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GOVERNMENT OF TAMIL NADU

NURSING GENERAL

HIGHER SECONDARY FIRST YEAR

Untouchability is Inhuman and a Crime

A publication under Free Textbook Programme of Government of Tamil Nadu

Department of School Education

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Assessment

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Learning objectives:	List out all the major topics and provide students with a clear purpose to focus their learning efforts.
Case study	Life experiences and indepth understanding of the concept given.
Do you know?	Gives additional related information for broader understanding.
Activity:	Given to elicit critical thinking , creative thinking and application in day to day activities.
QR Code	Enhance long term memory through Audio Visual learning.
ICT Corner	References to the relevant website for enhanced information.
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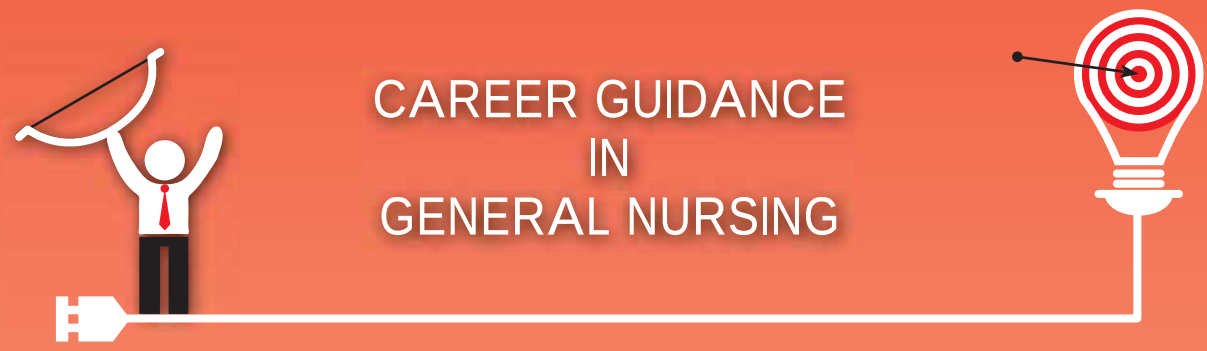

CAREER GUIDANCE IN GENERAL NURSING

NURSING COURSES AVAILABLE IN INDIA

Nursing courses are available in Degree, Diploma and Certification Courses in India. UG (Undergraduate) and PG (Post Graduate) courses are the two main types available. Using the PG courses, one may specialize in disciplines within the medical profession.

Well known nursing courses available in India are:

- **B.Sc. Nursing (Basic)**– 4 years Bachelor's Degree course
- **B.Sc. Nursing (Post Basic)**– 2 years Bachelor's Degree course (3 years distance education mode)
- **GNM (Diploma in General Nursing and Midwifery)**– 3½ years program
- **ANM (Diploma in Auxiliary Nursing and Midwifery)**– 2 years program
- **M.Sc. Nursing**– 2 years PG Degree Course
- **M.Phil. Nursing**– 1 year (2 years part time)
- **PhD Nursing**– 3 to 4 years regular full time, 4 to 6 years part time.

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Other than the above mentioned standard UG (Degree and Diploma) and PG programs, there exist numerous other PG Diploma and certificate courses too. Such PG Diploma and Certificate courses help one take on different specialities. Some such well known areas of specialization are-

- Neonatal Nursing
- Orthopaedic and Rehabilitation Nursing
- Operation Room Nursing
- Critical Care Nursing
- Emergency Nursing
- Neuro Science Nursing
- Nursing Administration
- Cardio-Thoracic Nursing

When it comes to such Post Graduate Diploma/Post Basic Diploma nursing courses, the duration is one year.

ELIGIBILITY CRITERIA

B.Sc. Nursing (Basic)– 10+2 Science stream passed with Physics, Chemistry, Biology and English subjects from a recognized board. Minimum aggregate marks required is as per Indian Nursing Council (INC) (50% marks). Candidate must be at least 17 years of age.

GNM– 10+2 passed in any Science or Arts from a recognized board. Minimum aggregate marks required is as per INC (50% marks). Candidate must be at least 17 years of age. ANM qualification holders are also eligible to pursue this course. Note: In case of many institutes, the eligibility criteria is much more relaxed. There exist many colleges that allow 10+2 passed students from any stream (Science/Commerce/Arts) to pursue this course.

ANM– 10+2 passed in Science or Arts from a recognized board. Minimum aggregate marks required may vary from one institute to another (generally around 50% marks). Candidate must be at least 17 years of age. Note: In case of many institutes, the eligibility criteria is much more relaxed. There exist many colleges that allow 10+2 passed students from any stream (Science/Commerce/Arts) to pursue this course.

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M.Sc. Nursing– must have completed B.Sc. Nursing/Post Certificate B.Sc./ Post Basic B.Sc. Nursing from an institute recognized by the INC with minimum 55% aggregate marks. Candidate should have 1 year working experience after completing the B.Sc. program and should also be a registered nurse with the State Nurse Registration Council.

M.Phil. Nursing– must have passed M.Sc. in Nursing (with any speciality) from an institute recognized by the INC with minimum 60% aggregate marks.

PG/Post Basic Diploma Nursing– must have completed B.Sc. Nursing/Post Basic B.Sc. Nursing/GNM from an institute recognized by the INC with minimum 55% aggregate marks.

CAREER PROSPECTS AND JOB OPPORTUNITIES

Skilled and qualified nurses are in huge demand across the World! Specializing in lucrative disciplines will further boost one's chance of landing a high paying job.

After completing any of the above mentioned nursing course, one may register with State Nurse Registration Council and become a 'Registered Nurse' or 'Registered Midwife'. After that, one may work as a nurse at Government hospitals, private hospitals, primary health centres, community health centres, rehabilitation clinics and private clinics.

Scope associated with working abroad is excellent, when it comes to nursing! The USA, UK, Gulf Countries, Australia, Canada and New Zealand are good destinations for Indian nurses. Salary package and facilities available abroad is much better than in case of India.

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▸ Well known recruiters include:

- **Government hospitals**
- **Private hospitals**
- **Primary health centres**
- **Community health centres**
- **NGOs**
- **Rehabilitation clinics**
- **Training Colleges/Institutes**

After 12th Commerce or Arts stream schooling, students are eligible to pursue two Diploma certificate nursing courses. They are-

1. ANM (Auxiliary Nursing and Midwifery)
2. GNM (General Nursing and Midwifery)

There exist many institutes in India (recognized by the Indian Nursing Council), which accept Arts/Commerce stream students to pursue the above mentioned courses.

To get more details about ANM (2 years course) and GNM (3½ years course) courses, you may click on the links provided above. I've written detailed articles about both these nursing courses. Details covered include eligibility criteria, course details, admission process, syllabus, career prospects and career paths available.

Note: The above mentioned programs are Diploma courses. I'll provide you the career path to follow, in order to get a Bachelor's Degree in Nursing.

GNM would be the best course among the 2 nursing courses mentioned above. After completing GNM course and registering as an R.N.R.M., one may pursue B.Sc. Nursing (Post Basic) course (2 or 3 years long). This career path will help one get a Bachelor of Science Degree in Nursing. This, in turn, will improve one's chances of landing a good job! After completing B.Sc. Nursing Post Basic program, one may then go for advanced courses like M.Sc. Nursing, PG Diploma in Nursing, M.Phil. Nursing and Ph.D program.

If you choose to pursue ANM, you'll have to complete the course and then go for GNM course. After completing GNM, you'll have to follow the career path mentioned above and gain a Bachelor of Science Degree in Nursing! After completing B.Sc. Nursing Post Basic program, one may then go for advanced courses like M.Sc. Nursing, PG Diploma in Nursing, M.Phil. Nursing and PhD program

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CAREER PROSPECTS AND JOB OPPORTUNITIES

Professional Course/ Medical Courses

- M. B. B. S. (Bachelor of Medicine and Bachelor of Surgery) – 5.5 years
- B. D. S. (Bachelor of Dental Surgery) – 4 years
- B. H. M. S. (Bachelor of Homeopathic Medicine & Surgery) – 5.5 years
- B. A. M. S. (Bachelor of Ayurvedic Medicine and Surgery) – 5.5 years
- B.Pharm (Bachelor of Pharmacy) – 4 year
- B.Sc Nursing – 4 years
- B.P.T (Physiotherapy) – 4.5 years
- B.O.T (Occupational Therapy) – 3 years
- B.U.M.S (Unani Medicine) – 5.5 years
- D.Pharm (Ayurvedic, Siddha Medicine) – 2 years
- BMLT (Bachelor of Medical Lab Technicians) – 3 year
- DMLT (Diploma of Medical Lab Technicians) – 1 year
- Auxillary Nurse Midwife (ANM) - 2 years
- General Nursing And Midwifery - 3½ years
- Post Basic B.sc Nursing - 2 years (after GNM)

UG Courses

- B.Sc Anthropology
- B.Sc Occupational Therapy
- B.Sc Physiotherapy
- B.Sc Microbiology:
- B.Sc. (H) Biomedical Science
- Bachelor of Veterinary Science & Animal Husbandry (B.VSc AH)
- Bachelor of Naturopathy & Yogic Science (BNYS)
- B.Sc. Dairy Technology
- B.Sc. Home Science
- Bachelor of Pharmacy

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Allied Fields

- EEG technician
- Hospital manager/Administrator
- Medical lab technologist
- Nuclear medine technologist
- Radiation technology
- Pathology technology
- Respiratory therapist
- Sonographer technician
- Operation theatre assistant
- Naturopathy
- Massage therapy
- Acupressure
- Acupuncture
- Yoga therapy

Biosciences

- Agriculturist
- Botanist
- Zoologist
- Microbiologist
- Biologist
- Horticulturist
- Floriculturist
- Environmental Science

Para medicine

- Physiotherapy
- Speech Therapy
- Audiology
- Prosthetics and Orthotics
- Medical Lab Technology
- Optometry and Ophthalmic technology
- Nutrition And Dietetics

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PG Courses

- M.Sc. Nursing– 2 years
- M.Phil. Nursing– 1 year advanced program (2 years in part time)

Ph.D in Nursing - 3 to 4 years regular full time, 4 to 6 years part time.

PG Diploma and Certificate Courses

- Neonatal Nursing
- Orthopaedic and Rehabilitation Nursing
- Operation Room Nursing
- Critical Care Nursing
- Emergency Nursing
- Neuro Science Nursing
- Nursing Administration
- Cardio-Thoracic Nursing
  - Renal Nursing
  - Geriatric Nursing

Common Job Available in Front of Registered Nurses are:

- **Chief Nursing Officer**
- **Assistant Nursing Officer**
- **Critical Care Nurse**
- **Paediatric Surgery Nurse**
- **Nurse Manager/Supervisor**
- **Rehabilitation Specialist**
- **Instructor/Teacher**
- **Staff nurse**
- **Nurse Educator**
- **Intensive Care Nurse**
- **Nurse Midwife**
- **Occupational Nurse**
- **Oncology (Cancer) Nurse**
- **Palliative Care Nurse**
- **Nurse Educator**
- **Intensive Care Nurse**

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Well Known Recruiters

- Government hospitals
- Private hospitals
- Primary health centres
- Community health centres
- NGOs
- Rehabilitation clinics
- Training Colleges/Institutes

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UNIT 1

Nursing – Origin and its Development

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LEARNING OBJECTIVES

The students will be able to:

- gain knowledge about history of nursing.
- know about what nursing is and the scope of nursing.
- know about a nurse, the qualities of a nurse, the functions of a nurse, fundamental rules of nurse.

1.1 Introduction

The origin of nursing was started from the history of humankind. Nurse in its simplest form has been practised since the world began. Every mother and father is primarily a nurse. These maternal and paternal instincts have been the main source of nurse impulse. Nursing has been called the oldest of the arts and science and the youngest of the profession. The word nursing evolved from the Latin word "Nutricious" means to nourish, to cherish, to protect, to support and to sustain.

1.2 Definition of nursing

International Council of Nursing

Nursing encompasses autonomous and collaborative groups and communities, sick or well and in all settings.

Royal College of Nursing

The use of clinical judgement in the provision of care to enable people to improve, maintain or recover health, to cope with health problems and to achieve the best possible quality of life - **Virginia Avena Henderson**

The unique function of the nurses is to assist the individual, sick or well in the performance of those activities. Contributing to health or its recovery.

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American Nurses Associations

Nursing is the protection and optimization of health and activities.

1.3 Scope of Nursing in India

There was a time when professional nurses had very little choice of service because nursing was centered in the hospital and bedside nursing. Career opportunities are more varied now for a numbers of reasons. The lists of opportunities available are given as per Indian Nursing Council.

1. **Staff Nurses:** Nurses Provides direct patient care to one patient or a group of patients. She is directly responsible to the ward supervisor.
2. **Ward sister or Nursing Supervisor:** Nurse is responsible to the nursing superintendent for the nursing care management of a ward or unit.
3. **Departmental supervisor/ Assistant Nursing Superintendent:** Nurse is responsible to the nursing superintendent and deputy nursing superintendent for the nursing care management of more than one ward or unit. Example-Surgical department. Out-patient department.
4. **Deputy Nursing superintendent:** Nurse is responsible to the nursing superintendent and assists in the nursing administration of the hospital.
5. **Nursing Superintendent:** Nurse is responsible to the medical superintendent for safe and efficient management of hospital nursing services.
6. **Director of Nursing:** Nurse is responsible for both nursing services educations within a teaching hospital.
7. **Community Health Nurse (CHN):** Services rendered mainly focusing Reproductive child Health Programme, Health awareness and hygiene.
8. **Teaching in Nursing:** The functions and responsibilities of the teacher in nursing are planning, teaching and supervising the learning experiences of the students. There are various positions available in nursing education such as clinical instructor, tutor, senior tutor. Lecturer, Associate Professor & Professor in Nursing.
9. **Industrial Nurse:** Industrial nurses are providing first-aid, care during illness, health educations about industrial hazards and prevention of accidents
10. **Military Nurse:** military Nursing services became a part of the Indian Army by which means nurses became commissioned officers who are given rank from lieutenant to major general.
11. **Nursing service abroad:** Attractive salaries and promising professional opportunities which causes a major increase for nursing service in abroad.
12. **Nursing service administrative positions:** At the state level the Deputy Director of Nursing / Joint Director of Nursing at the state Health directorate. The highest administrative position on a national level is the Nursing Advisor to the Govt. Of India.
13. **Nursing Education administrative position:** At the state level is the Registrar.

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1.3.1 Scope of Nursing

Position	Qualification		Roles
Independent Nurse Practitioner	Post Doctoral degree in Nursing		Nurse Researcher ■ Investigates nursing problems to improve care ■ Expand the scope of nursing.
Dean Nursing Director	Ph.D in Nursing(5 years) M.Phil in Nursing (2 years).		Nurse Administrators ■ In education ■ In Hospital services
Reader Professor Assistant Professor Lecturer Associate Professor	M.Sc. in Nursing (2 years)		Nurse Educator ■ Works in schools of nursing ■ Provides Educational programmes for student nurses. ■ Nursing service.
Diploma certification programme - Critical care nurse practioners. -Cardio Thoracic Nursing -Family Nurse practioner.	Post Basic B.Sc (2 years) Diploma in Nursing and Midwivery (3 years) (DGNM)	B.Sc in nursing (4 years)	Clinical Nurse specialist ■ Patient care ■ Clinical educator ■ Nurse practitioners ■ Nurse midwives ■ Nurse anaesthetists ■ Nurse Researcher
Auxillary Nurse midwivery (2 years)	Higher secondary students		■ Home visit

Eligiblity for jobs in Abroad (Foreign Country)
Competitive exams
(CGFNS, NCLEX)-USA
Prometric (gulf countries), IELTS

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1.3.2 Types of Nurses in highest demand

1. Registered nurse (RN)
2. Licensed practical nurse (LPN)
3. Travel nurse
4. Nurse practitioner (NP)
5. Intensive care unit (ICU) registered nurse
6. Medical-surgical nurse.
7. Emergency room nurse
8. Operating room nurse or OR nurse
9. Home health nurse / community health Nurse

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1. Urban area
2. Rural Area

10. Nurse case manager
11. Post-anaesthesia care unit (PACU) nurse
12. Clinical nurse specialist
13. Telemetry nurse
14. Nurse manager
15. Staff nurse
16. Neonatal intensive care unit (NICU) nurse
17. Dialysis nurse.
18. Paediatric nurse
19. Labour & delivery nurse
20. Cardiovascular nurse
21. Psychiatric-mental health nurse practitioner
22. Radiology nurse
23. School nurse
24. Oncology nurse

1.4 Evolution of Nursing

It can be divided into three periods of time in history,

- Early Christian era
- Middle age
- The dawn of modern Nursing

Early Christian Era

Nursing in pre-Christian times, religious beliefs has great bearing on the caring for the sick suffering. Christianity believed that one should render services of love to humanity without any reward. It was equal to one's sincere love to god. This principle was absorbed in nursing and helped to improve the status of a nurse. Some of the examples of such women are as follows.

PHOEBE	■ First deaconesses, intelligent and educated. ■ Best nursing care for the sick in their homes. ■ Compared to a modern public health nurse.
FABIOLA	■ Converted her palace into a hospital. ■ Daughter of a great Roman Noble. ■ She collected the poor and sick from the streets in her place.
PAULA	■ Friend of Fabiola. ■ She built a hospital for strangers, pilgrims and travellers and for the sick. ■ Constructed a monastery in Bethlehem.
MARCELLA	■ She lead a group of high rank with freedom of women and induce them in works of charity.

Middle age

Monks and nuns devoted their life to the care and services of the poor and sick.

- St. Dominic (1170-1221)
- St. Francis of Assisi (1182-1226)
- St. Elizabeth of Hungary (1207-1231)
- St. Catherine Sienna (1347-1380)

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Late in the 12th and 13th centuries nursing become differentiated from medicine and surgery.

1.4.1 The Dawn of Modern Nursing

From the late 1700s through 1853, the manner in which the sick were care. Remain essentially unchanged. In Europe the dawn of Nursing was underway. The deaconess institutes of kaiserswerth, Germany was established in 1836 by pastor Theodore Fliednes, to train the Deaconesses to care for the sick and the provision of social influence throughout the world.

1.4.2 Introduction to modern nursing Florence Nightingale

Miss Florence Nightingale known for her devotion to the services to the poor and the sick and is also aware of what she did for humanity and to raise the status of nursing profession.

Florence Nightingale was born in a wealthy English Family, on 12th may 1820. She had great desire to become a nurse. She was dissatisfied with the daily routine life style of the upper-class women. She had classical education which provided her with an understanding of the circumstances of the world in which she lived. She became aware of the inadequate care being provided in hospitals. She accompanied her mother on visits to the ill patients at hospitals. She visited hospitals in England and Europe.

She recognized that nurses require

- Knowledge
- Training and
- Discipline

Nightingale was admitted to the training program at the school at Kaiser Werth in1850s After her training, in 1853 she was appointed as superintendent of the institution for the care of the sick gentlewomen in London. She had an opportunity to give her best services to the wounded soldiers in the Crimean war in 1854, she attended thousands of wounded and dying soldiers. For which she was righty known as "The Lady with the Lamp"

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Miss. Nightingale introduced numerous improvements in military hospitals, she also founded the first training school for nurses St. Thomas Hospital at London in 1860. She shared her ideas about Nursing and Nursing education. Florence Nightingale paved the way for the ultimate recognition of nursing as a superior, compassionate profession.

Miss. Nightingale was the first to mention Holism (Treating the whole patient) in Nursing. Nightingale was the founder of modern nursing education. She planned a complete public health program. Despite her ill health, she worked for the development of nursing services without tailing sufficient rest.

1.4.3 The Florence Nightingale Pledge

The modified Hippocratic Oath arranged by Mrs. Lystra E. Gretter and her committee for the Farr and Training School for Nurses, Detroit is called the Florence Nightingale Pledge as a token of esteem for the Founder of Modern Nursing.

Pledge

- I solemnly pledge myself before God and in presence of this assembly to practice my profession with dedication.
- I will serve mankind with love and compassion, recognising their dignity and rights irrespective of colour, caste, creed, religion and nationality.
- I will endeavour to maintain up-to-date knowledge and skill to uphold standard of Nursing care to individual, family and community in all settings and in all aspects of holistic care as a member of the health care team.
- I will hold in confidence personal matters of my clients committed to my care and help them to develop confidence in care rendered by me.
- I will refrain from any activity that will harm my personal and professional dignity as a nurse.
- I will actively support my profession and strive towards its achievement.

I will fulfil my responsibilities as a citizen and encourage change towards better health.

1.4.4 Nurses Uniform

When you think of a nurse, what image comes immediately to mind? A lady in a crisp white frock, with a starched white cloth apron, cap in her hair, wearing white rubber shoes, white socks and white belt; the quiet essential image of standard nursing uniform for nurses worldwide. However, the concept of nursing uniforms has changed now, with nurses wearing scrub sets and other flexible clothing.

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Nursing in the past Nightingale era turned into a more respectable job with schooling systems and uniforms for nurses. Nurses had to wear a hat and band to distinguish themselves as nurses and display their nursing rank. Fresh nurse students would wear ribbon bands of pink, blue, or other pastel colours. Senior nurses and nursing teachers would wear black ribbon bands to indicate seniority.

1.5 Nursing as a profession – A New Perspective.

DO YOU KNOW?

Nursing is a profession within the health care sector focused on the care of individuals, families, and communities so they may attain, maintain, or recover optimal health and quality of life

Historically, only medicine, law and Engineering were accepted as profession.

1.5.1 Criteria of a profession

Genevieve and Roy Bixler first wrote about the status of nursing as a profession in 1945. These criteria include the following.

1. **The services provided are vital to humanity and the welfare of the society:** Nursing is the service that is essential to the wellbeing of the people and to the society.
2. **There is a special body of knowledge that is continually enlarged through research**: In the past nursing was based on principles borrowed from the physical and social sciences and other disciplines. Today there is unique body of knowledge to nursing.
3. **The services involve intellectual activities:** Nursing process is a cognitive activity that requires both critical and creative thinking and serves as the basis of providing nursing care.
4. **Practitioners are educated in institution of higher learning**: There are basic nursing program, baccalaureate program, masters and Doctoral program in nursing
5. **Practitioners are relatively independent and control their own policies and activities (Autonomy):** Nursing actions are independent, most nurses are employed in hospitals where authority resides in one's position.
6. **Practitioners are motivated by service (altruism) and considered their work an important component of their lives:** Nurses are dedicated to the ideal services to others, which is known as altruism.
7. **There is a code of Ethics to guide the decisions and conduct of Practitioners:** The International council of Nurses (ICN) has established Code of Nursing Ethics through which standards of practice are established, promoted and refined.
8. **There is an organization (Association) that encourage**

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and supports high standards of practice: Nursing has a number of professional associations that were formed to promote the improvement of the profession. Foremost among there is the TNAI (The Trained Nurses Association of India).

1.5.2 Perception of Nursing

A global perception of Nursing will enable nurses to rise higher levels in their knowledge, skills and improved performance both in India and around the globe. The factors which influence the trends in Nursing are.

1. **Changes in society – done by five factors:**
   a. Intensive efforts of government to meet the health needs of people.
   b. Gradual improved literacy level of the people.
   c. Advanced scientific technology
   d. The changing role of women
   e. The continuing growth of population.
2. **Patients "Bill of Rights":** The nurses are also accountable for patients care and have legal responsibilities for the patient.
3. **Development in other discipline:** Development in other discipline other than medicine also influence trends in nursing profession.
4. **Leadership within the profession:** It also influences the trends in Nursing.
5. **Overseas Scope:** Shortage of Nurses in other countries, higher salary paid in abroad is the main causes for the working of Indian Nurses in abroad.
6. **Working Hours of Nurses:** More Convenient hours of duty, better accommodations and higher salaries
7. **Trends in other countries:** Developed countries influence the trends in the nursing profession in India.

1.5.3 Expanded and Extended Roles of Nurses:

The following roles and positions perceived as in globe are given below.

POSITIONS	ROLES
Nurse educator	Works in schools of Nursing teach clients about the self care and home care.
Clinical Nurse specialist	Managing specific diseases, functions as clinicians, educators, managers etc.
Nurse practitioners	Health care to clients in out-patient or community settings.
Certified nurse mid wife	Mid wife to provide independent care for women during normal pregnancy, labour and delivery.
Nurse anaesthetist	Provides surgical anaesthesia
Nurse administrators	They manage clients with health care agencies in a middle or upper level management position.
Nurse Researches	With Doctorate degree investigate nursing problem to improve care and to define and expand the scope of nursing practice.

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DO YOU KNOW?

In our State Government, Nursing service is considered under branch II Nursing of Tamilnadu Medical Service (Medical code) as "Tamilnadu Nursing Service" (TNNS).

1.6 Qualities of a Nurse

1.	Love	Qualities like mercy, kindness, gentleness, patience and understanding.
2.	Willingness and self sacrifice	These two qualities are complimentary to each other. A nurse sacrifices her time, comfort and material benefits.
3.	Reliability	She is trust worthy and competent. Tackles situations with alacrity
4.	Courage	Ready to meet any problem with courage.
5.	Loyalty	Her relationship with the patient associates by loyalty and honesty.
6.	Observant	A nurse should anticipate and meet the patients needs.
7.	Willingness to learn	Maintain her knowledge and skill at a consistently high level.
8.	Co-operative and considerate	A nurse learns to live in harmony with patient, doctors and other members of the health team.
9.	Cleanliness	She must be clean and tidy, demand high standards of cleanliness.
10.	Assertiveness	Nurse should possess the components of assertiveness such as self Esteem, self Knowledge, Respect for others and clear communication.

1.6.1 Functions of Nurse

FUNCTIONS OF NURSE

CARE GIVER	The nurse provides direct care to patients
COUNSELLOR	The nurse assists patients to make decisions
TEACHER	The nurse teaches formal, informal intentional or incidental
ADVOCATE	A nurse speaks up for a acts on behalf of patient
RESOURCE PERSON	A nurse provides skilled intervention and information

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1.6.2 Professional Organizations

Organizations provide a means through which united efforts are made to elevate standards of nursing education and practice. It also offers a means of voicing and opinions, developing our abilities and keeping informed of new trends.

A. World Health Organization (WHO)

The world Health Organization is a specialized agency of the United Nations. It was organized in 1948 to achieve the highest possible level of health for all people. The WHO is also active in nursing education and practice in a number of ways in India:

B. The International Council of Nurses (ICN)

The International Council of Nurses was founded in 1899 by Mrs. Bedford Fenwick.

Objectives

1. It provides uniform standards in nursing education and reciprocity in nursing registration.
2. It has authority to prescribe curriculum for nursing education in all states.
3. It has authority to recognise programme of nursing education or to refuse recognition of a programme if it did not meet the standards required by the council.
4. It is registering the foreign nurses.
5. It also maintains the Indian Nurses Register.
6. The INC authorises State Nurses Registration Council and examining board to issue qualifying certificates.

C. The Indian Nursing Council (INC)

The Indian Nursing Council was authorized by the Indian Nursing Council Act of 1947. It was established in 1949 to provide uniform standards in nursing education and reciprocity in nursing registration throughout the country.

Objectives of ICN

1. To promote the development of the strong national nurses association.
2. To assist national nurses association to improve the standards of nursing education and practice.
3. To assist national nurses association to improve the status of nurses within their countries.
4. To serve as the authoritative voice for nurses and nursing internationally.

D. TamilNadu Nurses and Mid-Wives council

Every professional nurses in the nursing professions, either here or abroad must be registered with the one of the state Nurses Registration Councils. The state council functions as an official to control the standards of the nursing practice

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Objectives

1. It registers Nurses/Mid-wives.
2. It serves as legal protection.
3. It protects the public from incompetent nursing practices or poor nursing care.
4. It accredits and inspects schools of nursing and college of nursing.
5. It prescribes the rules of conduct, take disciplinary action etc.
6. It takes united efforts to elevate the standards of nursing.
7. It works for the welfare of the members.

1.6.3 Volunteer Health Organization

A. The International Red Cross Society

The International League of Red Cross was formed in 1919 after world war1.

Objectives

The body meets once in four years. It supports unity in the work of all of these originations and promotes governmental support of the Red Cross Activities.

B. The Indian Red Cross Society

The Indian Red Cross Society was established in 1920, with major aims of helping others from a neutral point. It gives relief to needy and suffering people at times of major disasters and in times of wars.

Objectives

1. Gives financial aid to social welfare institutions.
2. Operates blood banks throughout India.
3. It teaches First aid.

C. Youth Red Cross Society

The involvement and contribution of young people to the work of the Red Cross originated in the province of Quebec, Canada in 1914, when school Children first participated in the humanitarian work of the Red Cross work by making bandages, dressings and other comforts for soldiers.

Objectives

In channelling and guiding this young people in the cause of humanitarian action.

D. United Nations International Children's Educational Fund (UNICEF)

UNICEF is an agency of the United Nations. It was founded in 1946 for the purpose of helping mothers and children

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Objectives

UNICEF in India has provided teaching equipments for nursing education, textbooks and visual aids for schools and colleges of nursing and training for personal to help with the health of mothers and children.

1.6.4 Professional Associations

A. Trained Nurses Association of India (TNAI)

The Trained Nurses Association of India is a largest national professional association of nurses in India. It was established in 1922.

Objectives

1. Upholding the dignity and honour of the nursing profession.
2. Promoting the sense of unity among all nurses.
3. Enabling members to discuss together on matters relating to their profession.

B. Student Nurses Association of India (SNA)

The students Nurses Association organised in 1929 is associated under the jurisdiction of the TNAI.

Objectives

1. To help the student nurses learn how the professional organizations serve to uphold the dignity and the ideals of the nursing profession.
2. To furnish student nurses in the courses of study leading to professional qualification.

C. Christian Medical Association of India

The Nurse's League of the Christian Medical Association was founded in 1930.

Objectives

1. To promote co-operation and encouragement among Christian nurses.
2. To promote efficiency in nursing education and services.
3. To secure the highest standard possible in Christian Nursing Education through the Christian schools of Nursing and
4. To consider the special work and problems of Christian nurses working.

Nursing considered to be an occupation now attains the status of profession.

1.7 Holistic Nursing

Introduction

Miss. Nightingale was the first person to mention Holism (Treating the whole patient) in Nursing. Holistic nursing is a nursing speciality concerned with the integration of a person's mind, body, and spirit with their environment.

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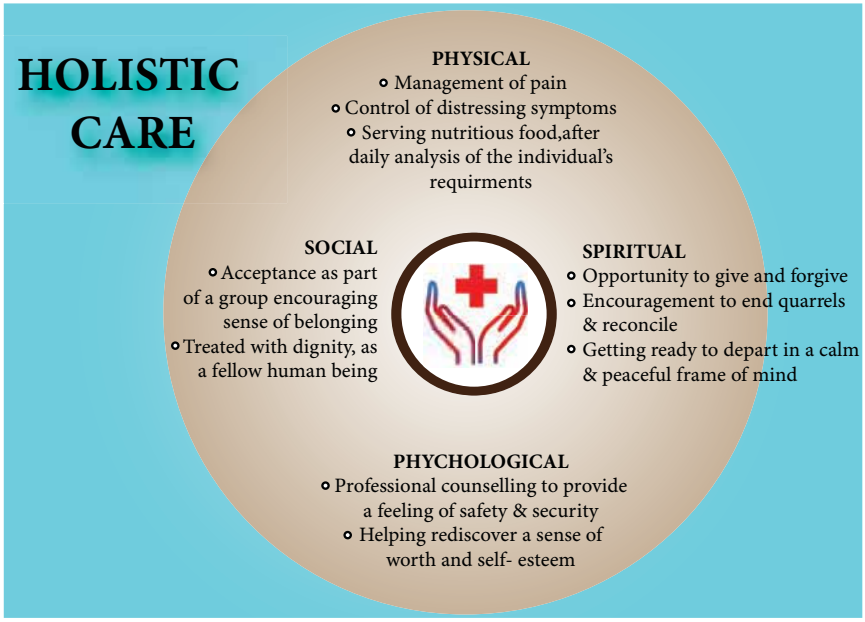


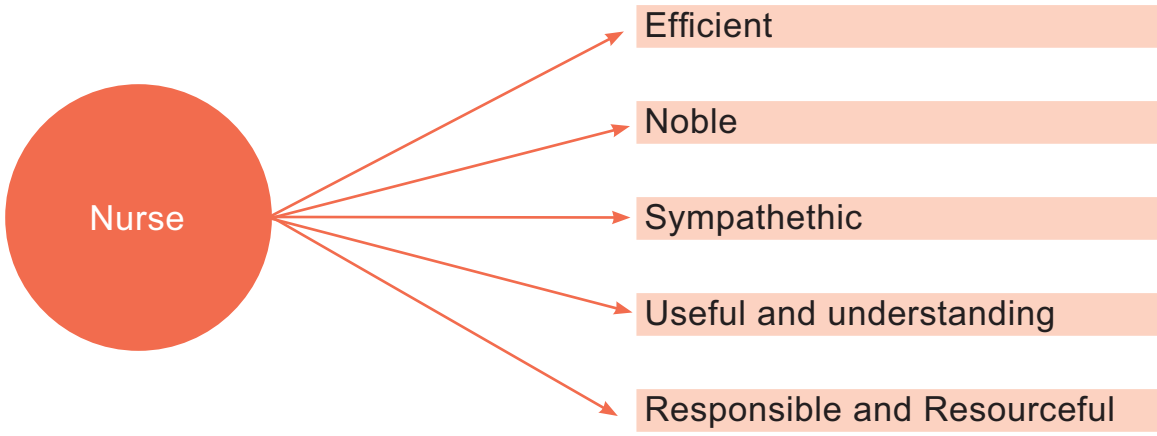
1.7.1 Definition of Holism

Holism defined from Greek *holos* "all, whole, entire" is the idea that systems (physical, biological, chemical, social, economic, mental, linguistic, etc.) and their properities should be viewed as wholes, not just as a collection of parts.

The term Holism was coined by JC Smuts.

What is a Holistic Nurse?

Holistic nurses are legally licensed nurses who use nursing knowledge, theories, expertise and institution to recognize and care for the totally of the human being within the scope and standards of their state and the Holistic Nursing speciality. Holistic nurses nurture wholeness, please and healing by valuing each person's physical, mental, emotional, spiritual and environmental strengths and challenges and honouring each person's values, health beliefs and health experience. The condition of the whole person is taken into account during the nurse's assessment, diagnosis, planning, intervention and evaluation of the results.



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SUMMARY

In this chapter we learned about the history and origin of nursing from the dawn of civilization, evidence prevails that nurturing has been essential to the preservation of life. Survival of the human race is inextricably interwined with the development of nursing Christianity believed that one should renter services of love to humanity without any reward. This principle was absorbed in nursing and helped to improve the status of a nurse. Phoebe, Fabiola, Paula and Marcella devoted themselves for the service of sick. Every night Florence Nightingale walked about with a long lamp in her hand to help the suffering soldiers. So she was rightly known as "The Lady with the Lamp". A professional nurse should have kindness, gentleness, patience, willing to serve and to be honest. She should be reliable, resourceful, courageous and co-operative. Nursing associations and organisations are taking united efforts to elevate the standards of nursing education and practice.

EVALUATION

I. Choose the correct answer

1. Who was the founder of Modern nursing?
   a. Phoebe
   b. Fabiola
   c. Florence Nightingale
   d. Paula
2. Which agency was founded for the Purpose of helping mothers and children.
   a. ICN b. INC
   c. UNICEF d. WHO
3. The international council of Nurses was founded in
   a. 1899 b. 1949
   c. 1920 d. 1946
4. Which society gives relief to needy and suffering people at times of major disasters
   a. Red cross
   b. WHO
   c. TNI
   d. SNA

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5. The term holism was coined by
   a. Bedford Frenwick
   b. J.C Smuts
   c. Roy Binler
   d. Marcella

II. Answer the following questions in one (or) two lines

6. Define Nursing.
7. State the different definition of nursing.
8. Expand the Following.
   a. TNAI
   b. INC
   c. ICN
   d. WHO
   e. IRCS
   f. INRCS
   g. UNICEF
   h. YRCS
   i. SNA
   j. CMAI
9. Define Holism.
10. Name women who rendered services of love to humanity during early Christian era.
11. Name monks and nuns devoted their life to the care and services of the poor and sick during middle age.
12. What is the function of deaconess institutes of Kaiser werth germany, when it was established?
13. Why Florence Nightingale is rightly known as "The lady with the lamp"?
14. What is the formula for happy life?

III. Write short notes

15. Florence Nightingale.
16. Objectives of ICN , INC.
17. Objectives TN nurses and Mid wives council.
18. Objectives of WHO.
19. Objectives of International and Indian Red Cross Society.
20. Objectives of youth Red cross Society.
21. Objectives of UNICEF.
22. Objectives of TNAI.
23. Objectives of SNA.
24. Objectives of Christian medical association of India.
25. What is a Holistic Nurse?
26. What are the factors changed the perception of nursing in society?

IV. Write in detail

27. Scope of nursing in India.
28. What are the organisations elevated in standard of Nursing education?
29. Give an account on Evolution of Nursing.
30. Give an account of different images of nursing at 19th and 20th centuries.
31. Nursing as a profession a new perceptive.
32. What are the qualities of a nurse?
33. What are the perception of Nursing?
34. What are the expanded and extended roles of Nurses?

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GLOSSARY

1. Ethics –(நெறிமுறைகள்) Moral Principles or group's
2. Infirmity -(நலிந்த தளர்ந்த நிலை)- physical or mental weakness.
3. Profession -(தொழில்)-Occupation involves prolonged training and a formal qualification.

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UNIT 2

Health Care Delivery System in India

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LEARNING OBJECTIVES

At the end of the unit, the students will gain adequate knowledge regarding the health care delivery system in our country.

- understand the levels of health care available to the public
- implement the care needed based on the type
- appreciate the essential concept of health, illness and the continuum
- explore the nature of disease pattern
- identify the factors influencing and affecting health
- extrapolate the steps of nursing process and incorporate in the client's need

2.1 Introduction

Health is a fundamental human right and public right. Hence it implies that the state authority has a responsibility for the health of its people. Also we are aware that social, economical, political and environmental factors have an impact on the health care delivery system of any country because it influence growth and development of that particular country. National government of all the countries around the globe are striving to improve and expand their health care delivery services. Nearly all governments of the world have recognized these principles. The current drawback is that they are, urban oriented, curative in nature and it is accessible only to a limited population.

In country like India, health care is completely a government affair. Since independence, India has created a vast public health infrastructure comprising of several sub centres, public health centres, community health centres. It is estimated that this vast infrastructure is benefitted to only 20% of the population and the remaining 80% of the health care needs are still being provided by the private health sectors. A health system also sometimes referred as health care system is the organization of people, institution and resources that deliver health care services to meet the health needs of the people.

In the past most individuals and societies viewed good health or wellness as the opposite or absence of disease. Health is

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highly desirable state for all human being. Health is an individual perception; it has many meaning and views differently to different people. Wellness is the condition in which an individual functions at optimal level. In both developed and developing countries, currently the aim is not only to reach the whole population with sufficient and adequate health care services but also to secure an acceptable level of health for all through the application of primary health care programs.

WHO has identified the inequalities in the access of health care among the people especially in developing and under developing country. Necessary measures to be taken to improve in these aspects and to avoid discrimination. The challenge that exists today in many countries is to reach the whole population with adequate health care services and to ensure their utilization.

2.2 Health Care Delivery System in India

India is a union of 29 states and 7 union territories. States are largely independent in matters relating to the delivery of health care to the people. Each state has developed its own system of health care delivery independent of the Central Government.

The Central Government responsibility consists mainly of policy making, planning, guiding, assisting, evaluating and coordinating the work of the State Health Ministries.

The health system in India has 3 main links

A. Central
B. State and
C. Local or peripheral

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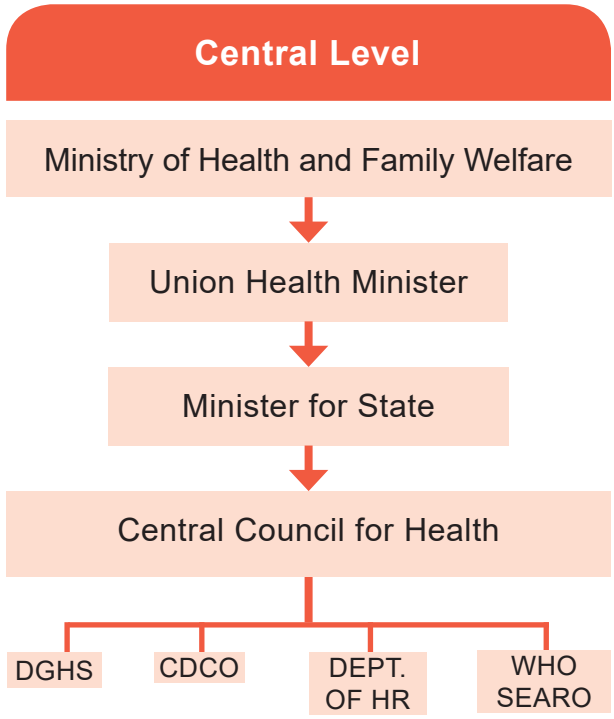
2.2.1 At the Central Level

- The official "organs" of health system at national level are



DGHS - Director General of Health Services
CDCO - Central Drugs Control Organisation
HR - Health Research
WHO – World Health Organization
SEARO – South East Asia Regional Office

I. Ministry of Health and Family Welfare

Functions

The functions of the Union Ministry of Health and Family Welfare are set out in the seventh schedule of Article 246 of the constitution of India under

1. Union list and
2. Concurrent list

1. Union list

1. International health relations and administration of port quarantine.

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2. Administration of Central Institutes such as All India Institute of Hygiene and Public Health, Kolkata.
3. Promotion of research through research centres
4. Regulation and development of medical, pharmaceutical, dental and nursing professions
5. Establishment and maintenance of drug standards
6. Census and collection and publication of other statistical data
7. Immigration and emigration
8. Regulation of labour in the working of mines and oil fields
9. Coordination with states and with other ministries for promotion ofhealth

2. Concurrent list

The functions listed under the concurrent list are the responsibility of both the union and state governments

1. Prevention and extension of communicable diseases
2. Prevention of adulteration of food stuffs
3. Control of drugs and poisons
4. Vital statistics
5. Labour welfare
6. Ports other than major
7. Economic and social planning
8. Population control and Family Planning

II. Directorate General of Health Services

Functions

1. International health relations and quarantine of all major ports in country and international airport
2. Control of drug standards
3. Maintain medical store depots
4. Administration of post graduate training programmes
5. Administration of certain medical colleges in India
6. Conducting medical research through Indian Council of Medical Research (ICMR)
7. Central Government Health Schemes.
8. Implementation of National Health Programmes
9. Preparation of health education material for creating health awareness through Central Health Education Bureau.
10. Collection, compilation, analysis, evaluation and dissemination of information through the Central Bureau of Health Intelligence
11. National Medical Library

III. Central Council of Health

Functions

1. To consider and recommend broad outlines of policy with regard to matters concerning health like environment hygiene, nutrition and health education.
2. To make proposals for legislation relating to medical and public health matters.
3. To make recommendations to the Central Government regarding distribution of grants-in-aid.
4. To establish any organization or organizations invested with appropriate functions for promoting and maintaining cooperation between the central and state health administration.

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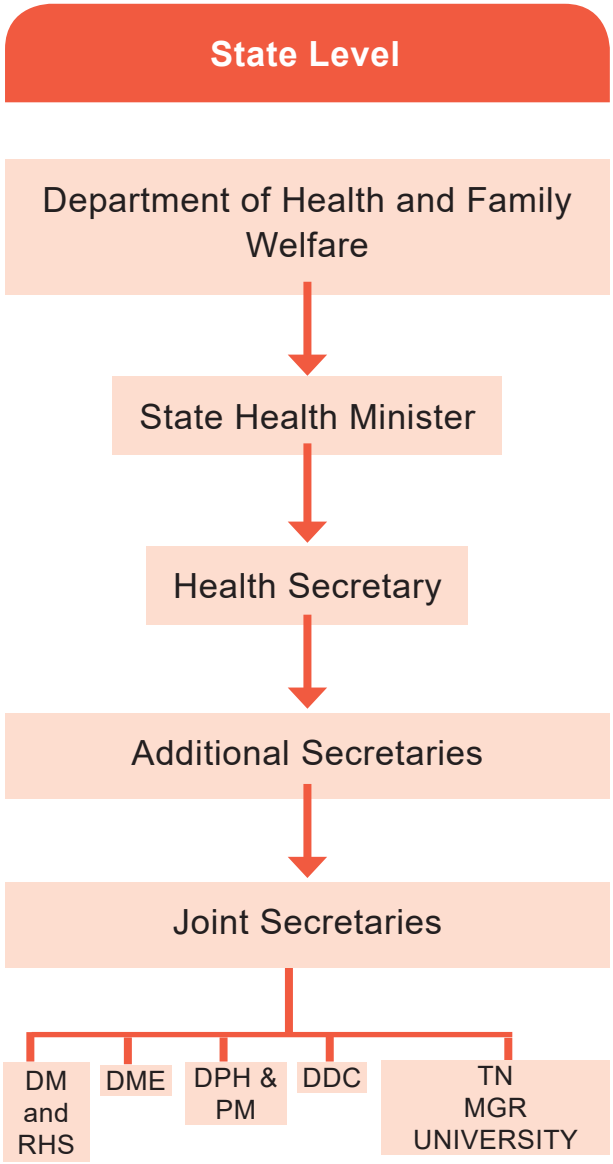
2.2.2 At the State Level

The health subjects are divided into three groups: federal, concurrent and state. The state list is the responsibility of the state, including provision of medical care, preventive health services and pilgrimage within the state.



DM & RHS - Directorate of Medical and Health Services
DME - Directorate of Medical Education
DPH & PM - Directorate of Public Health and Preventive Medicine
DDC – Directorate of Drugs control

State Health Administration

At present there are 29 states in India, each state having its own health administration. In all the states, the management sector comprises the state ministry of health and a directorate of health

1. Department of Health & Family Welfare

State Department of Health and Family Welfare headed by the state minister of Health and Family Welfare.

1. State health Directorate

   There are three separate major departments in Health and Family Welfare.

