thought to travel through the lymphatics to the bladder, prostate, and female genitourinary.

Direct extension from another organ – this occurs from intraperitoneal abscesses, especially those associated with inflammatory bowel diseases.

The organism triggers an inflammatory response in the lining of the urinary tract. This irritation leads to pain, frequent voiding, and other clinical manifestations.

CLINICAL MANIFESTATION OF DISORDERS OF THE URINARY SYSTEM

A UTI can present with a range of symptoms, or may be totally asymptomatic. The presenting symptoms will vary with the age and sex of the patient and also with the severity and site of the infection but may include:-

- Frequency, urgency, dysuria
- Cloudy or foul smelling urine
- Suprapubic discomfort
- Haematuria and back pain
- Signs and symptoms of upper UTI include fever, chills, flank pain, and painful urination.

MANAGEMENT

MEDICAL TREATMENT

Diagnosis

- Urine culture
- Urinalysis

Treatment

The aim of treatment is to promote comfort and decrease complications.

- Most uncomplicated UTIs can be treated with oral antibiotics such as Trimethoprim, Cephalosporin, Fluoroquinolone (e.g. ciprofloxacin, levofloxacin).
- If the patient has symptoms consistent with pyelonephritis, intravenous antibiotics may be indicated
- Modify diet – certain foods such as caffeine, spicy foods, alcohol, tomatoes which irritate the bladder should be avoided.
- Increase fluid intake (especially water) – to flush out the urinary system and prevent urolithiasis (urinary calculi)
- Patients with recurrent UTIs may need further investigation. This may include ultrasound scans of the kidneys and bladder or intravenous urography (X-rays of the urological system following intravenous injection of iodinated contrast material)

NURSING MANAGEMENT USING THE NURSING PROCESS

Assessment

History of urinary signs and symptoms is obtained from the patient with a suspected urinary tract infection. Conduct the physical examination. Additionally the patient's urine is assessed for volume, colour, concentration, cloudiness, and colour, all of which are altered by bacteria in the urinary tract.

Nursing Diagnoses

Based on the assessment data, the nursing diagnoses may include the following:

- Pain and discomfort related to inflammation and infection of the urethra, bladder, and other urinary tract structures
- Altered patterns of elimination related to frequency, urgency, and hesitancy
- Knowledge deficit regarding factors predisposing to infection and recurrence, detection and prevention of recurrence, and pharmacology therapy
- Risk for renal failure related to extensive damage of the kidney.

Planning and Implementation

Goals - the major goals for the patient may include:

- Relief of pain and discomfort
- Relief from frequency, urgency, hesitancy
- Increased knowledge of preventive measures and treatment modalities
- Absence of potential complications

Nursing Intervention

1. Relieving pain and discomfort

- Pain and discomfort associated with UTI are quickly relieved once antimicrobials are initiated.
- Give antispasmodics agents to relieve bladder irritability and pain
- Administer Aspirin, heat to the perineum, and hot tub baths to help relieve discomfort and spasms.

2. Relieving frequency, urgency and hesitancy

- The patient is encouraged to drink liberal amounts of fluids to promote renal blood flow and to flush the bacteria from the urinary tract.

- Avoid fluids that may irritate the bladder such as coffee, tea.
- Encourage frequent voiding (every 2 to 3 hours) to empty the bladder completely in order to reduce bacterial count, reduce urinary stasis and prevent re infection

3. Patient Education

- Teach the patient for the need for follow up to determine the effectiveness of antimicrobial therapy.
- Teach the patient the need for frequent bladder emptying to prevent stasis of urine.
- Teach the patient on hygienic measures such as showering as compared to tub baths, change of underpants daily and wearing well-ventillated clothing e.g cotton pants.
- Encourage the patient to report the signs and symptoms of recurrence.

Unit Summary

Summary

In this unit, you have studied how to assess and evaluate the urinary and renal system, and the different diagnostic tests that are used to determine the renal and urinary function. You have further learnt how to manage and nurse patients with urinary tract infection.

Congratulations! This means that you are now ready to advance to Module 2, which focuses on nursing patients with gastrointestinal disorders, HIV and AIDS, Dermatovenerology conditions, endocrine conditions and Nervous disorders.

Readings

Phipps, W.J. et al., (2007). **Medical-Surgical Nursing**, C.V. Mosby CO., St Louis.

Roper, N. et al. (1996). **The Elements of Nursing, a Model for Nursing Based on a Model of Living**. Churchill Livingstone, Edinburg

Phillips, W.J. et al. (2005). **Medical surgical Nursing**, Mosby Co. St Louis.

Tomey, A.M. and Alligood, M.R. (2006). **Nursing Theorists and Their Work,** 6th Edition. Mosby, Elsevier. St. Louis, Missouri.

MOH (2004) **Management of opportunistic infections and Neoplasms reference material for health workers in Zambia**

Hazel M. (2004). **Potter and Perry's Foundations in Theory and Practice**, Mosby, St. Lous.

Patient's Bill of Rights, available at www.aha.org, accessed on 11/09/2014. Time 1230hrs.

General Nursing Council of Zambia, (2013). **Professional Code of Conduct,** Lusaka.

General Nursing Council of Zambia**.** (2013). **General Nursing Council of Zambia School Rules,** Lusaka.

Basavanthappa BT. (2000), **Nursing Administration**. Gopsons Papers Ltd, Sector 60 Noida.

Donelson R F, (2006) **Group dynamics**, 4th edition, Thomson Wadsworth Co., New York.

Annie-Marie Nazzaro et al, (2009) **Group Dynamics and team building**, world federation of hemophilia, Montréal, Canada.

World Health Organisation, (2007) Team **building,** Geneva, Switzerland.

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