   - The Directorate of medical and Rural Health Services, Directorate of Medical Education and Directorate of Public Health and preventive Medicine are the chief Technical directorates to the statte government on all matters related to public health.
   - There are other directorates such as Directorate of Health and Family Welfare, Directorate of Drugs control, Directorate of health Transport, Tamilnadu AIDS control society, State health mission etc.

2.2.3 At the District Level

There are 614 (year 2007) districts in India. Within each district, there are 6 types of administrative areas.

1. Sub-division
2. Thasils (Taluks)
3. Community Development Blocks
4. Municipalities and Corporations

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5. Villages and
6. Panchayats

Most district in India are divided into two or more subdivision, each incharge of an Assistant Collector or Sub Collector. Each division is again divided into taluks, incharge of a Thasildhar. A taluk usually comprises between 200 to 600 villages. The community development block comprises approximately 100 villages and about 80000 to 1,20,000 population, in charge of a Block Development Officer. Finally, there are the village panchayats which are institutions of rural local self-government.

The urban areas of the district are organized into the following institutions of local self-government:

1. Town Area Committees (in areas with population ranging between 5,000 to 10,000)
2. Municipal Boards (in areas with population ranging between 10,000 and 2,00,000)
3. Corporations (with population above 2,00,000)

The Town Area Committees are like panchayats. They provide sanitary services. The Municipal Boards are headed by Chairman / President, elected by members.

The functions of Municipal Board & Corporations

1. Construction and maintenance of roads
2. Sanitation and drainage
3. Street lighting
4. Water supply
5. Maintenance of hospitals and dispensaries
6. Education and
7. Registration of births and deaths etc.

The Corporations are headed by Mayors, elected by councillors, who are elected from different wards of the city. The executive agency includes the commissioner, the secretary, the engineer and the health officer.

The activities are similar to those of municipalities on a much wider scale.

2.2.4 Panchayat Raj

The Panchayat Raj is a 3-tier structure of rural local self-government in India linking the village to the district

The three institutions are:

1) Panchayat (at the village level)
2) Panchayat Samiti (at the block level)
3) Zila Parishad (at the district level)

1) Panchayat (at the village level)

The Panchayat Raj at the village level consists of

- The Gram Sabha
- The Gram Panchayat
- The Nyaya panchayat

The Gram Sabha considers proposals for taxation and elects members of the gram panchayat.

The Gram Panchayat covers the civic administration including sanitation and public health and work for the social and economic development of the village.

2) Panchayat Samiti (at the block level):

The Panchayat Samiti execute the community development programme in

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the block. The Block Development Officer and his staff give technical assistance and guidance in development work.

3) Zila Parishad (at the district level):

The Zila Parishad is primarily supervisory and coordinating body. This is the agency of rural local self-government at the district level. Its functions and powers vary from state to state.

Students Activity

- Prepare a flow chart on school organization
- Divide the students into groups and encourage to prepare an organizational chart of your own school, and the hospital you visited.

2.3 Primary Care

The concept of primary care came into lime light in 1978 following an international conference in ALMA ATA, USSR. The primary health care approach is based on principles of social equity, nation wide coverage, self reliance, inter sectoral co ordination and implementation of health programs in pursuit of common health goals. This approach is defined as "health by the people, and placing peoples health in peoples hand".

DEFINITION

Primary health care is Essential health care made universally accessible to individuals and acceptable to them, through full participation and at a cost the community and country can afford.

2.3.1 Levels of Health Care

Health services are usually organized at three levels and each supported by a higher level to which the patient is referred.

Levels of health care

1. Primary health care – Provided at the PHC, SC (sub centre), home visit
2. Secondary health care – Provided at Taluk, District hospital.
3. Tertiary health care – Provided at Super Speciality and medical college hospitals

Primary Health Care

This is the first level of contact between the individual and the health system. A majority of health complaints and problems can be satisfactorily dealt at this level.

Secondary Health Care

This level serves as the first referral service and more complex problems are dealt.

Tertiary Health Care

This level offers super specialty care provided by the regional and central level institution.

Early to bed, and early to rise makes a man healthy, wealthy and wise.

Health is not valued till sickness comes.

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Activity

Divide the students into group and form a health committee and assign them the various roles and responsibilities.

Encourage and conduct monthly health checkup.

2.4 Short Term Care and Long Term Care

2.4.1 Short Term Nursing Care

Short term nursing care is a care provided to a person who has sudden illness, injury or surgery but is expected to recover.

Who needs short term care

- Requiring three or more hospital stays
- Short term care needed due to current health condition
- Being admitted in a Medicare certified facility
- If these requirements are met, the patient may receive short-term care for up to 100 days.

2.4.2 Long Term Care:

Long term care refers to both medical and non-medical care for patients with a chronic illness or disability.

Care involves assisting patients with basic daily activities such as

- Bathing
- Dressing
- Managing pain
- Attending to personal hygiene
- Preventing wandering
- Providing comfort and assurance
- Attending to medical needs
- Feeding
- Maintaining the household

2.5 The Health, Illness-Wellness Continuum

Health

Absence of symptoms of illness and ability to carryout activities.

Illness

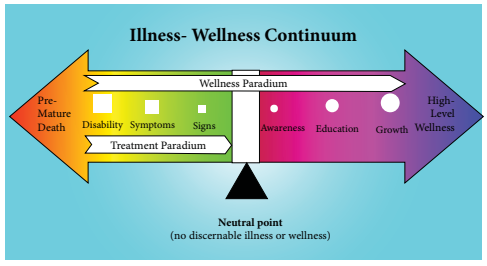
A state in which the person fills unhealthy may or maynot related to disease.

Wellness

A state of optimal health or optimal functioning.

Wellness is a process, never a static state.

Most of us think of wellness in terms of illness; we assume that the absence of illness indicates wellness. There are actually many degrees of wellness, just as there are many degrees of illness.



The illness wellness continuum, illustrate the process of change, in which the individual experiences various states of health and illness (ranging from extremely good health to death that fluctuate throughout life. People move back and

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forth with in this continuum day by day) the illness wellness continuum composed of two arrows pointing in opposite direction and joined at neutral point.

1. Movement to the right on the arrows (towards high level wellness) equals and increasing level of health and wellbeing.

   Achieved in three stages.

   a Awarness

   b Education

   c Growth

2. Movement to the left on the arrows (towards pre matured death) equals a progressively decreasing state of health.

   Achieved in three stages.

   a Signs

   b Symptoms

   c Disability

3. Most important is the direction the individual is facing on the pathway.

   a If towards high level heath, a person has a positive outlook despite is/her health status.

   b If towards premature death, a person has negative outlook about is/her health status.

4. Compares treatment model with wellness model

   a If treatment model is used and individual can move right only to the neutral point. (eg.) client with hypertension takes only medication without making any other life style changes.

   b If a wellness model is used, and individual can move right past the neutral point. (eg) client with hypertension not only takes his medication but stops smoking, loose weight etc.

Activity

- This is the Theme for World Health Day 2017. Similarly Identify for the Past 5 Years also
- Use role play to explore good and poor health habits.

2.6 Nature of Disease

Natural history of disease refers to the progress of a disease process in an individual over time in the absence of intervention. The process begins with exposure to or accumulation of factors capable of causing disease. Without medical intervention, the process ends with recovery, disability, or death.

Exposure → host → disease → leading to recovery, disability and death

Knowledge of the natural history of disease ranks along side causal understanding in importance for disease prevention and control.

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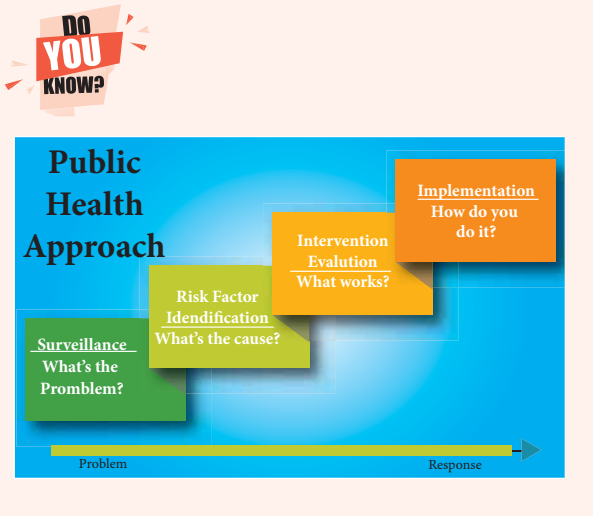
2.6.1 The Natural History of Disease in a Patient

- A – Biologic onset of disease
- P – Pathologic evidence of disease if Sought
- S – Signs and symptoms of disease
- M – Medical care sought
- D – Diagnosis and
- T – Treatment



2.6.2 Levels of Disease Prevention

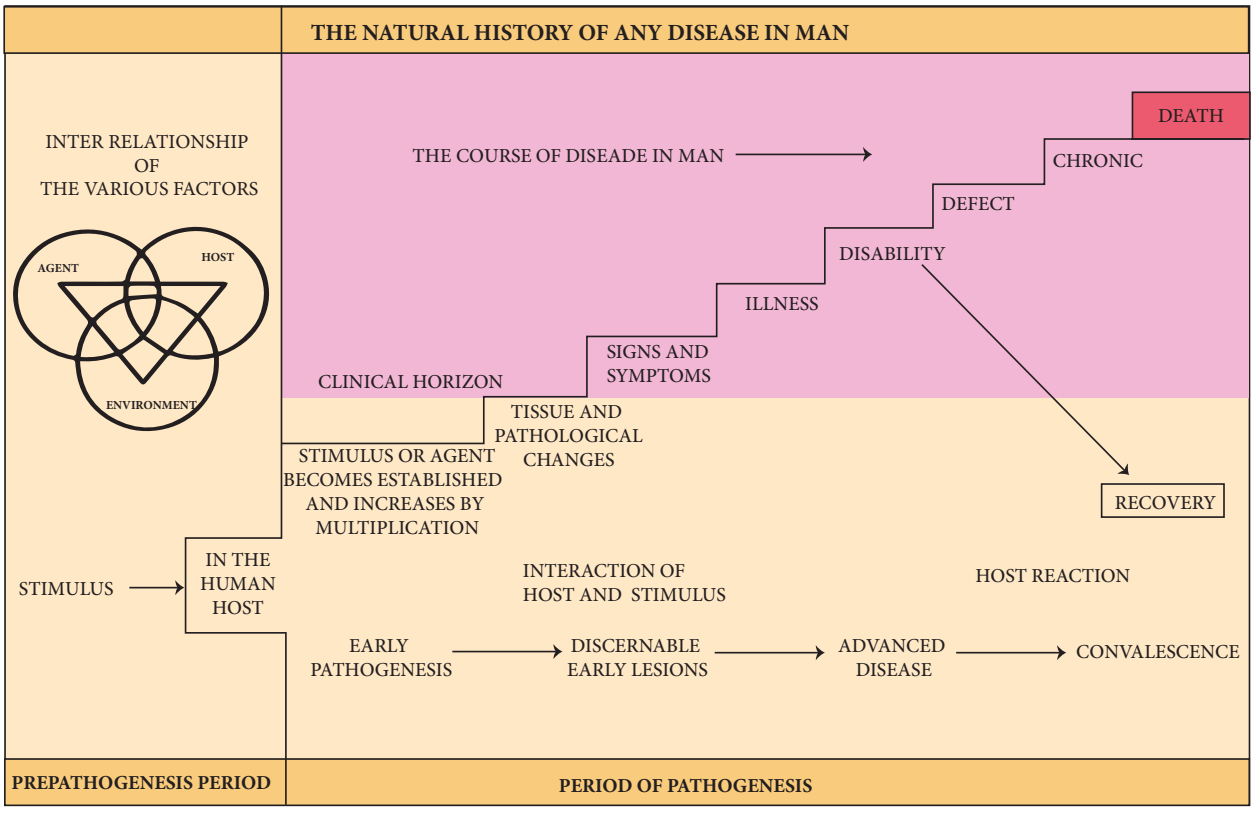
A. Primary Prevention

- Measures of prevention undertaken before an individual experiences health problem.
- Health education programme immunization, physical and nutritional fitness activities.

B. Secondary Prevention

Measures of prevention focuses on individual experiencing health problem without symptoms and who are at risk for developing complications.

PREVENTIVE MEASURES: Early diagnosis and treatment. Eg. Medical examination of school children.



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C. Tertiary Prevention

Measures undertaken when the disease has become advanced in order to prevent disabilities and to help individual to achieve has high level of functioning. Eg. Application of plaster for fracture to prevent further complication.

2.6.3 Disease Occurence

Disease is not simply cost by a single factor but it results from interaction of three factors. The host, The Agent and the environment.

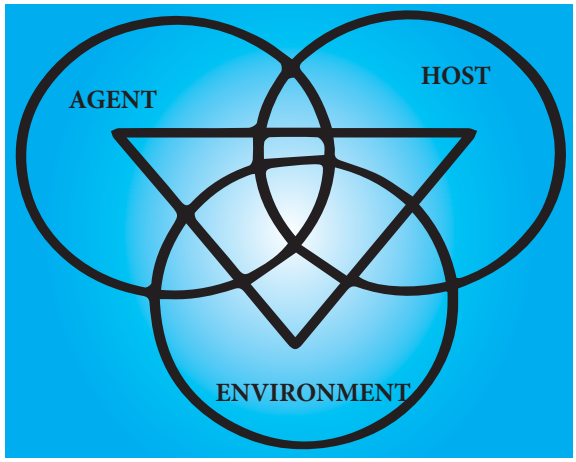
The interaction of three factors the Host, Agent, and the environment. The interaction of these three factors are called the **epidemiological triad of disease**.

Presence of only one of this factors is not enough to cause the disease. These factors must interact in a particular way to lead to the disease.

An Agent: Is an environment factors are stressor that must be present or absent for an illness to occur. Eg. Bacteria, Virus, Dust, Toxins, Insecticides. Heat, Cold, Sound excess or deficient of Vitamins and Minerals.

A Host: Is a living organism capable of being infected or affected by an agent. Eg. Age, Sex, Health habits.

Environment: Is the conditions that. Facilitate the contact between the host and the agent. Eg. Temperature, air, Viruses, Insects, Animals, Plants, Cultural values habits, life styles



Eg. Burns

Host: Susceptible person

Agent: Physical/Chemical agent

Environment: Conditions for Exposure/ Injury

Kerosene are present in all houses and the children are at risk, but all children will not get burned. This depends are interaction between the home environment and the children.

2.7 The Factors Influencing and Affecting Health

Factors Influening Health

- Health Care intervention: Access to medical care
- A person surroundings: Home, Climate, Air, Quality of drinking water
- Life style and Backgorund: Diet, Activity etc.
- Economic and social condition: Job, Gang activity
- Education and Literacy
- Personal health practices and hoping skills

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Factors affecting health:

RISK FACTOR	EXPLANATION	EXAMPLES
Hereditary	Traits passed biologically from parents to child.	Eg. Carry in genes that increases to risk of Diabetes, Cancer
Enviornmental	The influence of the physical and social condition surrounding a person.	Quality of drinking water, exposure to tobacco, influence of friends, culture.
Behavioural	Condition resulting from a persons actions and decisions.	Smoking, High fat diet, keeping feelings bottled up.

Activity

- Prepare an album of each disease such as agent, host, environment
- Draw a lifecycle of malaria
- Prepare a collage based on any of the activity

2.8 Impact of Illness on the Individual

Role changes: If a parent of an adult becomes ill and cannot carry out usual activities, the adult child often assumes many of the parent's responsibilities and becomes a parent to the parent.

Increase demands on time: A father who has a cold, lacks the energy and patience to spend time in family activities. He becomes irritable and prefers not to interact with his family.

anxiety about outcomes

financial problems

change in social customs

loneliness as a result of separation

Activity

- Arrange for a counselling session, if any one of your student is sick and identify their issues towards illness. Invite a speaker to help students come out of this problems

2.9 Definition of Nursing Process

The nursing process is a critical thinking process that professional nurses uses to apply the best available evidence to care giving and promoting human functions and responses to health and illness

-American Nurses Association, 2010

It is the fundamental blue print for how to care for patients. The nursing process is also a standard of practice, which when followed correctly, protects nurses against legal problems related to nursing care.

2.9.1 Over View of Nursing Process

The nursing process is goal-oriented method of caring that provides a

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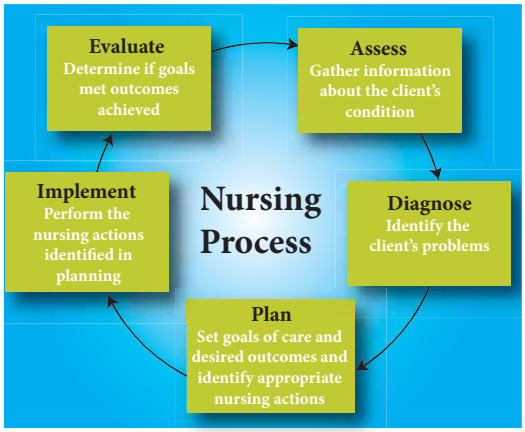
framework to nursing care. It involves five major steps:



A - Assess (what data is collected?)

D - Diagnose (what is the problem?)

P - Plan (how to manage the problem)

I - Implement (putting plan into action) with Rationale (Scientific reason of the implementations)

E - Evaluate (did the plan work?)

According to some theorists, this seven-steps description of the nursing process is outdated and misrepresents nursing as linear and atomic.

Assessing phase-Nursing assessment

The nurse completes an holistic nursing assessment of the needs of the individual/family/community, regardless of the reason for the encounter. The nurse collects subjective data and objective data using a nursing framework, such as Marjory Gordon's functional health patterns.

Methods for data collection

Nursing assessments provide the starting point for determining nursing diagnosis. It is vital that a recognized nursing assessment framework is used in practice to identify the patient's problems, risks and outcomes for enhancing health. The use of an evidence-based nursing framework such as Gordon's Functional Health Pattern Assessment should guide assessments that support nurses in determination of NANDA-I nursing diagnosis. For accurate determination of nursing diagnosis, a useful, evidence-based assessment framework is best practice.

Methods

- Client Interview
- Physical Examination
- Obtaining a health history (including dietary data)
- Family history/report

Diagnosing phase-Nursing diagnosis

Nursing diagnosis represent the nurse's clinical judgment about actual or potential health problems/life process occurring with the individual, family, group or community. The accuracy of the nursing diagnosis is validated when a nurse is able to clearly identify and link to the defining characteristics, related factors and/or risk factors found within the patients assessment. Multiple nursing diagnosis may be made for one client.

Planning phase-Nursing care plan

In agreement with the client, the nurse addresses each of the problems identified in the diagnosing phase. When there are multiple nursing diagnosis to be addressed,

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the nurse prioritizes which diagnosis will receive the most attention first according to their severity and potential for causing more serious harm. For each problem a measurable goal/outcome is set. For each goal/outcome, the nurse selects nursing interventions that will help achieve the goal/outcome. A common method of formulating the expected outcomes is to use the evidence-based Nursing Outcomes Classification to allow for the use of standardized language which improves consistency of terminology, definition and outcome measures. The interventions used in the Nursing Interventions Classification again allow for the use of standardized language which improves consistency of terminology, definition and ability to identify nursing activities, which can also be linked to nursing workload and staffing indices. The result of this phase is a nursing care plan.

Implementing Phase

The nurse implements the nursing care plan performing the determined interventions that were selected to help meet the goals/ outcomes that were established. Delegated tasks and the monitoring of them is included here as well.

Activities

- pre-assessment of the client-done before just carrying out implementation to determine if it is relevant
- determine need for assistance
- implementation of nursing orders
- delegating and supervising-determines who to carry out what action

Evaluating Phase

The nurse evaluates the progress toward the goals/outcomes identified in the previous phases. If progress towards the goal is slow, or if regression has occurred, the nurse must change the plan of care accordingly. Conversely, if the goal has been achieved then the care can cease. New problems may be identified at this stage, and thus the process will start all over again.

2.9.2 Characteristics of Nursing Process

The nursing process is a cyclical and ongoing process that can end at any stage if the problem is solved. The nursing process exists for every problem that the individual/family/community has. The nursing process not only focuses on ways to improve physical needs, but also on social and emotional needs as well.

- Cyclic and dynamic
- Goal directed and client centred
- Interpersonal and collaborative
- Universally applicable
- Systematic

The entire process is recorded or documented in order to inform all members of the health care team.

SUMMARY

Thus there is a wide variety of health systems around the world, which as many histories and organizational structures. Implicitly nations must design and develop

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health system in accordance with their needs and resources. Although common elements in virtually all health system are primary health care and public health measures.

Nursing includes the promotion of health, prevention of illness and the care of ill, disabled and dying people. Advocacy promotion of a safe environment and participation in health policy education and health system are also a key nursing roles. The nurses also play a vital role in implementing the actions of the policy makers.

Activity

- Arrange for a visit to a nursing home and help students to identify the needs and problems of the patients those who are admitted.
- Prepare a scrap work to differentiate each and every issues of the condition.

Teacher Activity

- Arrange a visit to a nearby hospital and orient the functions of each unit
- Arrange a visit to community centres, government offices on family welfare to understand the pattern of functions.

EVALUATION

I. Choose the correct answer

1. Health is a state of complete physical, mental and social
   a. well being
   b. maturity
   c. disease
   d. illness

2. Health system in India has
   a. central
   b. state
   c. local
   d. all of the above

3. The functions of union ministry of health and family welfare are scheduled in
   a. article 246
   b. article 200
   c. article 250
   d. article 156

4. There are ----- levels of prevention
   a. 3
   b. 4
   c. 5
   d. 6

5. Epidemiological triad has
   a. agent
   b. host & environment
   c. only a
   d. both a & b

F8H5MH

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II. Answer the following questions in one (or) two lines.

6. Define health.
7. Define disease.
8. Define illness.
9. What is primary care?
10. List the factors influencing health.
11. List the Factors affecting health.
12. State the levels of health care.
13. What is short term care?
14. What is long term care?

III. Write short notes

15. Describe primary care.
16. Differentiate short term from long term care.
17. Illustrate health illness continuum.
18. What is the nature of disease?
19. Explain epidemiological triad.

IV. Write in detail

20. Explain the health care delivery system in India.
21. Explain the impact of illness on individuals.
22. Explain levels of prevention.
23. Characteristics of Nursing process.
24. Levels of disease prevention.

A-Z GLOSSARY

1. Continnum (தொடரகம்) – a continuous or sequence
2. Elusive (பிடிபடாமல் இருக்கிற) – difficult to find or achieve
3. Epidemiology (கொள்ளை நோயியல் / நோய் பரவு இயல்) – a branch of medicine that deals with incidence and distribution of disease
4. Pandemic (பெரும் பரவலாக இருக்கிற நோய்) – prevalent over a whole country or world
5. Perception (கருத்து) – the way in which something is understood
6. Realm (ஆட்சி எல்லை, அதிகார எல்லை) – a field of activity or interest
7. Static (நிலையான) – lacking in movement or action or change
8. Vital Statistics (முக்கிய புள்ளிவிபரங்கள்) – data on number of births, deaths, etc
9. Web (நெய்யப்பட்ட பொருள் / வலை) – a net work of fine threads

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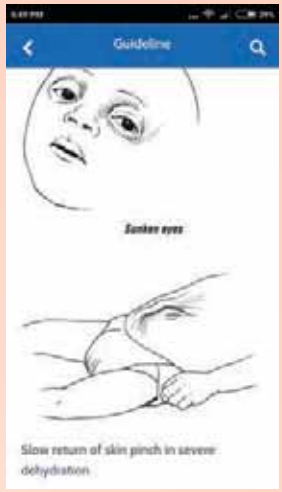
ICT Corner

Hospital Care for Children



Lets know how to care for the children in hospital

Step - 1 This is an Android app activity. Open the Browser and type the URL given (or) Scan the QR Code. (Or) search for "**WHO** Hospital Care for Children" in google play store.

Step - 2 (i) Install the app and open the app, (ii) click on the Menu "**GUIDELINES**",

Step - 3 In the opened page "**Guidelines**" click the menu "**Browse by Chapter**" and then select any "**Chapter**"

Step 1

Step 2

Step 3

URL:

https://play.google.com/store/apps/details?id=com.production.ksm.generalsurgery

*Pictures are indicative

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UNIT 3

Hospital and its Environment

F8R1P5

LEARNING OBJECTIVES

The students will be able to:

- explain the types of hospitals
- enumerate the basic functions of hospital
- discuss about meeting patient's needs and Nurses' responsibilities
- describe hospital economy
- explain about admission procedure
- describe the admission, observation and charting
- discuss about comfort & environment
- discuss about discharging the patient

3.1 Introduction

The word hospital is derived from the latin word "hospice". Meaning of hospice is 'host or an establishment where a guest is received and cared.

DEFINITION

Word health organization (WHO) defines the hospital as an integral part of the social and medical organization the function of which is to provide for the population, a complete health care.

3.2 Types of Hospitals

Based on Ownership of Hospital

Public hospital or government hospital:	These hospital are run by the central or state government municipal bodies/corporations to

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	provide wide-range of various types of health care free of charge.
Charitable hospitals:	These hospital are established under societies Registration Act run for service motive. These are generally funded by donations, grants & aids from charitable organizations.
Private hospitals:	These hospitals are generally owned by an individual or a group of individuals, which are generally self – funded.
Corporate hospitals:	These hospitals are established by registered companies formed under companies Act.

Based on Clinical Specialities

General hospitals:	These hospitals are run to provide care for patients with various disease condition for both sexes to all ages.
Specialized hospitals:	These hospitals limit their service to a particular condition, cardiology, neurology, nephrology etc.

Based on Length of Stay

Long – term hospital:	These are hospitals where over 90% of all patients admitted to stay for more than 30 days.
Short term hospitals:	These are hospitals where over 90% of all patients admitted to stay for less than 30 days.
Day care hospitals:	These hospitals offer care only during daytime. Patients are admitted on the same day, procedure is performed, and then discharged on the same day. For example, eye care hospitals

India has one hospital bed for 879 people. This is far below the world average of 30 hospitals per 10,000 population. According to the WHO, India needs 80,000 more hospital beds every year to meet the demands of its growing population.

Based on Diversity in Aim of Hospitals

Teaching hospitals:	These hospitals are run for the dual purpose. i.e., teaching the medical, nursing and other health care students as well provide the care to the people.
Non-Teaching hospitals:	These hospitals are run to offer only health care services to the people, without any purpose of providing the teaching to the health science students.

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DO YOU KNOW?

India is experiencing 22-25 percent growth in medical tourism and the industry is expected to double its size from present (April 2017) US$ 3 billion to US$ 6 billion by 2018. Medical tourist arrivals in India increased more than 50 per cent to 200,000 in 2016 from 130,000 in 2015. A total of 3,598 hospitals and 25,723 dispensaries across the country offer AYUSH (Ayurveda, Yoga & Naturopathy, Unani, Siddha and Homoeopathy) treatment, thus ensuring availability of alternative medicine and treatment to the people. In 2017, the Government of India has provided grant-in-aid for setting up of AYUSH educational institutions in States and Union Territories.

3.3 Basic Functions of the Hospital

F8ZHQS

- Diagnostic Services
- Curative care
- Emergency Care
- Critical Care Services
- Rehabilitative Services
- Preventive Services
- Health Promotion
- Education and Training
- Research

3.3.1 Meeting Patient's Needs & Nurses Responsibilities

Basic Human needs are needs all persons have. However individuals meet these needs in different ways. Most residents in long term facilities will need some assistance to meet their basic needs.

Physical needs

Oxygen/Air

- Elevate Head end of the bed for resident with breathing problems.
- Position in bed and chairs to allow lung expansion.
- Assist resident to ambulate.

Nutritional Needs

- Making meal time as pleasant as possible.
- Assist resident to eat, feed resident when possible.
- Provide nutritional food according to their body condition.

Fluid and electrolytes

- Offer fluids frequently.
- Keep water containers within reach.
- Keep water fresh, other liquids at correct temperatures.

Elimination

- Assist resident in toileting needs.
- Provide privacy.

Rest

- Assist in preparation for sleep.
- Recognize changes in patterns for sleep.

Activity and Exercise

- Encourage range of motion in activities of daily living.

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- Ambulate, transfer and move properly
- Encourage activity

Emotional needs

- To feel love
- To be loved and give love
- To be treated with respect & dignity
- To feel that their self-esteem is protected

Spiritual needs

- Remember that each patient has a right to believe in any faith system or to deny the existence of any beliefs
- Listen to a patient's thoughts and keep them confidential

Social needs

- Give the patient an opportunity to talk; assure the patient that you will not share the information with others
- Explain the need for procedures and assist if help is needed
- Respect the patient's right to privacy at all times
- Fulfilling one's social needs makes one feel good and increases the self-esteem
- Interactions with others and give opportunities for free personal expression

3.4 Hospital Economy

- Economy of time is too often neglected. If nurse is undecided about the method of carrying out a duty, she should ask for guidance and not waste time in her efforts of trail and error.
- A nurse should look after her health so that working hours are not lost through illness.
- Daily inventories of important instruments will prevent their loss.
- Old blankets are used for medical fomentations and not lint.
- A wide bandage should not be used when a small one will do.
- Dressing lotions should be carefully measured so that there is no waste.
- During dressing, the bed-linen is protected by a dressing mackintosh and dressing towel.
- Taps, light and gas should be turned off when not in use.
- Faulty taps must be reported. Kettles sterilizers and saucepans must not be allowed to boil dry, or left on the gas unnecessarily.
- The kettle should not be filled when a small quantity of hot water is required.
- Articles must be used for the purpose for which they are made.
- Medicine and drugs must be accurately used as ordered. Many deteriorate from exposure or evaporation.
- Soap must not be allowed to stay in water.
- Disinfectants should not be wasted or used in wrong strengths.
- Cleaning powders, furniture polish and metal polish should be used sparingly
- Torn linen must not be used without mending or it may be torn further and rendered useless.
- During meals patient's wear and bed lines are protected with towels.

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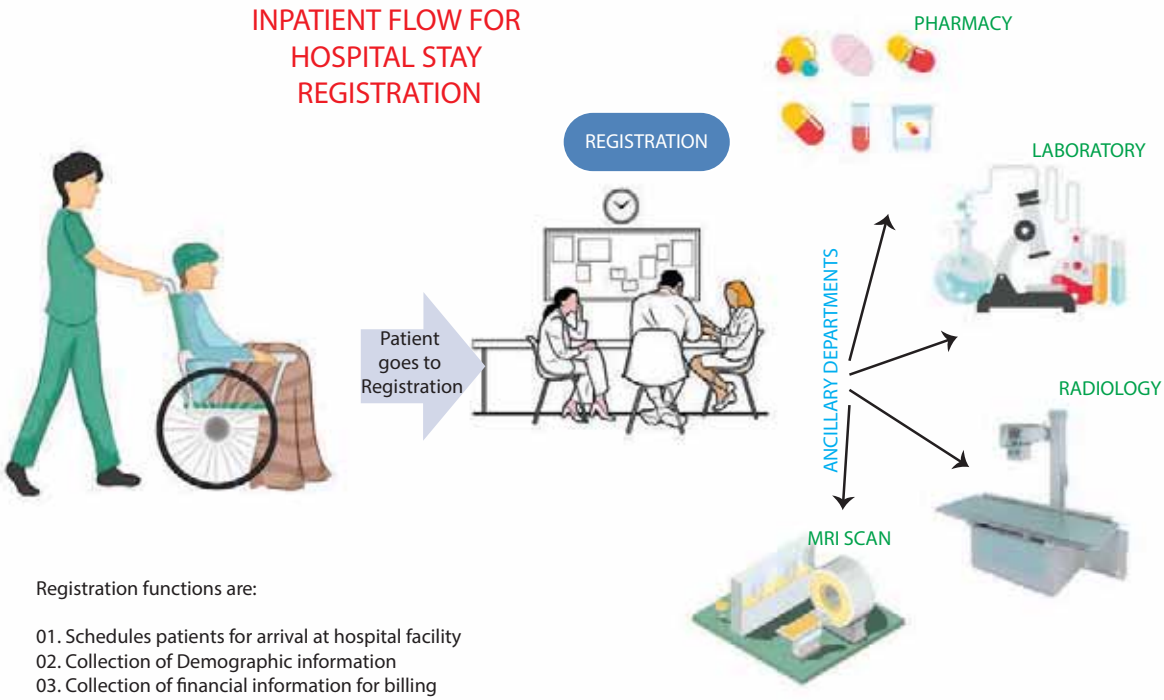
- A small amount of diet should be given to a patient and a second help if desired and permitted. Excess food should be returned to the main kitchen.
- Although patients should look as nice as possible, it must be remembered that laundering involves wear and tear and is very expensive.
- Crockery must be handled carefully and not allowed to chip crack.
- Nurses should be taught the prices of articles, lotions etc…
- False economy is criminal on occasions.
- Nurses must remember that hospitals are maintained with the public's money. The people can often ill afford their contributions.
- Each ward is assessed separately and list of expenses sent round to the wards. They impress the nursing staff and encourage economy.

3.5 Admission Procedure

DEFINITION

Admission of a patient means allowing and facilitating a patient to stay in the hospital unit or ward for observation, investigation, and treatment of the disease he or she is suffering from.

1. Purpose of admission procedure
   - ✓ To provide immediate care.
   - ✓ To provide comfort and safety to the patient.
   - ✓ To receive the patient in ward for admission according to his condition.
   - ✓ To be ready for any emergency.
   - ✓ To assist the patient is adjusting to the hospital environment.



Registration functions are:

01. Schedules patients for arrival at hospital facility
02. Collection of Demographic information
03. Collection of financial information for billing
04. Prints face sheet to the patient chart
05. Prints and attaches arm band to patient
06. Assigns patient room and bed they are to occupy
07. Sends patient off to nursing station

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- ✓ To obtain information about the client so as to establish therapeutic nurse patient relationship.
- ✓ To involve patient and family in care.
- ✓ To assist proper discharge planning of care.

3.5.1 Types of Admission

- **Routine Admission:** clients are admitted for investigations and planned treatments and for surgeries. eg. diabetes, hypertension.
- **Emergency Admission:** Patients are admitted for acute, an emergency condition which requires immediate treatment like burns, drowning, road accidents, fall, heart attack.

Voluntary admission: The patient is admitted of his or her own volition after a doctor at this hospital has decided that inpatient treatment is necessary.

Involuntary admission: The patient is admitted on the authority of the governor if two designated mental health doctors ordered by the governor to examine the patient determine that the patient's admission is necessary as a result of examination because of a risk of self-harm or hurting others.

Admission for medical care and protection: The patient is admitted even without their consent if a designated doctor regards their admission as necessary and the patient's guardian consents.

3.5.2 Responsibilities of the admission department

1. Gather patient information (name, age, sex, address, mobile no etc)
2. Prepare medical record
3. Prepare patient identification bracelet
4. Consent form signed
5. Initial orders obtained
6. Inform to floor ward nurse

3.5.3 Responsibilities of the nurse

Prepare room

- Prepare a clean and neat admission room with all the necessary items as per the need of the patient.
- Prepare an appropriate type of bed with adequate adjusted height of the bed

Identify self

- Welcome patient and his family with warm approach.
- Make the patient comfortable in bed and provide him with hospital clothes and ensure adequate privacy.
- Alleviate anxiety/fear

Orient patient

- Location of nurses station
- Room boudaries
- Clothes storage

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- Call light
- Bed controls
- Light switches
- Telephone policy
- Tv controls
- Meal times
- Visitng hours
- Diet
- Safety measures-side rails
- Time for doctors visit
- What tests are scheduled

Gather information related to:

- Medical Orders
- Treatments
- Lab Results
- Tests
- Diet
- Activity

3.5.4 Charting

- Record all the basic information in patients record.
- Clearly mention admission date, time patients details, complaints of the clients, any allergies, patients mental status.
- Record in admission register, treatment book, report book, medical legal case (MLC) register, update ward census and nurse's notes.
- Physical Assesment
- Patients Comfort
- Collect information for database
- Perform initial Admission Assessment
- Obtain physician order for the Lab, Tests, Medical activity
- Identify data
- Chief complaints
- Present history
- Past health history
- Review of body system

Observation:

What to look for in newly admitted patients

- Anxiety
- Loneliness
- Increased privacy
- Loss of identity

3.5.5 Admission Assessment

Do a good assessment of his physical condition in order to plan his care. If his physical state needs immediate treatment report to physician and prepare your patient for physical examination and carry out the treatment, which the physician prescribes after the physical examination.

3.6 Safety and Comfortable Environment

The environment in which the patient is placed should be comfortable and safe and it should contribute to his well being and should not retard his recovery.

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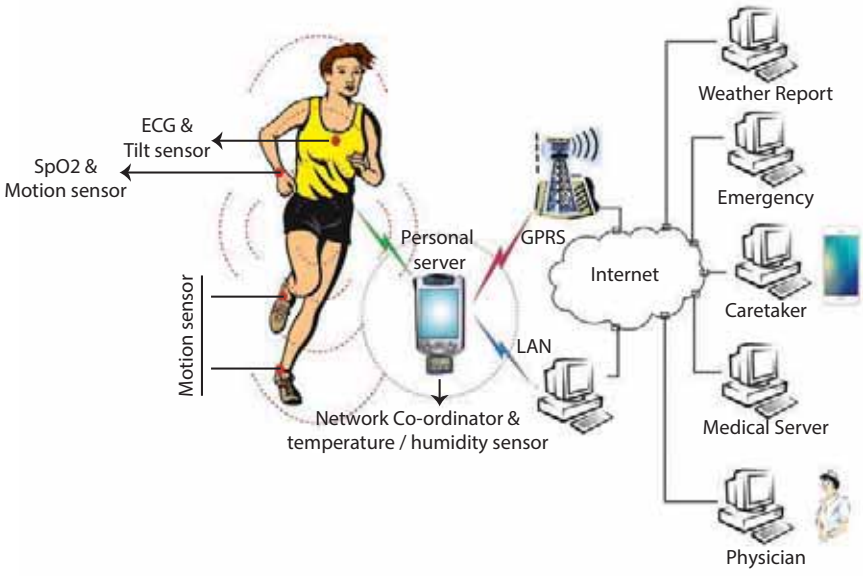
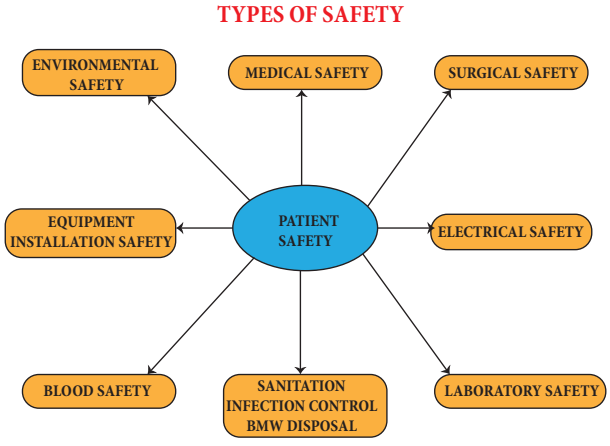


a. Patient Safety and Comfort Measures:

Safety means protection from possible injury during the process of health care

Types of safety



Medical Safety

- Clear doctors order
- identification of patient with similar names
- proper handling and taking over during change of shift
- check oxygen flow and empty cylinder
- check drip flow speed, drip sets, air bubbles etc
- avoid wrong medication
- discourage telephonic order

Surgical Safety

- Proper patient identification
- performance of correct procedure at correct body site
- improved hand hygiene
- avoid wrong connections of tubings. eg. catheters
- check safety code
- red – allergy
- yellow – fall risk
- purple – do not resuscitate

Laboratory Safety

- Single use of syringe
- avoid needle prick

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- avoid spilling of blood
- care in handling acids and inflammable substances

Electrical Safety

- Safety fuses with each equipment
- No loose wires or connection.
- connection Properly plugged and fixed
- If short circuit call electrician

Fire Safety

- Use fire proof material for construction
- Have fire exit in all buildings
- Smoke detection and water sprinklers on the root of all floors
- Fire extinguisher in all areas
- Training in fire management

Equipment and Installation Safety

- Regular checking of equipment
- Proper earthling to avoid shock
- Regular maintenance and repair
- Training nurses and mechanicals of possible hazards.

Blood Safety

- Proper grouping and cross matching
- Test HIV and hepatitis

Environmental Safety

- Adequate light and ventilation
- Stairs with hand rails
- Slip preventing floors
- Fire extinguishers and alarms
- Prevent noise pollution
- Safe wheel chairs and trolleys
- No water logging in bathroom
- Call bell system
- Adequate number of screens

b. Safeguarding Patient's Personal Belongings

- When documenting valuables make sure to use words like white/yellow metal not gold. Clear stone not diamonds and rubies
- Have a witness
- Have nurse and patient sign valuable list
- Inform the patient that he will get back his valuables on discharge

Sanitation and Infection Control

- Proper segregation transport and disposal of biomedical waste
- Use of sterile procedure
- Formation of hospital infection control committee
- Use of proper disinfection in right dose in right time
- Safely dispose in needle destroyer
- Reorientation of Doctors and nurses of infection control

Patient Comfort During Hospital Stays:

- Provide Privacy (Shut Door, Pull curtain)
- Assist if needed to remove clothing & put hospital gown
- Provide Extra blankets if requested

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- Hospitals provide the patient with the right to not only accept their visitors, but also to deny them. It doesn't help a patient's recovery if the visitor is someone who will only bring them added stress.
- Visitors are allowed to stay as long as they want, even overnight.
- Provide wireless access along with the usual TV's and comfortable chairs.
- Counselling services and places to pray and meditate.
- Make waiting time more productive—or at least less boring.
- Help people connect more easily with hospital billing, physicians, scheduling, etc.
- Learn more about your patients and visitors—and about their hospital experiences

3.7 Discharging the Patient

Discharge is a preparation of a patient and discharge records to leave the hospital.

Purpose

1. To ensure continuity of care to the patient after discharge.
2. To assist the patient in discharge process.

Guidelines

The patient are discharged from the hospital in one of the following ways.

1. **Discharge to home.** The discharge to home or another hospital or another unit within the hospital is initiated by the doctor who advises the patient that he is well enough to leave the hospital or requires treatment in another unit within the hospital or in an another hospital.
2. **Discharge to another hospital or another unit within the hospital (referral).** When a patient or family is not satisfied with the treatment or care given and wants to leave the hospital against the medical advice, in such cases the patient of the relative is asked to sign a statement that he is going or taking the patient on his own will and responsibility.
3. **Discharge against medical advice (AMA).** Patient leaves the hospital against the medical officer's advice when a patient escapes from the hospital without the knowledge of the hospital staff and without signing the said statement he is treated as absconded in the records.

3.7.1 Nurses Responsibility

1. Inform the patient and the relatives a day or two before the discharge.
2. Get the discharge slip prepared after checking the vital signs and examining the patient.
3. The nurses should see that the patients personnel hygiene is maintained, he is dressed in home clothes and has taken meals.
4. Hand over the patient's belongings and any valuables, which have been kept safely, to the patient or the relative under proper receipt.
5. Complete the unit admission and discharge registers, case sheet and other records.

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6. Hand over the case sheet and other records to medical records to medical record department under proper receipt.
7. Inform the hospital authorities about the discharge if the patient is medico-legal.
8. Hand over the discharge slip to the patient or relative and explain about
   a. The treatment and the diet to be taken at home
   b. Follow-up visits and inform to bring the discharge slip on every visits
   c. Any special advices pertaining to condition
9. See that the patient receives all the medicines as per discharge slip.
10. Check the hospital things before the patient leaves the ward.
11. Place the patient in the wheel chair or stretcher.

    According to the patient's condition until he leaves the hospital.

    Immediately after the patient leaves reorganize the patient unit.

SUMMARY

Hospital as an integral part of the social and medical organization. The function of hospital is to provide the population complete health care. There are various types of hospital based on ownership, clinical specialities, length of stay, and diversity in Aim. The basic function of the hospitals is therapeutic, curative care, rehabilitative, emergency care and preventive services. Hospitals meets the patients need from the time of admissions till the discharges it provide comfort as well as a safe environment during the stay in the hospitals not only provide curative services it also provide extended services like Health promotion, Education and Research. Thus hospital play as important role in the healthcare system.

EVALUATION

I. Choose the Correct Answer

1. The word hospital is derived from
   a. Hope
   b. Holy
   c. Hospice
   d. Hopse
2. The hospital where the patient stays for less than 30 days is termed as
   a. Long term hospital
   b. Specialized hospital
   c. Short term hospital
   d. Day care hospital
3. All the basic information of the patients are recorded in
   a. Admission
   b. Observation
   c. Charting
   d. Discharging

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4. The hospitals which limit their service to a particular condition is
   a. General hospital
   b. Corporate hospital
   c. Charitable hospital
   d. General hospital

5. In Surgical safety the colour code of allergy is
   a. Red
   b. Yellow
   c. Purple
   d. Blue

II. Answer the following questions in one (or) two lines.

6. How hospital is defined by WHO?
7. Name the types of admission.
8. What is charting?
9. What are the guidelines to be followed in discharging the patience?
10. What is comfort?

III. Write short notes

11. Write the types of hospital based on clinical specialities.
12. Write the basic function of the hospital.
13. List the types of patients safety.
14. Write the purpose of Discharging the patient.
15. What are the comfort devices used for patients during hospital stay?

IV. Write in detail

16. Describe the types of hospitals.
17. What are the functions of the hospital?
18. Write the needs and nurses responsibilities.
19. How to manage hospital economy?
20. Give an account on comfort and environment.

A-Z GLOSSARY

1. Admission (சேர்க்கை)–It means allowing and facilitating a patient to stay in the hospital unit or ward for observation, investigation and treatment of the disease he or she is suffering from.
2. Discharge (வெளியேற்றம்)–It is a preparation of a patient and discharge records to leave the hospital
3. Dressing (காயக்கட்டு)– It is a sterile pad or compress applied to a wound to promote healing and protect the wound from further harm
4. Hospital (மருத்துவமனை)–It is an integral part of the social and medical organization the function of which is to provide for the population, complete health care

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UNIT

Communication Skill in Nursing

F9INU3

LEARNING OBJECTIVES

The students will be able to:

- describe the concepts and types of communication
- discuss the importance of communication
- list down the essential elements of communication
- enumerate the essentials of good communication
- enlist the barriers of communication
- explain about interpersonal relationship

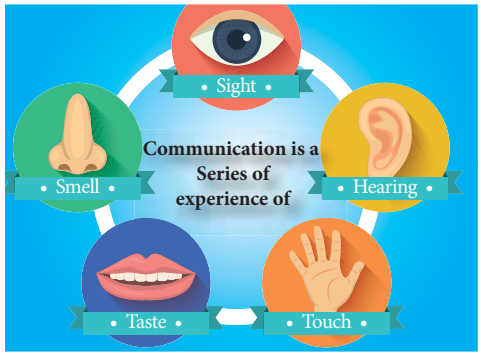
4.1 Introduction

கேட்டார்ப் பிணிக்குத் தகையவாய்க் கேளாரும்
வேட்ப மொழிவதாஞ் சொல்

- திருக்குறள்

'Tis speech that spell-bound holds the listening ear,
While those who have not heard desire to hear

Communication is the art of transmitting information, ideas and attitudes from one person to another. Communication is the process of meaningful interaction among human beings. The word communication originates from 'communis', a Greek word, meaning 'to make common'



Communication is a lifelong learning process. It is a basic element of human interactions and one of the most vital components of all nursing practice. To communicate effectively with patients, family and members of health care

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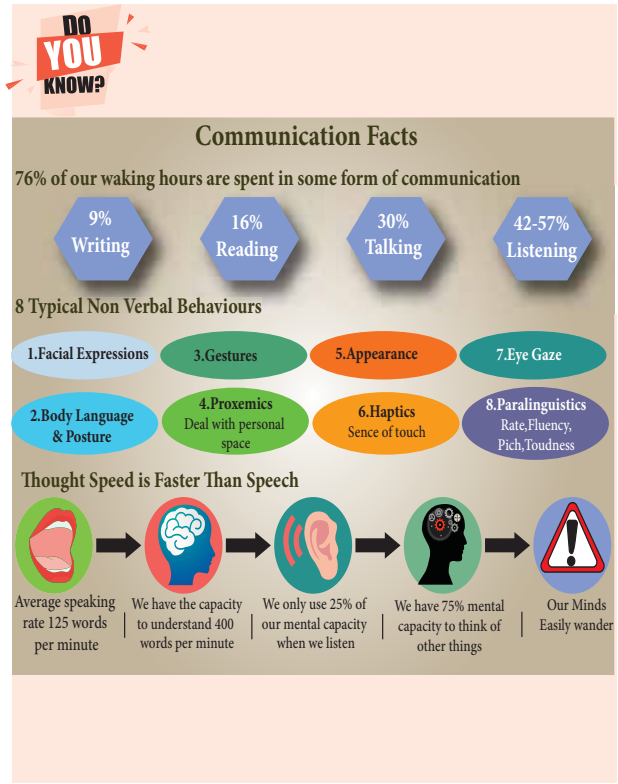
team, the nurse must possess the skilled communication techniques.

Good communication between nurse and patient is essential for the successful outcome of individualized nursing care of each patient. To achieve this, nurses should devote time to the patient to communicate with necessary confidentiality and the persons who surround the patient. Good communication is not only based on the physical abilities of nurses, but also on education and experience.

4.2 Concepts and Types of Communication: Concepts

"Before you speak, think: Is it necessary? Is it true? Is it kind? Will it hurt anyone? Will it improve on the silence?"

- Communication is sending and receiving information between two or more people.
- Communication is the process of exchanging information, thoughts, ideas and feeling from one individual to another.
- Communication is the process of passing information and understanding from one person to another.
- Communication is the process of sharing meaning through continuous flow of symbolic messages.
- Communication is irreversible and unrepeatable.
- Communication is culture-specific.
- Communication is the transmission of information, ideas, emotions and skills through the use of symbols, words, pictures, figures, and graph.
- Communication is the process of transmitting ideas, information, and attitudes from the source to a receiver for the purpose of influencing with intent.



4.2.1 Types of Communication

There are two types of communication based on channels of communication

- Verbal
- Non verbal

Verbal communication refers to the form of communication in which message is transmitted verbally which is done by word of mouth and a piece of writing. It is divided into oral communication and written communication

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In ***oral communication***, spoken words are used. It includes face-to-face conversations, speech, telephonic conversation, video, radio, television, voice over internet.

In ***written communication***, written signs or symbols are used to communicate that includes email, letter, report, memo, etc.,

Nonverbal communication is the sending or receiving of wordless messages. It is otherwise called as body language. It includes

- Posture and gait are often reliable indicators of self-concept, mood and health
- Facial expressions convey a universal meaning
- Eye contact eg., mutual eye contact
- Body movements eg., shrugging shoulders
- Touch brings close relationships
- Tone of voice display honesty and competence
- Signal is a sign to give instruction or warning
- Symbol is a sign that represents ideas

THE FIRST COMMUNICATION DEVICE

The telephone (meaning "far sound") is the most widely used telecommunications device. It was invented in 1876

by Alexander Graham Bell

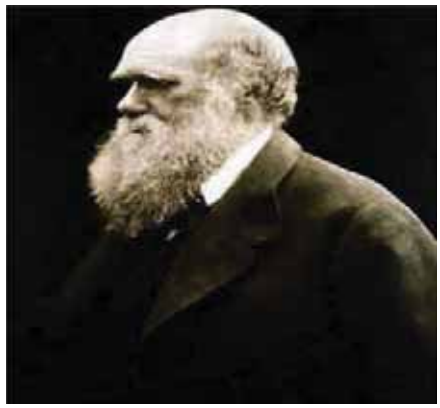
Who was the first to study body language and its origins?

No other than Charles Darwin, the father of evolution, himself. He was the first man to study the body language of humans and animals in his book "The Expression of the Emotions in Man and Animals" in 1872.

By careful observation he noticed that humans, like animals, **share some inborn behaviors that are common to all of us**. These non verbal cues revealed internal emotions or used to help communicate with others.

The study of body language in communication called **Kinesics**. It's aim is to categorize and understand how different gestures developed and their meaning in communication.

Charles Darwin



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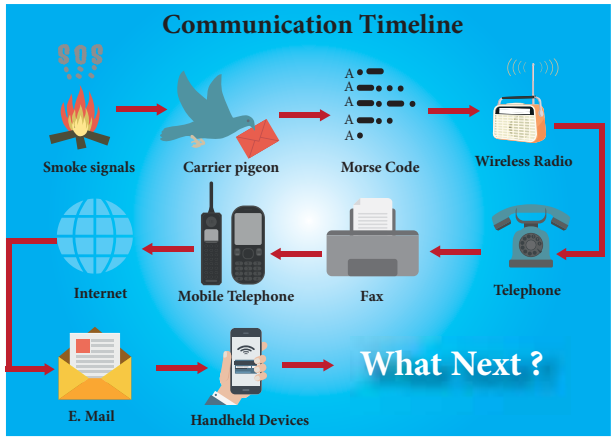
There are 5 types of communication based on levels of communication

- **Intrapersonal communication** is the kind of communication that occurs within us. It involves thoughts, feelings, and the way we look at ourselves
- **Interpersonal communication** occurs on one to one basis
- **Group communication** includes the communicating information that is of common interest
- **Public communication** is for the large group to serve the common man
- **Mass communication** is the transfer of messages to large group through mass media like TV, radio, newspapers, etc.,

4.3 Importance of Communication

- Helps to understand and to exchange ideas to the patient, relatives, doctors and other health care team members
- Generate trust between nurse and patients
- Reduces the interpersonal tensions and improves the interpersonal relationship
- Helps to modify nurse's behaviour
- Helps to influence others behaviour
- Prevent disorder in the ward
- Provides effective leadership



4.4 Essential Elements of Communication Process

There are five elements of communication. It includes:

- **Sender** is the person who encodes and delivers the message.
- **Receiver** is the person who receives and decodes the message.
- **Message** is the content of communication.

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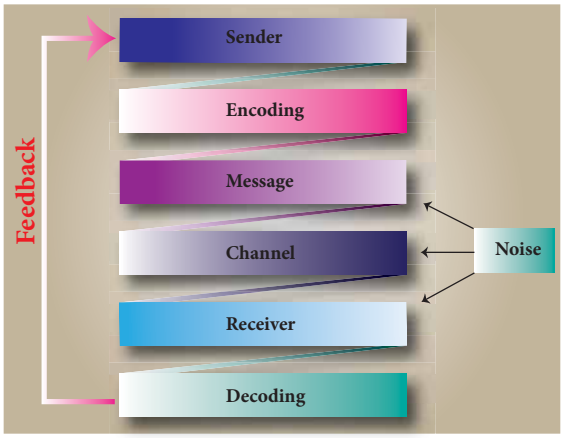

- **Channels** are means of conveying and receiving message through visual, auditory and tactile senses.
- **Feedback** is the message the receiver returns. It indicates whether the receiver understand the meaning of the sender's message.

4.5 Essentials of Good Communication

Listen

Always start by emptying out all your pre-conceptions of what you know. Have an open mind about what the other party has to say.

Do not interrupt

Allow the other party to fully express their concerns. Suppress any urge to cut in with your own.

Avoid pointing fingers

Placing blame always comes across as an excuse and will quickly alienate the other party.

Be clear and concise

Beating about the bush or sticking to generalize can confuse those you are interacting with. Be as specific as you can and leave no room for doubt.

Repeat the other person's views

Always repeat what the other party has expressed to ensure you fully understand their point of view.

Provide feedback

Without interrupting the speaker, inject some neutral statements, such as "oh," or "I see" to show that they have your undivided attention and that you follow their train of thought.

Show empathy

Empathy is the ability to understand the emotion behind the other party's arguments, especially when the topic is a sensitive one.

Pay attention to non-verbal signs

The body language of the other party will give you important additional information about what they are expressing. Sometimes these cues may even reveal a more truthful view of the situation.

4.5.1 Communication Skills for Nurses

F9SJVQ

For a nurse, the ability to communicate is a very important skill and a vital part of the job. Nurses speak to people of varying educational, cultural and social backgrounds and must do so in an effective, caring and professional manner, especially when communicating with patients and their family.

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"Kind words can be short and easy to speak, but their echoes are truly endless."

- Mother Theresa

If you are looking to improve your communication skills, here are ten tips that may help:

1. Speak Slowly

Certain words sound very similar to one another if they are spoken very quickly. **Take time to speak slowly and carefully**, and your words may be less likely to be mistaken by others.

2. Speak Clearly, Not Loudly

Instead of speaking louder, **try speaking more clearly, especially when communicating with older patients**.

3. Avoid Using Slang

A common mistake that many people make is to try to use **bigger and more complicated words**. Another common mistake is to try to use **slang terms that are not fitting or appropriate**. Avoid both of these mistakes for better communication.

4. Remember Your Audience

What you might say to a doctor or a fellow nurse might be very different from what you would say to a patient or a patient's family. **Choose your words to fit the situation and the audience.**

5. Stop and Listen

One of the most important skills you can have for effective communication is being able to actually stop and **listen to what is being said by the other person.** Listening is a very powerful communication tool.

6. Reflect

To make sure that the communication is flowing, learn the simple trick of reflecting on what the person is saying to you. To do so, you **simply repeat what has been said in your own words,** back to the person. If you are wrong, the person can say so before you walk away.

7. Use Body Language

In addition to the words that you say, you communicate with those around you with your face, your hands your posture etc. **Make sure that what you are saying and what your body is saying are in agreement, and you are not sending conflicting messages.**

8. Know Your Communication Roadblock

If you have ever stumbled on a word or you have ever found yourself so frustrated that you could not communicate at all, then you know the roadblocks. Disintegrate and then **learn ways to manage such situations better.**

9. Consider Learning a Foreign Language

It might sound strange but **learning a new language puts you in better touch with your native tongue** and can open your eyes to the way you use the words you already know.

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10. Don't Forget Other Methods of Communication

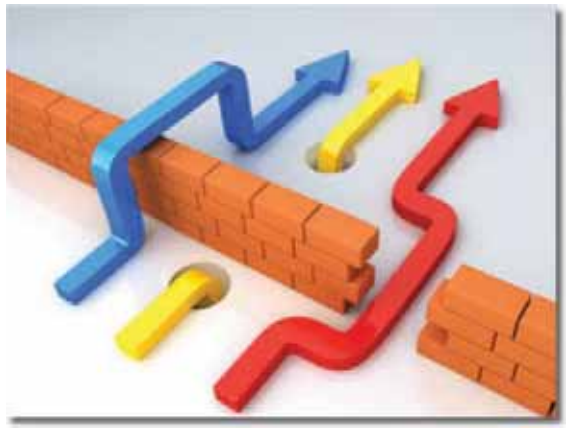
In addition to speaking and listening, don't forget that **there are other skills that you should work on such as reading and writing.**

4.6 Barriers to Effective Communication

Barriers to effective communication can retard or distort the message or intention of the message being conveyed. This may result in failure of the communication process or cause an effect that is undesirable.

- **Physical barriers** - Physical barriers are often due to the nature of the environment like noise, invisibility, etc.
- **Organisational barriers** - It refers to problems with the structures or systems in place in an organization. Eg., a lack of supervision or training or policy
- **Personal barriers** - It is due to psychological problems of individuals. Eg., lack of motivation or dissatisfaction at work or inattentive
- **Ambiguity of words/phrases** - Words sounding the same but having different meaning can convey a different meaning altogether. Hence the communicator must ensure that the receiver receives the same meaning.
- **Individual linguistic ability** - The use of jargon, difficult or inappropriate words in communication can prevent the recipients from understanding the message.
- **Physiological barriers** - These may result from individuals' personal discomfort, caused by ill health, poor eyesight or hearing difficulties.
- **Bypassing** - This happens when the communicators (sender and the receiver) do not attach the same symbolic meanings to their words.
- **Cultural barriers** - Strong beliefs, customs, attitudes, religious, sentiments, illiteracy may influence communication.
- **Fear of being criticized** - This is a major factor that prevents good communication.
- **Gender barriers** - Most communicators whether aware or not, often have a set agenda. This is very notable among the different genders.

4.6.1 Measures to Overcome the Barriers of Communication



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Clarify the idea – The communicator must be clear about what he wants to communicate

Completeness of the message – The message should be relevant to the nature and purpose of communication

Understand the receiver – The communicator should be aware of the total physical and human setting

Use appropriate channels – The channels should be appropriate to the message

Consistency in communication – The message should be consistent with objective

Feedback – It involves effective participation and improves mutual understanding

Simplified structure – The communication can be strengthened by simple procedure and regulating the information flow

Improve listening – The sender and receiver must listen with attention, patience and empathy

Mutual trust and confidence – It improves the effectiveness of communication

4.7 Interpersonal Relationship (IPR)

"Without communication there is no relationship. Without respect there is no love. Without trust there is no reason to continue."

~ Unknown

4.7.1 Definition

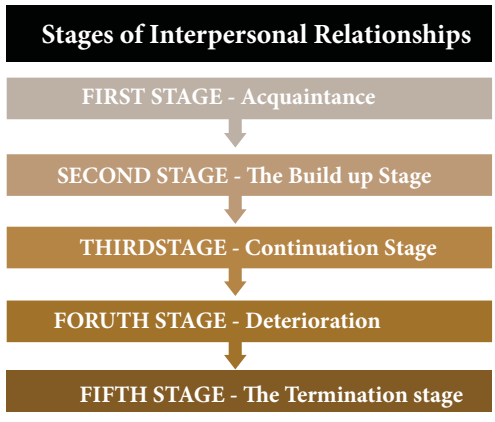
IPR is any or all behaviour which a person undertakes in the presence of others. These are social associations, connections or affiliations between two or more people.

4.7.2 Purposes

- To learn about self and society
- To establish and maintain relationships
- To alleviate loneliness
- Helps for diversion
- Helps to meet the needs of others
- Gain confidence and satisfaction

4.7.3 Stages

According to George Levinge, a Psychologist, there are five stages



Acquaintance: It depends on previous relationship, physical proximity, first impression, etc.,

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Build-up: People begin to trust and care for each other.

Continuation: It follows a mutual commitment for a long duration.

Deterioration: Not all relationship deteriorates. Some may deteriorate due to loss of trust or dissatisfaction.

Termination: This final stage leads to an end of the relationship either by death or by separation.

4.7.4 Principles of IPR

- **Mutual Benefit Principle:**

  The strong interpersonal relations are formed when people share same group of interests. It helps them to form a strong bond and meet up the social need of themselves.

- **Credit Principle:**

  For making the relation with the people fruitful and pleasant it is important to make people feel that you are useful for them.

- **Respect Principle:**

  Everyone has a right of freedom to speech so everyone has right to share their thoughts. Only through respect one can maintain good interpersonal relationships.

- **Tolerance Principle:**

  Tolerance means that a person does not care about small minor issues, and by keeping aside the disturbing issues.

- **Moderation Principle:**

  To maintain a good social interpersonal relation one should keep a moderate way to deal and communicate with people.

THERAPEUTIC NURSE BEHAVIOURS

Self-awareness - Internal evaluation of one self and of one's reactions to emotionally charged situations, people and places

Genuine, warm and respectful - Highly skilled, experienced nurses must possess these attributes or skills to successfully establish a nurse client relationship

Empathy - Having the ability to enter the perceptual world of the other person and understanding how they experience the situation

Cultural sensitivity - Cultural backgrounds effect people's perceptions of life and health

4.7.5 Barriers of IPR

- Physical
- Perception
- Emotions
- Culture
- Language
- Gender
- Defensive

4.7.6 Methods to Overcome Barriers

- Be open to others opinion
- Choose your words carefully
- Look for similarities
- Work with the facts
- Admit when you are wrong
- Smile
- Pay attention to verbal cues

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SUMMARY

Communication is an important component of nursing practice. Communication allows people to establish, maintain and improve human relations. Communication refers to verbal and non-verbal behaviour within a social context. It includes all symbols and clues to give and receive meaning.

EVALUATION

I. Choose the correct answer

1. The email, letter, report and memo are used in
   a) Oral communication
   b) Written communication
   c) Mass communication
   d) Public communication
2. The nonverbal communication is otherwise called as
   a) Body language
   b) Interpersonal communication
   c) Mass media
   d) Posture and gait
3. The kind of communication that occurs within us is known as
   a) Interpersonal communication
   b) Intrapersonal communication
   c) Verbal communication
   d) Group communication
4. The means of conveying and receiving message through visual, auditory and tactile senses is known as
   a) Encoding b) Feedback
   c) Channel d) Decoding
5. Individuals personal discomfort, caused by ill health, poor eyesight or hearing difficulties are known as
   a) Physiological barriers
   b) Personal barriers
   c) Physical barriers
   d) Cultural barriers
6. The behaviour which a person undertakes in the presence of others is known as
   a) Communication
   b) Encoding
   c) Tone of voice
   d) Interpersonal relationship

7. The following which is not a principle of IPR is
   a) Credit principle
   b) Tolerance principle
   c) Respect principle
   d) Clarity principle

II. Answer the following questions in one (or) two lines.

8. Define communication.
9. Define interpersonal relationship.

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10. Enlist the principles of IPR.
11. Enumerate two importance of communication for nurses.

III. Write short notes

12. What are the levels of communication?
13. Describe the essential elements of communication process.
14. List down the communication skills for nurses.
15. Explain the barriers of communication.
16. Mention the measures to overcome the barriers of communication.
17. Explain the stages of IPR.
18. List down the barriers of IPR and the methods to overcome it.

IV. Write in detail

19. Explain the various types of communication.
20. Explain the barriers of communication and the measures to overcome the barriers.

Students Activity

- Role play on communicating with patient in a ward
- Prepare a report on communication through mass media
- Visit a nearby hospital and submit the observed sign boards prepared by you

A-Z GLOSSARY

1. Communication (*தகவல் தொடர்பு / தொடர்பு*) – It is the process of exchanging of information, thoughts, ideas and feeling from one individual to another
2. Interpersonal Relationship (*ஒருவருக்கொருவர் இடையே தொடர்பு*) – It is any or all behaviour which a person undertakes in the presence of others
3. Nonverbal communication (*சொல்வழியற்ற தகவல் தொடர்பு*) – It is the sending or receiving of wordless messages
4. Verbal communication (*வாய்மொழி தகவல் தொடர்பு*) – It refers to the form of communication in which message is transmitted verbally which is done by word of mouth and a piece of writing

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UNIT 5

Health Assessment and Physical Examination

FI27RI

உற்றான் அளவும் பிணியளவும் காலமும்
கற்றான் கருதிச் செயல். - திருக்குறள்

English Couplet 949:

The habitudes of patient and disease, the crises of the ill
These must the learned leech think over well, then use his skill.

LEARNING OBJECTIVES

The student will be able to:

- define the term health assessment, temperature, pulse ,respiration and blood pressure
- explain the techniques of health assessment
- describe the factors affecting the body temperature, pulse, respiration and blood pressure
- identify the types of thermometers
- narrate the procedure for recording temperature , pulse , respiration and blood pressure
- locate the sites for assessing pulse
- describe pulse oxymeter
- discuss the level of consciousness and Glasgow Coma Scale

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5.1 Introduction

Successful treatment of the sick depends on correct diagnosis and correct diagnosis depends on a great deal of an accurate observations. It is therefore most important that the Health Worker develops skill in making accurate observations on patients. She must also be able to record her observations correctly, clearly and neatly.

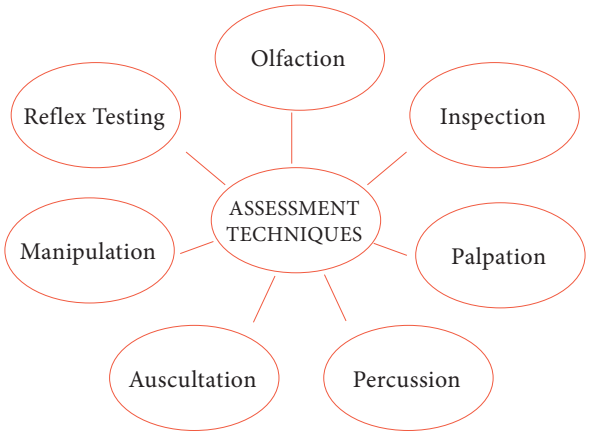
5.2 Definition

Health assessment is an important component in health care for proper diagnosis and effective treatment. Health assessment includes the following

1. Anthropometric measurement includes height, weight, and circumference of head, chest, mid-arm.
   - Systemwise examination
   - Recording height and weight

1. Mental status examination
2. Laboratory investigation
3. Special investigation

5.3 Assessment Techniques



1. Inspection: It means looking with eyes it reveals any rush scar, colour, size, shape, contour and symmetry of the body parts.
2. Palpation: It means feeling using sense of touch. It reveals any swelling, coldness, hotness, stiffness, hardness, smoothness roughness, pain, vibration, firmness and flaccidity

3. Percussion: It means striking or tapping with fingers. It elicits sounds which indicate whether the underlined tissue is solid or filled with fluid.

The sounds may vary

a) Resonant: A loud sound over the normal lung tissue
b) Tympanic: A drum like sound over the air filled tissues such as gastric air bubble
c) Dull: A medium pitched sound with medium duration without resonance, heard over the solid tissues, such as heart, liver.
d) Flat: A pitched sound with short duration without resonance, heard over the complete solid tissues, such as bones.

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4. Auscultation: It means listen with stethoscope (or) placing the ear against the body. It reveals sounds produced within the body and the blood vessels such as heart beat, bowel sounds

5. Manipulation: It means moving with the body parts. It reveals rigidity, difficulty (or) discomfort in moving the body parts.
6. Reflex testing: Means automatic response to a given stimulus. It reveals reflex is present, or not present, strength and movements of hands and legs.
7. Olfaction: It means sense of smell (Odour). It reveals the nature of disease condition of the patient.

5.4 Head to foot examination

5.4.1 Measurement of Weight

Quantitative expression of body mass, which indicates state of growth and health, is measured in kilograms or pounds using adult or infant weighing scale.

Checking Weight of an Infant

[Infantometer]

Purposes:

- To check whether an infant has adequate weight for age
- To calculate food requirements
- To calculate intravenous fluids and medications
- To monitor whether an infant gaining or loosing weight depending on disease condition

Required articles

- Infant weighing scale-infantometer
- Draw sheet
- Duster
- Paper and pencil for calculation

Procedure:

1. Clean the weighing scale with wet duster
2. Place draw sheet on the scale
3. Balance the scale to read zero
4. Place the weighing scale close to the wall to prevent the child from falling
5. Instruct mother to stand beside the scale
6. Undress the child before weighing
7. Mummify the infant with the same draw sheet and place the infant on the scale
8. Place the left hand over the infant without touching
9. Note the weight
10. Lift the infant from the scale and help the mother to dress the infant
11. Check and compare previous weight
12. Difference of more than 100 gms, needs to be clarified by rechecking the infants weight immediately

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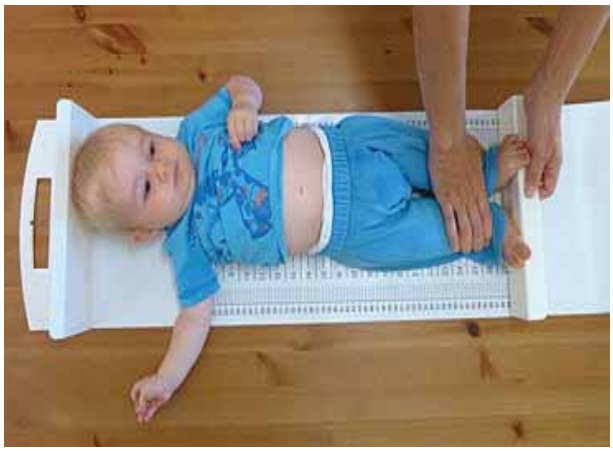
13. If the difference is still the same, it should be informed to the doctor concerned.
14. If the weight is in pounds and it must be converted to kilograms using conversion table.
15. Document the weight

1 Kg = 2.2 lbs

5.4.2 Measuring the Length of an Infant



Measurement of length by placing the child on a paper covered surface. Making the end points of the top of head and heels of the feet, and measuring between the two given points gives the length of the child.

Length of the baby can be measured in weighing scale by marking with scale between head and heel points.

5.4.3 Measurement of Head Circumference

1. Place light drape or paper on flat surface
2. Place infant in supine position or seated on paper drape

3. Place tape measure over the most prominent point of the occiput, around the head just above the eyebrows and pinna. This point is should be taken as head circumference.

5.4.4 Measurement of Chest Circumference

Place tape measure underneath the back of baby and bring it to front measured at nipple line gives the chest circumference.

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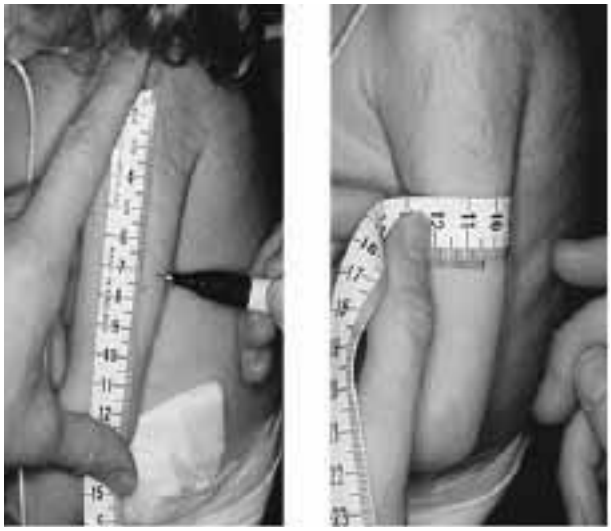
5.4.5 Measurement of Mid-Arm Circumference



1. Place the tape vertically, alone the posterior aspect of the upper arm to the acromian process and the olecranon process.
2. Half measured is the mid point
3. Place the inch tape at the midpoint and measure around the arm. It gives the mid arm circumference.

5.4.6 Measurement of Height & Weight of Adult

Measurement of Height:

Height is a measurement from head to toe that indicates the state of growth and health. It is measured in feet, inches or centimeters.

Purpose:

To measure accurate height of the patients

Required articles:

1. Measuring scale attached to the wall
2. A straight object or scale
3. Paper and pencil
4. Newspaper

Guidelines:

1. Have the patients shoes / slippers removed while taking height to avoid any variations in the reading
2. If thick object or scale is placed on the top of the head at right angle to the scale indicating the reading, note the bottom reading of the object.

Procedure:

1. Gather the equipment
2. Explain the purpose and procedure to the patient

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3. Wash your hands
4. Tell the patient to remove the slippers or shoes.
5. Assist the patient to stand on a lean newspaper kept on the floor
6. Tell the patient to stand with the buttocks and the back of head against the scale on wall, feet flat, heals together and eyes looking straight ahead.
7. Place the straight object on the top of the head at right angles to the scale on the wall, touching the scale calibration. Note the reading where the said object touches the scale.
8. Tell the patient to put on slippers
9. Place the patient in a comfortable position
10. Replace the equipment
11. Wash your hands
12. Record the date and time of the procedure and height in the nurse's notes or graphic sheet.

Measurement of weight:

Weight is the quantitative expression of a body that indicates the state of growth and health. It is measured in kilograms, pounds and grams.

Purposes:

1. To obtain accurate weight of the patient
2. To help in accurate diagnosis of the patient
3. To evaluate patient's response to treatment

Required articles:

1. Weighing scale
2. Newspaper

Guidelines:

1. Weigh on weighing scale when the patient is ambulatory
2. Daily weigh the patient at the same time with the same scale and with same clothing
3. Weigh before meals and after voiding
4. Weigh on admission to provide base line information to subsequent daily weight recording and assess any significant increase or decrease in the patient's weight.
5. The weighing scale must be accurate, hence the balance scale, be prepared before weighing the patient.

Procedure:

1. Collect the equipments
2. Explain the procedure to the patient
3. Wash your hands
4. Assist the patient to void or empty the bladder
5. Check the commonly used flat weighing machines reading is set at zero level
6. Tell the patient to remove the slippers or shoes and extra cloths
7. Assist the patient to step on the centre of the scale platform
8. Assist the patient to step off the scale platform
9. Assist the patient to return to the bed
10. Wash your hands
11. Record the weight in the graphic sheet or nurse's notes.

FIB3T6

5.4.7 Body Mass Index

BMI is an attempt to quantify the amount of tissue mass (muscle, fat and bone) in

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an individual, and then categorize that person as underweight, normal weight, overweight, or obese based on that value.

The body mass index is a value derived from the mass (weight) and height of an individual. The BMI is defined as the body mass divided by the square of the body height and is universally expressed in units of Kg/m^2 resulting from mass in kilograms and height in metres.

$$BMI = \frac{mass_{kg}}{height^2_m}$$

Students Activity

Every student has to calculate their BMI and to be categorized

WHO regards a BMI of less than 18.5 as underweight and may indicate malnutrition. While a BMI equal to or greater than 25% considered overweight and above 30 is considered obese.

CATEGORY	BMI (KG/M2)	
	FROM	TO
Low		18.5
Normal	18.5	25
Obese (level 1)	25	30
Obese (level 2)	30	35
Obese (level 3)	35	40
Obese (level 4)	40	

BMI ranges are based on the relationship between body weight and disease and death.

Overweight and obese individuals are at an increased risk for the following diseases

- Coronary artery disease
- Dyslipidemia
- Type 2 diabetes
- Gall bladder disease
- Hypertension
- Osteoarthritis
- Stroke

5.5 Procedure and Recording of Temperature

Body temperature is its degree of heat. Normally the degree at which balance between heat production and heat loss is maintained is called the "Normal Body Temperature". It is also called as "Normothermia or Euthermia".

Adult Normal Temperature is 37°C (98.4°F)

5.5.1 Factors affecting body temperature

1) Age, 2) Exercise, 3) Hormone level, 4) circadian rhythm 5) Stress, 6) Environment, 7) Temperature attraction, 8) Fever, 9) Hyperpyrexia, 10) Heat stroke, 11) Hypothermia

1) **Age:** Temperature regulation is unstable until children reach puberty. Older adults are sensitive to temperature extremes because of deterioration in control mechanisms, reduced sweat gland activity, reduced amounts of subcutaneous fat and reduced metabolism

2) **Exercise:** Muscle activity causes increased metabolism by increasing carbohydrate and fat breakdown.

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Any form of exercise can increase heat production and the body temperature because of increased metabolism.

3) **Hormone level:** Women generally experience greater fluctuations in body temperature than men. Hormonal variations during menstrual cycles cause body temperature fluctuation.

Temperature changes occur in women during menopause (cessation of menstruation).

4) **Circadian rhythm:** Body temperature normally changes from 0.5º to 1ºC during 24 hours period. The temperature is usually lowest between 1.00 AM and 4.00 AM

5) **Stress:** Physical and emotional stress increases body temperature through hormonal and neural stimulation. Those physiological changes increase metabolism, which increases heat production.

6) **Environment:** Environment influences body temperature because of extensive radiant and conductive heat loss.

7) **Temperature attraction:** Changes in body temperature can be related to excess heat loss, minimal heat production, minimal heat loss or any combination of these.

8) **Fever:** Hyperpyrexia or fever occurs because heat loss mechanisms are unable to keep pace with excess heat. Production, resulting in an abnormal rise in body temperature.

9) **Hyperpyrexia:** An elevated body temperature related to the body's inability to promote heat loss or reduce heat production is hyperthermia. Any disease or trauma to the hypothalamus can impair heat loss mechanisms.

10) **Heat stroke:** Prolonged exposure to the sum or high environmental temperature can overwhelm the body's heat loss mechanisms. Heat also depresses hypothalamic function. These conditions cause heat stroke, a dangerous emergency condition with a high mortality rate. Patients at risk for heat stroke are the very young, very old, cardio vascular condition, diabetes and alcoholics.

11) **Hypothermia:** Heat loss during prolonged exposure to cold overwhelms the body ability to produce heat causing hypothermia. **Hypothermia is classified as follows**:

	CELSIUS	FAHRENHEIT
Mild	33-36°C	91.4° - 96.8°F
Moderate	30-33°C	86.0° - 91.4°F
Severe	27-30°C	80.6° - 86.0°F
Profound	<36°C	<80.6° F

5.5.2 Sites for assessing temperature:

1) Oral
2) Rectal
3) auxiliary
4) Groin
5) Ear (Tymphanic membrance)

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The Mouth (oral Temperature)

This is a convenient, reliable and commonly used method, but should not be used if the patient is;

a) A child under 6 years of age

b) Unconscious, mentally confused or very nervous condition

c) Very weak, so that the mouth may full open

d) Having breathing difficulty or frequent cough

e) Having an injured of inflammed mouth.

Contra Indications

1. Oral temperature: Temperature should also not be taken by mouth soon after a hot drink (or) hot bath
2. Rectal: Rectal temperature is used for very ill patients, for infants and children. The reading is a little higher than oral when the temperature is taken by rectum
3. The Axilla: This is convenient when the temperature cannot be taken by mouth. It is less accurate and the reading will be a little lower than when taking by mouth. The axilla must be dried and the thermometer is placed. So that the bulb is in contact with both skin surfaces the arm should be held close to the chest.
4. Groin: This is a convenient site in children. The groin must be wiped dry and the thigh well flexed over the abdomen and held there.
5. Ear: It is also a convinient site for mentally disturbed patients. For assessment, digital thermometers are used.

5.5.3 Types of Thermometers

1) Mercury thermometers (Clinical thermometer)
2) Electronic thermometer
3) Temporal artery thermometer
4) Disposable thermometer

1) **Mercury thermometers (Clinical thermometer):** Clinical thermometers are meant for clinical purposes. It is developed for measuring the human body temperature. It is a long narrow

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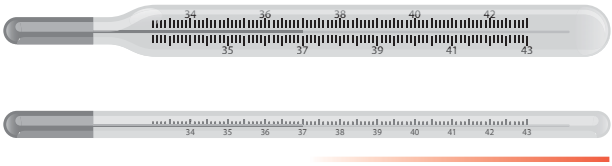
glass tube with a bulb containing mercury at the end.

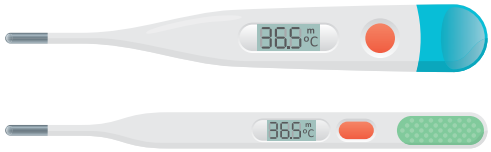
The normal human body temperature is 37°C. It can fluctuate between the ranges 35°C. The level of mercury tells our body temperature in °C. Since mercury is toxic element has been eliminated from health care facilities because of the environmental hazards of mercury. When you find a mercury – in – glass thermometer in the home



Teach the patient about safer temperature devices and encourage the disposal of mercury products at appropriate neighbourhood hazardous disposal locations.

2) **Electronic thermometer:** The electronic thermometer consists of a rechargable battery – powered display unit, a thin wire cord and a temperature – processing probe covered by a disposable probe cover. Separate unbreakable probes are available

For oral and rectal use. You can also use the oral probe for auxiliary temperature measurement. Electronic thermometers provide two modes of operation; a 4-second predictive temperature and a 3-minute standard temperature. A sound signals, and a … Readings appears on the display unit when the Peak temperature readings has been measured.



3) **Temporal artery thermometer:** Measures the temperature of the superficial temporal artery. A handheld scanner with an infrared sensor tip defects the temperature of Cetaceous blood flow by sweeping the sensor across the forehead and just behind the ear. After scanning is complete, a reading appears on the display unit. Temporal artery temperature is reliable non-invasive measure of core temperature.

4) **Disposable thermometer:** Single use (or) reusable chemical dot thermometers are thin strips of plastic with dots on the surface that have been impregnated with temperature – sensitive chemicals. The strips are sticker on the armpit and prevent slippage.

The dots change colour at different temperatures (within 60 seconds) as the chemicals in them respond to body heat. In the Celsius version there are 50 dots, each representing a temperature increment of 0.1°C, over a range of 35.5 – 40.4°C.

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The Fahrenheit version has 45 dots with increments of 0.2°F and a range of 96-104.8°F. Disposable thermometers are usually for oral temperatures. You also use them at auxiliary with a placement time of minutes. Chemical dot thermometers are useful for screening temperatures, especially in infants and young children and patients who are incubated.

Purpose of Taking Temperature

1) To aid in diagnosis or the patient's condition
2) To find out the progress of the patient.

5.5.4 Taking Temperature By Mouth

General Instructions

1) Oral temperature should not be taken immediately after the patient has had a hot or a cold drink or food.
2) Oral temperature should not be taken for the following patients.
   1. Children below the age of five years
   2. Patients receiving oxygen
   3. Patients with nasal obstruction, dyspnoea or sore throat
   4. Patient who are delirious, unconscious and not cooperating, hysterical
   5. Restless or mentally ill
   6. Patients with oral surgeries.

Recording temperature – oral Equipment

Tray Containing

1) 3 or 4 test tubes or bottles with antiseptic lotions (Savlon 2%) and a little cotton underneath
2) A glass tumbler with clean water and little cotton underneath
3) A bowl containing a bit soapy white wipers
4) A small piece of clean cloth
5) A Kidney tray
6) A Paper bag
7) Watch with second hand
8) Red lead pen

Procedure

1) Explain the procedure and take the patients cooperation
2) Let the patient be sitting or lying down
3) Remove thermometer from the lotion, wash with clean water and dry with clean piece of cloth form the bulb upwards to prevent bacteria from setting down on the lower part which goes into the mouth of the patient.
4) Shake down the mercury by 95°F. Place the bulb of the thermometer under the tongue and tell the patient not to bite the thermometer but to hold it with his lips.
5) Leave the thermometer in the mouth for 2 minutes (during this time take his pulse and respiration)
6) Remove the thermometer, note the temperature clean with the soapy

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wiper from above downwards towards the bulb(to prevent bacteria from spreading all over the thermometer)

7) Collect the dirty soapy water in the kidney tray and place the dirty wiper in the paper bag.
8) Replace thermometer in the test tube of bottle with the lotion
9) Record the temperature in the chart

After care of the equipment

1) Clean all the articles used
2) Wash the thermometer with soap and cold water
3) Keep the thermometer in the antiseptic lotion for 2 to minutes
4) Reset the tray and keep it ready for the next use.

Conversion of Scales

To convert centigrade to Fahrenheit, multiply by 9, divide by 5 and add 32.

To convert Fahrenheit to centigrade, deduct 32, multiply by 5 and divide by 9

$$C = (F-32) \times 5/9$$
$$F = 9/5 \times C+32$$

Abnormal temperature

1) Subnormal - 35° to 36.1°C (95° to 97°F)
2) Collapse – below 35°C (95°F)
3) Fever or pyrexia

   Low pyrexia – 37.2° to 38.3°C (99° to 101°F)

   Moderate Pyrexia – 38.3° to 39.4°C (101° to 103°F)

   High Pyrexia – 39.5° to 40.5°C (103° to 105°F)

   Hyper Pyrexia – 40.5°C (105°F) and above

Galileo Galilei was the inventer of Primitive themometer.

5.6 Pulse

Pulse is the expansion felt in an artery where it can be pressed against a bone

Sites

Radial: It is felt with two or three fingers lightly placed on the thumb side of the wrist, anterior surface.

Carotid: This is felt in the neck beside the larynx.

Temporal: It is felt in front of the ear.

Facial: Near the angle of the lower jaw.

Femoral: Felt in the groin

Anterior Fontanel: An infant's pulse may be felt at the 'soft spot' on his head

Observation of the pulse

1. Rate – Number of pulse beat per minute
2. Rhythm or Regularity
3. Strength

Pulse rate

The normal pulse rates for persons at rest are

Adults : 60 to 80 beats/minute

Children : 80 to 100 beats /minute

Infants : 100 to 140 beats /minute

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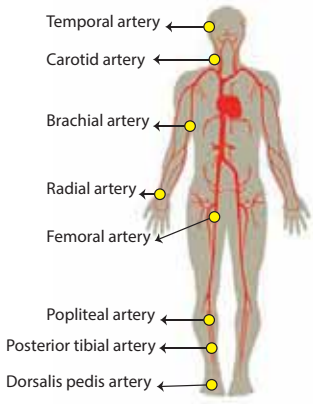

Pulse points on the body

5.6.1 Factors That Affect the Pulse Rate are

1. Sex: The pulse rate of women is little higher than men
2. Exercise: The rate increases with exercise and is slower when at rest
3. Emotion: Anger, fear, joy can increases the pulse rate
4. Hunger and fatigue: decreases the pulse rate
5. Drugs : some drugs increase, while others decrease the pulse rate
6. Acute pain causes an increase in pulse rate
7. Low blood volume as in dehydration haemorrhage and shock, causes an increase in pulse rate
8. Heart and thyroid diseases affect the pulse rate.

Tachycardia: Above 100 beats / minute
Bradycardia: Below 60 beats /minute

5.6.2 Taking And Recording The Pulse

The pulse is usually taken along with the temperature. In some cases like after surgery accidents and heart diseases the pulse rate has to be taken and recorded every 15 minutes.

Method

1. See that the patient is in rest
2. See that the patent's arm is well supported
3. Place the tips of three fingers (never the thumb) gently over the radial artery at the wrist.
4. Feel the pulsation carefully before starting the count note the strength and regularity of the beats
5. Using a watch with seconds hand or a pulse oxymeter, count the number of beats for one minute. If necessary count longer to be sure and accurate
6. Record the pulse rate and note any abnormality in strength or regularity on a JPR chart the pulse rate is often marked in red.

Hand placement for pulse check

5.7 Respiration

Respiration is the act of inhalation and exhalation of air

Respiration derived from a Latin word respire

The surface area of a lung is roughly the same as a size of a tennis court

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The usual ratio of respiration rate and pulse rate is 1 to 4

The normal respiration rates are

Age	Rate breaths/min
New born	35-40
Infant	30-50
Toddler	25-32
Child	20-30
Adolescent	16-20
Adult	12-20

5.7.1 Besides Age, Factors **Affecting Respiration Rate:**

1. Sex: respirations are generally more rapid in females than in males
2. Exercise: increases the rate
3. Emotions: such as fear influence respiration
4. Heat: such as hot water or hot both causes increase in rate and decrease in depth of breathing
5. Cold makes the breathing full and deep
6. Drugs: Like sedatives, slow the respirations
7. Respiratory illness: increase the rate especially pneumonia
8. Pain, fever, anaemia, haemorrhage and shock increase the rate
9. Coma and brain injuries – cause decrease in respiration rate.

Procedure:- (counting respiration)

1. The patient must be at rest and unaware that respiration is being taken. It is therefore wise to take while keeping fingers on the pulse
2. Feel or watch the rise and fall of the patient's chest
3. Count each rise and fall as on respiration count for a full minute
4. While counting the rate, note also
   a) Rhythm - Regular or irregular
   b) Depth - Shallow, normal or deep
   c) Sound - quiet and noisy
   d) Any discomfort or difficulty in breathing

5.7.2 Alteration in Breathing Pattern

Bradypnoea - Abnormal slow respiration less than 10/min

Tachypnoea - Abnormal high respiration greater than 30-min

Apnoea - Absence of respiration for several seconds

Hyperventilation - Rate and depth of respiration increases

Hypoventilation - Rate and depth of respiration is very low

Cheyne – Strokes respiration - Respiratory cycle begins with slow, shallow breaths that gradually increase to abnormal rate and depth. This pattern reverses: Breathing slows and become shallow climaxing in apnoea before respiration resumes.

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Pulse oxymeter

Pulse oxymeter is a device useful to measure the oxygen level (oxygen saturation of the blood) It is an easy painless measure of how well oxygen is being send to parts of the body. At the same time it measures the pulse rate also.

5.8 Blood Pressure

Blood pressure is the force or pressure of blood against the walls of blood vessels as it flows through them.

Hypertension is a silent killer disease

It depends on the following factors:

1. Force of the heart beat
2. Elasticity of the blood vessel wall
3. Volume of blood in circulation
4. Dilatation on concentration of the small arteries and capillaries.

Systolic pressure – Highest pressure in the arteries due to contraction of the heart

Diastolic pressure – Lowest pressure. It occurs between the heart beats

Pulse pressure in the difference between the systolic and diastolic pressures. It is normally about 35 and in a measure of the heart's strength

Variation in Blood pressure:

Rise of blood pressure due to

- Fear
- Worry
- Emotions
- Exercise

Hyper tension – high blood pressure 140/90 mmHg
Hypo tension – low blood pressure 90/60 mmHg
Normal Range is 120/80 mmHg

5.8.1 Types of Blood pressure Monitoring Equipment

1. Sphygmomanometer: It includes a pressure manometer, unify cuff inflatable rubber bladder and a pressure bulb with a release valve that inflates the bladder.

2. Electronic Blood pressure device: Many different types of electronic BP machines are available to determine BP automatically. They relay on an electronic sensor to detect the vibrations caused by the rush of blood through an artery.

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3. Self-measurement of blood pressure: Electronic monitoring device allows individuals to measure their own BPs in their home with the rush of button.

4. Dial type of BP apparatus: It is lighter and useful for home visits. There is no mercury or glass. But this type may be not as accurate as the sphygmomanometer.

A stethoscope should be used with the BP apparatus in order to listen to the sounds of the brachial pulse and determine the BP reading.

5.8.2 Method of taking the Blood Pressure

1. Explain the procedure to the patient and have him seated by a table or lying with the arm supported and relaxed.
2. Place the centre of the cuff of the BP apparatus over the brachial artery and wrap it smoothly and firmly around the patient's arm 5cm just above elbow. Junk the end neatly.
3. Find the brachial pulse with the fingers and place the stethoscope over it.
4. Close the sinew valve and inflate the cuff until the pulse disappears and above that about 20 mm mercury
5. Open the valve slowly and listen for the first sound while watching the manometer reading. The first sound given the systolic reading. As air escapes, the sounds become louder and cleaner.
6. Continue to let air out slowly. As you listen the sounds suddenly become dull and at this point take the Diastolic reading.
7. Allow all the air to escape and the mercury to all to zero
8. Repeat the procedure, if there is any doubt about the reading
9. Record the reading the systolic pressure in always written over the Diastolic pressure eg. 120/80 mmHg
10. Remove the cuff from the patient's arm, roll and replace in the box.

5.9 Level of Consciousness

Loss of consciousness means that there is some interference with the normal working of the brain. The person who is unconscious is not aware of what is happening around him.

Human brain has the capacity to generate approximately 23 watts of power when awake.

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Level of Consciousness

The level of consciousness is determined by the activity of the brain. It can be categorized as follows:

1. Alert (a):- Sound and clear mind responding normally an answering questions swiftly.
2. Response to voice (v):- feels tired and sleepy. Wakes up easily and able to do as told or answers simple questions. The patient is in a state of confusion nevertheless and is easily agitated.
3. Response to pain (p):- Difficult to wake up but will respond to pain. The patient cannot answer questions properly.
4. Unresponsive (u):- Impossible to be woken up with no response to external stimulation.

NOTE:

Anything below alert is unconscious. From there we need to determine how unconscious the patient is. A patient can be unconscious with response to stimuli or unresponsive.

Glasgow Coma Scale

The Glasgow Coma Scale is an assessment based on numeric scoring of the patient's responses.

5.9.1 Glascow Coma Scale

Best Eye opening Response	**1. No response**
	2. To pain
	3. To speech
	4. Spontaneously
Best Motor Response	**1.** No response
	2. Extension – abnormal
	3. Flexion – abnormal
	4. Flexion – with drawl
	5. Localizes pain
	6. Obeys verbal commands
Best Verbal Response	**1.** No response
	2. Sounds – incomprehensible
	3. Speech – inappropriate
	4. Conversation – confused
	5. Oriented

1. Eye opening : (1-4 points)
   - **a)** Spontaneous: 4. Eyes are opened and focused. The patient can recognise you and follow eye movements.
     Lower the score is 3 – coma
     Less then – 8 – severe injury
     9-12 - moderate injury
     13- 14 - minor injury
   - **b)** To voice (E 3):
     The patient opens his eyes when spoken to or when directed to do so. c) To pain: (E2):
     The patient opens his eyes when given some sort of painful stimuli.
   - **c)** To pain: (E2)
   - **d)** None (E1)
2. Motor Response (1-6 points)
   - **a)** Obeys commands(M 6)
   - **b)** Localize pain (M5)
   - **c)** Withdraws to pain (M4)
   - **d)** Flexion (M3)
   - **e)** Extension (M2)
   - **f)** None (M1)

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3. Verbal Response (1-5 POINTS)

a) Oriented (v5);
The patient can talk and answer questions about his location, time, and who he is. This scale is used to measure the level of consciousness traumatically injured persons and all chronically ill patients.

SUMMARY

Health assessment is an important component in health care for proper diagnosis and effective treatment. Health assessment includes physical assessment, mental status examination, laboratory investigation and special investigation. Assessment techniques are inspection, palpation, percussion, auscultation, manipulation, reflex testing and olfaction.

The balance between heat production and heat loss is called as "normal body temperature". Adult normal body temperature is 37°C or 98.4 °F. Sites to assess the temperature are oral, rectal, axillary, temporal artery and the groin.

Types of thermometers are mercury thermometer, electronic thermometer, temporal artery thermometers and disposable thermometers. Pulse is the expansion felt in an artery where it can be pressed against a bone site. The normal pulse rate of the adult is 60- 80 /minute. Respiration is the act of inhalation and exhalation of air.

Pulse oxymeter is a device to measure the oxygen saturation of the blood and pulse rate.

Blood pressure is the force or pressure of blood against the walls of blood vessels as it flows through them. Types of blood pressure monitors are sphygmomanometer, electronic blood pressure device, measurement device and dial type of BP apparatus.

There are four types of consciousness .They are alert, response to voice, response to pain and unresponsive.

The Glasgow coma scale is an assessment based on numeric scoring of the patient's responses.

EVALUATION

I. Choose the correct answer

1. Striking and tapping with fingers are called
   a) auscultation
   b) manipulation
   c) olfaction
   d) percussion

2. Assessment by the sense of touch is called
   a) percussion
   b) manipulation
   c) palpation
   d) inspection

3. Adult normal body temperature is
   a) 98.4°F b) 94.8°F
   c) 94.4°F d) 99.4°F

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4. Prolonged exposure to cold causes
   a) hyper pyrexia b) heat stroke
   c) hypothermia d) fever
5. Preferable time of keeping thermometer in the axilla is
   a) 2 minutes b) 3 minutes
   c) one minutes d) 5minutes
6. Normal pulse rate of an adult is
   a) 60-80 minutes
   b) 80-100 minutes
   c) 100=140minutes
   d) 40- 60minutes
7. The device used to measure the oxygen saturation of blood is called
   a) pulseoxymeter
   b) pulsometer
   c) sphygmomano meter
   d) electronicthermometer.
8. Rate and depth of respiration increases means
   a) apnoea
   b) hyperventilation
   c) hypoventilation
   d) tachypnoea.
9. Absence of respiration for several seconds are called
   a) apnoea
   b) brdypnoea
   c) tachypnoea
   d) cheyne stroke respiration
10. Hypotension means the blood pressure is lower then
   a) 120/80 mmHg
   b) 90/60 mmHg
   c) 140/90mmHg
   d) 110/70mmHg

II. Answer the following questions in one (or) two lines.

11. What is percussion ?
12. What is auscultation?
13. What are the types of thermometers?
14. What are the sites for assessing the body temperature?
15. How do you convert centigrade to Fahrenheit?
16. What is pulse?
17. Define - respiration.
18. Define – pulse pressure.
19. Define – cheyne- strokes respiration.
20. What is meant by un consciousness?

III. Write short notes

21. What are the conditions to avoid checking oral temperature?
22. What are the pulse points on the body?
23. Write briefly about pulse oxymeter?
24. What are the factors influencing respiratory rate?
25. Write briefly about the monitors of blood pressure?

IV. Write in detail

26. How will you assess the health?
27. What are the factors affecting the body temperature?
28. Write about temporal artery thermometers?
29. What are the level of consciousness? Explain.
30. Write about hypothermia.
31. Write about Glasgow coma.

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GLOSSARY

1. Apnoea (மூச்சுத்திணறல் / சுவாசம் நின்றுவிடுதல்) – cessation of breathing
2. Auscultation (ஒலிச்சோதனை) – examination of the body by listening to sounds
3. Bradycardia (குறை இதயத் துடிப்பு) – abnormally decreased heart rate
4. Chynestoke respiration (சுவாசத்தின் அசாதாரண வகை) – an abnormal pattern of respiration
5. Diastole (இதயவிரிவு) – a period of relaxation of heart
6. Hyper ventilation (சுவாசத்தன்மை அதிகம்) – very deep rapid respiration
7. Hypo ventilation (சுவாசத்தன்மை குறைவு) – very shallow respiration
8. Hyperthermia (அதிக வெப்பநிலை) – increased body temperature
9. Hypothermia (தாழ் வெப்பநிலை) – decreased body temperature
10. Olfaction (நுகர்தல்) – ability to perceive and disintegrate smell
11. Oxymeter (பிராணவாயு அளப்பான்) – a device that measures the oxygen saturation
12. Tachycardia (இதயத் துடிப்பு மிகைப்பு) – increased heart rate

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ICT Corner

Human body

Through this activity you will be able to understand the anatomy of human body.

Step - 1 Type the given URL in the browser. Human anatomy page will appear.

Step - 2 Select 'Anatomy Explorer' from the menus on left and select a system or several systems you want to explore.

Step - 3 Select 'Customize 3d Model' from the menus on left and use 'View modes' to Isolate a single part and explore it.

Step - 4 Use buttons on right side bottom or use navigation arrow keys on keyboard to navigate the structure.

Step 1

Step 2

Step 3

Step 4

URL:

https://human.biodigital.com/

B178_11_NUR_EM

*Pictures are indicative

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UNIT

Infection Control

LEARNING OBJECTIVES:

The students will be able to:

- list the types of immunity.
- list the most common microorganisms associated with disease in each type of immune deficiency.
- list the main laboratory methods for most of the infections in immune compromised patients.
- describe the infectious disease process (chain of infection).
- understand the problem of nosocomial infection and how to prevent them.
- describe hand hygiene procedures
- understand basic concepts of cleaning, disinfection and sterilization.
- understand the link between infection control, healthcare and Bio-medical waste management.

6.1 Introduction

Infection control refers to policies and procedures used to minimize the risk of spreading infection especially in hospital and human. Infection control is the discipline concerned with preventing nosocomial or healthcare associated infection, It is the practical sub discipline of epidemiology. Eventhough it is an essential, often under recognized and under supported part of the infrastructure of health care.

Infection control addresses factors related to the spread of infection within the healthcare setting (whether patient to patient and from patient to staff and from staff to patients). Practices that control and prevent transmission of infection help to protect patients and health workers from disease. Infection prevention and control is required to prevent the transmission of communicable disease in all health care settings. Risk factors that increase patient susceptibility to infection. Health care workers should be vaccinated against preventable disease such as hepatitis B. Personnel at risk for exposure to Tuberculosis and HIV-AIDS should be screened per recommendations

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used to reduce the risk of transmission of infectious agents from body fluids or environmental surface that contain infectious agents.

Health care workers can protect themselves from contact with infectious material or exposure to communicable disease by having knowledge of the infectious process and appropriate barrier protection. Knowledge of Microbiology is an essential component in nursing for practicing disinfection and sterilization to eliminate pathogenic microbes causing infectious disease.

6.2 Immunity

The ability of a host to resist a particular infection or toxins by the action of specific antibodies or sensitized white blood cells produced by them in response to natural exposure of the organism is called as immunity

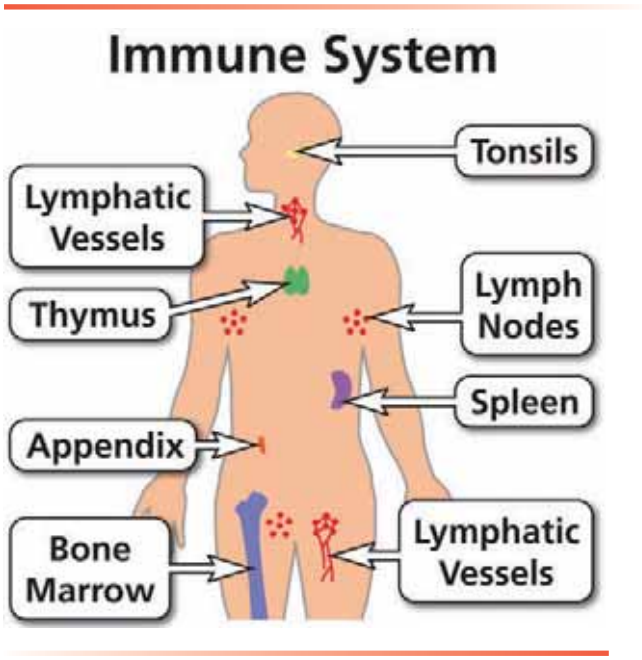
6.2.1 Immune System

A complex network of specialized cells, tissues, and organs that recognize and defend body from foreign substances. Primarily disease causing microorganism such as bacteria viruses, parasites and fungi.

Lymphoid Organs:

- PRIMARY LYMPHOID ORGANS – Thymus, Bone Marrow
- SECONDARY LYMPHOID ORGANS – Lymph Node, Spleen

These organs produce immune cells or T-cells, B-cells, NK cells, macrophages, leukocytes that help to fight against pathogens.



6.2.2 Factors Influencing the Immune Status of Individual Inherent

Species immunity

Species immunity is that in which a disease affecting one species does not affect the other species (Ex) Human do not contract cattle plague, chicken cholera, while animals are not affected by enteric fever.

Racial immunity:- is that in which various races show marked differences, in their resistance to certain infectious disease.

(Ex) Black Africans affected by a sickle cell anemia (a genetic disease) are resistant to Malaria while Malaria affects other human races.

Individual immunity:-The same racial background and opportunity for exposure some individual of the race experience severe infection. (Ex) Children are more susceptible to disease such as measles, chicken pox while aged individuals are susceptible to pneumonia.

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Specific antibodies or sensitized white blood cells produced by them in response to natural exposure of the organism is called as immunity.

6.2.3 Types of immunity:- 3 types of immunity is in human.

1. Innate immunity (natural or non specific)
2. Acquired (specific or adaptive) immunity
3. Active and passive immunity.

Do you eat fruits during cold and cough?

It has been proven scientifically that increased intake of fruits rich in vitamin c are in fact protective against cold and cough in children.

Innate (natural or Non-specific immunity: -

It refers to the inborn ability of the body to resist and is genetically transmitted from one generation to the next. The immunity offers resistance to any microorganism or foreign material encountered by the host.

Natural immunity results after acquiring certain disease Ex. Measles. This immunity lasts a life time.

Innate immunity can be divided in to species, racial, individual immunity.

Acquired immunity (Specific or Adaptive):

Acquired immunity refers to an immunity that is developed by the host in its body after exposure to a suitable antigen or after transfer of antibodies.

Immunity can be described as either active or passive, depending on how it is acquired.

Active immunity: - Active immunity involves the production of antibodies by the body itself and the subsequent development of memory cells.

Passive immunity: - Results from the acquisition of antibodies from another source and hence memory cells are not developed.

Active immunity will result in long-term immunity but passive immunity will not due to the presence or absence of memory cells.

Both active and passive immunity can be induced by either natural or artificial mechanism.

Examples of active immunity: -

Natural – Producing antibodies in response to exposure to a pathogen if infection acquires. (e.g. Chicken Pox, Measles).

Artificial – Producing antibodies in response to the controlled exposure to an attenuated pathogen (e.g. vaccination)

Examples of passive immunity: -

Natural: Receiving antibodies from another host. (e.g. IgG - mother to feters via the placenta; IgA - From mother to new born via breast milk (colostrum)).

Artificial: - Receiving manufactured antibodies via external delivery (Blood transfusion of monoclonal antibodies).

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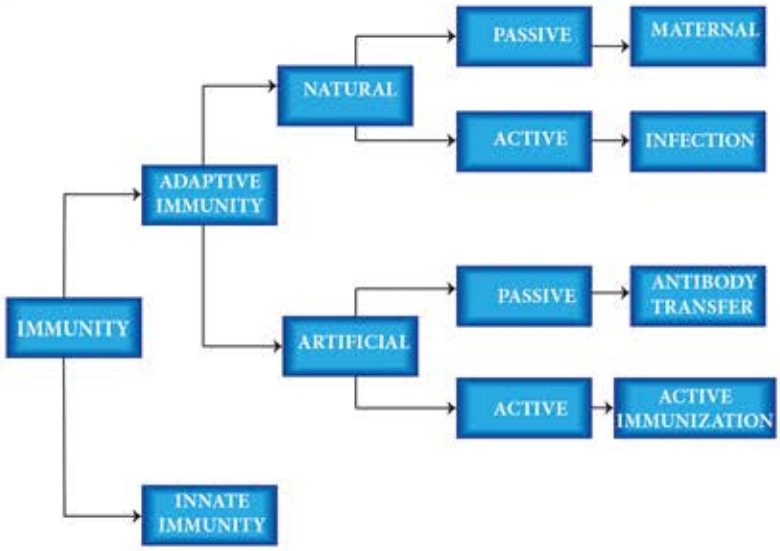
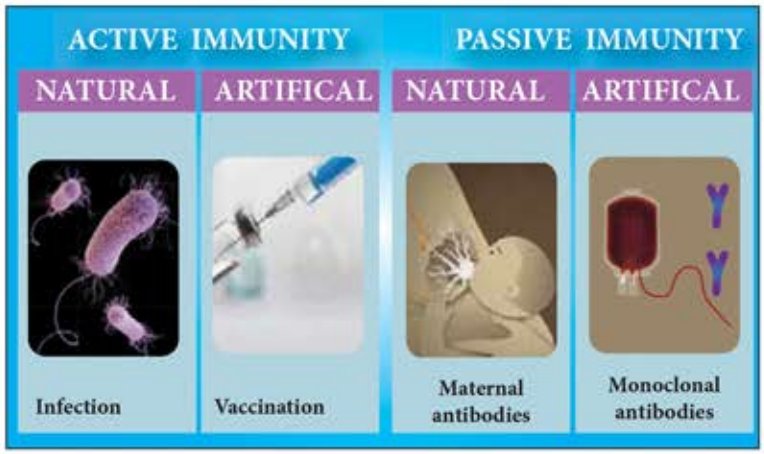
Types of Immunity: -

Example:





Types of immunization:-

Active immunization: is the induction of immunity after exposure of an antigen. Antibodies are created by the recipient and may be stored permanently. Artificial active immunization is where the microbe is injected into the person before they are able to take it in naturally.

Passive immunization: - It can be provided when people cannot synthesize antibodies, and when they have been exposed to a particular organ that they do not develop immunity.

Student Activity

Quiz on immune system (group activity- what are the immune cells involved in immune function during infection)

Chart preparation – types of immunity

6.2.4 Vaccine: -

Definition:

A Vaccine is a biological preparation that provides active acquired immunity to a particular disease. A vaccine typically

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contains an agent that resembles a disease causing microorganism and is often made from weakened or killed forms of the microbe, its toxin or one of its surface protein.

The agent stimulates the body's immune and that it may encounter in the future.

The term vaccine and vaccination were derived from variola vaccine (smallpox of the cow) This term was first discovered by Edward Jenner in 1796.

Types of vaccines:

- Live Attenuated Vaccine
- Inactivated Vaccine
- Subunit Vaccine
- Toxoid Vaccine
- Conjugate Vaccine
- DNA Vaccine
- Recombinant Vector Vaccine

sun is important for the immune system. When a person spends time in the sun their body produces vitamin D.

Live attenuated vaccine:

Live microorganism modified to be less deadly or closely related microorganism that induce immune response. The organism can be attenuated by growing it in prolonged culture. Attenuation means the loss of virulence of the pathogen.

e.g. OPV, MMR (mumps, measles, Rubella) BCG, varicella vaccine, yellow fever.

Inactivated vaccine or killed vaccine:

Whole microorganism destroyed by heat, chemicals, radiation, antibiotics.

e.g. *Hepatitis A vaccine,* Hepatitis B, Pneumococcal polysaccharide, IPV, influenza, Hib, Typhoid.

Toxoid vaccine:

Inactivated toxic compounds is toxoid. [toxins can be inactivated by using formalin]

Toxin +formalin _____ toxoid

e.g. DPT, Antivenom, TT (tetanus toxoid)

- Vaccine prevent more than 2.5 million death every year.
- CDC (Center for Disease Control, USA) has reported a 99% reduction in the incidence of bacterial meningitis caused by Haemophilus influenza.

Subunit vaccine:

A Protein component of the microorganism.

e.g. Surface Protein or Synthetic virus like particles lacking viral genetic material [unable to replicate] e.g. Hepatitis -B

Monovalent Vaccine:

Immunize against single strain of microorganism.

Multivalent Vaccine:

Immunize against multiple antigens strains or micro organism

The children with malnutrition have low resistance to fight against

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infection. Therefore children need timely immunization. All children have a rights to get vaccines, protection against preventable disease. Extremely malnourished children may show severe reaction to certain vaccines because they have low antibodies. e.g. Measles Vaccine.

Advantages of live/killed Vaccine:

Live Vaccine:

ADVANTAGES	DISADVANTAGES
Single dose	Remote chance of reactivation of virus
Induce CMI	Cannot be used in immune compromised
Long lasting immunity	Need proper cold chain
Economical	
Suitable for mass immunization	

Killed Vaccine:

ADVANTAGES	DISADVANTAGES
Safe	Multiple dose
Stable	Booster dose needed
Can be given as combined vaccines	Does not induce local immunity

In the past 60 years vaccine helped to eradicate disease (small pox).

Maintaining a cold chain:

It is essential to maintain the favorable temperature with cold storage, to maintain the potency of vaccines. The temperature should be around 2°C to 8°C. The vaccine should be kept under freezing compartment. The thermometer should be placed in cold place to confirm the validity.

During transportation, the vaccines should be placed in a container maintaining the cited temperature or in a plastic bag in the ice box.

The Vaccines should be arranged according to their expiry dates for the better use.

Contraindications for the immunization:

- An acute illness with fever.
- When the child is on immune suppressive drug or on radiation.
- A child suffering from leukemia, lymphoma, malignancy.

Vaccine helped to reduce measles death globally by 78% between 2000-2008

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NATIONAL IMMUNIZATION SCHEDULE

National Immunization Schedule for Infants, Children and Pregnant Women

Vaccine	When to give	Dose	Route	Site
For Pregnant Women				
TT - 1	Early in pregnancy	0.5ml	Intra-muscular	Upper Arm
TT - 2	4 weeks after TT - 1*	0.5ml	Intra-muscular	Upper Arm
TT - Booster	If received 2 TT doses in a pregnancy within last 3 years*	0.5ml	Intra-muscular	Upper Arm
For Infants				
BCG	At birth or as early as possible till one year of	0.1ml (0.05ml till 1 month age)	Intra-dermal	Left Upper Arm
Hepatitis B	At birth or as early as possible within 24 hours	0.5ml	Intra-muscular	Antero-lateral side of mid thigh
OPV - O	At birth or as early as possible within the first 15	2 drops	Oral	Oral
OPV 1, 2 & 3	At 6 weeks, 10 weeks & 14 weeks\	2 drops	Oral	Oral
DPT 1, 2 & 3	At 6 weeks, 10 weeks & 14 weeks\	0.5ml	Intra-muscular	Antero-lateral side of mid thigh
Hep B 1, 2 & 3	At 6 weeks, 10 weeks & 14 weeks\	0.5ml	Intra-muscular	Antero-lateral side of mid thigh
Measles	9 completed months - 12 months	0.5ml	Sub-cutaneous	Right upper arm
Vitamin-A (1st dose)	At 9 months with measles	1 ml (1 lakh IU)	oral	Oral
For Children				
DPT Booster	16-24 months	0.5ml	Intra-muscular	Antero-lateral side of mid thigh
Measles 2nd dose	16-24 months	0.5ml	Sub-cutaneous	Right upper arm
OPV Booster	16-24 months	2 drops	Oral	Oral
Japanese Encephalitis**	16-24 months	0.5ml	Sub-cutaneous	Left Upper Arm
Vitamin-A***				
(2nd to 9th dose)	16 months. Then one dose every 6 months upto the	2ml (2 lakh IU)	Oral	Oral
DPT Booster	5-6 years	0.5ml	Intra-muscular	Upper Arm
TT	10 years & 16 years	0.5ml	Intra-muscular	Upper Arm

* Give TT-2 or Booster doses before 36 weeks of pregnancy. However, give these even if more than 36 weeks have passed. Give TT to a woman in labour, if she has not previously received TT.

** JE Vaccine, in select endemic districts after the campaign.

*** The 2nd to 9th doses of Vitamin A can be administered to children 1 - 5 years old during biannual rounds, in collaboration with ICDS.

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6.2.5 Infection & Its transmission:

1. **Entry of infection into human body:**

Microorganism may enter the body in one of the below three ways.

- Digestive tract – Swallowed in contaminated food or water.
- Respiratory tract – air contain pathogens
- Skin and mucous membrane – through a wound, weekend surface or injections

2. **Organism leave the body of an infected person:**

- Excreta – Feces and urine.
- Coughing and sneezing and sputum
- Pus and wound discharges
- Blood (Mosquito bite and injection needles)

3. **Routes of transmission:**

- Fecal to oral route.
- Feces to Skin.
- Droplet infection

4. **Prevention of infection:**

- Hand washing before preparing or eating food.
- Eating only clean food, kept free from flies.
- Handwashing after defecation.
- Drinking boiled water.
- Avoid crowded places.
- Immunization specially to protect children.
- Cover the mouth and nose when coughing.

Spirilla e.g. Campylobacter jejuni

6.3 Micro organism

6.3.1 Definition

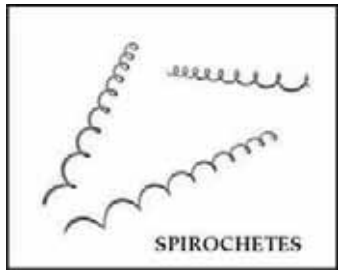
Microorganism or microbe is a living thing that is too small which is invisible to the naked eye but it can be visible under microscope. The study of microbes is called as microbiology.

Microorganisms are divided into **seven** types.

■ Bacteria	■ Fungi
■ Archea	■ Viruses
■ Protozoa	■ Multi cellular animal parasites (helminthes)
■ Algae	

Each type has a characteristic cellular composition morphology, motility or locomotion, reproduction.

Bacteria are prokaryotic organism. (single celled microbes). The cell structure is simple than that of other organism. Bacteria are classified into many groups according to the Morphology of Bacteria:



Spirochetes e.g. Treponema pallidum

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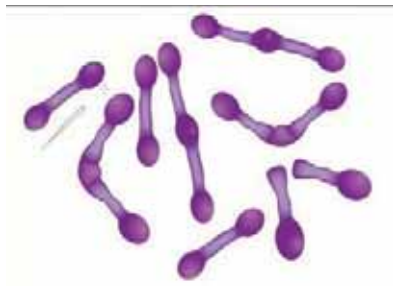
Diplococci arranged in pairs

e.g. Streptococci pneumoniae



Pleomorphic

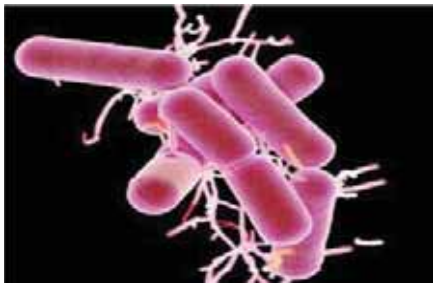
e.g. Corynebacterium diptheriae

Rod shaped bacteria

e.g. E. coli

Endospore

e.g. Clostridium tetani



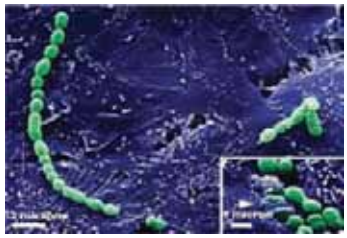
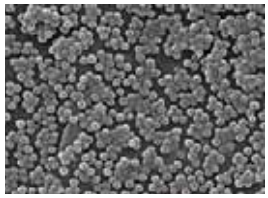
Peritrichous flagella

e.g. Salmonella typhi

Cocci in chains

e.g. Streptococcus pyogenes

Type of Bacteria based on morphology:-

Cocci in chains (Spherical form or oval)		Streptococci
Cocci in cluster		Staphylococci

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Cocci in pair		Diplococci e.g. Diplococci pneumoniae
Chain of bacilli (Rod shaped)		Bacilli in chains e.g. Lactobacillus sp
Spirochete (Flexible spiral form)		Corks Screw e.g. Treponema pallidum
Vibrio (Comma shaped)		Comma e.g. Vibrio cholerae

The opposite of antibiotics is probiotics. It favours the growth of beneficial microorganism in the body. e.g. Curd

It kills the harmful bacteria (pathogens).

e.g. Probiotics-**Bifidobacterium, Lactobacillus.**

Bacteria can be divided into two,

1. Beneficial bacteria
2. Harmful bacteria (pathogenic bacteria)

Beneficial bacteria in the body is plays an important role in human survival. Bacteria in the digestive system break down the food substance and produce Vitamin K (**E.coli.**) Beneficial bacteria are also called probiotics. The normal flora are bacteria which are found in or on bodies. The presence may be temporary or permanent basis without causing any disease.

6.3.2 Harmful bacterial infection

Harmful bacteria are called pathogenic bacteria because they cause disease and illness in human and animals.

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Classification of bacteria into gram positive and gram negative based on the cell wall composition.

Gram positive cocci in chains	–	Streptococcus pyogenes
Gram positive cocci in Clusters	–	Staphylococcus aureus
Gram negative Cocci in pairs	–	Neisseria meningitis
Gram positive Bacilli in chains other bacteria	–	Bacillus anthracis
Acid fast bacilli	–	Mycobacterium tuberculosis
Endospore forming	–	Clostridium tetani
Pleomorphic	–	Corynebacterium diphtheria
Gram Negative Bacilli	–	Escherichia coli

When bacteria is present in our body in the absence of disease is called as colonizer. However people can get infection from Pathogenic bacteria through contaminated water, food and air

Skin infection:-

The organism most commonly found in the skin and mucous membrane. It cause superficial and systemic infections. **e.g. Staphylococcus aureus**

Superficial: Boils, impetigo, foliculitis, Pneumonia, Food poisoning, bacteremia.

Respiratory tract infection: - The organism which is more found in the mouth as a normal flora. The infection may be in the upper tract or lower respiratory tract.

Ex. Streptococcus pyogenes

Upper Respiratory tract	–	Sore throat Laryngitis Pharyngitis
Lower Respiratory tract	–	Pneumonia and Tuberculosis

ENZYME LINKED IMMUNO SORBENT ASSAY - ELISA. This technique is used to detect antibodies of HIV Infection.

Gastro intestinal infection: -

Many different species of gram negative bacilli normally found in the intestinal tract. It cause inflammation of the gastrointestinal tract involving both stomach and the small intestine. Symptoms include diarrhoea, vomiting, and abdominal pain.

All the bacteria in our body collectively weigh more than 4 pounds [2kg-bacteria]

Genitourinary tract infection: -

A urinary tract infection (UTI) is an infection in any part of urinary system kidney, uterus, bladder, urethra. However, serious consequences can occur if a UTI spreads to your kidney.

Lower urinary tract	–	Cystitis
Upper urinary tract	–	Pyelonephritis

The most commonly UTI causing organism is **Escherichia coli**

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Bacterial Infection

BACTERIA	LOCATION	INFECTION
• Streptococcus pneumoniae • Neisseria meningitidis • Haemophilus influenza	Brain (meninges)	meningitis
• Streptococcus Pneumoniae	Ear	Otitis media
• Streptococcus Pneumoniae • Staphylococcus aureus • Mycoplasma pneumonia • Mycobacterium tuberculosis	Lungs(inhalation)	• Lower Respiratory infection – Pneumonia – Tuberculosis • Upper respiratory tract – Sore throat – Sinusitis – Pharyngitis
• Staphylococcus aureus • Streptococcus pyogenes • Pseudomonas aeruginosa	wound	Skin infection – Cellulitis – Abscess – Impetigo
• Escherichia coli • Pseudomonas aeruginosa	Urinary tract	Urinary tract infection – Urithritis
• Salmonella • E.coli • Shigella • Clostridium • Staphylococcus aureus	Ingestion (oral)	Typhoid Travellers diarrhoea Bacillary dysentery Tetanus Food poisoning
• Helicobacter pylori	Stomach	Gastritis(Ulcer)
• Staphylococcus aureus • Neisseria gonorrhoeae • Chlamydia trachomatis	Eyes	Eyes infection Conjunctivitis Trachoma
• Neisseria gonorrhoea • Treponema pallidum • Haemophilus ducreyi	Sexual contact	Sexually transmitted disease Gonorrrhoea Syphilis

Student Activity

Visit - observation of biomedical waste management in nearby hospital

6.3.3 Viruses

Viruses are obligatory intracellular parasites. They multiply by using the host cells. Synthesizing machinery to cause

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the synthesis of specialized elements that can transfer the viral nucleic acid to other cells. They are ultra-microscopic structure and are not visible in ordinary microscope. They are visible only under electron microscope.

Microbes generate at least 50% of the oxygen we breathe.

Viral Infection

VIRUSES	LOCATION	INFECTION
• Measles • Rabies • J C Virus • Arbo virus	(Meninges) Brain	Encephalitis Meningitis
• Rhino virus • Influenza virus	Respiration(inhalation)	Common cold
• Herpes simplex virus • Adeno virus • Cytomegalo virus	Eyes	Eye infection Conjunctivitis
• Herpes simplex type 1	Gums	Gingivostomatitis, Cold sore
• Adeno virus • Epstein Barr virus • Cytomegalo virus • Respiratory syncytial virus • Parainfluenza viurs • SARS Coronavirus	Lungs (Inhalation)	Pharyngitis Infectious mononucleosis pneumonia
• Polio virus • Mumps virus	Myelin Oral	Poliomyelitis Parotitis
• Cox sackie B virus	Heart	Cardio Vascular infection
• Rota virus • Noro virus • Coxsackie B virus	Ingestion(oral)	Gastro enteritis Pancreatitis
• Heptatitis virus • Type A,B,C,D,E	Blood transfusion, Infected mother's millk	Hepatitis(Jaundice) Liver cirrrhosis
• Rubella • Measles • Human papilloma virus • Varicella zoster virus	Direct contact(air) Skin	Skin infection(koplik spot) Genital warts and cancer Chicken pox

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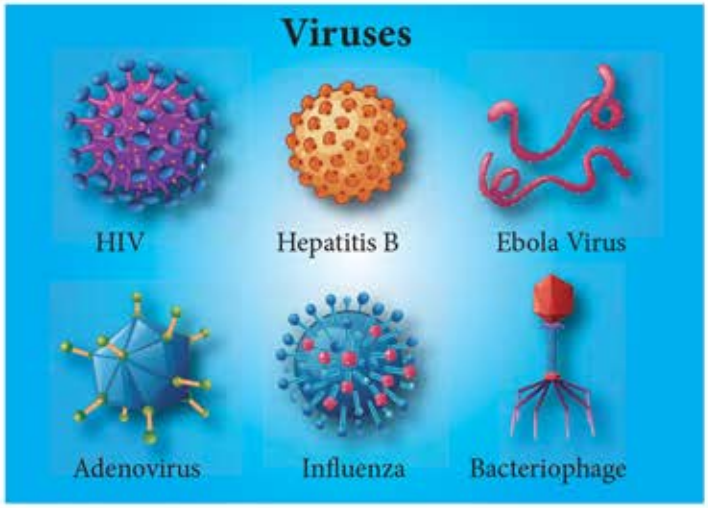
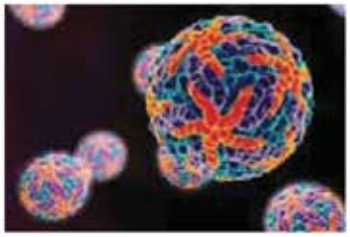
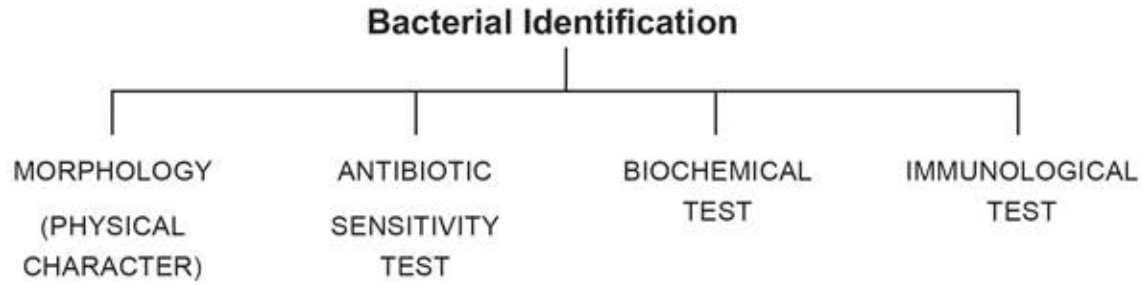



Dengue Virus

Chikungunya Virus

6.3.4 Methods used for identification of microbes:-

Bacteria are single celled microorganism and are invisible to naked eye. Bacterial identification is a necessary part of disease diagnosis and treatment without the identification of causative bacteria is very tough to provide effective treatment with available antibiotics.



Antonivan Leuwenhoek: (A Scientist)

He invented microscope and was the first on the earth to see the microbes.

Identification by morphology: -

Microscope is used to magnify the object and structure. In compound light microscopy which uses two sets of lenses, ocular, and objective lens. We calculate the total magnification of an

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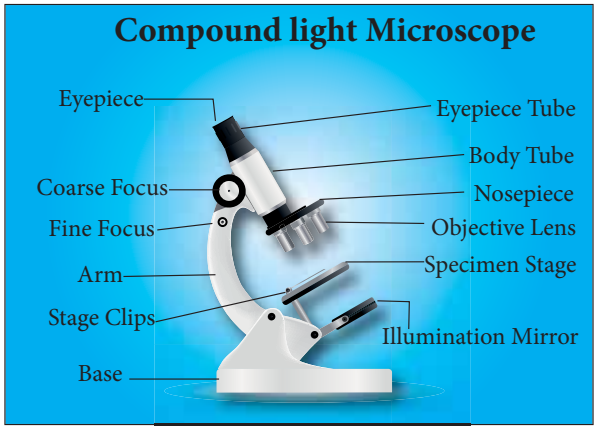
object by multiplying the magnification of the objective lens and magnification of the ocular lens.

- The compound light microscope uses visible light.
- The maximum resolving power (ability to distinguish two points) of a compound light microscope is 0.2 µm
- Oil immersion lens is used to reduce the light loss and increases the resolving power.

Types of Microscope:-

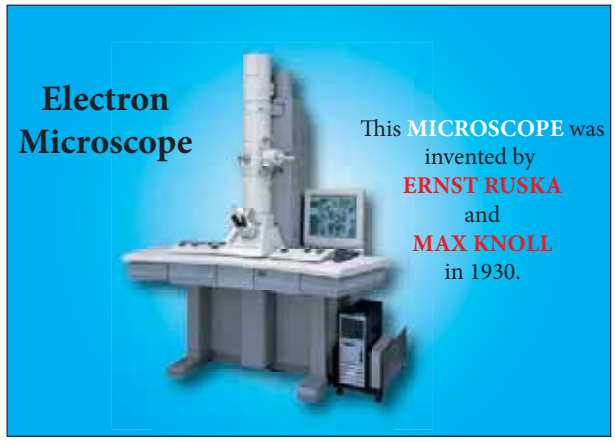
- Bright field microscope
- Dark field microscope
- Phase contrast microscope
- Flourescence microscope
- Electron microscope

Compound Light Microscope



Electron Microscope:

Electron microscope use beam of electrons and it has the magnification power of 10,000 to 1,00,000 x. It is used to view ultra-structure of viruses and other organisms



Preparation of specimens for light microscopy: -

Preparing smears and staining:

- A smear is a thin film of material used for microscopic examination. Place a drop of saline or distilled water and mix the specimen with a sterile inoculation loop.
- Spread the specimen uniformly on the slide.
- Fixing uses air and heat to attach microorganisms on a slide.

Staining: -

- Gram staining method
- Acid-fast staining method

DO YOU KNOW?

In man's mouth alone over 40 million bacteria are living

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Fixing:

After smear preparation the glass slide should show for 2 to 3 times in a flame. Due to flaming the specimen get fixed perfectly on a slide and also some chemicals like formalin, Methyl alcohol, Mercuric chloride is used for fixing the specimen.

Stains: - Stains is used to make cellular shapes and arrangements visible. For e.g. The stains used in gram staining – **Crystal violet, saffranin**)

(decolorizer -Ethyl alcohol, Mordant agent – grams Iodine).

Ear wax having anti-microbial properties that reduce the feasibility of bacteria and fungus in the human ear.

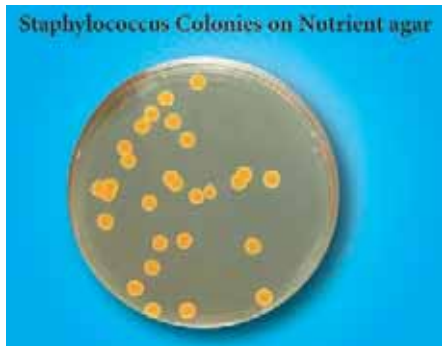
Hanging Drop Method: - (Glass slit method).

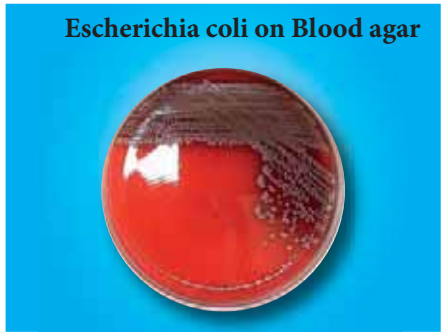
In hanging drop method, a drop of culture is made to hang between glass slide and slit and viewed under microscope.

The advantage of hanging drop method is we can identify mobile bacteria. Some bacteria have flagella for motility. e.g. Monotrichous, Peritrichous flagella (e.g. Proteus)

By cultural characteristics: -

Here bacteria are identified as group or culture as a whole and note individual bacteria some most bacteria grow in colonies and also divide fast. They can be easily grown into a culture in suitable nutrition media. Based on the characteristics of culture they can be identified as the size of colonies, type of elevation, margins, surface of colony, colour of culture.





Based on Antibiotic Resistance

Antibiotics (Ex-Penicillin) is added to the culture and measuring the resistance of microbe. The zone of inhibition surrounding the antiobiotic disc indicating sensitivity

No zone of inhibition surrounding the antibiotic disc indicating resistance.

By Biochemical test: -

Sugar fermentation test

- Litmus milk test
- Indole production test

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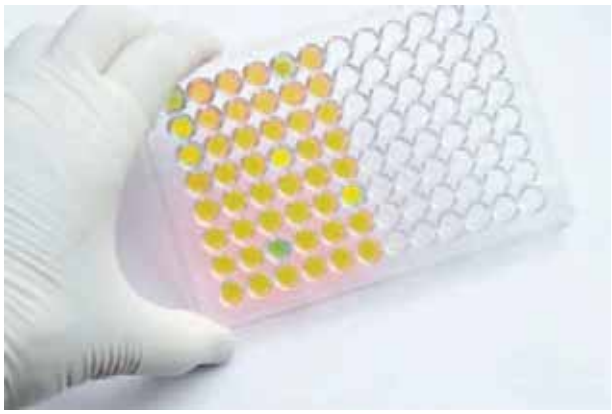
- Methyl Red test
- Citrate utilization test

By differential staining: -

The identification depends on staining of bacteria. And most bacteria can be stained by specific stain like crystal violet. Gram positive bacteria are stained by gram stain while Gram negative bacteria don't take up gram stain.

Mycobacterium tuberculosis bacteria can be stained by acid fast staining method.

Serological methods: - Here identification of bacteria is done by use of antibodies and antigens which are specific against the suspected bacteria. Antigens and antibodies are very specific and bind to single type of bacteria.



TEST

- VDRL, ELISA- Screening Test
- Western Blot - Confirmatory test

} Identification for HIV

Identification of bacteria is necessary to

- Identify the disease
- Select suitable drug
- Evaluation of treatment progress
- For industrial purpose.
- Storage

6.3.5 Types of specimen collection

Swabs: - It is usually collected in a sterile cotton swab, care should be taken so as to prevent contaminations of specimen. (e.g. Throat swab, Eye, Ear, Nose, Mouth, Vaginal, Abscesses swab). Materials should be taken only from the infected area.

Sputum: - It should be collected in a sterile container having wide mouth. Sputum should be collected directly after a cough and sent immediately to the laboratory.

Urine: - Urine specimen remains an important tool for clinical diagnosis. A correct urine result is influenced by the collection method, timing and handling (first morning sample, random sample). It should be collected in a sterile container.

Faeces: - Fresh stool should be collected for bacteriological examination. Specimen should be well covered and labelled.

For culture and parasite examination the specimen must be returned to the laboratory within one hour of collection.

Blood: - It is important that specimens are properly collected, prepared and preserved. When assisting the physician should adopt aseptic precautions so as to avoid contamination of specimen.

Always collect the blood specimen in hygienic area. Blood is carefully transfer from the syringe to the tube

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and gently invert 2-3 times to thoroughly mix the anticoagulant with the blood (heparin)

6.4 Terminologies

Pathogens: - The microorganisms able to cause disease. (disease-causing organisms is called as pathogens.)

Disease: - Any change from a state of health. The pathogens multiply and cause an alteration in normal tissues and manifest with signs and symptoms.

Normal Flora: - Collection of organisms that colonize an animal, human surfaces or in the body without causing disease.

Infection: - Growth of microorganism in the body.

Asymptomatic infection: - If the microorganism fails to cause severe injuries to cells or tissues and patient is symptom free from particularly disease.

Communicable disease: -

If the infectious disease can be transmitted directly from one person to another. It is known as communicable disease or contagious disease.

Acute infection: - Any disease in which symptoms develop rapidly but last for only a short time.

Chronic disease: - An illness that develops slowly and is likely to continue as recur for long periods.

Disinfection: - It is a process by which pathogenic organisms are killed by physical and chemical agents.

Disinfectant: - It is a chemical substance, which kill the pathogenic organism Ex. Iodine, Phenol, Carbolic Acid.

Antiseptic: - It is a chemical substance which inhibit the growth of organism and do not kill the organism Ex-Lysol.

Detergent: - Any substance that reduce the surface tension of water.

Bacteriostatic:-It is a process of inhibiting the growth of bacteria. Ex. Freezing and drying.

Bactericide: It is a substance which kills bacteria.

Sepsis: - It is a term used for the presence of pathogenic organism.

Inflammation: A host response to tissue damage characterized by reddening, pain, heat, swelling.

Antigen: - Any substance (microorganism) that when introduced into the body which induce antibody formation and reacts only with its specific antibody.

Antibodies: - Antibodies are large glycoprotein molecule produced by the body in response to an antigen and capable of combining specifically with the antigen.

Antibodies are also called as immunoglobulin which are synthesized and secreted by plasma cells when an antigen enters the body to neutralize the antigen.

Types of Immunoglobulin Ig G, Ig A, Ig M, Ig D, Ig E

- IgA = Mostly in secretion (tears, saliva, milk)
- IgG = Crosses the placenta (mother to baby)

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Sterilization: - is a process by which an article or surface or medium is free from Microorganism (vegetative, spore state)

Chemotherapy: - Treatment of a disease with chemical substance (sulfonamides).

Antibiotics: - An antimicrobial agent produced naturally by a bacterium (or) fungus.

e.g. - Ciprofloxacin
Streptomycin by
Streptomyces griseous.

Serum: A liquid remaining after blood plasma is clotted which contains immunoglobulin.

Local infection: - An infection that is localized within a particular part or a single organ. Proper care can control spread.

Systemic infection

An infection that affects the entire body. It can become fatal.

6.5 Infection Process

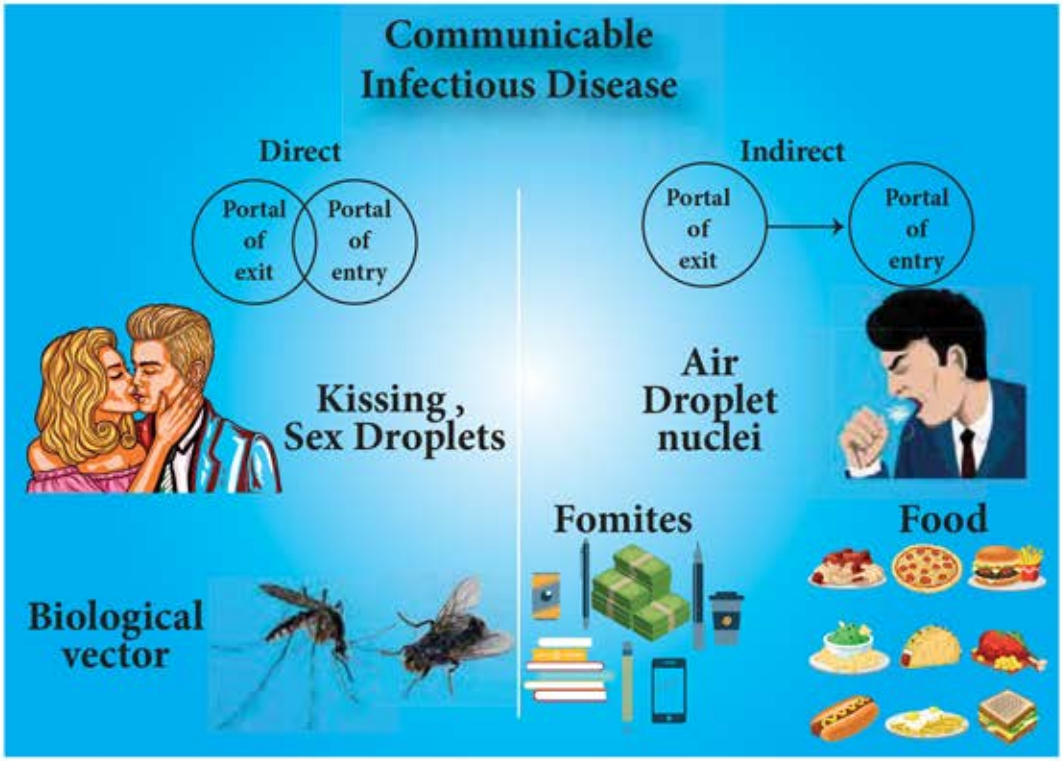
Infection is the invasion or colonization of the body by pathogenic microorganisms.

Disease occur when an infection results in any change from a state of health.

Development of an infection occurs in a cycle that depends on the following elements.

- An infectious agent or pathogen Ex. Salmonella
- A continual source of infection is called a reservoir of infection **(spread of infection)**
- A mode of transmission of disease
- A portal of entry to a host
- A susceptible host.

An infection will develop if this chain remains intact. Nurse use infection prevention and control practices to break the chain so that infection will not develop.



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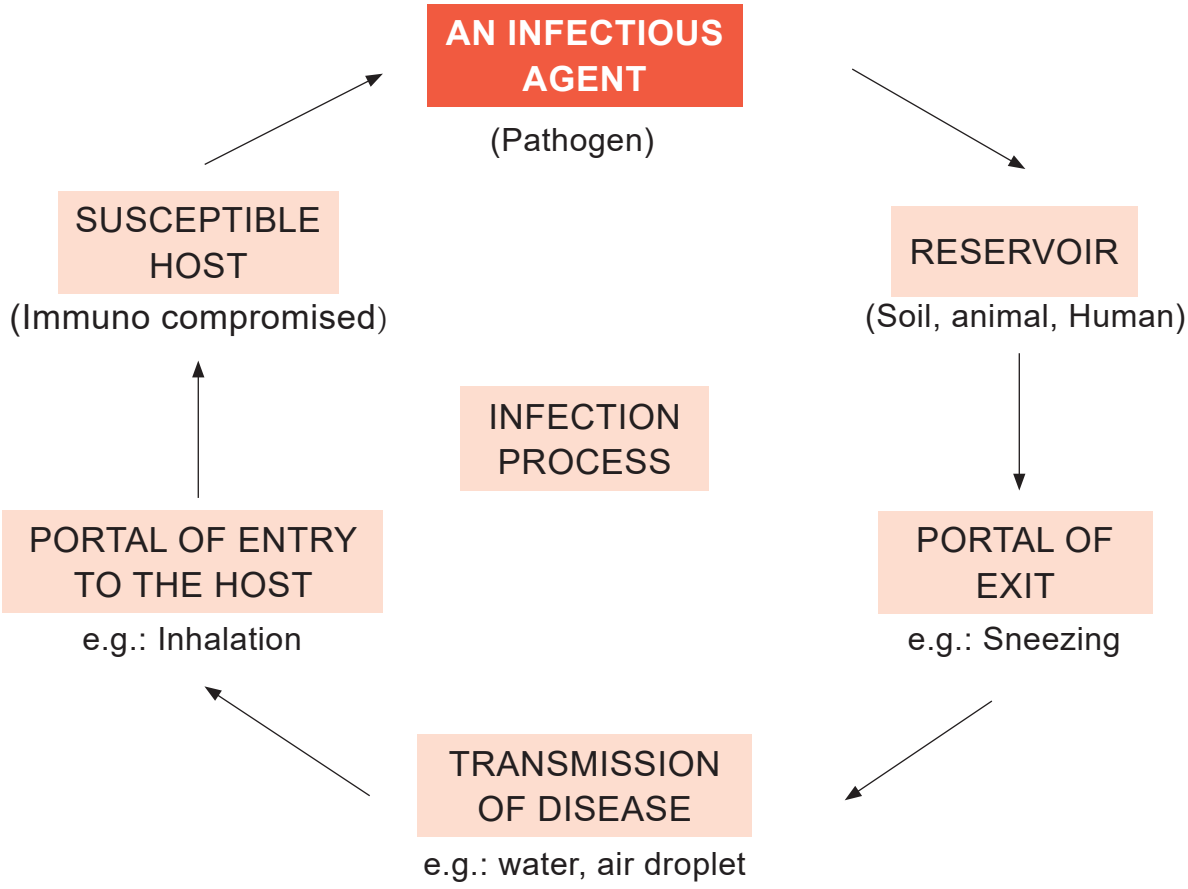

When you cough germs can travel about 3 metres. If you do not put your hand or hand kerchief.

6.5.1 Chains of infection:

) **Infectious Agent**: -

Microorganisms include bacteria, viruses, fungi and protozoa. They are common infectious agents or pathogens. The potential for microorganisms to cause disease is depends on the following factors.

- Sufficient number of pathogens (Inoculum) which enter into the body.
- Virulence or ability to produce disease.
- Ability to enter and survive in the host (overcome the immune system of the host).
- Susceptibility of host.

) **Reservoir**: - A reservoir is where a pathogen can survive.

- A continual source of infection is called a reservoir infection.
- People who have a disease are carriers of pathogenic organisms (**human reservoir**).
- Zoonoses can be transmitted to humans from animal reservoirs of infection.
- Some pathogenic microorganisms grow in nonliving reservoirs Ex-Soil, Water.

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) **Portal of exit: -**

- Pathogens have preferred portals of entry, they also have definite portal of exit.
- 3 common portal of exit.

  Respiratory tract – coughing, sneezing

  Gastro intestinal tract – Saliva, feaces

  Genital tract – Vagina and penis
- Arthropods and syringes provide a portal of exit for microbes in blood.

) **Modes of transmission**: -

Mode of transmission is through direct or indirect contact, droplet infection, vehicle transmission, air borne, arthropod vector.

) **Portal of entry**: -

Organism can enter the body through skin, mucous membrane, gastro intestinal tract, intestinal tract, blood, genital tract.

. **Compromised host: -**

When a person acquires an infection depends on the susceptibility of an infectious agent.

- Individual degree of resistance to a pathogen.
- Patients with burn, surgical wounds, and suppressed immune system are the most susceptible.
- According to the virulence of the microbes.

ROUTES AND MEANS	TRANSMISSION	EXAMPLE (ORGANISM)
DIRECT CONTACT	PHYSICAL CONTACT	CHICKEN POX, MEASLES, RUBELLA
INDIRECT CONTACT	FOMITES (IN ANIMATE OBJECTS)	INFLUEZA (COMMON COLD)
DROPLET INFECTION	SALIVA, MUCUS	MYCOBACTERIUM TUBERCULOSIS
VEHICLE BORNE INFECTION	WATER, FOOD, AIR, BLOOD	V.CHOLERAE, SALMONELLA SHIGELLA
AIR BORNE INFECTION	WATER DROPLETS	INFLUENZA
VECTOR :-		
MECHANICAL & BIOLOGICAL	FLIES MOSQUITO LOUSE	SALMONELLA ADES EGYPTIA RICKETTSIA TYPI

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DO YOU KNOW?

Tears contain Bactericides such as lysozyme. So it kills bacteria (sometimes crying is good)

6.5.2 Course of Infection

Once a microorganism does overcome the defenses of the host, development of the disease follows a certain sequence of steps that tends to be similar whether the disease be acute or chronic.

- Incubation period
- Proximal stage
- Period of illness stage
- Period of decline
- Period of convalescence

Incubation Period: - The period of incubation is the time interval between the actual infection and the first appearance of signs and symptoms interval between entrance of pathogen into body and appearance of first symptoms.

e.g. Common cold - 1 to 2 days

Mumps - 18 days

Prodromal Stage: -The prodromal period is characterized by the appearance of the first mild signs and symptoms (low-grade, fever, fatigue). During this time microorganism grow and multiply and patient is more capable of spreading disease to others.

Illness Stage: - During this period of illness, the disease is at its height and all disease signs and symptoms are apparent.

e.g. Common cold - Sore throat, sinus

Mumps - Earache, high fever, parotid, salivary gland swelling

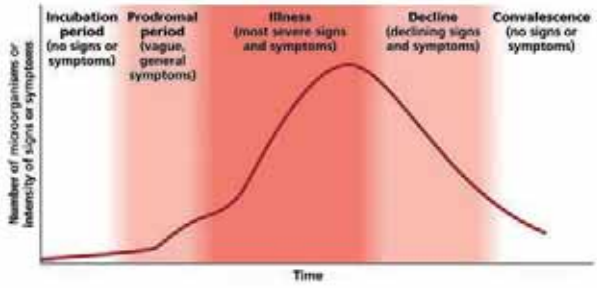
The severity of the patients' illness depends on the extent of infection, the pathogenicity of the microorganism, susceptibility of individuals.

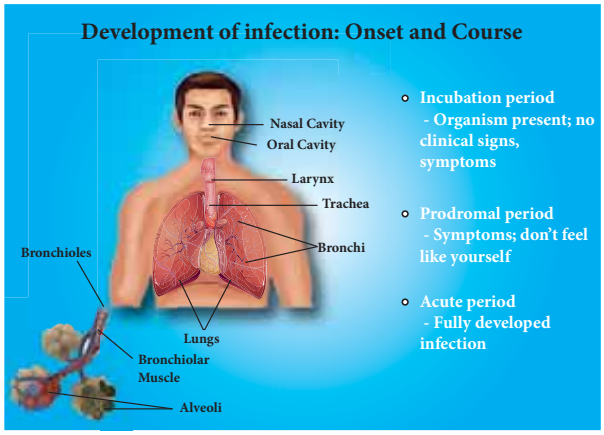
Decline Stage: -

During the period of decline, the signs and symptoms subside.

Convalescence Period: -

During the period of convalescence, the body returns to its predeceased state, the health is restored. Length of recovery depends on severity of infection and patients' general health status. Recovery may take several days to month.





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6.5.3 Defense Against Infection: -

1. The immune system is one portion of the body's defense against infection.
2. Normal body flora that reside inside and outside of the body protect from several pathogens.
3. Skin and mucous membrane both prevent pathogens from entering the body by creating a barrier, mucous traps microorganisms.
4. ■ Skin & Mucous Membrane
   ■ Acidity of Skin,
   ■ Saliva, tears (Ig A)
   Nostril hairs
   Stomach Acidity

   } Provide first line of Defense against Infection it contains Ig A

   ■ The inflammatory response is a protective vascular and cellular reaction that neutralizes pathogens and repair body cells.

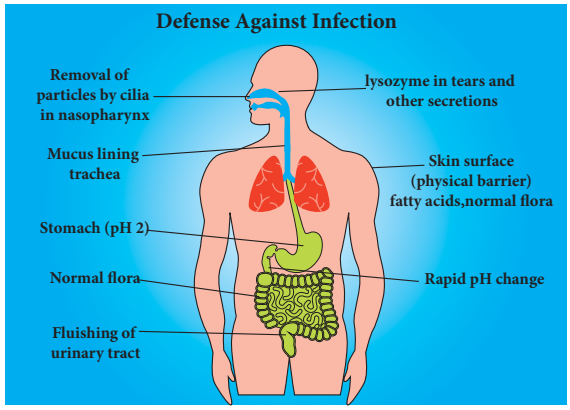
   Inflammatory response – bring blood and therefore more phagocytes to the area.

   ■ IgA is predominantly present in secretion (tears, saliva, milk) is the first line of defense.

   ■ Lysozyme is present in phagocytes which digest the foreign particles, break the cell wall of gram positive bacteria

Student Activity

Hanging drop technique -to observe the movement of microbes under microscope in different water sample



6.5.4 Types of Infection: -

Nosocomial Infection:-It is defined as any infections that are acquired during the course of stay in a hospital, nursing home, or other health care facility health care workers.

Iatrogenic Infection:-Iatrogenic infections are a type of nosocomial infection resulting from a diagnostic or therapeutic procedure.

i.e. UTI that develops after catheter insertion

- Exogenous
- Endogenous

Exogenous Infection: - Exogenous infection arises from microorganism external to the individual which do not exist as normal flora

Ex. Salmonella typhi – Typhoid fever

Endogenous Infection: - Endogenous infection occurs when part of the patient's normal flora becomes altered (virulent) and also increase in number it will become opportunistic infection. Ex. Streptococci in mouth

E. coli in intestine as normal flora which may cause UTI. When it reach the urinary bladder.

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Deinococcus radio durans can live in soil. It can tolerate/resist almost 10,000 times the dose of radiation lethal to human [in space microbiology]

6.5.5 Sites and causes for cross infection: -

I.	Urinary tract infection	- Insertion of urinary catheter - Improper hand washing technique - Contaminated catheter tube and bag - reflux of urine from bag to bladder.
II.	Surgical wound infection	- Improper hand washing - Improper sterilization of instruments and dressing material - failure to use aseptic techniques
III.	Blood stream (Bacteremia)	- Contaminated intravenous fluid, blood, needles
IV.	(RTI) Lower	- Pneumonia (Respiratory devices)
	Cutaneous infection	- New born have high rate of infection.

Risk factors for infection

- Broken skin or mucous membrane
- Obstructed urine outflow
- Decreased mobility
- Reduced hemoglobin level

6.6 Sterilization: - Definition

It is a process of making something free from bacteria or other living organism either in vegetative or spores. The removal of all microorganism from an object or surface.

Disinfection

The process of cleaning something. Especially with a chemical in order to destroy or kill bacteria, but not necessarily spores.

- Physical method
- Chemical method
- Radiation
- Filtration
- Mechanical

Beef tape worm-It is the largest parasite in human intestine which can grow (7 ½ metres or 25feet long)

Student Activity

Classroom assignment – sterilization method

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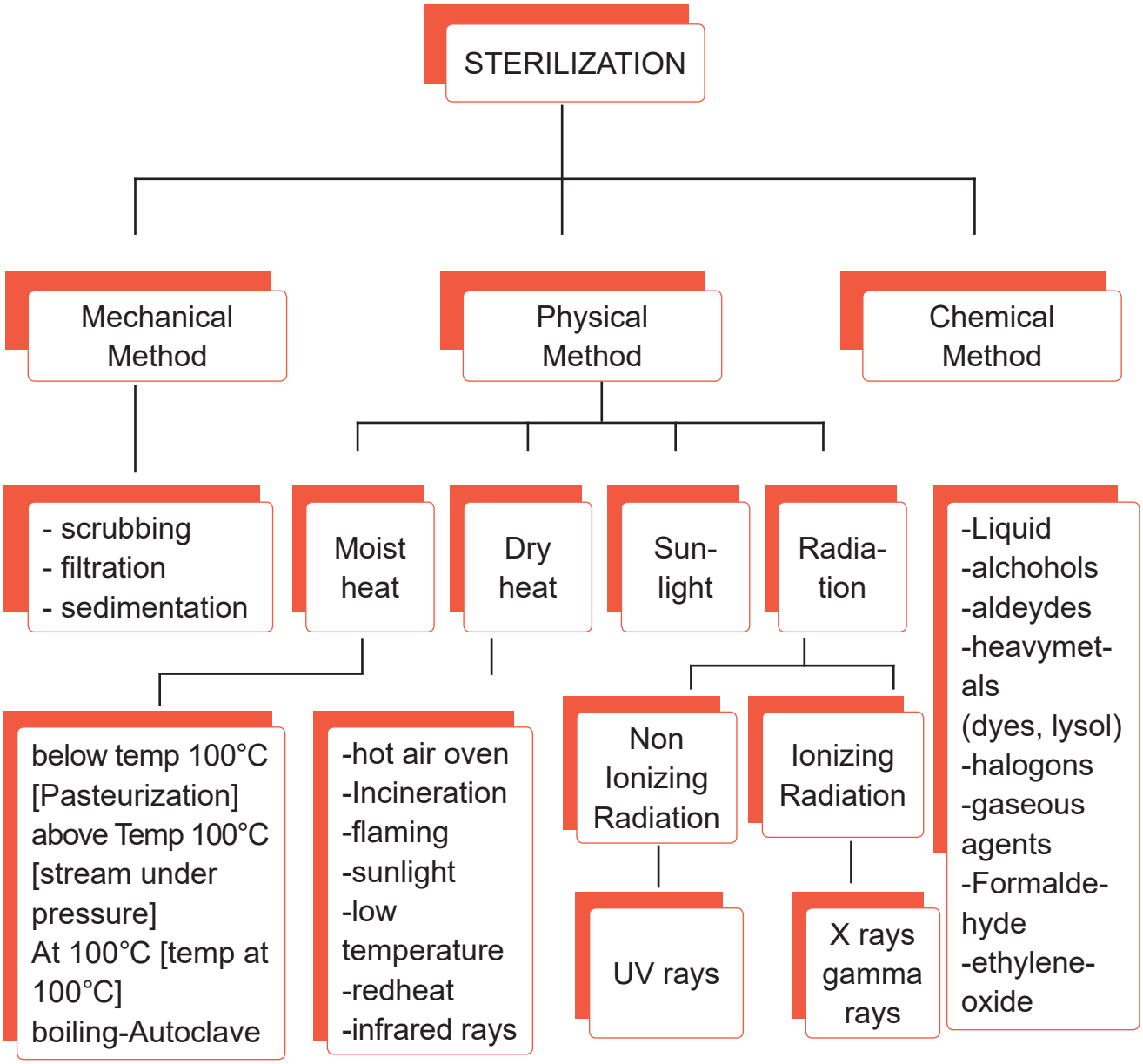
6.6.1 Methods of disinfection and Sterilization:



. . . *Mechanical Method*

Scrubbing: Hand washing is one of the important procedures of a nurse in order to control and prevent self-infection as well as cross infection.

Filtration: Filtration is the passage of a liquid fluid or gases through a filter with pores small enough retain microbes – vaccine, toxins, enzymes.

e.g. - HEPA filter, Membranes filters (nitrocellulose)

Sedimentation: - It is used in the purification of water by this method the suspending material together with

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bacteria settles down in the bottom of liquid.

. . . hysical methods

Sunlight: Sunlight contains UV rays which cause thymine dimer in the DNA of bacterial cells. These UV says stops the replication of DNA in bacterial cells. These rays has more antimicrobial action e.g. Blanket, Pillows.

Dry heat: -

Direct flaming: -

- Very effective method of sterilization.
- Burning contaminants to ashes.
- This is used to sterilizing inoculation loops and sterilizing needles and instruments killing organisms.

Incineration: All hospital wastages like dressing, garbage, contaminated materials are completely bunt by incineration. It is very effective to kill all organism.

Hot air oven: This instrument is used to sterilize glassware, syringes, needles, culture tubes and enhance the growth of micro organism in culture media The vegetative forms of bacteria can be killed by this at 160°C for1 hour.

Hot air oven

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Moist heat Sterili ation

Boiling: At a temperature of 100°C boiling for 3 to 5 minutes kill microorganisms except spore bearing organisms.

- This method is suitable for enamel, metal, glass, rubber wares.

oints to remem er

- The article must be cleaned by scrubbing to remove the organic matter.
- Great care should be taken for glass articles and they should be wrapped with cloth and put in cold water and then brought to boil.
- The organic matter which will coagulate around the organism and protect them.
- Testing material to check effectiveness of sterilization.

Autoclaving (Above 100°C temperature)

Spore bearing organism Ex. Clostridium tetani are killed by steam under pressure.

Autoclave

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Autoclave is an apparatus used for sterilization of articles by steam under pressure.

- It is a metal chamber with an outer jacket and a lid, which can be firmly clamped. Steam is generated by heating water in a boiler or in the outer jacket.

In this the steam is allowed to circulate in a closed container and it is compressed and there by raises the temperature above the boiling point of water (at 121°C for 15 to 30 minute). Then the heat is turned off. The steam is evacuated.

ses

The materials sterilized by autoclaving method are dressing, gloves, lines, syringes, certain instruments and culture Medias.

oints to remem er

. All articles should be clean and dry before packing. Any organic matter such as blood or pus prevents penetration of steam.

. The holes in drum must be open when placing into the auto clave, and closed immediately on taking them out.

. Rubber gloves cannot stand high temperature and long sterilizing. Autoclave those separately at 15 lbs. pressure for 15 minutes.

. To auto clave bottles of fluids loosen the screw caps, evacuate the steam slowly.

Pasteurization: (Temperature at 62.8°C)

In pasteurization a high temperature is used for a short time (72°C for 15 minutes) to destroy pathogens without altering the flavor of the food. This process is used to kill all the pathogenic organisms in milk, cream, and certain alcoholic beverages.

6.6.1.3 Chemical Methods

Certain chemicals are used in disinfection of articles like thermometer and also the disinfection of floor and de-contamination of infected linen.

Chemical Substance which are commonly used:

1. Dettol: This is widely used chemical for Sterilization of instruments, thermometer etc. 5 to 50% of solution is used for drawings and wound irrigation.
2. Savlon: 1:30 solution is used to destroy or kill vegetative bacteria.
3. Chloride of lime (bleaching powder): This is used for disinfection of drinking water, stools, urine, sputum. As it decomposes quickly when exposed to air. Solutions must be prepared fresh for each use.
4. Formalin: - A 40% solution is used to disinfect faces, urine and sputum. It is not used for the skin and tissue, as it is an irritant.
5. Tincture of Iodine: - 1-2% iodine is used for cleaning skin and treating injuries to the skin.

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6. Hydrogen peroxide: 1-5% of solution is used in cleaning wounds and to remove pus from infected ears. Hydrogen peroxide is also used to clean the mouth. It is an oxidizing agent.
7. Potassium Permanganate: - It is an oxidizing agent used for cleaning the mouth with 1:1000 strength. It is also used for irrigation of wounds.
8. Carbolic acid (Phenol): - It is a good designating for feces, pus, blood and sputum. It is a skin irritant and a poison. Dissolves early in hot water. For thermometer 1:20 solution for a duration of 10 minutes.
9. Lysol: This is a phenol preparation mixed with soap. It is less poisonous than a carbolic acid but has a greater bactericidal action. 2% of solution for 6-8 hours is wed for disengaging livens.
10. Ethyl Alcohol: 70% is effective for skin disinfection. Certain gases like formaldehyde and glutaral-dehyde are used in disinfection of rooms.

6.6.1.4 Radiation

The effects of radiation depend on its wave length, intensity, duration.

Ionizing radiation

- Gamma rays and x-rays are both types of high energy electron (high frequency) electromagnetic radiation
- These rays can cause destruction of the DNA in microbes.
- The principal effect of ionizing radiation is the ionization of water, which forms highly reactive hydroxyl radicals.

on Ioni in radiation rays

UV light damages the DNA of the exposed cells. It causes bonds to form between adjacent thymine dimers in DNA chain and inhibit replication.

USES

The radiations are used for sterilizing pharmaceutical and medical dental carries. (cold sterilization)

- Practical application is the UV lamp (germicidal property) in the microbiological laboratories.

6.6.1.5 Fumigation (0r) Gas Sterilization

Fumigation is a process of gaseous sterilization which is used for killing of microorganisms and prevention of microbial growth in air, surface of wall or floor.

- It is generally used in the pharmaceutical, operation theatres. Hospitals, and offices.
- For effective fumigation process is done according to the density. Humidity 60% and temperature never below 18° C in opened area around at a time of 1 hour to o16 hours it may be differ the gas kill all the spores, vegetative cells etc.,

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Gaseous agents

- Formaldehyde
- Ethylene oxide
- Glutaraldehyde
- Propiolactone

Disadvantage: These gas may cause irritant to the eyes, and mucous membranes and un wanted odors.

6.6.1.6 Low temperature:

Cold has the effect of decreasing or completely stopping the growth of bacteria constant freezing will destroy and inhibit the growth of bacteria.

In freeze condition the organisms growth may be delayed or inhibited. The organisms can be destroyed often is freeze conditions.

Principles to be observed:

1. All articles contaminated with blood, feces, pus, sputum or other substances must be rinsed with cold water to prevent coagulation of protein material.
2. Use soap and water for cleaning the instruments and use a brush whenever necessary.
3. Allow sufficient time for articles to be disinfected or sterilized by physical or chemical agents.
4. It is importance to select the right disinfectant, the right strength and the right time.
5. Use the right procedure to render instruments and other articles safe for further use in order to prevent the spread of infection.

6.7 Universal Precaution

Definition:

Universal precaution is an approach to infection control to treat all human blood and certain human body fluids as if they were known to be infectious for HIV, HBV and other blood borne pathogens.

Need for universal precautions: -

- Use barrier protection to prevent skin and mucous membrane contact with blood or other body fluids.
- Wear gloves to prevent contact with blood, infectious material or other, potentially contaminated surfaces or items.
- Wear face protection if blood or bodily fluid droplets may be generated during a procedure.
- Wear protective clothing if blood or bodily fluid may be splashed during a procedure.
- Wash hands and skin immediately and thoroughly if contaminated with blood as body fluid.
- Wash hands immediately after gloves are removed.
- Use care when using or handling sharp instruments and needles. Place used sharps in labeled, punctured resistance container.
- If you have sustained an exposure or puncture wound, immediately flush the exposed and notify your supervisor.

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HIGHLY INFECTIOUS BODY FLUIDS	
Blood	Feces
Semen	Nasal Secretion
Vaginal	Sputum
CSF	Sweat
Synovial Fluid	Tears
Amniotic Fluid	Urine / Vomitus Saliva

The concept of universal health precaution emphasizes that all our patients should be treated as though they have potential blood borne infections and can infect the health care workers.

Hospital Infection:

MICROBIAL SOURCE + TRANSMISSION + SUSEPTIBLE HOST = INFECTION

Care should be taken when using sharp needles, ampoules (needle stick injuries can spread HIV, HBV, HCV)

Use of impervious gown

Avoid soaking our inner clothes and exposure to harmful microbes

Use of mask, cap, eyewear, foot wear

It will protect us from splashes of body fluids and out patients.

Clean the floor by using sanitizer and disinfectant. It kills all germs.

Use of a pair of disposable plastic gloves can protect if chances of contact with body fluids.

Wash your hands properly and kill germs especially in (case of infants, ICV, Dialysis, burns unit.

Proper disposable of Bio medical waste.

Storage and distribution: -

- Cup boards, selves, tables, chairs, racks.
- Trolleys, Instrument trays, wire baskets and containers.

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DO YOU KNOW?

Honey is a natural reservoir for the botulism bacteria. which is cause for food poisoning.

6.8 Bio medical waste management

Introduction: -

All human activities produce waste which may be dangerous and needs safe disposal Industrial waste, Agricultural waste, Sewage waste Pollute water, land and air. It can also be dangerous to human beings and environment. Similarly, hospitals and other health care facilities generate so many wastewhich spread lot of infection. It spread HIV, Hepatitis, Tetanus etc. mostly the health workers who handle in hospital.

FJ3QY4

India generates around three million tons of Bio medical waste per year and the amount expected to grow at 8% annually.

Bio medical waste is the waste which is generated by hospitals, nursing homes, clinic dispensaries, veterinary institution, animal house, pathological laboratory and blood bank and is not degradable.

Classification of waste: -

1. **General Waste: -**
   a. General sweeping
   b. Packing material.
   c. Kitchen waste.
   . Paper pieces
   . Waste from laundry, wards and Laboratory.
2. **Infectious waste: -**
   a. Human anatomical waster (human tissue, organ, body parts)
   b. Microbiology and micro technology waster (Laboratory culture, stocks, attenuated vaccine research and industrial laboratories)
   c. Solid Waste (items contaminated with blood and body fluids including cotton, dressing, soiled plaster casts) beddings, linens, devices used for transfer of cultures.
3. **Shapes: -**
   a. Hypodermic needles, stitching needles, needles attached with tubing.
   b. Scalpel blades, razors, nails etc.
   c. Blood vials, cover slips, edges of slides

Bio medical waste: -

Bio medical waste means any solid or liquid waste including its container and any intermediate product which is generated during the diagnosis, treatment or immunization of human being and animals.

Prompted improvements in medical technology and centralized Medicare brought huge volumes of toxic and hazardous waste.

Situation forced a serious rethinking and necessitated an appropriate refinement in preexisting legislation.

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Sources:

- Hospitals
- Medical research laboratories
- Vaccinating centers
- Slaughter house
- Animal houses
- Bio technology institution

Types of biomedical waste: -

- Human anatomical waste like tissues, organs and body parts.
- Waste from hospitals like needles, syringes, scalpels, and broken glass.

Segregation, Packing, Transporting: -

1. Biomedical waste shall not be mixed with other waste.
2. Biomedical waste shall be segregate into containers bags at the point of generation prior to its storage, transportation, treatment, and disposal. The containers shall be labeled.
3. Untreated biomedical waste shall be transported only by the competent authority as specified by the government.
4. The authorized person must take permission of the prescribing authority to take measure to ensure that the waste does not adversely affect human health and the environment.

Measures to minimize health risk due to medical waste: -

- Use appropriate protecting clothing like gloves.
- Popularize use of color and emblem code on container bags
- Constitute a hospital acquired infection control committee.
- Incinerator
- Confirms to pollution control board norms.
- Segregation of waste from hospitals is transport and disposes it.

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6.9 Central sterile service department (CSSD): -

CSSD is also called sterile processing, on central supply department is an integrated place in hospitals and health care facilities that performs sterilization and other actions on medical devices, equipment and consumable.

- It is also for subsequent use by health workers in the operating theatre of the hospital and also for other aseptic procedures.

E.g. Catheterization, wound stitching and bandaging. In a medical, surgical and maternity or pediatric ward.

CSSD Divisions: -

CSSD is divided into five major areas.

- Decontamination
- Assembly & Processing
- Sterilizing
- Sterile storage
- Storage

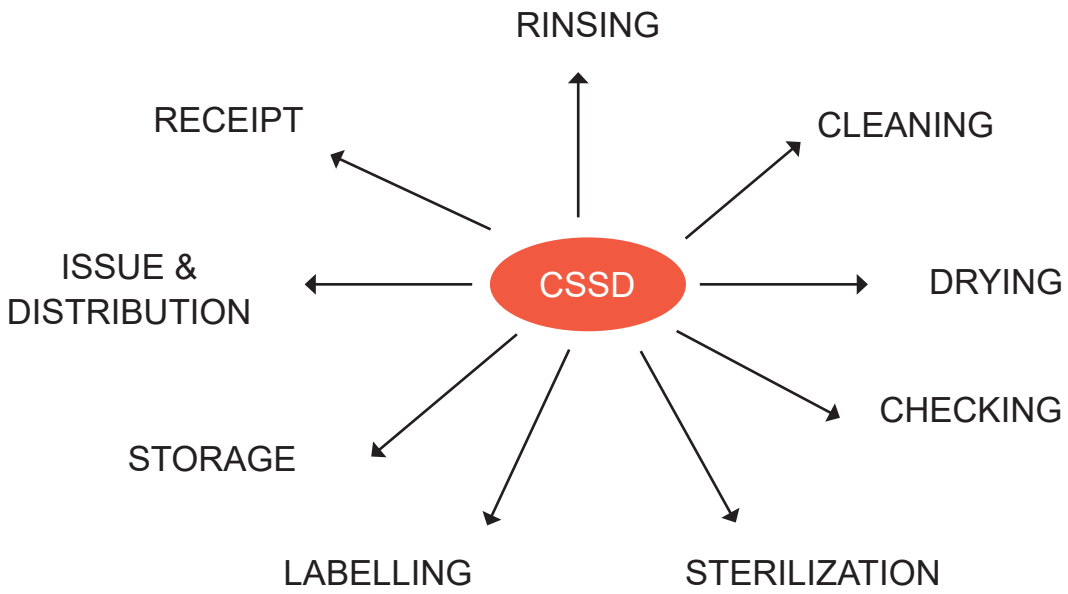
Definition: -

CSSD as that service, with in the hospital catering for the sterile supplies to all departments both to specialized units as well as general wards in OPDS.

AIM:

- Centralizing the activities of receipt, cleaning, assembly, sterilization, storage and distribution of sterilized materials from a CSSD.
- Safe sterilization is done under controlled condition with technical supervision at an optimum cost.
- To provide an efficient, continuous and quality supply of sterilized material to hospital in various areas and infection free patient care.
- Contributes to reduction in hospital infection.
- To reduce the burden of work of the nursing personnel, thereby enabling them to devote more of their time to patient care

FUNCTION AND ACTIVITIES OF CSSD



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Advantages:

- Processing issue and control
- Infection free atmosphere
- Economic efficient and uniform source
- Maintains Standards
- Reduces burden on nursing staff
- Prevents cross infection
- Shortens patients stay
- Ensures safe environment
- Inventory maintenance & quality one.

Objectives And Functions Of CSSD:-

- To provide supplies of sterile linen packs basins, instruments other sterile items.
- To maintain an accurate record of the effectiveness of the cleaning, disinfecting and sterilizing process
- To monitor and enforce control necessary to prevent cross infection according to infection control policies.
- To review current practice for possible improvement in quality or service provided.
- To provide consulting services to other departments in all areas of sterile processing.
- CSSD is the hospital central nervous system where the battle against infection takes place.

Planning Of CSSD

Responsible for receiving dirty utilities and mainly responsible for distribution to various areas of hospitals (TSSU)

Basic Division in CSSD: -

I	II	III	IV	V	VI
Cleaning Area	Drying Area	Packaging Area	Sterilization Area	Storage Area	Issue Counter

Equipment: -

. **Cleaning area: -**

1. High capacity pass through washer disinfector at 80C to 90C having various shapes and sizes
2. Cold and hot water streams
3. Detergent solution
4. Hot air oven for drying instruments.
5. Wall fixtures for drying.

. **Sterilization area: -**

1. Autoclaves using dry heat, moist heat.
2. Ethylene oxide sterilizers.

Student Activity

Make a posters in the classroom – how does an infectious disease spread

Sleep is very important for a person's immune system. If a person does not get enough sleep every night their immune system will collapse.

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SUMMARY

Infection control is the discipline concerned with preventing Nosocomial or health care associated infection. It is the practical sub discipline of epidemiology. Practices that control and prevent transmission of infection help to protect patients and workers health from disease.

Knowledge of microbiology is an essential component in nursing for practising this infection sterilization to eliminate pathogenic microbes causing infection disease.

A complete network of specialized cells, tissues, organs that recognize and defend the body from foreign substances. The ability of the host to resist a particular infection or toxin by the action of specific antibodies sensitized white blood cells produced by them in response to natural exposure of the organism is immunity.

Microbial identification is necessary to know the disease and its specific treatment by morphology, resistance, biochemical test, immunological test.

Infection is the invasion or colonization of the body by pathogenic microorganism. The surgical instruments and operation theatres is cleaned by sterilization process and some disinfection agents. if the organism overcome the defense of the host development of the disease follows a certain sequence of steps.

Universal precaution is an approach to infection control to treat all human blood and certain human body fluid (HIV, Hepatitis B). Biomedical waste management is mandatory technique in hospital. Because these waste things may cause so many hazardous to the environment. Segregation of waste from hospital is transport and proper disposable is needed. CSSD as that service within the hospital for the sterile supplies to all departments.

EVALUATION

I. Choose the correct answer

1. What type of immunity can develop by the administration of vaccine?
   a) Artificial passive immunity
   b) Artificial active immunity
   c) Natural active immunity
   d) Natural passive immunity
2. Which is live attenuated type of vaccine ?
   a) DPT b) OPV
   c) BCG d) HepA
3. The organism which most involved in urinary tract infection.
   a) Salmonella b) E.coli
   c) Staphylococcus d) Shigella.
4. Ear infection (otitis media) is caused by
   a) Streptococcus pyogenes
   b) Streptococcus pneumonia
   c) Mycobacterium sps
   d) Salmonella typhi

FJCLZR

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5. The ultra structure of the viruses can be seen by
   a) Dark field microscope
   b) Electron microscope
   c) Phase contrast microscope
   d) Flourescene microscope.
6. The motility of the bacteria can be seen by
   a) Staining method
   b) Hanging drop method
   c) Bio chemical test
   d) Serological test.
7. The confirmatory test for HIV infection is
   a) RIA b) ELISA
   c) VDRL d) WESTERN BLOT
8. The antibody which is mostly present in secretions like tears,saliva, milk.
   a) Ig A b) IgM
   c) Ig G d) IgE
9. The temperature which is employed in moist heat sterilization for autoclaving method
   a) 151^{0}C 1 hour
   b) 121^{0}C for 15-30 minutes
   c) 160^{0}C 1 hour
   d) 140^{0}C for 30 minutes.
10. The temperature which is employed in hot air oven
    a) 280^{0}C 1hour
    b) 160^{0}C for 1 hour
    c) 150^{0}C 2hour
    d) 180^{0}C for 30 minutes.
11. In which of the following is non ionizing radiation?
    a) Gamma rays b) X-rays
    c) Cosmic rays d) UV rays
12. In which stage the appearance of mild signs and symptoms and capable of spreading disease is.
    a) Incubation period
    b) Prodromal stage
    c) Period of decline
    d) Convalescence stage
13. The patient acquire infection during therapeutic procedure is
    a) Nosocomial infection
    b) Iatrogenic infection
    c) Endogenousinfection
    d) Exogenous infection.

II. Answer the following questions in one (or) two lines.

14. Define immunity.
15. What is innate immunity? Give example
16. What is adaptive immunity? Give example
17. What is vaccine? give examples.
18. What is inactivated or killed vaccine? give examples.
19. What is infection? Write any two types.
20. What is antiseptic agent? give examples.
21. What is an antigen?
22. What is antibodies? and its types.
23. What is sterilization?

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III. Write short notes

24. What is antibiotics?
25. What is incubation Period?
26. Write about the types of adaptive immunity.
27. List out the organism involved in respiratory tract infection.
28. Write any two types of sterilization process in moist heat method.
29. List the types of microscope.
30. Write about the methods of dry heat sterilization.
31. Write about the types of rays involved in sterilization Process.
32. What are the stages involved in stages of Infection?
33. List the types of Infection.
34. What is Fumigation? With example.
35. What is Pasteurization?
36. List out the things which are used in universal precautions for infection control.
37. What is Bio-medical waste management?

IV. Write in detail

38. Explain the types of Immunity.
39. Write in detail about the types of vaccine.
40. Explain the infection process.
41. Write about the course of infection.
42. Write in detail about the moist heat sterilization.
43. Write about the defence against infection.
44. Write the need for universal precaution.
45. Explain the classification and disposal of Bio-medical waste.
46. Explain the Objective, Planning, functions and activities of CSSD.

A-Z GLOSSARY

1. Antiseptic (*கிருமி நாசினி*) – a chemical agent used in antisepsis
2. Anti asepsis (*சீழ்த்தவிர்ப்பு*) – the destruction of microorganism on living tissue having preventing the infection
3. Carrier (*கடத்தி*) – a person who harbours a specific infectious agent in the absence of clinical disease
4. Colonization (*நுண்ணுயிரிகளின் வளர்ச்சி*) – the presence of organism in a particular site without any symptoms
5. Flora (*உடல் நுண்ணுயிரிகள்*) – microorganism resident is an environment or body site

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6. Nosocomial infection (நோசோகோமியல் தொற்று) – infection acquired during hospitalization
7. Incubation period (இன்குபேஷன் காலம்) – the time interval between initial contact with entry of organism and the appearance of first signs or symptoms
8. Reservoir (தேக்கம்) – a place where microorganism are growing or have grown
9. Sterilization (நோய் நுண்மங்கள் ஒழிக்கப்பெற்ற) – a process which renders an item sterile
10. Susceptible (பாதிக்கப்படுகின்ற நிலை) – a person not possessing sufficient resistance against a pathogenic agent
11. Virulence (நச்சுத்தன்மை) – a degree of activity of pathogenic microorganism

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- Text book of microbiology " Ananthanarayanan and panikar's – edited by CKJ panikar 7th edition
- Text book of immunology – benjamini coico sunshine – wiley- liss publication 4th edition

INTERNET LINKS

- http://medlineplus.gov>infectioncontrol
- https://www.cdc.gov
- http://m.youtube.com>watch

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ICT Corner

Surgery Tools

Explore the surgery tools identify their uses.

Step - 1 Use the following URL or scan the QR code to download the 'General Surgery Tools' app to your smartphone. Select 'Surgical Instruments' to explore the set of tools grouped on the basis of their uses.

Step - 2 Scroll the list and select the tool name to know the dimension and uses.

Step - 3 After exploring all the tools, reach home screen and select 'Check Yourself' tab to attend a quiz on the tools to reinforce it.

Step - 4 After reinforcing, select 'Examination Mode' tab and evaluate yourself and monitor your progress through the scores.

Step 1

Step 2

Step 3

Step 4

URL:

https://play.google.com/store/apps/details?id=com.production.ksm.generalsurgery

*Pictures are indicative

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UNIT

Hygiene – Patient and their Environment

FJLI2E

LEARNING OBJECTIVES

The students will be able to:

- define hygiene
- enumerate the factors affecting hygiene
- describe the various type of bed
- explain about the bath and back care
- explain briefly on the care of foot and nails
- explain about oral hygiene, and common oral problem
- describe the purpose, guideline and procedure of hair wash
- explain about the eye and ear care
- explain the nursing management of retention of urine
- explain the procedure of offering and removing bed pan
- explain briefly about intake and output chart
- explain briefly about the catheter care

7.1 Introducion

Personal hygiene involves those practices performed by an individual to care for one's bodily health and well-being, through cleanliness. Motivation for personal hygiene practice includes reduction of personal illness and sense of well being.

Definition

The word hygiene refers to "The Science of the establishment and maintenance of health"

"Hygiene is the practice of keeping yourself and your surroundings clean especially in order to prevent illness or the spread of disease".

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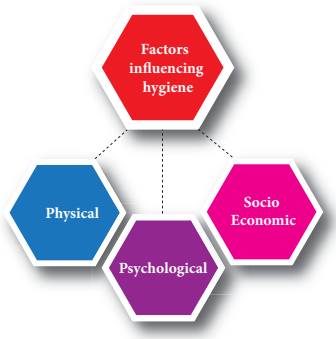
Origin of the word hygiene

The work hygiene derived from the Greek work Hygieinous.

7.2 Factors influencing personal hygiene practices



1. **Physical Factors:** - In many cased people understand the importance of good hygiene and wish to practice it. But they are prevented from doing it. The reason may be.
   1. Post-operative incision
   2. Plaster cast
   3. Chronic illness
   4. Injury
   5. Prolonged hospital stay
   6. Obesity
   7. Arthritis
2. **Psychological Factors:** - Psychological disorders such as schizophrenia and border line personality often causes a lack of interest in hygiene. Poor hygiene can be a diagnostic tool pointing major depressive disorder.
3. **Socio Economic Factors:** - Financial hardship such as inability to pay a water bill, soap, towels and sanitary facilities.

7.3 Bed Making

Bed making is an art. Skillful bed making contributes materially to the patient's comfort. Clean and comfortable bed includes the patient's unit in the hospital.

FJVE42

DO YOU KNOW?

According to Guinness world record, the world's largest bed was 86 feet in long and 53 feet in wide and was made in the Nether land by 2011.

PURPOSE

1. To provide clean and comfortable bed to the patient.
2. To observe and prevent patient's complications.
3. To save time, effort and material
4. To provide a neat appearance of the ward.

TYPES OF BED

The beds are of two types, ordinary and special bed.

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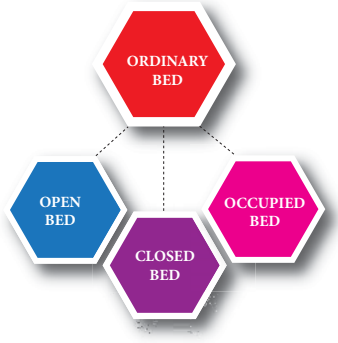

Types of ordinary bed

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a. **Open (simple bed):-** This is prepared for an ambulatory patient.

Indication: - To provide a clean smooth comfortable bed to the patient.

b. **Closed (unoccupied bed):-** This is an empty bed in which the top covers are arranged in such a way that all bed spread is fully protected from dust and dirt. On arrival of the patient, this bed is converted into open bed.

Indication: - Keep the bed ready for receiving the new patient in it.

Special beds

a. **Admission bed:** - This is for newly admitted patient.

Indications:-

1. Provide minimum disturbance to the patient.
2. Protect bedlinen during admission bath and leave a fresh bed for the use.

b. **Post-operative bed:** - This is prepared for the patient who has undergone surgery.

Indication: - Protect bed linens from vomiting, bleeding, drainage and discharges.

c. **Fracture bed:** - This is a hard firm bed designed for the patient with fracture particularly of spine pelvis and femur.

Indications:-

1. Aid in immobilizing the fracture.
2. Provide warmth and comfort
3. Prevent sagging of the mattress.

. **Plaster bed:** - This is a hard bed designed for the patient with fracture TB spine.

Indications:-

1. Aid in immobilizing the part until the plaster dries.
2. Aid in drying the plaster in correct position and shape.

. **Amputation or stump bed:** - In this type of bed the top bed clothes are divided or split. This is used for the patient with amputation of legs.

Indications

1. Take the weight of the clothes off the side of the amputated limb or stump.
2. Keep the stump in good position
3. Watch stump for hemorrhage constantly and apply tourniquet if necessary.

. **Cardiac bed:** - This is prepared for a patient with heart disease.

Indications:

1. Relieve dysponea.
2. Prevent complications.
3. Provide comfort to the patient.
4. Asset in recovery of the patient.

. **Renal bed:** - This is prepared to provide extra warmth to the patient.

Indications:

1. Provide comfort to the aching joints in patients with acute rheumatism.
2. Improve perspiration for excretion of waste products in case of nephritis.

. **Burns bed:** - This is prepared for a patient with burns.

Indications:-

1. Prevent infection to the burnt area.

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2. Help in healing of the burnt area.
3. Prevent the patient from sticking to the sheet as a result of exudates oozing from the burnt area.

Bed Making- Open Bed

uipments

1. Cot, 2.Duster, 3.Chair and stool, 4. Protective sheet, 5.Bed linen, i-e mattress, mattress cover, bottom sheet one, draw sheet one, Pillow, Pillow cover, top sheet, blanket

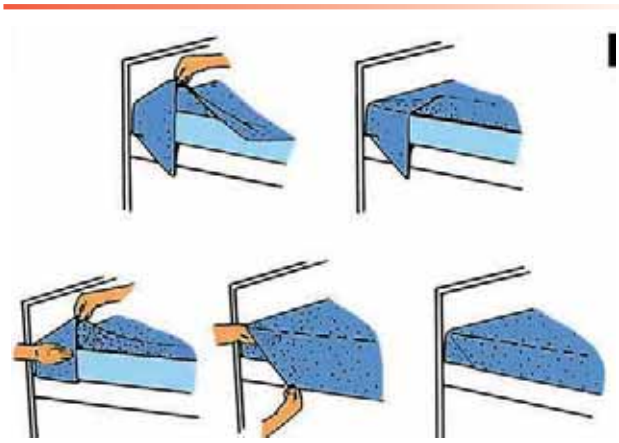
ursin Activity

1. Collect and take the supplies to the bed side.
2. Place the supplies on the stools
3. Tidy the shelves and move the locker little away.
4. Explain the patient that you are going to make his or her bed.
5. Maintain patient's privacy by using screen.
6. Wash your hands
7. Make the bed as mentioned below accordingly.

rocedure

1. Assist the patient out of bed as necessary and offer chair to sit.
2. Remove any equipment attached to the bed linen.
3. Adjust the bed in flat position to a comfortable height to prevent straining your back.
4. Strip the bed clothes, fold them one by one and place on the back of a chair, in case to be reused. Remove the mattress cover and bed cover fold and keep them also.
5. Dust the bed with damp duster and mattress with dry duster. Turn the mattress.
6. Spread the bed cover on the bedsprings to protect the under surface of the mattress. Put on the mattress cover. If it is loose the excess can be tucked under the mattress pull the mattress to the top.

MAKING TRIANGULAR FOLD



Packing up the top sheet

Sheet on top of mattress in a triangular fold

Lower edge of sheet tucked under mattress

Triangular fold making

Triangular fold placed over side of mattress

Linen tucked under mattress

7. Place the bottom sheet at the foot of the bed same side down with the lower head with the edge of the mattress and the center fold on the

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center of the bed. Then unfold the upper layer onto the head of the bed.

8. Tuck in excess sheet at the head of the bed.
9. Miter the corner as below at the head end of the bed, making smooth and neat corner.
   a. Pick up the side edge of the sheet, so that the sheet forms a triangle with the head of bed and the side edge perpendicular to the bed.
   b. Hold the sheet against the side of the mattress using the palm of your hand and tuck of excess sheet under the mattress.
   c. Drop the sheet from your top hand to the side of mattress.
10. Miter the corner as above at the foot end of the bed.
11. Tuck the sheet under the mattress from head to foot of bed on one side.
12. Place a protective sheet and draw sheet in the middle of the bed with the center fold on the center of the bed and unfold. Then tuck in on one side.
13. Place the top sheet at the head of bed. Same side up with the top head even with the head of mattress and the center fold on the center of the bed, then unfold the upper layer on to the foot of the bed.
14. Make a vertical or horizontal toe pleat as under while tucking the top bed clothes at the foot of the bed.
15. Vertical pleat. Fold a six inches pleat lengthwise in the top clothes from the center to the foot end, at the center of mattress.
16. Horizontal pleat – fold a two inches pleat across the top clothes at the centre of foot of the mattress.
17. Tuck in the excess sheet, and bed spread together at the foot of the bed.
18. Milter of corner of top clothes at the foot of bed as in step 9 allowing the top linen to hand over the side of the bed.
19. Repeat the procedure on the opposite side pull the linen tight and smooth out any wrinkles.
20. Fold back the top sheet at the head of the bed to the shoulder height.
21. Put the clean pillow cover on pillow and place the pillow at the center of the head of bed with open end of the cover away from the door of the room.
22. Fan fold the top clothes toward the foot of the bed or pie fold them as under for easy entering.

FAN FOLD

- Fold the half of the top clothes toward the foot of the bed which is further folded into 2-3 according pleats so that the top clothes are at the foot end of the bed.
- Pie fold place one finger at the center of the top clothes facing the head of the bed. Lift the edge of the top clothes and fold it back toward making a triangle.

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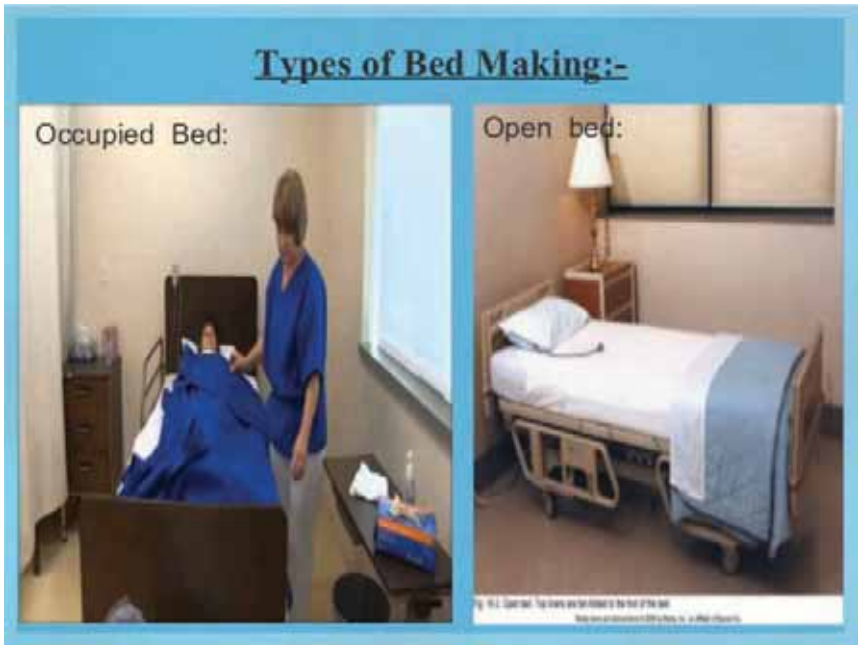

7.4 Personal Hygiene

Good personal hygiene is one of the most effective ways to prevent the development and spread of infection it includes.

1. Skin care (Bed bath & Back care)
2. Mouth care
3. Care of eyes and ears
4. Scalp care
5. Nail care

7.5 Care of the Skin

The skin is an active organ with the factious of protection, secretion, excretion, temperature regulation and sensation. The skin has three primary layers. Epidermis, Dermis, and Subcutaneous

Bacteria commonly reside on the skin's outer surface.

1. Immobilization.
2. Reduced sensation.
3. Poor nutrition.
4. Dehydration or Oedemic
5. Excessive secretions and excretions on the skin.
6. Vascular insufficiency
7. Use of external devices e.g. Cast bandage or Orthopedic devices.

DO YOU KNOW?

Skin is the largest organ in the body. It occupies approximately 1.73 sq. meter

Common S in ro lems

1. **Dry Skin** (Flaky, rough texture on exposed areas such as hands, arms, legs or face.

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2. **Skin rashes:-** Results from over exposure to sunlight or moisture or from allergic reaction

3. **Contact dermatitis:** - Inflammation of the skin with scaly oozing lesion.

4. **Abrasion:** Scrapping away of epidemics results in localized bleeding.

5. Bacterial break down of sebum appears on face, neck, shoulders and back

7.5.1 Bed Bath

Definition

Bathing of the patient while he is in bed.

Purpose

1. To cleanse the skin and thus increase elimination through it.
2. To stimulate circulation through slightly active or entirely passive exercise.
3. To refresh the patient by relieving fatigue and discomfort.

7.5.2 Care of Shoulder and Back

Routine care of shoulder and back must be done as often as necessary for all patients, who lie in bed in order to prevent bedsore.

Purpose

1. To cleanse the skin and back.
2. To stimulate circulation.
3. To relieve fatigue and discomfort.
4. To prevent bed sore.

Equipment

SL. NO.	ITEMS
1)	Basin of Warm Water
2)	Soap
3)	Wash cloth
4)	Towel
5)	Lotion or spirit
6)	Talcum powder

Procedure

1. Bring the tray to the bed side and screen the bed.

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2. Explain to the patients
3. Make him into left lateral position or right lateral
4. Protect the bed with towel.
5. Wet the shoulder and back.
6. Soap the palm of the hand well and massage with circular movements. So that the tissues under the skin are moved and the circulation is stimulated.
7. Rinse the soap off the skin with the wash cloth, and dry well with the towel.
8. Apply lotion or spirit in the shoulder and back.
9. Apply talcum powder to dry the skin.
10. Leave the bed tidy and the patient comfortable.

If the patient is inconvenient, it is better to use ointment such as Zinc and Caster Oil instead of Spirit and Powder to protect the skin from moisture.

7.6 Care of Foot and Nail

The foot and nails require special attention to prevent infection, odors and an injury to tissue. Problems may result from poor care of the feet and nails. Such as improper trimming, exposure to chemicals and poorly fitted shoes.

Purpose

1. To keep nail harmless
2. To prevent accumulation of dirt under the nail and reduce occurrence of infection.

Care of Nail and Foot

1. Inspect the feet daily including the toes and soles of the feet and the area between the toes.
2. Wash and soak the feet daily using Luke warm water (37 degree C).
3. If the feet perspire, apply a bland foot powder.
4. If dryness is noted along the feet, apply soft oil and rub gently into the skin.
5. File the toe nails straight across and square.
6. Avoid wearing elastic socks and clean daily the socks.
7. Wear properly fitted shoes.
8. Exercise regularly to improve circulation to the lower extremities.

Take Care of Minor Cuts and Infections

Characteristics of a healthy nail

A normal healthy nail is transparent, smooth and convex with pink nail beds and translucent white tips.

Nails grow faster in the summer than in winter

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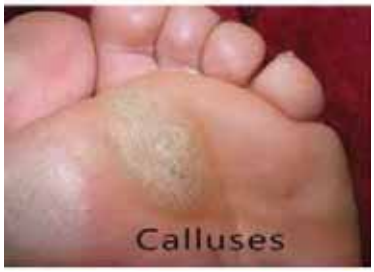
1. **Dry Skin :-** It can cause itching and burning feet. Use mild soap in small amounts and a moisturizing cream or lotion on the legs and feet every day.
2. **Corns and Calluses :-** These are caused by friction and pressure when the bony parts of the feet rub against the shoes.



3) **Warts:-** A wart is an infection caused by a virus. Which can invade the skin through small cuts and breaks. The wart develops into a hard and rough growth on the surface of the skin. People with allergies or weakened immune systems are more vulnerable to the wart.

4. **Ingrown Toe Nails:-** An ingrown nail is the result of a nail growing into the skin that surrounds it. It may be caused by improper trimming, fungalinfection or pressure.

5. **Bunions:** It is an enlarged bone on the side of the big toe that is angled outward. The big toe may be angled mildly or sharply toward the other toes.

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6. **Hammer Toes:-** It is an arched toe, the result of an abnormal contraction or "buckling" that leaves the toe in a claw like position.

7. **Spurs:-**Spurs are Calcium growth that develops on bones of the feet. They are caused by muscle strain in the feet. Prolong standing, bad fitting shoes and over- weight can make spurs worse. Heel supports are the treatment for spurs.

8. **Foot Odor:-** Result of excessive perspiration promoting micro organism growth.

7.7 Oral Hygiene (Mouth Wash)

The oral cavity is lined with mucous membrane continuous with the skin. The mucous membrane is an epithelial tissue that lines and protects organs. Secretes mucous to keep passage ways of digestive system moist and lubricated and absorbs nutrition.

Purposes of oral Hygiene

1. Oral hygiene helps maintain the healthy state of the mouth, teeth, gums and lips.
2. Brushing massages the gums.
3. Brushing cleanses the teeth of food articles, plaque and bacteria.
4. Brushing relieves discomfort resulting from unpleasant odors and tastes.
5. Flossing helps remove plaque and tartar from between teeth or reduce the gum inflammation and infection.
6. Oral hygiene gives a sense of well being.
7. Proper oral hygiene stimulated appetite.
8. To improve taste.

Proper oral Hygiene

1. Good oral hygiene involves cleanliness, confer and the moisturizing the mouth structures. Proper care prevents oral disease and tooth destruction.
2. Brushing, flossing and irrigation are necessary for proper cleaning.

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3. To prevent tooth decay, reduce the intake of carbohydrates, especially sweet snacks between meals.
4. Brushing of the teeth at least four times a day is a basic to an effective oral hygiene (after meals and at bed time)
5. Tooth brushes should be replaced every three months.
6. After brushing, thorough rinsing is important to remove dislodged food particles.

Risk Factors for Oral Problems

1. Patients who are paralyzed or seriously ill.
2. Unconscious patients.
3. Diabetic patients.
4. Patients undergoing radiation therapy.
5. Patients receiving Chemotherapy
6. Patients having oral surgery, trauma.
7. Patients with immune suppression drug e.g HIV Patients.

Common Oral Problems

The two major types of oral problems are dental caries (cavities) and periodontal disease ({Pyorrhea)

1. Dental caries is the most common oral problem of younger people. The development of the cavity involves the destruction of tooth enamel through decalcification. Decalcification is a result of an accumulation of mucin, carbohydrates and lactic acid bacilli in the saliva normally found in the mouth, which forms a coating on the teeth called Plaque. Plaque is transparent and adheres to the teeth near the base of the crown at the gum margins. The plaque prevents normal acid dilution and neutralization, preventing the dissolution of bacteria in the oral cavity. The acid eventually destroys the teeth enamel and in severe cases, the pulp, or inner sponge tissue of the teeth.
2. Periodontal disease is the disease of the tissue around the tooth. It is an inflammation of the periodontal membrane. It is most common problem of people over 35 years of age. The calculus deposit on teeth at the gum line. The gingivae become swollen and tender. Then the inflammation spreads, pockets develop between gums gingivae. The alveolar bone is destroyed and the teeth loosen.
3. Halitosis (Bad Breath):- is a common problem of the oral cavity.

   Causes: i. Poor oral hygiene
   ii. Inspection of the oral cavity
   iii. Liver disease
   iv. Diabetes
4. Cheilosis is the disorder involves cracking of the lips especially at the ankle of the mouth.

   Causes: i. Riboflavin deficiency
   ii. Mouth breathing
   iii. Excess salivation.
5. Stomatitis is an inflammative condition of the mouth.

   Causes: i. Contact with irritants such tobacco

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ii. Vitamin deficiency

iii. Infection by bacteria, virusus or fungi.

iv. Use of Chemotherapeutic drugs

6. Glossitis is an inflammation of the tongue resulting from an infectious disease or injury such as burn or bite.
7. Gingivitis is a inflammation of the gums usually resulting from poor oral hygiene.
8. Oral malignancies:- Lumps are ulcer appears in or around the mouth. The most common site is at the base of the tongue.

Causes: i. Pipe smoking

ii. Tobacco chewing.

Equipments

A tray containing

1. Cotton swab or clean linen pieces in a bowl.
2. Forceps (artery and dissecting forceps).
3. Gallicups 2 Nos. (one for Glycerin borax another for salt solution).
4. Feeding cup with salt solution.
5. Kidney trays 2
6. Swabs sticks
7. Rubber sheet
8. Towel
9. Wash towel.

Procedure

1. Place all the articles conveniently on the bed side table.
2. Explain the procedure to the patient
3. Put the rubber sheet (Mackintosh) with towel and kidney tray under the chin.
4. Have patient rinsed his mouth with salt solution from the feeding cup.
5. Turn the patient's head to one side.
6. Take an artery forces and wrap a piece of linen around the tip of the forceps.
7. Dip it inside the saline water and clean the teeth with up and down movements.
8. Pay special attention to inside the mouth, gums, inside the cheeks, tongue and the roof of the mouth.
9. Change linen pieces as often as necessary.
10. Discard used cotton in the other kidney tray.
11. Allow the patient to gargles as much as necessary.
12. Dip the swap stick in glycerin borax swab gums, root and sides of the mouth.

After Care of Equipment

1. Clean kidney trays and feeding cups with soap and water.
2. Boil the forceps, and the galli -cups after cleaning.
3. Place all articles in their places after cleaning and boiling.

Care of Dentures

If the patient has dentures, care should take to keep the dentures clean. If the patient is unable to do so, the nurse has to remove the dentures by grasping it with gauze pieces, place them in a tumbler or

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cup containing water. Dentures are washed carefully with the brush, tooth paste and cold water. Hot water should not be used hence it may injure the composition of dentures. If the patient is to do by himself, he may be assigned. Remove dentures of patients who are unconscious, mentally ill and who have vomiting or cough spasm.

7.8 Scalp Care

This procedure is necessary for a patient who is in bed for a long time this will give comfort and pleasure.

The scientific name of grey hair is salt and pepper.

Purpose

1. To keep the hair clean and healthy.
2. To prevent itching, infection and infestation.
3. To provide a sense of well being.
4. To destroy pediculi.

Guidelines

1. For bedridden patients give hair wash at least once a week.
2. Avoid hair wash for the patient who has just taken meals within an hour.
3. Avoid exposure – keep the patient covered, close the doors and windows, finish the wash quickly.
4. If the patient is very sick, note the pulse before and after the hair wash.

EQUIPMENT

Sl. No.	Items
1	Jugs with hot water and cold water
2	Basin
3	Mug
4	Trough made from the towel
5	Ruber sheets – 3
6	Towels – 2
7	Blanket – 1

A Tray containing

Sl. No.	Items
1	Shampoo
2	Wash cloth
3	Cotton balls
4	Kidney Tray

Method

1. Explain the procedure to the patients, and screen the bed.
2. Bring the articles to the bed side.
3. Move the patient so that her head is near the edge of the bed. Arrange the pillow under her shoulder so that the head is tilted back protect the bed with the trough you made, with the end in the bucket, so that water will run down into it. Alternatively the patient may lie across the middle of the bed with a stool supporting her legs.
4. Protect the patient's shoulders with a small rubber sheet and towel and pin it in front.

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5. Fold and place the wash cloth over the eyes, and put cotton in the ears.
6. Loosen the hair and comb out tangles.
7. Mix the hot and cold water and test the temperature.
8. Wet the hair with warm water. Apply shampoo and rub the scalp and hair well, using the soft pads of the fingers. Rinse the hair well, repeat shampooing and rinsing if necessary. Squeeze the water from the hair.
9. Remove the bucket of dirty water and collect the trough into the second bucket.
10. Place a clean towel under the patient's head and dry the hair well.
11. Make the patient comfortable.
12. When dry, comb the hair and braid it.
13. Remove the articles, clean and replace them, chart the procedure.

7.9 CARE OF EYES

Primary eye care is a vital component of promotion of eye health and the prevention of treatment of conditions that may lead to vision loss.

Special attentions are also needed for patients with eye infection and who have undergone eye surgery, and unconscious patients.

Corneas are the only tissues that don't have blood supply

Nursing Management

1. Protect them from glare, or direct light in the eyes especially babies eyes in sunlight.
2. Regular hand washing prevents the spread of disease from one eye to the other.
3. Protect the baby eyes from flies and by means of Prophylactic drops at birth.
4. Get medical advice in good time. If anything seems wrong.
5. Never put drops or anything else into the eyes except by the order of a doctor.
6. Special nursing care is essential for patients with eye glasses, contact lenses or artificial eyes

7.10 CARE OF EARS

Hygiene of the ears has implications for hearing audity. Foreign body in the ear canal can cause deafness of older adults.

Wearing head phones for just an hour will increase the bacteria in the ear by 700 times

Management

1. The ears should be cleaned during the bed bath for bed ridden patients.
2. A clean corner of a moistened wash cloth rotated gently into the ear is used for cleaning.
3 Cotton tipped applicator is useful for cleansing the Pinna

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4. If there is any discharge from the ear canal, inform it to the doctor.
5. Instruct the patient not to put any sharp objects like hair pin inside the ear.
6. In case of using hearing aid routine cleaning and proper insertion techniques should be followed.

7.11 CARE OF PATIENT WITH RETENTION OF URINE

Acute urinary retention is a medical emergency that requires prompt recognition and bladder drainage.

Shy bladder syndrome is a type of phobia were people are unable to pass urine in the public place

Nursing Management

1. Instruct the patient to warm up before attempting to urinate
2. Avoid alcohol intake
3. Advise the patient to drink a cup of coffee or tea to create urinary urgency.
4. Sitting in a tub of warm water or warm shower may help him to urinate.
5. Make the patient to scheduled toileting position to pass urine.
6. Running water sound may increase the urgency. Take him to the bathroom and hear the sound of running water.
7. Use a catheter with a retention balloon to empty the bladder.

7.12 Offering and removing the Bed Pan

Bed patients usually need to use a bedpan about once or three times a day. The ward may be closed with a screen for this purpose as a routine. However if a patient make request for a bedpan at another time, you should meet the request with understanding and without delay.

Method of giving a bed pan

1. Screen the bed.
2. Bring a covered bedpan to the beside and place it on the stool. The bed pan should be clear and dry. In cold weather, warm it first with hot water. Pad the seat of the bedpan, if the patient is very weak and emaciated.
3. Protect the bed with a rubber sheet if necessary.
4. Place the bedpan on the bedside for the patient.
5. Place your left hand beneath the lower back to aid the patient in raising the buttocks and place the bedpan in position without force. Adjust the bedpan comfortably for the patient. Cover and leave him alone unless he is too ill or weak
6. Get a toilet tray ready and bring it to the bedside contents of the tray are.

Sl. No.	Items
1	Jug with warm water
2	Soap
3	Wash cloth and towel
4	Bowl with rag pieces or cotton
5	Long artery forceps
6	Kidney tray and paper bag

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To remove the empty bedpan

1. Let the patent wash himself if he is able to do so. Help him pouring water over the genitals, Remove the bedpan and give the patent water and soap for hand washing.
2. If the patient is helpless, use moistened rag pieces or cotton and the artery forceps and clean from front to back to prevent infection.

   Turn him on his side while removing the bedpan (a second person may be needed to help)
3. Make the patient comfortable.
4. Cover the bedpan, take it to the toilet room.
5. Observe the contents.
   A. Proper position reduces patient's back strain.
   B. Improper position of patient.

6. Empty the content and since the bed pan with cold water. Then clean it with the brush kept in soap solution the bed pan may be soaked in disinfectants. For one hour or sterilized if there are facilities for doing so.
7. Remove other articles from the bedside. Clean them and put them back in their proper place.
8. Wash your hands well.

Remove the screens, and leave the unit tidy. Record the time and observations.

7.13 Intake and Output Chart

Excessive sodium in the body retains water in the body and make your brain swell.

Intake and output records provide valuable information about fluid and electrolyte problems. As accurately recorded intake and output will identify sources of excessive intake of fluid losses. Intake should include Oral, IV, and tube Feedings and retained irrigations. Output includes urine, excess perspiration wound or tube drainage vomits and diarrhea. Estimate fluid loss from wounds and perspiration. Note the amount and colour of the urine.

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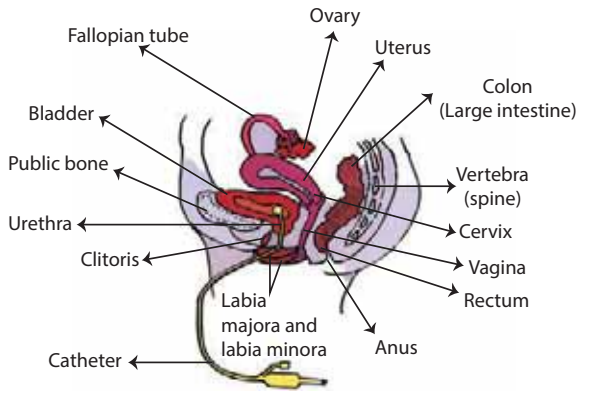
Use a separate plastic graduated measuring receptacle obtains a move precise measurement of urine output. Report any extreme increase or decrease in urine volume.

Assess the patient's average daily fluid intake. Advise the patient to use measuring cup or gloves.

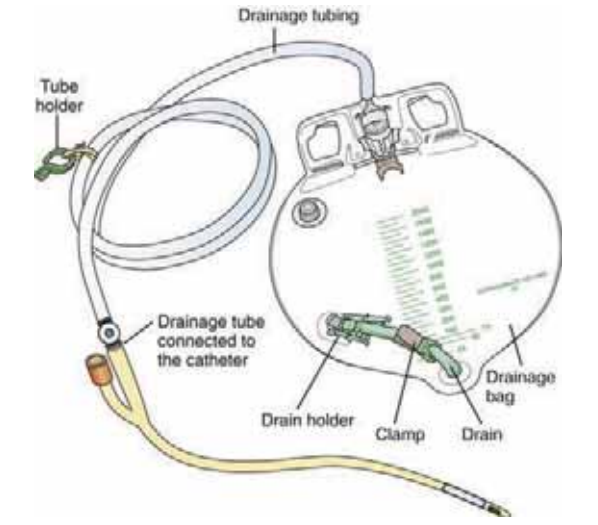


7.14 Individual Catheter Care

Introduction:- Urethral catheterization is a routine medical procedure to drain out urine from the bladder.

Uses

1. **Diagnostic Purposes:-** To determine the etiology of various genitourinary conditions.
2. **Therapeutic Conditions:-** To relieve urinary retension, irrigation and instill medications.



Types of Catheterization

1. Immediate drainage
2. Short term drainage – e.g. During surgery
3. Long term drainage:- Chronically ill or elderly patients.

Management of Patient with Catheter

1. Teach catheter care to the patient particularly one who is ambulatory.
2. Use a sterile, closed drainage system in short term catherization.

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3. Maintain an un -obstructed flow of urine. Empty the collecting bag regularly, and keep it below the level of the bladder.
4. Provide perineal care once or twice a day. Do not use lotion or powder near the catheter.
5. With long term use of a catheter, a long bag may be used.
6. Another catheter using some type of securement device to prevent catheter moving and urethral tension.
7. Use sterile technique whenever the system is open. e.g. sample collection for culture.

SUMMARY

- Hygiene is the practice of keeping yourself and your surroundings clean especially in order to prevent illness or the spread of disease.
- Factors affecting personal hygiene are physical, psychological and socio economic factors.
- Bed making contributes materially to the patient's comfort.
- There are too types. They are ordinary and special beds.
- Personal hygiene is one of the most effective ways to prevent the development and spread of infection.
- Bed bath is bathing a patient while he is bed.
- Routine care of shoulder and back is necessary to prevent bed sore.
- Foot and nail problems are due to improper trimming of nails, exposure to chemical and poorly fitted shoes.
- Good oral hygiene involves cleanliness, comfort and the moisturing the mouth structures and also prevent oral diseases.
- Hair wash is necessary for a patient to give comfort and sense of well being.
- Primary eye and ear care are the vital component of promotion of health.
- Acute urinary retension requires prompt recognition and bladder drainage.
- Catheterization is a routine medical procedure to drain out urine from the bladder.
- Nurse should meet the patient request of a bed pan with understanding and without delay.

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EVALUATION

I. Choose the correct answer

1. Closed bed is the type
   a. simple bed
   b. fracture bed
   c. unoccupied bed
   d. cardiac bed
2. Which type of bed which provide extra warmth to the patient.
   a. burns bed
   b. rheumatism bed
   c. cardiac bed
   d. stump bed
3. Enlarged bone on the side of big toe and angled outward is called as
   a. hammer toe
   b. spur
   c. bunions
   d. warts
4. Wart is an infection of
   a. bacteria
   b. virus
   c. fungus
   d. protozoa
5. Bad breath is called as
   a. cheilosis
   b. stomatitis
   c. halitosis
   d. dental caries
6. Inflammation of the tongue is called as
   a. gingivitis
   b. stomatitis
   c. glossitis
   d. halitosis

FK5A5P

7. Gingivitis is the inflammation of the
   a. tongue
   b. gum
   c. oral mucosa
   d. angle of the mouth
8. Bacteria commonly reside on the
   a. dermis
   b. epidermis
   c. subcutaneous

II. Answer the following questions in one (or) two lines.

9. What are the purposes of bed making?
10. What are the factors influencing personal hygiene?
11. What is meant by closed bed?
12. What is a healthy nail?
13. What is spur?
14. What is bunion?
15. What is wart?
16. What is meant by fan fold?
17. What is meant by cheilosis?
18. Define :- hygiene

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III. Write short notes

19. What are the purposes of bed bath?
20. What are the indications for a cardic bed?
21. What are the purposes of back care?
22. What is periodontal disease?
23. What are the causes of stomatitis?
24. What are the uses of burns bed?
25. What are the causes of oral malignancies?
26. What are the uses of intake and output chart?
27. Write about the types of catheterization?

IV. Write in detail

28. Enumerate any five types of special beds and its purpose.
29. What are the risk factors of skin impairment?
30. What are the common skin problems?
31. How will you take care of foot and nail?
32. List down the foot and nail problems?
33. Write the purposes of oral hygiene?
34. What are the risk factors of oral problems?
35. Write the nursing managements of a patient with retention of urine.
36. How will you manage a patient with urinary catheter?

A-Z GLOSSARY

1. Bunion (கால் பெரு விரல் வீக்கம்) – an abnormal prominence on the inner aspect of the first metatarsal head
2. Calluses (தடித்த தோல்) – a localized area of thickened skin
3. Cheilosis (கடை வாய்ப்புண்) – fissuring and scaling of lips
4. Chemotherapy (மருந்து கொண்டு நோய் நீக்கும் முறை) – treatment with chemical agents for cancer patients
5. Decalcification (எலும்புச் சுண்ணக நீக்கம்) – loss of calcium salts from bone
6. Dyspnoea (மூச்சு திணறல்) – difficulty in breathing
7. Glossitis (நாக்கில் தொற்று) – inflammation of tongue
8. Gingivitis (ஈறுகளில் தொற்று) – inflammation of gingival
9. Irrigation (நீர்ப் பாய்ச்சல்) – washing by a stream of water or fluid
10. Halitosis (வாய் துர்நாற்றம்) – offensive breath resulting from a poor oral hygiene
11. Malignancy (புற்று(கட்டிகள்) வேகமாகப் பரவக் கூடிய) – an advanced state of cancer
12. Perspiration (வியர்த்தல்) – profuse sweating
13. Stomatitis (வாய்ப்புண்) – inflammation of the mucus membrane of the mouth

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- https// kidskonnect.com > biology
- https// www.very well.com
- https//webmed.com> oral health
- https//webmed.com>scalp problem
- https//googleweblight.com
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UNIT

Nursing Procedures

FKE67C

LEARNING OBJECTIVES

At the end of the unit, the students will gain adequate knowledge regarding the nursing procedures and will develop desirable skill and positive attitude in practicing the procedures at all settings while caring a patient.

- demonstrate steps of each procedure in detail
- enumerate the advantages of each procedure
- explore the nursing responsibilities before, during and after the procedure.

8.1 Introduction

Nursing is considered to be an art oriented profession which should encompass knowledge, skill and attitude. These procedures should be skill oriented and the experienced nursing care in the comfort of your home like for the consumers. Thus, this unit focuses on the basic nursing procedures that are essential in taking care of the patients.

The essential care of the nursing practice is to deliver holistic, patient-centred care. Nurses deliver care in collaboration with the health care team members and within the frame work of the organization. To deliver high quality care we need to establish an effective inter personal and professional relationship and attain the best knowledge, skill and attitude.

An integral part of the training required for both study programs is the teaching of practical skills required for further study and for the subsequent profession of a nurse. The theoretical, preclinical preparation addressed in this textbook should create the conditions for the effective practice of nursing procedures and interventions under laboratory conditions and subsequently in clinical practice, while also reducing the risk of inappropriate or improper nursing procedures and patient interventions during further study.

In addition to the practical exercises under laboratory conditions, the study of this textbook should contribute to the smooth transfer of nursing procedures and interventions from preclinical preparation through the clinical practice while internalizing the key skills required for the healthcare profession and general nursing.

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This unit contains descriptions basic nursing procedures supplemented by extensive photographic and tabular material.

Linking the skills of professional nursing with the mastery of scientific knowledge of environmental health concepts from interdisciplinary studies is essential to reform the educational process for the health professions. Environmental effects on the health and welfare of individuals, families, and communities are increasingly complex and multifaceted. These effects require integrated knowledge of prevention and amelioration of environmental health consequences in all health professions education.

DO YOU KNOW?

The most important practical lesson that can be given to nurses is to teach them what to observe—how to observe—what symptoms indicate improvement—what the reverse—which are of importance—which are of none—which are the evidence of neglect—and of what kind of neglect.

8.2 Oxygen Therapy

Definition

Oxygen therapy refers to supplemental oxygen given to people with breathing disorders.

FKN28Z

Methods

- Nasal Cannula method
- Oxygen tent method/Oxyhood method
- Simple mask method
- Venture mask method

Sources

- Oxygen cylinder
- Oxygen wall outlet

Indications

- Shock
- Poisoning
- Trauma
- Anaesthesia
- Cardiac failure
- Respiration failure

8.2.1 Cannula Method

Definition

A method by which oxygen is administered in low concentration through a cannula, which is disposable plastic device with two protruding prongs for insertion into the nostrils.

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Purpose

1. To relieve dysponea.
2. To administer low concentration of oxygen to patients.
3. To allow uninterrupted supply of oxygen during activities like eating, drinking, etc.

Procedure

Sl.No	NURSING ACTION	RATIONALE
1	Determine need for oxygen therapy in patient. Check physician's order for rate, device used concentration, etc	Reduce risk of error in administration.
2	Perform an assessment of vital signs, level of consciousness, lab values, etc. and record.	Provides a baseline for future assessment.
3	Assess risk factors of oxygen therapy, patient and environment such as patients with the dangers of smoking when oxygen is on flow.	Reduces risk of danger to the patient.
4	Explain procedure to patient and relatives and inform them how to cooperate.	Reduces anxiety and ensures cooperation
5	Post "No Smoking" sign on the patient's door in view of patient and visitors	Oxygen supports combustion, smoking in oxygen area can lead to fire hazards.
6	Wash hands	Reduces risk of transmission of microorganisms.
7	Set up oxygen equipments and humidifier a. Fill humidifier up to the level marked on it with sterile water b. Attach flow meter to source, set flow meter in 'off' position. c. Attach humidifier to base of flow meter d. Attach tubing and nasal cannula to humidifier e. Regulate flow meter to prescribed level f. Ensure proper functioning by checking for bubbles in humidifier or feeling oxygen at the outlet.	Filling beyond this point will cause water to enter tubing. Flow meter helps in monitoring and regulating oxygen flow to patient Humidification helps in preventing drying of mucous membranes and promotes comfort of patient. Oxygen is a drug and is dangerous to administer at flow rates greater or lesser than prescribed level. Kinks in the tubing will obstruct flow of oxygen through tube.
8	Place tips of cannula to patient's nares and adjust straps around ear for snug fit. The elastic band may be fixed behind head or under chin	Proper fixing ensures comfort and prevents chances of cannula slipping from nostrils.

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Sl.No	NURSING ACTION	RATIONALE
9	Pad tubing with gauze pads over ear and inspect skin behind ear periodically for irritation/breakdown	Constant pressure may cause skin breakdown.
10	Inspect patient and equipment frequently for flow rate, clinical condition, level of water in humidifier, etc.	Helps identifying any complications that may arise.
11	Ensure that safety precautions are followed	
12	Wash hands	
13	Document time, flow rate and observations made on patient.	
14	Encourage the patient to breath through his/her nose with mouth closed	Provides for optimal delivery of oxygen to patient.
15	Remove and clean the cannula with soap and water, dry and replace every 8 hours. Assess nares at least every 8 hours.	Presence of cannula causes irritation and dryness of the mucous membrane.

Oxygen concentration will vary on many factors like patient's tidal volume and ventilator pattern.

Special Precautions

1. Never deliver more than 2-3 litres of oxygen to patients with chronic lung disease, e.g. COPD (chronic obstructive pulmonary disease)
2. Check frequently that both prongs are in patient's nares.

Oxygen concentration with flow rates	
Flow rate per minute	**Oxygen concentration**
1 litre/mt	24 to 25%
2 litres/mt	27 to 29%
3 litres/mt	30 to 33%
4 litres/mt	33 to 37%
5 litres/mt	36 to 41%
6 litres/mt	39 to 45%

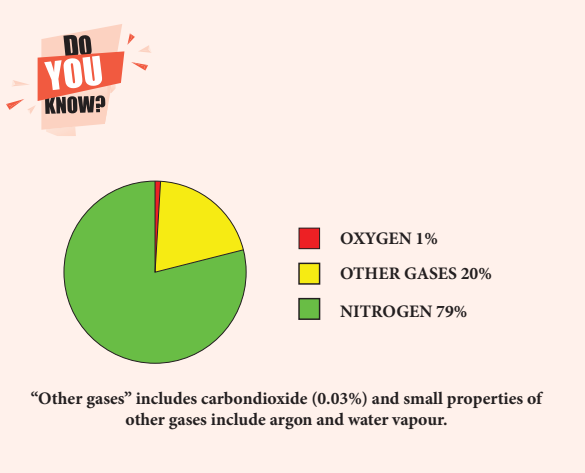
8.2.2 Administering Oxygen By Mask Method

Definition

Administering oxygen to the patient by means of a mask (simple / venturi) according to requirement of patient.

Purpose

1. To relieve dyspnoea.
2. To administer higher concentration of oxygen.



"Other gases" includes carbondioxide (0.03%) and small properties of other gases include argon and water vapour.

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DO YOU KNOW?

By volume, dry **air** contains 78.09% nitrogen, 20.95% oxygen, 0.93% argon, 0.04% carbon dioxide, and small amounts of other gases. **Air** also contains a variable amount of water vapor, on average around 1% at sea level, and 0.4% over the entire **atmosphere**.

Articles

1. Oxygen source
2. Mask (simple / or with venture adaptor high flow device of appropriate size)
3. Humidifier with distilled water
4. Flow meter
5. Gauze pieces
6. "No Smoking" sign.

Procedure

Sl.No	NURSING ACTION	RATIONALE
1	Determine need for oxygen therapy, Check physician's order for rate, device to be used and the concentration.	Reduces risk of error in administration.
2	Perform an assessment of vital signs, level of consciousness, lab values, etc. and record.	Provides a baseline for future assessment.
3	Assess risk factors of oxygen administration in patient and environment-like hypoxia drive in patients and faulty electrical connection.	Reduces risk of danger caused to patient. Oxygen is a combustible gas. Hypoxia drive in patients is essential to maintain respiration.
4	Explain procedure to patient and relatives and emphasize how he has to cooperate.	Reduces anxiety and enhances cooperation
5	Post "No Smoking" signals on the patient's door in view of patient and visitors and explain to them the dangers of smoking when oxygen is on flow.	Oxygen supports combustion; smoking in oxygen area can lead to fire hazards.
6	Wash hands	Reduces risk of transmission of microorganisms.
7	Set up oxygen equipments and humidifiers. a. Fill humidifier up to the level mark on it. b. Attach flow meter to source, set flow meter in 'off' position. c. Attach humidifier to base of flow meter d. Attach tubing and face mask to humidifier (if venture device is used attach the colour coded venture adapter to mask as appropriate) e. Regulate flow meter to prescribed level	Filling humidifier above this level will cause water to enter into tubing. Flow meter helps in monitoring and regulating oxygen flow to patient. Humidification helps to prevent drying of mucous membranes and promotes comfort of patient. Oxygen is a drug and is dangerous to administer at flow rates greater or lesser than prescribed level.

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Sl.No	NURSING ACTION	RATIONALE
8	Apply mask to patient's face from nose to downward. Fit the metal piece of mask to conform to shape of nose.	To mask should be mould to face so that very little oxygen escapes into eyes or around cheeks or chin.
9	Secure elastic band around patient's head.	Ensure comfort of patient.
10	Apply padding behind ears as well as scalp where elastic band passes.	Padding prevents irritation to skin around area.
11	Ensure that safety precautions are followed	
12	Inspect patient and equipment frequently for flow rate clinical condition, level of water in humidifier, etc	Identifies complications if they develop.
13	Wash Hands.	Reduces risk of transmission of microorganisms.
14	Remove the mask and dry the skin every 2-3 hours if oxygen is administered continuously. Do not put powder around the mask.	The tight fitting mask and moisture from condensation can irritate the skin on the face.
15	Document relevant data in patient's record.	

Venturi mask

Special Considerations

1. The dosage of oxygen may be ordered as an FIO (Fraction of Inspired Oxygen) which is expressed as a percentage or as litres per minute.
2. The venturi mask will have colour-coded inserts that list the flow rate necessary to obtain the desired percentage oxygen.

Flow rates and oxygen concentrations delivered using venturi mask		
Nazzelcolour code	Flow rate (litres per minute)	Concentration of oxygen to be delivered
Blue	3 Lpm	24%
Yellow	6 Lpm	28%
White	8 Lpm	31%
Green	12 Lpm	35%
Pink	15 Lpm	40%
Orange	15 Lpm	50%

Oxygen administration by face mask

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Images of different kinds of mask

8.2.3 Administering Oxygen Using Oxygen Tent

Definition

Process of administering oxygen by means of tent, usually for infants which gives maximum comfort and most satisfactory results.

Description

An Oxygen tent consists of a canopy over the baby's bed that may cover the baby fully or partially and is connected to a supply of oxygen. The canopies are transparent and enables the nurse to observe the sick baby.

Advantages

1. provides an environment for the patient with controlled oxygen concentration, temperature regulation and humidity control.
2. It allows freedom of movement in bed.

Disadvantages

1. It creates a feeling of isolation.
2. It requires high level of oxygen (10-12 litres per minute)
3. Loss of desired concentration occurs each time the tent is opened to provide care for the infant.
4. There is an increased chance of hazards due to fire.
5. It requires much time and effort to clean and maintain a tent.

Articles

Oxygen tent and oxygen source, humidifier.

Procedure

Sl.No	NURSING ACTION	RATIONALE
1	Explain and reassure the parents and child.	Helps in obtaining cooperation
2	Select the smallest tent and canopy that will achieve the desired concentration of oxygen and maintain patient comfort.	Increases the efficiency of the unit.
3	Tuck the edges of the tent under the mattress securely. This is especially important if the child is restless and can dislodge the tent by pulling the covers loose.	Dislodgement of tent leads to oxygen leakage.

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Sl.No	NURSING ACTION	RATIONALE
4	Pad the metal frame that supports the canopy.	Protects the child from injury.
5	Flush the tent with oxygen (increase the flow rate) after it has been opened for a period of time to increase the concentration of the gas and reset the flow meter to the original level.	Oxygen is circulated in the tent to adjust the concentration.
6	Analyze and record the tent atmosphere every 1-2 hours. Concentration of 30 to 50% can be achieved in well maintained tents.	Concentration varies with the efficiency of the tent, the rate of flow of oxygen, and the frequency with which tent is opened to the outside environment.
7	Maintain a tight fitting canopy whenever possible, provide nursing care through the sleeves or pockets of the tent.	Prevent oxygen leakage and disruption of the tent atmosphere.
8	Check child's temperature routinely.	Moisture accumulation may result in hypothermia.
9	No smoking' sign should be pasted in the unit.	Oxygen helps in combustion.
10	Record the flow rate of oxygen, alteration in flow rate and the child's reaction.	Serves as a communication between staff members.

Oxyhood

Note

1. Oxygen can be administered to babies using oxygen hood (Oxyhood).
2. Oxygen hood is a plastic device, which is kept over the head of the infant. It permits easy access to the child without loss of oxygen. It helps in efficient delivery of oxygen.
3. While placing hood over the head of the child, the edges of the hood should not rub against the child's chin, neck and shoulders.

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Special Considerations

1. Mist is prescribed with oxygen therapy to liquefy secretions.
2. Humidified air may condense into water droplets on the inside walls of the tent, it is important to examine the child's clothing and bedding and change them as necessary to prevent chilling.
3. Electrical equipment used within or near the tent should be grounded properly.
4. It is preferable to monitor SpO2 (oxygen saturation) of patient continuously.
5. Avoid the use of volatile, inflammable materials such as oils, grease, alcohol, either and acetone near the tent.
6. Nurses should be knowledgeable about the location and technique for using a fire extinguisher.
7. For the baby in oxygen tent, toys selected should be such that they retard absorption are washable and will not produce static electricity, e.g. woolen and stuffed toys. This ensures baby's safety.

8. 3 Specimen Collection

8.3.1 Definition

A specimen may be defined as a small quantity of a substance or object which shows the kind and quality of the whole (sample).

Specimen collection defined as the collection of the specimen for the purposes of diagnosis, treatment and recovery.

8.3.2 Preparation of the clients:

- Explain the procedure to the patient. It helps to gain the client's trust and cooperation.
- When preparing the client the nurse's explanation should be clear, straight forward and complete.
- Be sure that the client has understood clearly and correctly the information.
- In case of collection of urine, instruct the client to wash the genitalia with soap and water and then rinse it in water before collecting the specimen.
- Instruct the client not to contaminate the outside of the bottle.
- Instructions to use gloves and other barriers as necessary.

8.3.3 Types of containers used for specimen collection

- All specimens are collected in clean and dry containers.
- Use containers with wide mouth.
- Sterile containers are used for culture.
- Wax lined disposable cups are used for sputum and stool specimens.
- Large containers are used for 24 hours urine specimens.
- Sterile test tubes are used to collect fluids.
- Clean slides are used to collect smears.
- No antiseptic solution must be present in the specimen bottle as they may hamper the growth of micro organism and thus obscure the results.

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8.3.4 Collection of urine specimen:

8.3.4.1 Method of collecting single urine specimen :

Single urine specimen means the amount of urine voided at a time. Usually the morning specimens are collected. The amount of 100-120 ml of urine will be sufficient for the usual tests.

After cleaning the genital, the client passes urine into clean urinal or a clean kidney tray or directly in to specimen bottle, taking care not to spill the urine on the out side of the container.

8.3.4.2 Method to collect Midstream specimen for culture:

Ask the client to clean the genital area with soap and water then rinse in water alone. In female clients the labia are separated for cleaning and kept apart until the urine had been collected. In male client, the foreskin should be retracted and the glans penis is cleaned before the collection of the urine.

The client begins to void in to the toilet, commode or bed pan. Than the client stops the stream of urine, the sterile container is positioned and continues to void in to the container. When enough urine has been voided, for specimen, the client stops the stream again; the container is removed and then finishes voiding in the original receptacle.

8.3.4.3 Method of collecting 24 hours urine specimen:

24 hours urine specimen means to collect all the urine voided in 24 hours. The collection of urine begins at 6AM and discard the whole urine. All the subsequent voiding should be measured and collected in the bottle and labelled. Continue to collect till morning. Ask the client to void at 6 -AM on the next day and add it to the previously collected.

8.3.4.4 Method of collecting urine specimen from unconscious clients and children:

In male babies or unconscious male clients, take a test tube, a barrel of syringe or nirodh or condom with rubber tubing and is attached to the penis. It is kept in place by adhesive tapes. In female attach a wide mouthed container or a funnel with rubber tubing to the vulva by means of a T binder. The rubber tubing is connected to a bottle and the urine is collected in the bottle.

8.3.5 Method of collecting sputum specimen:

Water proof disposable sputum cups or wide mouthed containers are used to collect the sputum specimen. The client should be given the container and is instructed to raise the material from the lungs and not simply expectorating the saliva or discharges from the nose or throat. The sputum should be collected before brushing the teeth and the food. Mouth can be rinsed with plain water, not any antiseptic mouth washes.

8.3.6 Method of collecting stool specimen:

Water proof disposable sputum cups or wide mouthed containers are provide with necessary instructions. The client passes stool in a clean bedpan. A small amount of stool is removed with a stick or spatula and is placed in the container. Discard the stick in the waste bin.

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Nursing function for specimen collection

1. Complete lab Request
2. Place the specimen is appropriate place for pick up
3. Document specimen sent and anything unusual about the appearance of specimen.
4. Labell the patients details on the containers.

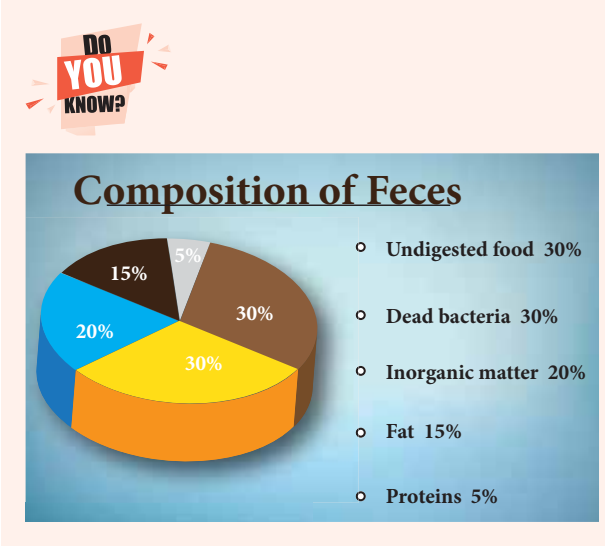
8.3.6.1 Collecting Stool Specimen for Routine Examination:

Definition

Collection of a small quantity of stool sample in a container for testing in the laboratory.

Purpose

To test the stool for normalcy and presence of abnormalities.



Articles

1. A Clean specimen container.
2. A spatula for putting the specimen into the container.
3. Dry bed-pan (for helpless patients). Additional bedpan for rinsing and cleaning.
4. Laboratory requisition form.
5. Clean gloves.
6. Waste paper (for wrapping used spatula).
7. A pitcher of water (for helpless patient).and Tissues / towel

Procedure

Sl.No	NURSING ACTION	RATIONALE
1	Check the physician's order and 'Nursing Care Plan'.	Obtains specific instruction and information
2	Identify the patient.	Helps to perform the right procedure for the right patient.
3	Explain to patient the procedure and make clear what is expected of him/ her.	Aids in proper collection of specimen.
4	Give the labelled container and spatula to the patient with instructions. i. To defecate into clean dry bedpan. Not to contaminate specimen with urine.	
5	Torn gloves	

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Sl.No	NURSING ACTION	RATIONALE
6	For helpless patient: assist patient on to the clean bedpan	
7	Leave him with instructions	
8	When done, remove and keep aside the bedpan after placing the second one for cleansing.	
9	Collect about 2cm of formed stool or 20 to 30ml of liquid diarrheal stool	
10	Once the specimen is collected send it to lab with the appropriate requisition forms.	
11	Wash and replace the reusable articles	
12	Dispose off the used spatula wrapped in waste paper.	Prevents contamination
13	Wash and dry hands.	Prevents cross contamination.
14	Record information in the patient's charts.	

Special Considerations

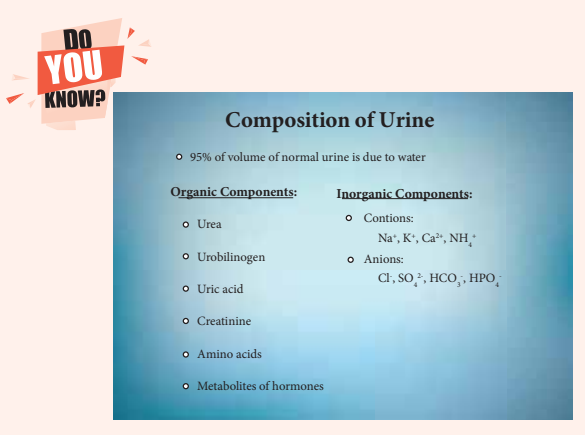
1. Send specimen to be examined for parasites immediately, so that parasites may be observed under microscope while viable, fresh and warm.
2. Inform if bleeding hemorrhoids or hematuria is present.
3. Postpone test if woman has menstrual periods, until three days after it has ceased.
4. Consider that intake of folic acid, anticoagulant, barium, bismuth, mineral oil, vitamin C, and antibiotics may alter the results.
5. Use two bedpans for helpless patient- one for collecting specimen and another for cleaning.

8.4 Urine Analysis

8.4.1 Test for sugar - benedict's test

Benedict's test is used as a simple test for reducing sugars. A reducing sugar is a carbohydrate possessing either a free aldehyde or free ketone functional group as part of its molecular structure. This includes all monosaccharides (eg. glucose, fructose, galactose) and many disaccharides, including lactose and maltose.

Benedict's test is most commonly used to test for the presence of glucose in urine. Glucose found to be present in urine is an indication of Diabetes mellitus



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8.4.2 Equipments

Benedict's solution (fresh; certainly not more than 3 months old), Dropper, Test-tube, Test-tube holder. Spirit lamp, Match box, Kidney tray, containers.

Quality checking of the Benedict's solution

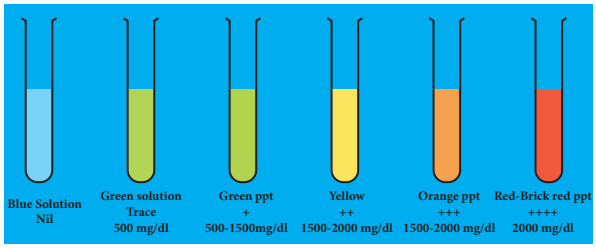
Benedict's solution is blue in color. In order to check purity of Benedict's solution take 5 ml of Benedict's solution in test tube and heat it. If it does not change color, it means, it is pure. Spirit lamp, Match box, Kidney tray, Container.

8.4.3 Procedure

- Take 5 ml (one teaspoon) of Benedict's solution in the test-tube.
- Holding the test-tube with the holder, heat it over a spirit lamp till the Benedict's Solution boils without overflowing.
- Drop 8 to 10 drops of urine into the boiling Benedict's solution.
- After again boiling the mixture, let it cool down.
- While cooling, the mixture changes color.
- Observe the color change and precipitate formation and analyze the test result

8.4.4 Result interpretation

The colour of the mixture serves as a guide to the amount of sugar in the urine :



(ppt – precipitate)

8.4.5 Test For Albumin

- Fill three-fourth of a test tube with filtered urine (filtering removes pus if present).
- See the reaction of the urine is acidic. If found alkaline, add one drop of acetic acid and make it acidic.
- Heat the upper third of the urine over sprit lamp and allow it to boil.
- A cloud may appear either due to phosphate or albumin.
- Add acidic acid drop by drop in to the test tube.
- If the urine is still cloudy it indicates the presence of albumin.
- If it becomes clear it indicates the presence of phosphates.
- No albumin is presence in the normal urine.
- If the urine is highly acidic or highly alkaline, the reading will be false.

8.4.6 Test for Acetone

- Take 5 ml of urine in a test tube and saturate it with ammonium sulphate.
- Add a small crystal of sodium nitroprusside and mix well.
- Slowly run along the side of the test tube liquor ammonia to form a layer.
- Immediate formation of a purple permanganate colored ring at the junction of the two fluids indicates a positive test

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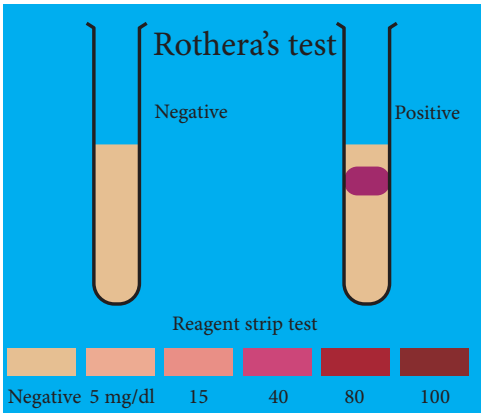
Glucose monitoring



8.4.7 Special points

- Keep reagent tables in a cool, dry place at a temperature below 86^0 F(30° C).
- Do not refrigerate the reagent tablets and strips.
- Keep the container tightly closed.
- Do not use discolored or outdated tablets or strips.

8.4.8 Test For Bile Salts (Hey's Test)

- Take a test tube, half full of urine.
- Sprinkle sulphur powder on the surface of the urine.
- If the powder sinks down to the test tube, it indicated the presence of bile salts.
- This is because, bile salts reduce the surface tension of the urine and allows the sulphur powder to sink down.

8.4.9 Test for Bile Pigments

- Fill three-fourth of a test tube with urine.
- Add iodine drops along the sides of the test tube, so as to form the layer on the surface of the urine.
- A green color at the junction of the two liquids indicates the presence of bile pigments.
- Discard the urine and clean the test tube.

8.5 Helping in Bathing the Patient

Giving a bed bath means washing someone who is in bed. A bed bath cleans the skin and helps keep the skin free of infection. It helps to relax the person being bathed and help him feel better. Let the person wash himself as much as possible. Several types of bath can be used depending upon the clients need. Bath may be used for cleansing or for therapeutic measures related to some skin problems.

8.5.1 Types of Therapeutic Bath

Sitz Bath	-	To decrease pain and inflammation after rectal or perineal surgery or pain relief from hemorrhoids.
Hot water bath	-	To relieve muscle spasm and muscle tension.
Warm water bath	-	To relax and sooth.
Cool water bath	-	To decrease fever and to reduce muscle tension.
Oatmeal or aveneo	-	To sooth irritated skin, softens and lubricates dry scaly skin.
Corn starch	-	To sooth skin irritation.

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8.5.2 BED BATH

Definition:

Bathing a bedridden patient in bed.

8.5.2.1 PURPOSES

- To clean the body off dirt and bacteria.
- To increase elimination through the skin.
- To prevent bed sore.
- To simulate circulation.
- To promote comfort to the patient.
- To regulate body temperature.
- To relieve fatigue.
- To provide active and passive exercise.
- To promote the feeling of wellbeing.

8.5.2.2 Articles Needed

- Makintosh and 2 bed sheets
- Disposable gloves.
- Water basin (bowl) to hold the water for the bed bath.
- Soft, lightweight cotton or flannel blanket.
- Bath towel and wash cloth.
- Soap, powder, lotion, deodorant.
- Scissors and nail cutters
- comb, hairbrush and hair oil.
- mouth care supplies, such as toothbrush and toothpaste.
- Kidney tray and paper bag.
- Clothing, such as underwear and clean bedclothes or robe.

8.5.2.3 Preparation of Client and Unit

1. Close the windows or turn up the heat to keep the room warm while giving the bath.
2. Explain the procedure to the patient. Remove the unnecessary items from the work area.
3. Wash hands and put on gloves.
4. Provide privacy Gather the necessary articles at the bedside.
5. Adjust the height of the bed to the comfortable working of the nurse.

   Fill the basin with warm water. The temperature of the water should not be higher than 115° F (46 ° C) using a bath thermometer.

   Put the soft blanket over the top sheet that is covering the person. Pull back the top sheet to keep it from getting wet. Help remove the person's clothes.
6. Offer bed pan or urinal if necessary. Keep the client flat, if the condition permits. Remove extra pillows and backrest.
7. Remove gloves, wash hands
8. Place the client is the supine position near the ride of the bed.

8.5.2.4 Procedure:

1. Close the window or door and screen the bed to prevent draught and to avoid exposure.
2. To collect the equipment next to the patients bed.
3. And arrange the items conveniently at the bed side.
4. Explain the procedure to the patient and get his cooperation.

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5. Protect the bed with mackintosh and sheet.
6. Remove the patients linen and cover the patient.
7. Take water in the basin and feel with the back of your hand. The temperature should be comfortably hot.
8. With wet sponge towel, moisten the patient's face first.
9. Apply soap. Carefully wash patient's face, ears and front of the neck. Dry with the towel.
10. Wash the left hand first and the right hand. Support patient's arm by holding the wrist. Wash well between fingers. The patient may place hands in basin.
11. Remove the sheet up to the waist, ask the patients and keep the arms above his head. It will be easy to clean the axillae in this position. Clean chest and abdomen.
12. Change water and turn the patient to the side and sponge his back. Give long firm strokes from back of neck to the buttocks. Watch for any redness over the pressure areas.
13. Do the left leg first and then the right. Have the patient's knee flexed so to facilitate washing. Give the bed pan and ask the patient to clean the genitals. If the patient is unable to do help to do it for him. Patient should be given privacy during this.
14. This back care is done applying alcohol, massage back,use long firm strokes starting from back of the neck out over the shoulders and down to the buttocks. Use also rotation motion to increase the blood circulation. Extra attention to be given to the pressure areas.
15. Apply powder if indicated. This depends upon the condition of the skin. If the skin is wrinked the application of oils/creams is advisable.
16. If the patients is having dribbling of urine, zinc cream is applied.
17. Role up the mackintosh and sheet when the patient is on the side. Then remove it from the other side. Put the soiled linen in the receptacle (bucket for soiled linen).
18. Dress up the patient and remove the top sheet.
19. The bed is kept tidy and dry.
20. The patient is given a warm drink.
21. Remove the articles from the bed side.
22. Clean and replace in respective places.
23. Send soiled linen for wash.

8.5.2.5 After the bath

- Rub lotion onto the person's arms, legs, feet, or other dry skin areas. Help to dress the person. Offer to help him with mouth, hair, foot, or nail care.
- Throw away the dirty water and clean the washbasin. Put away items used to give the bath.

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- The person has shaking chills or his temperature is over 101°F (38.3° C).
- The person has skin that is red or sore. These may be areas where the skin is broken down or getting infected.
- You have questions or concerns about the person's injury/illness or medicine.
- Seek care immediately if:
- The person has trouble breathing all of a sudden.
- The person has signs of a heart attack
- Chest pain or pressure that spreads to your arms, jaw, or back. Nausea (sick to your stomach), Trouble breathing, Sweating.

8.6 Pressure Ulcer

8.6.1 Definition

Pressure ulcers, also known as **pressure sores, pressure injuries, bedsores,** and **decubitus ulcers**, are localized damage to the skin and/or underlying tissue that usually occur over a bony prominence as a result of pressure, or pressure in combination with shear and/or friction.

The most common sites are the skin overlying the sacrum, coccyx, heels or the hips, but other sites such as the elbows, knees, ankles, back of shoulders, or the back of the cranium can be affected.

8.6.2 Causes

Pressure ulcers occur due to pressure applied to soft tissue resulting incompletely or partially obstructed blood flow to the soft tissue. Shear is also a cause, as it can pull on blood vessels that feed the skin. Pressure ulcers most commonly develop in individuals who are not moving about, such as those being bedridden or confined to a wheelchair.

There are four mechanisms that contribute to pressure ulcer development:

External (interface) pressure applied over an area of the body, especially over the bony prominences can result in obstruction of the blood capillaries, which deprives tissues of oxygen and nutrients, causing ischemia (deficiency of blood in a particular area), hypoxia (inadequate amount of oxygen available to the cells), edema, possible onset of osteomyelitis, inflammation, and, finally necrosis and ulcer formation. Ulcers due to external

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pressure occur over the sacrum and coccyx, followed by the trochanter and the calcaneus (heel).

Friction is damaging to the superficial blood vessels directly under the skin. It occurs when two surfaces rub against each other. The skin over the elbows and can be injured due to friction.

Shearing is a separation of the skin from underlying tissues. When a patient is partially sitting up in bed, their skin may stick to the sheet, making them susceptible to shearing in case underlying tissues move downward with the body toward the foot of the bed.

Moisture is also a common pressure ulcer culprit. Sweat, urine, feces, or excessive wound drainage can further exacerbate the damage done by pressure, friction, and shear.

8.6.3 Signs and Symptoms

The early signs of pressure ulcers are

- Unusual changes in skin color or texture
- Swelling
- Tenderness
- Discomfort
- Pus-like draining
- An area of skin that feels cooler or warmer to the touch than other areas
- Local oedema
- Later the area becomes blue purple and mottled
- Due to continued pressure, the circulation is cut-off, the gangrene develops and the affected area is sloughed off..

8.6.4 Stages of Pressure Sores

Stage 1

Intact skin with non-blanch and redness of a localized area usually over a bony prominence.

Stage 2

Partial thickness, loss of dermis presenting as a shallow open ulcer with a red pink wound bed without slough may also present as an intact or open/ruptured serum filled blister. Also presents as a shiny or dry shallow ulcer without slough or bruising. This stage should not be used to describe skin tears, tape burns, perinea dermatitis, maceration or excoriation

Stage 3

Full thickness, tissue loss, subcutaneous fat may be visible but bone, tendon or muscle are not exposed.

Stage 4

Full thickness tissue loss with exposed bone, tendon or muscle. Slough or eschar may be present on some parts of the wound bed.

Unstageable

Full thickness tissue loss in which actual depth of the ulcer is completely obscured by slough (yellow, tan, gray, green or brown) and/or eschar (tan, brown or black) in the wound bed. Until enough slough and/or eschar is removed to expose the base of the wound, the true depth, and therefore stage, cannot be determined.

Suspected Deep Tissue Injury

A purple or maroon localized area of discoloured intact skin or blood-filled

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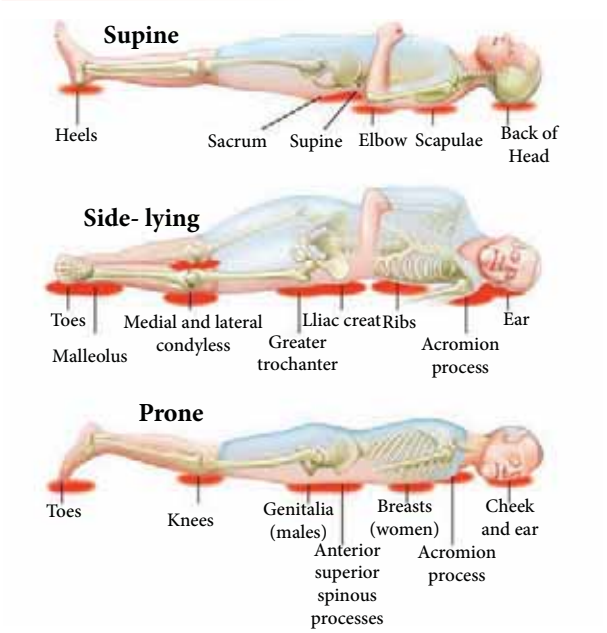
blister due to damage of underlying soft tissue from pressure and/or shear. The area may be preceded by tissue that is painful, firm, mushy, boggy, warmer or cooler as compared to adjacent tissue.

8.6.5 Areas Prone to Develop Pressure Sore



8.6.6 Risk Factors

Factors that may place a patient at risk include

- immobility,
- diabetes mellitus
- peripheral vascular disease
- malnutrition
- cerebro-vascular accident and hypotension.
- Other factors are age of 70 years and older,
- current smoking history,
- dry skin,
- low body mass index,
- urinary and fecal incontinence,
- physical restraints,
- malignancy, and history of pressure ulcers.

8.6.7 Prevention

8.6.7.1 Redistributing pressure:

The most important care for a person at risk for pressure ulcers and those with bedsores is the redistribution of pressure so that no pressure is applied to the pressure ulcer.

8.6.7.2 Support surfaces

Many support surfaces redistribute pressure by immersing and/or enveloping the body into the surface. Some support surfaces, including anti decubitus mattresses and cushions, contain multiple air chambers that are alternately pumped. Methods to standardize the products and evaluate the efficacy of these products have only been developed in recent years.

8.6.7.3 Nutrition

In addition, adequate intake of protein and calories is important. vitamin C has been shown to reduce the risk of pressure ulcers. People with higher intakes of vitamin C have a lower frequency of bed sores in those who are bedridden than those with lower intakes.

8.6.7.4 Treatment

The treatment includes the use of bed rest, pressure re distributing support surfaces, nutritional support, repositioning, wound care (e.g. debridement, wound dressings) and biophysical agents (e.g. electrical stimulation). Reliable scientific evidence to support the use of many of these interventions, though, is lacking.

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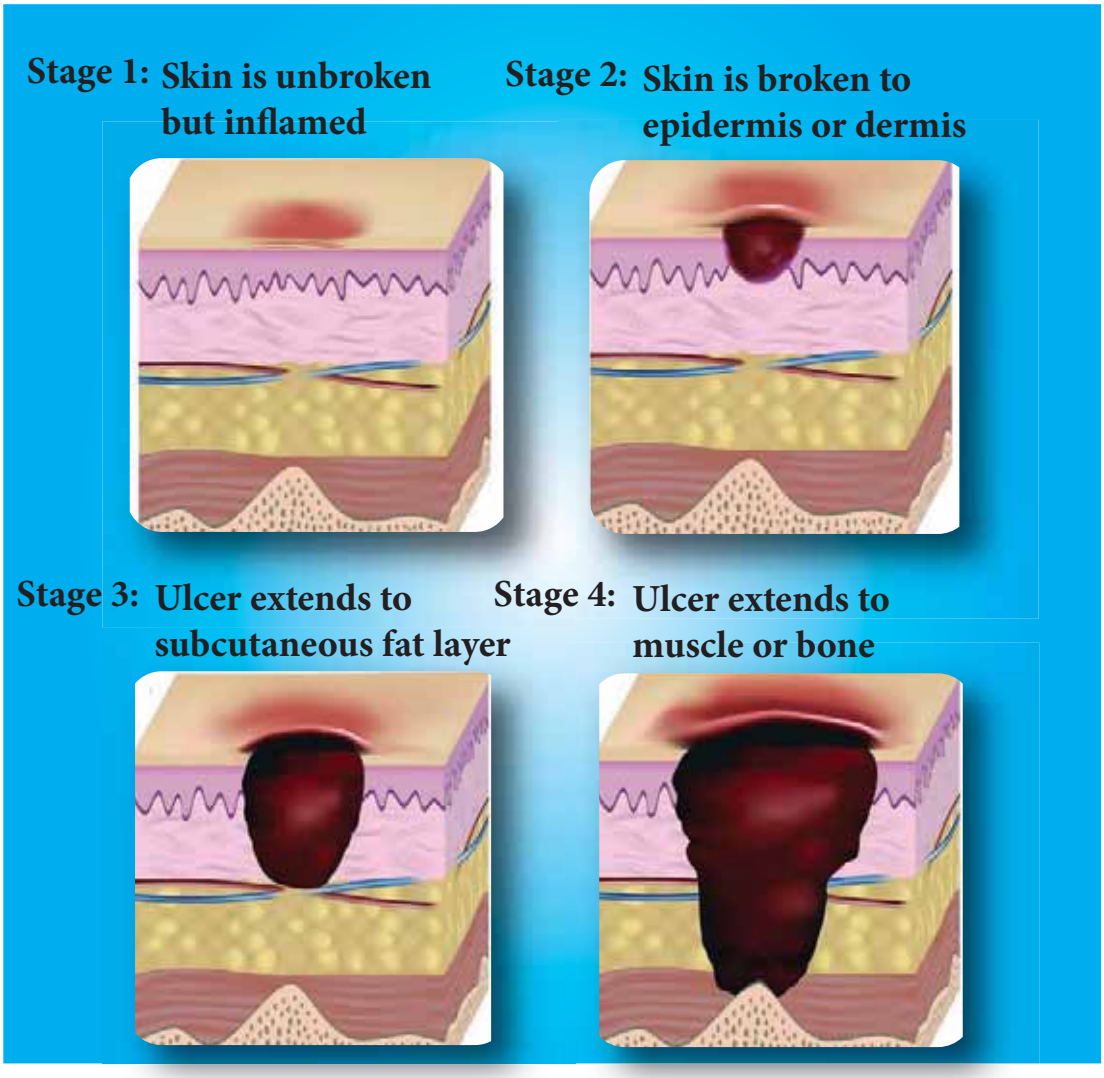

The following steps should be taken:

- **Remove the pressure** from the sore by moving the patient or using foam pads or pillows to prop up parts of the body.
- **Clean the wound**: Minor wounds may be gently washed with water and a mild soap. Open sores need to be cleaned with a saline solution each time the dressing is changed.
- **Control incontinence** as far as possible.
- **Remove dead tissue**: A wound does not heal well if dead or infected tissue is present, so debridement is necessary.
- **Apply dressings**: These protect the wound and accelerate healing. Some dressings help prevent infection by dissolving dead tissue.
- Use oral antibiotic cream: These will help treat an infection.

8.6.7.5 Debridement

Necrotic tissue should be removed in most pressure ulcers. The heel is an exception in many cases when the limb has an inadequate blood supply. Necrotic tissue is an ideal area for bacterial growth, which

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has the ability to greatly compromise wound healing. There are five ways to remove necrotic tissue.

1. **Autolytic debridement** is the use of moist dressings to promote autolysis with the body's own enzymes and white blood cells.
2. **Biological debridement**, or maggot debridement therapy, is the use of medical maggots to feed on necrotic tissue and therefore clean the wound of excess bacteria. Although this fell out of favor for many years, in January2004, the FDA approved maggots as a live medical device.
3. **Chemical debridement**, or enzymatic debridement, is the use of prescribed enzymes that promote the removal of necrotic tissue.
4. Mechanical debridement, is the use of debriding dressings, whirlpool or ultrasound for slough in a stable wound
5. Surgical debridement, or sharp debridement, is the fastest method, as it allows a surgeon to quickly remove dead tissue.

8.6.7.6 Dressing

Some guidelines for dressing are

Condition Cover dressing

None to moderate exudates - Gauze with tape or composite.

Moderate to heavy exudates - Foam dressing with tape or composite

Frequent soiling - Hydrocolloid dressing, film or composite

Fragile skin -Stretch gauze or stretch net

8.7 Back Care

8.7.1 Definition

Scientific form of massaging the back using different massaging strokes to provide cutaneous stimulation and thus promote comfort.

8.7.2 Purposes

- To relieve muscle tension
- To promote physical and mental relaxation.
- To relieve insomnia
- To stimulate blood circulation
- To assess the condition of skin
- To prevent bedsore

8.7.3 Contraindications

Patients with

- Rib fracture
- Burns
- Immediate post operative period after coronary artery bypass graft
- Spinal injuries
- Surgeries on back
- Lotion or oil

8.7.4 Articles Needed:-

- Lotion or oil
- Bath towel
- Bath blanket
- Soap
- Wash cloth
- Warm water in basin
- Mackintosh and draw sheet

If patient requires hygienic care, it should be provided, followed by massage

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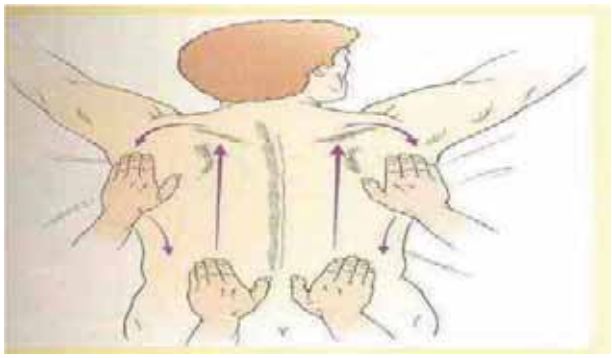
8.7.5 Massage Techniques

Effleurage

They are long sweeping strokes that alternate between firm and light pressure and which can be performed using the palm of the hand or the fingertips. The knots and tension in the muscles tend to get broken with this massage technique.



Petrissage

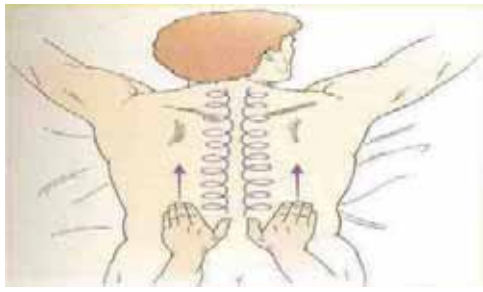
This is the technique of kneading the muscles of the body to attain deeper massage penetration. The thumbs and the knuckles of the fingers are used to knead the muscles of the body and to squeeze them to prepare them for the other massage techniques that follow.

Tapotement or Rhythmic Tapping

As the name suggests, it consists of rhythmic tapping that uses the fists of the cupped hands. This helps to loosen and relax the muscles being manipulated and also helps to energize them.

Friction

This move seeks to create heat to bring about relaxation of the muscles. The palms of the hand are rubbed together vigorously with each other, or they are rubbed onto the skin of the person being massaged in order to produce heat by friction. This technique can be used as a warm up for the muscles of the body to be treated for deeper massage.



Vibration or Shaking

This helps to loosen up the muscles by using a back and forth action of the fingertips or the heel of the hand over the skin. The muscles of the body are litreally shaken up to loosen and relax the muscles.

8.7.6 Procedure

- Explain the procedure and the position to the patient.
- Adjust bed to comfortable height.
- Adjust light, temperature and sound within room.

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- Close curtains around bed. Lower the side rails and help patient assume prone or side lying position (sim's position)
- Expose patient's back, shoulders, upper arms, and buttocks. Cover remainder of body.
- Wash your hands with warm water.
- Inform patient that lotion will feel cool and wet
- Apply hands first to sacral area massaging in circular motion, stroke upwards from buttocks to shoulders
- Continue in one smooth stroke from upper back to arm and laterally alongside of back, down to iliac crest.
- Do not take hands off from patient's back till the end of the procedure.
- Continue massage pattern effleurage for at least 3 minutes.
- Perform petrissage along upward along one side of spine from buttock to shoulders.
- Perform tapotement for 2 minutes.
- Apply other remaining massaging techniques for at least 2 minutes.
- Apply oil or lubricants to back as required.
- Wipe excess lubricant from patients back with bath towel/ tissue.
- Retie gown or assist pajamas.
- Help patient to comfortable position.
- Raise side rails as needed
- Disposed of soiled towel and wash hands.
- Record response to back massage and condition of skin.

8.7.7 Special Consideration

- For patients with history of hypertension and dysarrhythmia asses pulse and blood pressure.
- Consider cultural preferences.
- Do not give massage if any discoloration of skin present.
- A back massage should take about five to ten minutes and can be given with the patient's bath, before bedtime, or at any other time during the day.
- Determine if any allergies or skin sensitivities exist before applying lotion to the patient's skin.
- The greatest relaxation effect of a massage occurs when the rhythm of the massage is coordinated with the patient's breathing.

8.8 Hot and Cold Applications

8.8.1 Definitions

Hot application is the application of hot agent, warmer than skin either in a moist or dry form on the surface of the body to relieve pain and congestion, to provide warmth, to promote suppuration, to promote healing, to decrease muscle tone and to softens the exudates.

Cold application is the application of cold agent, cooler than skin either in a moist or dry form on the surface of the body to relieve pain and body temperature, to anaesthetize an area, to check hemorrhage, to control growth of bacteria, to prevent gangrene, to prevent oedema and reduce inflammation.

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8.8.2 Classifications

Hot Application

Local

- Hot water bottles
- Chemical heating bottles
- Infrared rays
- Ultraviolet rays
- Short wave diathermy
- Heating lamps
- Electric cradles
- Electric heating pads

- Warm soaks
- Local baths
- Hot fomentations (compresses)
- Poultices
- Stupes
- Paraffin baths
- Aquathermic pads

General

DRY HEATS
- Sun bath
- Electric cradles
- Blanket bed

MOIST HEATS
- steam bath
- hot packs
- whirlpool bath
- full immersion bath

Cold Application

Local

DRY COLD
- Ice bags
- Ice collar
- Ice pack
- Ice cradle

MOIST COLD
- Ice to suck
- Cold compress
- Evaporating lotion

General

DRY COLD
- hypothermia

MOIST COLD
- Cold sponging
- Cold bath
- Cold packs

8.8.3 Effects of Hot and Cold Applications

HOT APPLICATION	COLD APPLICATION
Peripheral vasodilation	Peripheral vasoconstriction
Increased capillary permeability	Decreased capillary permeability
Increased oxygen consumption	Decreased oxygen consumption
Increased local metabolism	Decreased local metabolism
Decreased blood viscosity	Increased blood viscosity
Decreased muscle tone	Increased muscle tone
Increased blood flow	Decreased blood flow
Increased lymph flow	Decreased lymph flow
Increased motility of leucocytes	Decreased motility of leucocytes

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8.8.4 Therapeutic Uses of Local Hot Applications

- Heat decreases pain
- Heat decreases muscle tone
- Heat promotes healing
- Heat promotes suppuration
- Heat relieves deep suppuration
- Heat provides warmth
- Heat stimulates peristalsis

8.8.5 Therapeutic Uses of Local Cold Applications

- Cold relieves pain
- Prevents gangrene
- Prevents edema and reduce inflammation
- Controls hemorrhages
- Checks the growth of bacteria
- Reduce the body temperature
- Cold anaesthetize an area

8.8.6 Principles of Hot and Cold Applicatons

1. Water is good conductor of heat.
2. Air is poor conductor of heat.
3. Heat always flows from hotter area to the less hot area.
4. Prolong exposure to moisture increases the skin susceptibility to maceration and skin breakdown, reducing the protection of the intact skin.
5. Moisture left on the skin cause rapid cooling due to evaporation of the moisture.
6. Presence of steam increases the temperature of the hot application
7. Oil acts as the insulator and delays the transmission of the heat.
8. Woolen materials absorb moisture slowly, but hold the moisture longer and cold off less quickly than the cotton materials.
9. When immersed in water the body becomes buoyant therefore the exercises are performed under water with less effort.
10. The temperature tolerance varies with individuals and according to the site and area covered.
11. The end organs of the sensory nerves of the skin convey the sensation of cold, heat pain and pressure. The sensation is interpreted in the brain.
12. Friction produces heat.

8.8.7 Contraindications of Hot Applications

- Heat is not used in malignancies
- Heat is not used in patients with heart, kidney and lung diseases
- Should not used in acute inflamed areas.
- Should not be applied on patients with paralysis.
- Should not be applied on open wounds
- Should not be applied when there is an edema associated with venous or lymphatic diseases.
- Should not be applied on patients with metabolic disorders.

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- Should not be applied on very young and very old patients.
- Should not be applied on clients with high temperature.

8.8.8 Contraindications of Cold Applications

- Cold should not be applied on clients who are in the stage of shock and collapse
- Cold should not be applied when there is edema.
- Cold should not be applied on clients with circulatory disorders.
- Cold should not be applied on patients with decreased sensation
- Patients with shivering and very low temperature,
- Cold should not be applied when there is infected wound.

8.8.9 Complications of Hot and Cold Applications

HOT APPLICATION	COLD APPLICATION
Pain	Pain
Burns	Blisters and skin breakdown
Maceration	Maceration
Redness of the skin	Gray or bluish discoloration
Edema	Thrombus formation
Pallor(secondary effects)	Redness(secondary effects)
Hyperthermia	Hypothermia

8.8.10 General Instructions

- Asses the condition the clients before and after the hot and cold applications.
- Maintain the correct temperature for the entire duration of the application
- Expose the client only to the safe temperature.
- Do not allow the clients to adjust the temperature control of appliance such as short wave diathermy, electric heating pads etc.
- Never ignore the complaints of clients however small they appear to be.
- Always make sure that the client is in position to remove the application
- The client must have a calling signal within reach
- Never leave a client alone even for a short period that cannot move from the appliances.
- A thin layer of petroleum jelly or oil should be applied to the skin prior the application of moist heat application.
- Do not use electrical appliances near to open oxygen. A small spark may cause explosion.
- Do not handle electrical appliances with the wet hands.
- Hot and cold applications must be very carefully used when the clients is unconscious, anaesthetized or otherwise unable to respond pain.

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- Any signs of complications should be recognized early, the procedure should be stopped immediately.
- After the procedure, dry the part gently by patting and not by rubbing to remove the moisture.
- In hyperpyrexia, the temperature of the body should be brought down gradually and steadily, sudden cooling is dangerous to the client.

DO YOU KNOW?

Practice Makes You Perfect

If You Do You Will Remember.
So Practice Like This

SUMMARY

This lesson has introduced the basic nursing care techniques and procedures involved in nursing a patient. The profession is now required to view aspects of nursing scientifically and to ensure that procedures, policies and standards of nursing care. The management of manual handling of procedures in all the settings can be sensitive and diverse. Therefore nursing a patient is an important art and skill oriented profession . By acquiring adequate knowledge, skill and attitude, the consumers will be satisfied with proper nursing care.

DO YOU KNOW?

Student Activity

Divide the students into small groups which consists of 5-6 students in each group. Appoint a group leader and let others be a member of the group.

For oxygen administration based on the color coding and % of the oxygen ,

- Let the students wear the same color of dress and let others identify the % of oxygen.
- Prepare an album with the respective colors with oxygen %
- Collect images of patients with oxygen in flow

Teacher Activity

- Arrange a visit to a local hospital , from where the students can observe and learn the skill of the procedures.
- Demonstrate the procedures to the students and ask them to do the return demonstration.

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EVALUATION

I. Choose the correct answer

1. Nursing is considered to be an ------ oriented profession

   a. Art

   b. image

   c. knowledge

   d. none of the above

2. The essential core of nursing practice is to deliver

   a. nurse centered care

   b. holistic care

   c. patient centered care

   d. both b & c

3. The low concentration of the oxygen can be delivered through

   a. venture mask

   b. cannula

   c. face mask

   d. both a & c

4. The oxygen concentration of around 24 to 25% will be delivered in flow rates of

   a. 2 litre b. 3 litre

   c. 1 litre d. 4 litre

5. During urine testing, yellow precipitate shows ------ sugar

   a. 500mg/dl

   b. 500-1000mg/dl

   c. 1000-1500mg/dl

   d. >1500mg/dl

II. Answer the following questions in one (or) two lines.

6. List the risk factors for pressure sore.
7. Write the purposes of back care.
8. List the types of hot application.
9. Classify cold application.
10. List the types of therapeutic bath.

III. Write short notes

11. Table out the effects of hot and cold application.
12. What are purposes of oxygen administration?
13. Explain the test for albumin.
14. Explain the test for acetone.
15. Write the purposes of bed bath.
16. List the mechanism of pressure ulcer.
17. Identify the signs and symptoms of pressure ulcers.
18. Illustrate the areas prone to develop pressure sore.
19. Enlist the therapeutic uses of hot and cold application.
20. Write the advantages and disadvantages of oxygen administration through tent method.

IV. Write in detail

21. Explain the procedure of collection specimen for urine.
22. Write a note on urine analysis.
23. Explain the stages of pressure sore.
24. Describe the procedure of back care.
25. Discuss the procedure of bed bath.

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A-Z GLOSSARY

1. CANNULA (வடிகுழாய் (அ) புனல் வகை உபகரணம்) – a thin tube inserted into nostrils for supplying oxygen
2. HUMIDIFIER (ஈரப்பத மூட்டி) – a device for keeping the air moist
3. MIDSTREAM (மத்திம ஓட்ட) – the middle of a stream ie, in between the act of passing urine
4. PRECIPITATE (வீழ்படிவுறுதல்) – Presence of turbidity or cloudiness settling down
5. GLUCOSE (சர்க்கரை/குளுக்கோஸ்) – a simple sugar which is important for energy
6. ALBUMIN (ஆல்புமின்) – a simple form of protein soluble in water
7. ACETONE (அசிடோன்) – a colorless volatile liquid ketone

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UNIT

First Aid

FL6TCA

LEARNING OBJECTIVES

After learning this chapter students will be able to

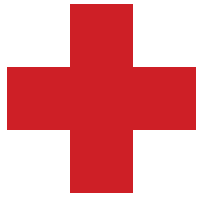
- define of first aid
- list the Golden rules of first aid
- explain first aid for patients with wound, hemorrhage, and shock.
- describe fracture and dislocation of joints.
- explain first aid for snake bite/insect bite, poison.
- elaborate CPR (Cardio- Pulmonary Resuscitation)
- practice ACLS (Advanced Cardiac Life Support)
- explain disaster management.

ISO First Aid Symbol

Star of life

Maltese or Amalfi Cross

St. Andrew's First Aid Badge



Emblem of the Red Cross

9.1 Introduction

First aid to sick and wounded has been practiced since ancient times. But an organized world wide effort for giving first aid came only in the year 1877 with the formation of St. John ambulance association of England after the Great apostle of St. John.

In **1920, Red Cross Society** of India was established. With more than 400 branches all over India, great success has been achieved in the improvement of health and prevention of diseases. Since then the universal need and utility of first aid has been increasing in this modern mechanized civilization.

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The famous German Surgeon General Esmarch (1823-1908) is considered to have conceived the idea of 'First Aid'.

9.1.1 Definition of First aid

- First aid is simple medical treatment given the earliest possible to a person who is injured or who suddenly becomes ill.
- First aid is the initial assistance or treatment given to a casualty for any injury or sudden illness before the arrival of an ambulance, doctor or other qualified person. First aid is not an end by itself. It indicates that the person is in need of a "**Secondary Aid**".

First Aider

The person who is trained to render emergency service on the spot until the medical aid is obtained is called a "**First Aider**".

Qualities of a First Aider.

- Calm
- Confident
- Willing to offer assistance whenever neccessary

A simple way to remember the aims of first aid is to think of the **"Three Ps"**

Preserve, Prevent, Promote.

Aims of first aid:

3Ps Preserve life

Prevent injuries /condition from worsening

Promote Recovery

Scope of First Aid

The scope of first aid includes

a) Diagnosis

b) Treatment

c) Disposal of the case.

(a) Diagnosis

Know the possible cause of accident or sudden injury.

Gather information from casualty and bystanders.

Watch for symptoms like faintness, bleeding, thirst, pain or shivering

Watch for abnormal signs like swelling, paleness etc.

(b) Treatment

Remove the causative agent from the casuality eg. falling machinery, fire, electrical wire, poision etc.

(c) Disposal

Arrange for the safe transportation of the casuality to the care of a doctor or hospital as soon as possible.

Inform the family or relatives at once.

9.2 Golden rules of first aid

1. Do first things first, quickly-quietly without fuss or panic.
2. Reassure the casualty through encouraging words.

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3. Check ABC Rule. (Airway, breathing, Circulation)
4. Open the airway by tilting the head.
5. Give artificial respiration if breathing has stopped.
6. Perform chest compression if the pulse is not present
7. Stop bleeding if any by direct pressure.
8. Treat for shock.
9. Do not allow people to crowd around.
10. Don't remove clothes unnecessarily.
11. Arrange for transportation of the casualty.
12. Casualty should be sent to a hospital or doctor by quickest means of transport. Always inform police about serious accidents and the relatives.

9.3 First aid for patients with Wound, Hemorrhage, and Shock

9.3.1 Wounds

Any abnormal break in the skin or the body surface is known as a wound.

In all wounds, even in small cuts or tiny stab wounds, there is danger that germs will grow in the wound, causing an infection.

Types of Wound

1. Penetrating wound-wound that breaks through the full thickness of skin.
2. Non-penetrating wound-wound does not break through the skin.
3. Miscellaneous wound

Penetrating wound	Non-penetrating wound	Miscellaneous wound
Stab wound Trauma from sharp objects,	**Abrasions** Scraping of the outer skin layer.	**Thermal wound** Injuries resulting from extreme hot or cold.
Skin cuts Cuts in the skin to perform surgical procedures.	**Laceration** Skin and tissue may be partly or completely torn away.	**Chemical wound** Injuries result from contact with or inhalation of chemical materials.
Gun shot wound Wounds resulting from fire arms.	**Contusions** The soft tissues beneath the skin are damaged but the skin is not broken.	**Bites and stings** Injuries resulting from bites from human, dogs, rodents, snakes, scorpions and tick.
	Concussion Damage to the underlying organs and tissue without external wound.	**Electrical wound** Injuries results from passage of high-voltage electrical current.

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Principles of wound care

1. To stop the bleeding
2. To prevent infection
3. To prevent shock

First aid for wounded patients

Major wounds	Minor wounds
Call for medical help	Clean the wound with soap and running water. Always clean away from the wound.
Apply continuous firm direct pressure to wound using clean cloth or bandage until bleeding stops.	Apply continuous firm, direct pressure to wound until bleeding stops.
If bleeding soaks through bandage do not remove the original bandage, apply more bandages and pressure over it.	Once bleeding stops apply antibiotic ointment and cover with bandage.
Get medical help to cleanse and close the wound.	If bleeding soaks through bandage do not remove original bandage. Apply more bandages and pressure.

9.3.2 Hemorrhage

Haemorrhage or bleeding is a flow of blood from an artery, vein or capillary accompanied an accident in which a wound, a fracture or damage to organs occurs.

Bleeding can occur internally, where blood leaks from blood vessels inside the body, or externally, either through a natural opening such as the mouth, nose, ear, urethra, vagina, or anus, or through a break in the skin.

Types of hemorrhage or bleeding,

a) arterial Bleeding-blood coming from Arteries ,bright red in colour, spurts.

b) Venous Bleeding-blood coming from veins, dark red in colour, flows steadily.

c) Capillary Bleeding. – blood from small blood vessels, oozes and most common.

first aid nemonic PEEP to deal with a severe bleeds.

***P** - Position*
***E** - Expose & examine*
***E** - Elevation*
***P** - Pressure*

First aid treatment for hemorrhage

External hemorrhage	Internal hemorrhage
Check the area to know exactly from where the blood is coming.	Provide comfortable position

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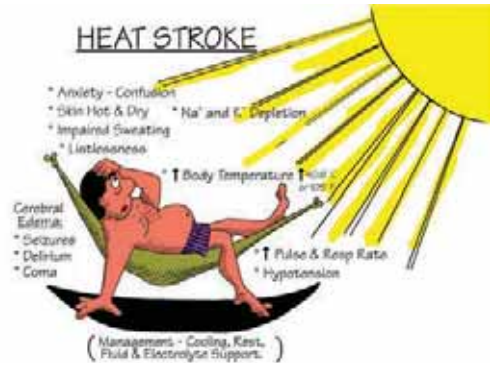
External hemorrhage	Internal hemorrhage
Clean the area with clean cloth	Do not give anything by mouth.
Place a sterile gauze pad or clean cloth and apply firm pressure at the point to stop bleeding,	If the casuality is unconscious check ABCs
If the bleeding does not stop in 10 minutes elevate the part above heart level to reduce blood flow,	If unconscious put in side lying position to prevent aspiration of secretion.
Reassess circulation every 20-30 minutes. Keep the casuality warm.	Treat the shock by raising the legs 8-12 inches.
Treat the shock by raising the legs 8-12 inches.	Transport immediately for medical care.

Effects of Extreme Heat Stroke

- It occurs when body can no longer controls its temperature anymore and the body's temperature increases to106 degree or higher within 10 to 15 minutes.
- It is caused by very high environment temperature or illness like malaria.
- Exposure to heat and humidity for long time
- Prolonged confinement in hot atmosphere.
- Consumption of alcohol.

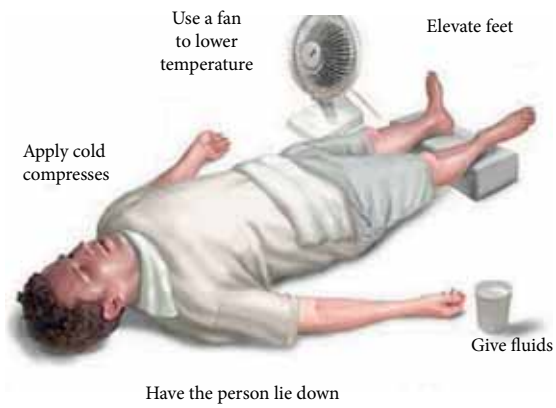


Management

- Move the causality to cold place and remove the clothing.
- If the casualty is conscious, then place him in half sitting position with head and shoulders supported.
- If the casualty is unconscious, then place in recovery position.
- Wrap the casualty in a wet sheet and keep it wet. Fan should be on.pour water all over the body. Colds ponging should be started
- Replace the body fluids. Give cold water to drink
- Apply ice cap with ice pieces over the head and neck.
- Cold water enema can be given
- If required, shift him to hospital.

DO YOU KNOW?

Heat stroke if not treated immediately can cause permanent brain damage.



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HEAT CRAMPS

Heat cramps, are muscle spasms that result from loss of large amount of salt and water through exercise. This can be caused by inadequate consumption of fluids or electrolytes.

Treating Heat Cramps

Identify hen you have a heat cramp

typically due to exercising or working in hot environments.

Stop the activity ein performed

Heat cramps are not something you "push through" during exercise. They are your body's way of telling you that it needs a break.

est in a cool environment

Find a cooler spot in the shade or indoors and give yourself time to rest and cool down

Drink plenty of fluids

The cramp is a response to dehydration and loss of electrolytes, so you should also drink lots of fluids while you rest. Dissolve a quarter or half teaspoon of regular table salt into one quart of water

Gently stretch the muscles that are cramping.

9.4 Frost Bite

It is a condition in which skin and the tissue below the skin freeze. This is caused due to prolonged exposure to intense cold. Frostbite is often accompanied by hypothermia.

Signs and symptoms

At first, the feeling of prick by "pins-and-needles"

Paleness followed by numbness

A hardening and stiffening of the skin.

A color change to the skin of the affected area.

Management;

a. Very gently remove gloves rings and other constriction.
b. Warm the affected part with your hands.
c. Move the casualty into warm before you thaw the affected part.
. Place the affected part in warm water
. Apply a high dressing of fluffed-up, dry gauze bandage.
. Raise and support the limb to reduce swelling.

9.5 Shock

Shock is a life- threatening condition in which not enough blood is reaching the vital organs in the body as a result of injury or illness.

Causes	Symptoms	Signs
Heart problems, such as a heart attack, or heart failure	weak, rapid pulse	Casuality is anxious and restless

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Severe internal or external bleeding Loss of body fluids, from dehydration, diarrhea, vomiting or burns Severe allergic reactions and severe infection Severe or extensive injuries Electric shock Exposure to extreme heat and cold Bites or stings Gas poisoning Emotional stress, illness.	cold, clammy skin faintness/ dizziness Blood pressure falls Pupils are dilated Lustreless eyes Shaking and trembling of arms and legs Unconsciousness may develop.	Weakness and fainting Giddiness & disorientation Shallow, rapid or gasping breathing Skin become pale, cold and clammy Nausea, vomiting or extreme thirst.

Effects of shock

- Early loss of consciousness
- Failing heart output and insufficient oxygen to cells that are vital for survival.
- Sustained lowered blood pressure

Types of Shock	
Neurogenic Shock	From damage to the nervous system such as a severed spine or a brain injury.
Haemorrhagic Shock	Loss of blood due to wound and internal bleeding.
Respiratory Shock	Insufficient amount of oxygen in the blood due to inadequate breathing.
Cardiogenic Shock	Cardiac muscle not pumping effectively due to injury or previous heart attack.
Circulatory shock,	It is a life-threatening medical condition of low blood perfusion to tissues resulting in cellular injury and inadequate tissue function.
Hypovolemic shock	Related to low blood-volume from hemorrhage, internal bleeding, severe dehydration, vomiting, diarrhea, uncontrolled diabetes, large areas of severely-burned skin, or extreme heat stress.
Metabolic	Loss of body fluids with a change in biochemical equilibrium
Septic Shock	Toxin causes pooling of blood in capillaries not enough blood available for tissues.
Anaphylactic Shock	Severe allergic reaction of the body to sensitization by a foreign protein caused by an allergic reaction to a food, drug, or venom.

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Types of Shock	
Traumatic shock	Brought on by either a traumatic physical injury such as being hit by a car or a mental/emotional blow such as seeing a loved one killed.
Insulin shock	Hypoglycemic (low blood sugar) reaction to an overdose of insulin, a skipped meal, or strenuous exercise.
Electric shock	Injuries caused when electric current passes through body.

Dropping blood pressure to dangerously low levels by widening blood vessels, causing respiratory distress, liver and kidney failure, and coma. Includes **toxic shock syndrome.**

Management

a. Immediately reassure and comfort the casuality.

b. Normally the lower extremities should be elevated. This reduces the blood in the extremities and improves the blood supply to the heart.

c. If there are indications of the head injuries, the head could be raised slightly to reduce pressure on the brain.

- If there are breathing difficulties, the victim may be more comfortable with head and shoulders raised
- Loosen the tight clothing to help the circulation and assist breathing.
- Treat the cause of shock, stop bleeding, immobilize fracture.
- If breathing and heart beat stop then;-
- Establish the airway
- Begin resuscitation immediately.
- Keep patient in recovery position.

Follow DRSABCD and manage other severe injuries

D - Danger — Ensure the area is safe.

R -Response — Check for response: ask their name, squeeze their shoulders.

S-Send for help

A – Airway — Open patient's mouth.

B-Breathing — Check for breathing: look, listen and feel.

C- CPR — Start CPR: 30 chest compressions followed by 2 breaths.

D- Defibrillation

9.6 Fracture

A break or crack in a bone is called a fracture.

A dislocation is where a bone has been displaced from its normal position at a joint. A fracture is when a bone has been broken.

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Fracture

closed fracture the skin surface around the damaged bone is not broken".

open fracture the skin over the fracture has been damaged or broken.

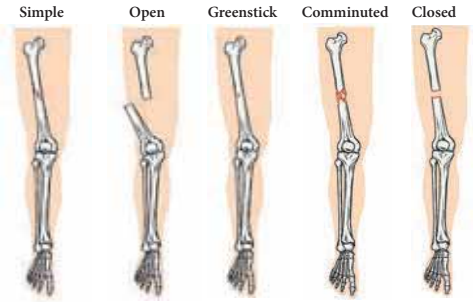
FLFPDX

Causes;-

Direct force:- A bone may break at the point where a heavy blow is received.

Indirect force:- a bone breaks away from the spot of application of force.

Types of Fracture	
Simple fracture	This is the clean break or crack in the bone
Compound fracture	in this type of fracture the skin is torn by the broken bone which may protrude through the wound
Greenstick fracture	Is a break that happens on oneside of a bone.
Comminuted fracture	This type of fracture produce multiple fragments
Impacted fracture	This type of fracture the ends of the broken bone driven in to each other.



DO YOU KNOW?

Green stick fractures occur in children younger than 10 years because their bones are softer and more flexible than the bones of adults

What to look for – fractures

Swelling.

Pain at or near the site of injury.

Difficulty moving.

Movement in an unnatural direction.

A limb that looks shorter, twisted or bent.

A grating noise or feeling.

Loss of strength .

The aims of first aid for the fractures are:

1. To prevent further damage
2. To reduce pain and shock
3. To make the patient feel comfortable
4. To get medical aid as soon as possible.

If you suspect that someone has fractured a bone

Do's

- Stop any bleeding .
- Immobilize the injured part.
- Apply ice pack wraped in a towel .
- Treat for shock.

Don'ts

- Do not force anyone to use a painful body part.
- Do not straighten a misshapen bone.
- Do not place ice/cold pack directly on skin.
- Do not move victim if neck or spine injury is suspected, unless absolutely necessary.

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- Do not move until injury has been immobilized.
- Do not remove shoes, boots, or clothes around a possible fracture.
- Splinting is unnecessary if victim can give the broken bone sufficient support and immobility.
- Do not splint a possible fractured bone if doing so causes pain.
- Do not Massage the affected area

Points to Remember

DO NOT move the casuality until the injured part is secured and supported unless he/she is in danger

DO NOT let the casuality eat or drink

DO NOT try to replace a disclosed bone into its socket

9.6.1 Dislocation of Joints

A joint is where two bones join or connect. A dislocated joint happens when bones are partly or completely pulled out of their normal position.

The most common joints that dislocate are the shoulder, knee, jaw, or joints in the thumbs or fingers.

Signs of Dislocated joints

The four signs of a dislocated joint are:

1. Strong, sickening pain
2. Not being able to move the joint
3. Swelling and bruising around the joint
4. Shortening, bending or deformity of the joint

First aid for dislocated joints

- Advise them to stay still and help them to support their dislocated joint in the most comfortable position.
- Stop the joint from moving using a bandage. For an arm injury, make a sling to support the arm. For a leg injury, use padding or broad-fold bandages..
- Apply an ice pack. Ice can ease swelling and pain in and around the joint.
- Once you've stopped the joint from moving, take or send the injured person to hospital.
- Keep checking their breathing, pulse and level of response. Check the circulation beyond the bandages every ten minutes and loosen if necessary.

9.7 Insect Bites

Bee, Wasp, Ant stings and other Insect bites.

Remove the sting by scraping, never squeeze the site.

Wash the area and apply antiseptic cream.

Keep the sting site rested, elevated and cool.

To relieve pain and swelling apply cold compress.

Local swelling and irritation may last for several days.

Scorpions Bites

Scorpion stings can be very painful and the pain may persist for several hours. Local redness and numbness often occur.

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Some people are allergic to stings and can rapidly develop the serious condition of anaphylactic shock.

DO YOU KNOW? Australian scorpions do not cause severe symptoms

Symptoms and signs

Itching, swelling

Burning pain

Increased sensation or numbness

Lacrimation

Salivation

Nausea and vomiting

Profuse sweating

Treatment

Apply a tourniquet proximal to the site of the sting and release it every 5 to 10 minutes. Apply ice pack on the region to slow down the absorption of poison.

Shift the patient to hospital

Centipedes

Local redness, itching and pain are common. Severe pain is sometimes experienced. Apply antiseptic to the bite site.

Snake bite

Bites from sharp pointed teeth cause deep puncture wounds that can carry germs far into the tissues. Snake bite results in punctured wounds caused by the fangs of a snake.

Signs and symptoms of snake bite:

A pair of puncture marks.

Severe burning pain at the site of the bite

Redness and swelling around the bite

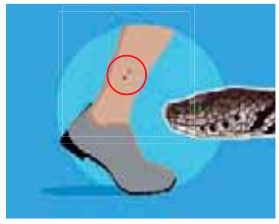
Nausea and vomiting

Difficult in breathing and speech.

Dimness of vision.

Increased salivation and sweating.

Examples of Snakebites



Venomous Snake

Nonvenomous Snake

- Do not wash, squeeze or puncture the bite site.
- Apply a pressure immobilization bandage.
- Keep the victim calm and still.
- Do not give food or alcohol.
- Do not allow the victim to walk.
- Bites to the head and body must be bandaged as firmly as possible.
- Do not attempt to catch or kill the snake.

Animal bites

One infection someone might get from an animal bite is rabies, which is a serious viral infection that attacks the brain and nervous system. If an infected animal bites a human, they will pass on the virus, through their saliva.

Tetanus (a bacterial infection) is also a potential risk after an animal bite.

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Animal bites- First Aid Management

- Wash the wound from the bite thoroughly with soap and warm water as it can reduce the risk of infection from an animal bite.
- Raise and support the wound and then cover it with a sterile wound dressing.
- If the wound is large or deep, then treat for bleeding.
- If there's a risk of rabies, then you need to get them to hospital as fast as you can.

If the bite is from another human, there's also a risk of getting hepatitis or HIV/ AIDS viruses.

9.8 Cardio Pulmonary Resuscitation (CPR)

CPR stands for cardio-pulmonary resuscitation. It's a life saving medical procedure which is given to someone who is in cardiac arrest. It helps to pump blood around the person's body when their heart can't.

To carry out CPR a person presses up and down on the casualty's chest (chest compressions) and gives them a series of rescue breaths to help save their life when they are in cardiac arrest.

CPR comprises the following 3 steps, performed in order:

- Chest compressions
- Airway
- Breathing.

Indications and contra indications

CPR should be performed immediately on any person who has become unconscious and is found to be pulseless and absence of breathing.

Contra indications

- The only absolute contra indication to CPR is a do-not-resuscitate (DNR) order or other advanced directive indicating a person's desire to not be resuscitated in the event of cardiac arrest.

6 Major CPR steps

Before starting CPR check is the environment safe for the person.

Step 1: Shake and shout

If the person appears unconscious tap or shake the shoulders ask loudly are you (ok)? No response call for help.

Step 2: Check for normal breathing and circulation

Check if the person is breathing normally by looking for:

- regular chest movements
- listening for breathing
- feeling for breath on your cheek.
- Check if the person has circulation by placing the index and middle fingers on the neck to the side of wind pipe.
- If there is no pulse and breathing start chest compression and rescue breathing,
  - If the person is breathing normally, then put them in the recovery position

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Step 3: Give 30 chest compressions

- Kneel next to the person.
- Place the heel of one hand in the centre of their chest. Place your other hand on top of the first. Interlock your fingers.
- With straight arms, use the heel of your hand to push the breastbone down firmly and smoothly, so that the chest is pressed down between 5–6 cm, and release.
- Do this at a rate of 100 to 120 chest compressions per minute – that's around 2 per second.
- Give **30 chest compressions.**

Step 4: Give two rescue breaths

- Open the airway Place one hand on the person's forehead, gently tilt their head back, then lift their chin using two fingers of your other hand under their chin – when you do this you open their airway.
  - Take a normal breath, make a seal around their mouth and breathe out steadily.
  - The person's chest should rise and fall. Keeping the person's head back and the chin lifted, take your mouth away, take another normal breath, and give a second rescue breath. The two breaths should take no longer than five seconds.

Step 5: Repeat until an ambulance arrives

Repeat 30 compressions and two rescue breaths.

Complications of CPR

- Fractures of ribs or the sternum from chest compression.
- Gastric insufflations from excessive artificial respiration.

9.9 Disaster

A disaster is a sudden calamitous event that seriously disrupts the functioning of a community or society and causes losses that exceeds the community or societys ability to cope using its own resources.

Red Cross (1975) defines Disaster as "An occurrence such as hurricane, tornado, storm, flood, high water, wind-driven water, tidal wave, earthquake, drought, blizzard, pestilence, famine, fire, explosion, building collapse, transportation wreck, or other situation that causes human suffering or creates human that the victims cannot alleviate without assistance."

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DISASTER' alphabetically means:

D - Destructions
I - Incidents
S - Sufferings
A - Administrative, Financial Failures.
S - Sentiments
T - Tragedies
E - Eruption of Communicable diseases.
R - Research programme and its implementation

9.9.1 Types of disaster

Types of disaster	Examples
Natural disaster	earthquake, floods, hurricane, tsunami
Manmade disaster	nuclear accidents, industrial accidents
Hybrid disaster	spread of disease in community global warming.

Classification of First Aids during Disasters

Type of Disaster	Possible First Aid Services
Fire	1) Assist people to evacuate the affected premises through the emergency exit or safest route. 2) Ensure that electrical fittings are untouched. 3) Shut down all electrical connections, by putting off the electrical mains. 4) Avoiding the sprinkling of water on fire effected person or objects. 5) Appropriate usage of fire extinguishers. 6) Protecting children from the impact of the fire. 7) assist the firemen once the fire services personnel arrives.
Earthquake	1) Ask all the people residing inside the building to come out in open space. 2) Pass on the message to all possible known contacts in the area through telephone. 3) Give priority to save human lives rather than protecting non-living objects. 4) Protect the children from building breakdown etc.
Cyclone	1) Protect the humans from high speed winds and heavy rains. 2) Ensure smooth flow of water so as to prevent flooding and water clogging. 3) Protect external electrical and electronic fittings from lightning associated with cyclone, which may result in fire.
Flood	1) Protect people from water currents.

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Type of Disaster	Possible First Aid Services
	2) Protect living beings from water borne diseases 3) Ensure everyone consumes non-contaminated food and water. 4) Arranging essentials and necessities if the water level is increasing. 5) Moving to safer places if the water level isn't receding after a point of time.

The first aid immediately after a disaster may consist of the following-

1) Attending to the individuals who have broken limbs, bones and apply local massage therapy.
2) Disinfecting the body parts/areas where there has been minor bruises with antiseptic and then plastering those areas with bandage.
3) Attending the parts having burns.
4) Putting in place a working communication system.
5) Prevent the spread of contaminated food and drinking water.
6) Provide post-accident SOS support services to all the affected individuals.

9.9.2 Disaster Triage

The word triage is derived from the French word trier, which means, "to sort out or choose."

"Triage is a process which places the right patient in the right place at the right time to receive the right level of care"

(Rice & Abel, 1992)

Types of Triage

There are two types of triage:

1. Simple triage
2. Advanced triage

Simple Triage

Simple triage is used in a scene of mass casualty, in order to sort patients into those who need critical attention and immediate transport to the hospital and those with less serious injuries.

S.T.A.R.T. (Simple Triage and Rapid Treatment) is a simple triage system that can be performed by lightly trained lay and emergency personnel in emergencies.

Triage separates the injured into four groups:

- 0 – The deceased who are beyond help
- 1 – The injured who can be helped by immediate transportation
- 2 – The injured whose transport can be delayed
- 3 – Those with minor injuries, who need help less urgently

Advanced Triage

Advanced care will be used on patients with less severe injuries. Because treatment is intentionally with held from patients with certain injuries

It is used to divert scarce resources away from patients with little chance of

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survival in order to increase the chances of survival of others who are more likely to survive.

Principles of advanced triage is

- "Do the greatest good for the greatest number"
- Preservation of life takes precedence over preservation of limbs.

Advanced Triage Categories

CLASS I (EMERGENT) RED IMMEDIATE

Victims with serious injuries that are life threatening but has a high probability of survival if they received immediate care.

They require immediate surgery or other life-saving intervention, and have first priority for surgical teams or transport to advanced facilities; they "cannot wait" but are likely to survive with immediate treatment.

"Critical; life threatening—compromised airway, shock, hemorrhage"

CLASS II (URGENT) YELLOW DELAYED

Victims who are seriously injured and whose life is not immediately threatened; and can delay transport and treatment for 2 hours.

Their condition is stable for the moment but requires watching by trained persons and frequent re-triage, will need hospital care (and would receive immediate priority care under "normal" circumstances).

"Major illness or injury;—open fracture, chest wound"

CLASS III (NON-URGENT) GREEN MINIMAL

"Walking wounded," the casualty requires medical attention when all higher priority patients have been evacuated, and may not require monitoring.

Patients/victims whose care and transport may be delayed 2 hours or more.

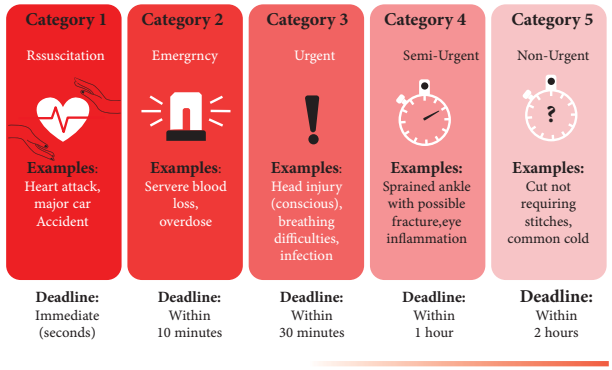
"minor injuries; walking wounded—closed fracture, sprain, strain"

CLASS IV (EXPECTANT) BLACK EXPECTANT

They are so severely injured that they will die of their injuries, possibly in hours or days (large-body burns, severe trauma, lethal radiation dose), or in life-threatening medical crisis that they are unlikely to survive given the care available (cardiac arrest, septic shock, severe head or chest wounds);

They should be taken to a holding area and given painkillers as required to reduce suffering.

"Dead or expected to die—massive head injury, extensive full-thickness burns"



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9.10 Role of Nursing in Disasters

"Disaster preparedness, including risk assessment and multi-disciplinary management strategies at all system levels, is critical to the delivery of effective responses to the short, medium, and long-term health needs of a disaster-stricken population." (International Council of Nurses, 2006)

Major Roles of Nurse in Disasters

1. Determine magnitude of the event
2. Define health needs of the affected groups
3. Establish priorities and objectives
4. Identify actual and potential public health problems
5. Determine resources needed to respond to the needs identified
6. Collaborate with other professional disciplines, governmental and non-governmental agencies
7. Maintain a unified chain of command
8. Communication

Consider These Facts

- 25% of all emergency room visits can be avoided with basic first aid and CPR certification
- Sudden cardiac arrest represents 13% of all workplace deaths
- Nearly 5 million workers were injured on the job in 2012, costing companies $198.2 billion
- 75% of all out-of-hospital heart attacks happen at home

SUMMARY

- First aid is the initial assistance or treatment given to a casualty for any injury or sudden illness. The First aid is not an end by itself. It indicates that the person is in need of a "Secondary Aid"
- A simple way to remember the aims of first aid is to think of the **"Three Ps"-Preserve / Prevent / Promote**.
- A wound is an injury in which the skin is cut or penetrated.
- Bleeding, technically known as hemorrhaging, is the loss of blood escaping from the circulatory system.
- first aid mnemonic **PEEP** to remember how to deal with a severe bleeds. **P**osition, **E**xpose & examine, **E**levation, **P**ressure.
- Shock is a syndrome that results from a decrease in effective circulating blood volume in the body as a result of injury or illness
- Shock, a potentially life-threatening condition in which the organs and tissues of the body are not receiving an adequate flow of blood.
- To manage severe injuries follow. **DRSABCD**
- A break or crack in a bone is called a fracture.

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- A dislocation is where a bone has been displaced from its normal position at a joint.
- Respiratory emergencies are medical emergencies characterized by difficulty in breathing or inability to breathe.
- Poisonous bites.
- CPR stands for cardiopulmonary resuscitation. It's a life saving medical procedure which is given to someone who is in cardiac arrest. It helps to pump blood around the person's body when their heart can't.
- There are 6 Major CPR steps.
- Bandages are used to prevent contamination of wound by hold dressings in position, provide support to the part that is injured, sprained or dislocated joint and to prevent & control hemorrhage.

EVALUATION

I. Choose the correct answer

1. First Aid is
   a. Initial care of the ill or injured
   b. First response to natural disasters
   c. How to use a First Aid kit
   d. Medical treatment of an injured person
2. The first step in managing a First Aid situation is
   a. Move the casualty out of the car
   b. Ask the casualty if they are in pain
   c. Sit the casualty up
   d. Check for danger, using all your senses
3. Technique used open the airway of an unconscious casualty is
   a. Head tilt and chin lift.
   b. Jaw thrust.
   c. Head tilt and jaw thrust.
   d. Lift the chin.
4. The medical condition which develop due to severe blood loss is
   a. Shock.
   b. Hypoglycemia.
   c. Anaphylaxis.
   d. Hypothermia.
5. An open fracture is
   a. A fracture in which the bone ends can move around.
   b. A fracture in which the bone is exposed as the skin is broken.
   c. A fracture which causes complications such as a punctured lung.
   d. A fracture in which the bone has bent and split.
6. The correct ratio of chest compressions to rescue breaths for use in CPR of an adult casualty is
   a. 2 compressions: 30 rescue breaths.

FLYGH8

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b. 5 compressions: 1 rescue breath.

c. 15 compressions: 2 rescue breaths.

d. 30 compressions: 2 rescue breaths.

7. What does the 'A' stand for in the acronym DRABC?

a. Accident b. Airway

c. Ambulance d. Alert

8. Which is more serious?

a. Heat Stroke

b. Heat Exhaustion

c. Heat Cramps

d. Heat Rash

9. The first action to be taken when treating an electrical burn is

a. Ensure that the casualty is still breathing.

b. Wash the burn with cold water.

c. Check for danger and ensure that contact with the electrical source is broken.

d. Check for level of response.

10. What steps would you take to control bleeding from a nosebleed?

a. Sit casualty down, lean forward and pinch soft part of nose.

b. Sit casualty down, lean backward and pinch soft part of nose.

c. Lie casualty down and pinch soft part of nose.

d. Lie casualty down and pinch top of nose.

II. Answer the following questions in one (or) two lines.

11. Explain the golden rules of first aid.

12. Write the first aid management for frost bite.

13. What are the causes of unconsciousness and explain the first aid management for an unconscious patient?

14. Write the rules for applying roller bandages.

15. List the first aid equipments.

III. Write short notes

16. Snake bite.

17. Burns and scalds.

18. Drowning.

19. Disaster Nursing.

20. Methods of handling and transporting injured patients.

IV. Write in detail

21. What is CPR? Explain in detail about the indication, contraindication and steps of CPR.

22. First aid management for Poisoning.

23. Elaborate the types of Bandages.

24. Explain Respiratory emergencies and its management.

25. Write the first aid management for shock.

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A-Z GLOSSARY

1. **Anaphylaxis** (*மிகையுணர்வுக்கம்*), a life-threatening condition in which the airway can become constricted and the patient may go into shock.
2. **Battlefield first aid** (*போர்க்களத்தில் முதலுதவி*) — This protocol refers to treating shrapnel, gunshot wounds, burns, bone fractures, etc. as seen either in the 'traditional' battlefield setting or in an area subject to damage by large-scale weaponry, such as a bomb blast.
3. **Bone fracture** (*எலும்பு முறிவு*), a break in a bone initially treated by stabilizing the fracture with a splint.
4. **Burns** (*தீப்புண்*), which can result in damage to tissues and loss of body fluids through the burn site.
5. **Cardiac Arrest (***இதய நிறுத்தம்***)**, which will lead to death unless CPR preferably combined with an AED is started within minutes.
6. **Choking** (*மூச்சுதிணறல்*), blockage of the airway which can quickly result in death due to lack of oxygen if the patient's trachea is not cleared,.
7. **Cramps** (*தசை பிடிப்பு*) in muscles due to lactic acid build up caused either by inadequate oxygenation of muscle or lack of water or salt.
8. **Heart attack** (*மாரடைப்பு*), or inadequate blood flow to the blood vessels supplying the heart muscle.
9. **Hair tourniquet** (*குருதி வழிதலைத் தடுக்க குருதி நாடியை இறுக்க கட்டும் துணி*) a condition where a hair or other thread becomes tied around a toe or finger tightly enough to cut off blood flow.
10. **Seizures** (*வலிப்பு*), or a malfunction in the electrical activity in the brain.
11. **Sprains and Muscle strains** (*தசை விகாரங்கள் மற்றும் சுளுக்கு*), a temporary dislocation of a joint that immediately reduces automatically but may result in ligament damage.
12. **Stroke** (*பக்கவாதம்*), a temporary loss of blood supply to the brain.

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ICT Corner

First Aid

Through this activity you will be understand the procedures of First Aid.

Step - 1 Open the browser and paste the link given below (or) by typing the URL given. You can download and install the ''First Aid" app.

Step - 2 Open the App, you can see many options like Emergency, Instructions, Call etc. Among these options, select 'Emergency' and you can see many types of illnesses and select 'Burns'.

Step - 3 You can see the First Aid steps to be followed in case of burns.

Step - 4 Click on 'Instructions' in main page and select CPR. You can see the first aid steps for CPR.

Step 1

Step 2

Step 3

Step 4

First aid learning app's URL:

https://play.google.com/store/apps/details?id=org.indianredcross.firstaid&hl=en

*Pictures are indicative

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ICT Corner

CPR, AED and Choking

Learn the first aid procedures of CPR, AED and Chocking.

Step - 1 Use the URL or scan the QR code to download 'Resuscitate' app in your smartphone. Tap 'CPR' tab and to enter the procedure list.

Step - 2 Select the type of patient list and observe the procedure to be followed.

Step - 3 Reach the home page by tapping back button from the top of the page and enter 'AED' procedure list to observe.

Step - 4 Then enter 'Chocking' procedure list and observe the procedures for every age group of people.

Step 1

Step 2

Step 3

Step 4

URL:

https://play.google.com/store/apps/details?id=org.learncpr.videoapp

*Pictures are indicative

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UNIT

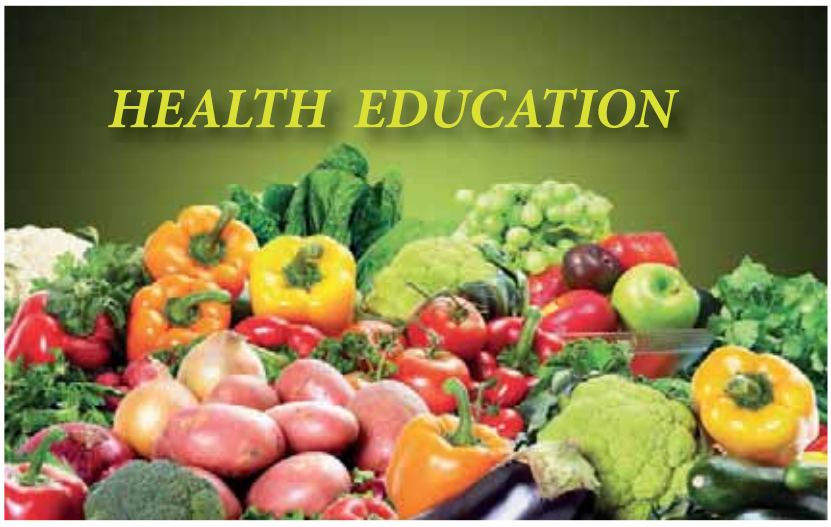
Health Education and Audio visual Aids

FM8CIV

LEARNING OBJECTIVES

At the end of the unit, the students will gain adequate knowledge regarding Health Education and AV Aids and will develop desirable skill and positive attitude in following the principles for health educating the people by using appropriate AV Aid at all setting.

- define the term health education
- discuss the concept of health education
- enumerate the goal of health education
- list the objectives of health education
- explain the principles of health education
- extrapolate the roles and responsibilities of health educator
- narrate the different methods and approaches to health education
- brief out the various audio visual aids



HEALTH EDUCATION AND AUDIO VISUAL - Aids

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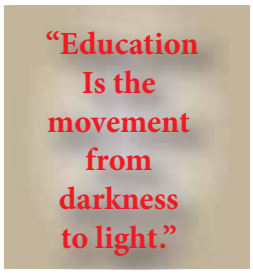
10.1 Introduction

Education brings change in behaviour of the individual in a desirable manner. Education can help to increase knowledge. It is often assumed that knowledge determines attitudes and attitudes determine behaviour.



Health education is a powerful and effective medicine in the treatment and prevention of illness. It is the cheapest but very effective tool. If administered with great awareness by every health worker, in any setting- hospital, school, health centre, home and community as a whole-it will be the best tool in promoting health. It is "to win friends and influence people" in order that they may attain the best of health.

10.1.1 Definition, Aims & Goal of Health Education

Definition

Health education is defined as "the process by which individuals and groups of people learn to behave in a manner conducive to the promotion, maintenance, or restoration of health.

John M. Last

According to National Conference on Preventive Medicine in USA "Health education is a process that informs, motivates and helps people to adopt and maintain healthy practices and life style. Advocates environmental changes as needed to facilitate this goal and conducts professional training and research to the same end.

"A process aimed at encouraging people to want to be healthy, to know hjow to stay healthys, to do what they can individually and collectively to maintain health and to seek help when needed". -Alma-ata (1978)

10.1.2 Aims of Health Education

The definition adopted by WHO in 1969 and the alma ata declaration adopted in 1978 provided in useful basis for formulating the aims and objectives of health education which may be started as below;

1. To encourage people to adapt and sustained health promoting lifestyle and practices
2. To promote the proper use of health services available to them
3. To arouse interest, provide new knowledge, improve skills and change attitudes in making rational decision to solve their own problems.
4. To stimulate individual and community self-reliance and participation to achieve health development through individual and

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community involvement at every step from identifying the problem to solving them.

10.1.3 Goal of health education

The goal of Health education is teaching people to live life to its healthiest – that is to strive towards achieving ones health potentials under given socio-cultural, geo-climatic conditions, at every opportunity a nurse gets to teach a client / patient.

10.2 Objectives of Health Education

10.2.1 Informing People

Dissemination of information to the people regarding prevention of disease and promotion of health. This creates awareness of health needs, problems, take away the barrier of ignorance and misconceptions about health and Disease.

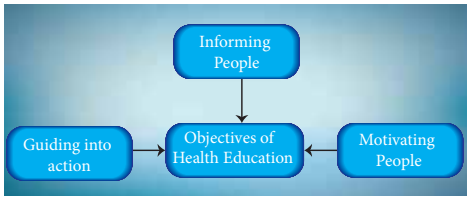
10.2.2 Motivating People

People should be motivated to change their ill habits, way of living as many diseases can be corrected by alteration of human behaviour or changes in health practices which are detrimental to health.

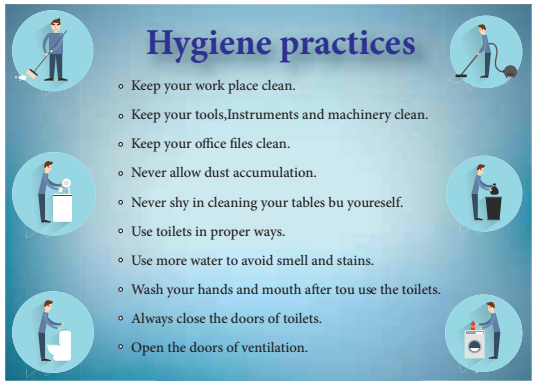
10.2.3 Guiding into action

People should be motivated, communicated, and educated, to adopt and maintain health practices and lifestyle practices.

Health Education should be made an integral part of Education, Which will enable to change their life styles



1. These are the important hygiene practices a child has to inculcate.
2. Identify and carryout five hygiene practice in your school premises



10.2.4 Areas of health education

Health education is as wide as community health. Every aspect of community health has an educational component. In practice, the content of health education may be

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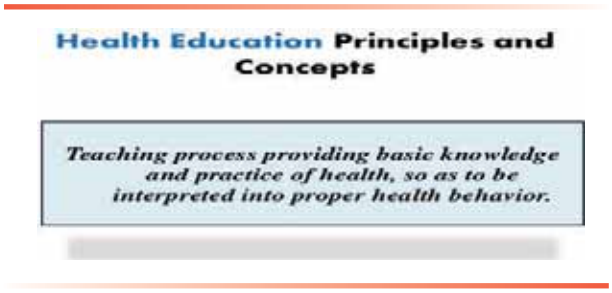
divided in to the following divisions for the sake of simplicity

1. ***Human biology***; The topics which may be covered include the structure and function of the body, how to keep physically fit ,the need for the exercise ,rest and sleep; the effect of alcohol, smoking and drugs on the body and first aid
2. ***Nutrition*;** Education in nutrition holds an important place in the fight against malnutrition. They should be educated about the nutritive value of foods; storage, preparation, cooking, serving and eating of food.
3. ***Hygiene*;** There are two aspects of hygiene –personal and environmental. both are important areas for health education. Personal hygiene includes bathing, clothing, washing hands, toilet, care of feet, nail, teeth; spitting ,coughing, sneezing ,personal appearance and inculcation of clean habits in the young. Environmental hygiene has a 2 aspects –domestic and community. Domestic hygiene comprises that of the home, use of soap and water, lighting, ventilation, food hygiene, control of rats and mice etc. In community hygiene, we teach the desirability of safe water, the benefits of drainage, good housing, town planning –in short, everything about the environment in which people live.
4. ***MCH and family planning*;** The fears of the mother about pregnancy and childhood can be dispelled only by health education

10.3 Principles of health education



Some basic principles that should be followed in imparting health education. (It can be summed up using a mnemonics -**"MILK CPR LG CSF")**

M: Motivation

I: Interest

L: Learning by doing

K: Known to unknown

C: Credibility

P: Participation

R: Reinforcement

L : Leader

G : Good human relation

C : Comprehensive

S : Setting an example

F : Feed back

Students Activity

Divide students into groups and ask them to write slogans for world health days. The best slogan can be selected and awarded.

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10.3.1 Motivation

In every person there is a fundamental desire to learn. Stimulation or awakening of this desire is called motivation. The two types of motives - primary and secondary motives. The primary motives are sex, hunger, survival; these are inborn desires. The secondary motives are praise, love, rewards, punishment and recognition.

10.3.2 Interest

It is well -known psychological principle, that unless people are interested, they will not learn. Health education should therefore relate to the interests of the people. All health teaching, in order to be effective, must be based on the health needs of the people.

10.3.3 Learning by doing

Learning is an action process. The following Chinese proverbs emphasizes the importance of learning by doing

"IF I HEAR, I FORGET

IF I SEE, I REMEMBER

If i do, i know"

10.3.4 Known to unknown

We must always go from "simple to complex"; from concrete to the abstract, from easy to difficult and from known to unknown. These are the rules of teaching. One should start educating people from what they know already and then expose them to new knowledge.

10.3.5 Credibility

It is the degree to which the message to be communicated is perceived as trustworthy by the receiver. It must be based on facts. It must be consistent, compatible with scientific knowledge and also with local culture, educational system and social goods.

10.3.6 Participation

It means taking part in or involving oneself or contributing towards something. It is one of the active principles in learning. It is better than passive learning. Personal involvement is more likely to lead to personal acceptance.

10.3.7 Reinforcement

Few people can learn all that is new in a single period. Repetition at intervals is necessary. If there is no reinforcement there is a possibility that the individual will forget what is taught.

10.3.8 Leader

We learn a best from people whom we respect and regard in the work of health education. We penetrate the community through local leaders. e.g. School teacher, Agents, etc. Leader understands the needs and demands of the community and provides proper guidance.

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10.3.9 Good human relations

The health educator must be kind and sympathetic. People must accept him as their real friend. Good relationships that lead to good communication are of utmost importance in health education.

10.3.10 Comprehension

In health education, we must know the level of understanding, education and literacy of the people to whom the teaching is directed. The teaching should be within the mental capacity of the people.

10.3.11 Setting an example

The health Education should set a good example in the things he is teaching. e.g. If he is explaining the hazards of smoking, he will not be very successful, if himself smokes.

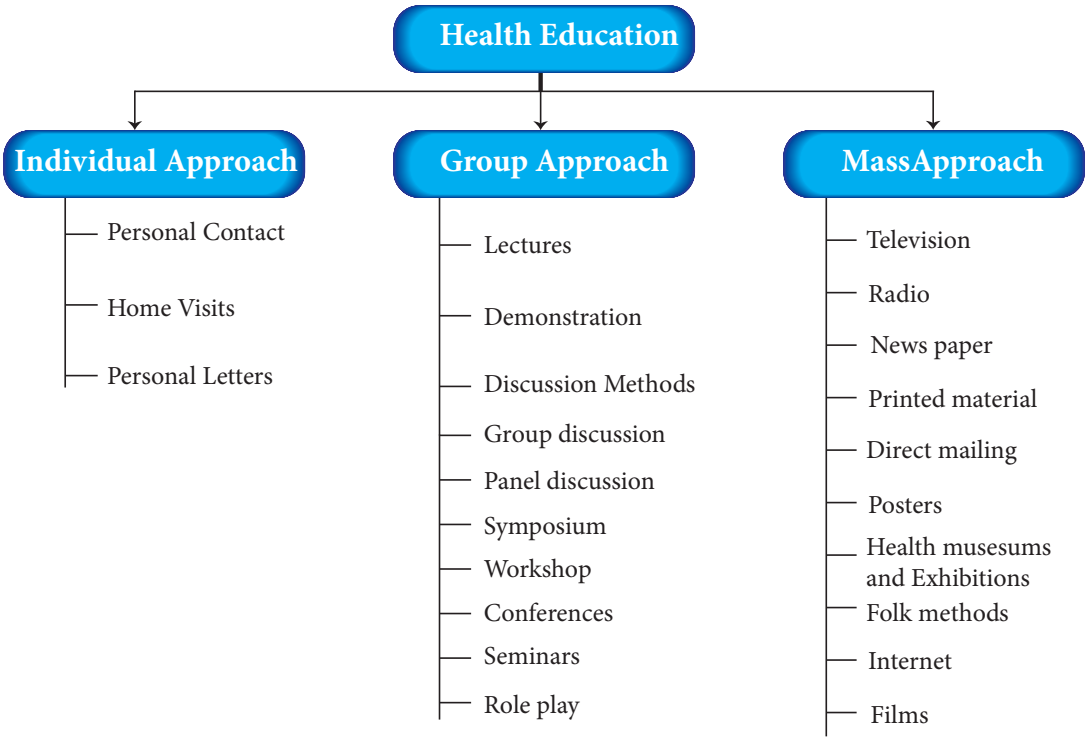
10.3.12 Feed back

It is one of the key concepts of the system's approach. For effective communication, feed back is of paramount importance.

"FOR GOOD HEALTH'S SAKE, RUN, JUMP, AND SHAKE."

10.4 Methods & Approaches of Health Education

FMH8KI



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10.4.1 Methods of health education

Health education is carried out at 3 main levels;

- Individual Approach.
- Group Approach.
- General Approach/Mass.

Individual Health Education:

Doctors and nurses, who are in direct contact with patients and their relatives, have opportunities for much individual health education. The topic selected should be relevant to the situation. For instance, a mother who has come for delivery should be told about child birth-not about malaria eradication.

The biggest advantage of individual health teaching is that we can discuss, argue and persuade the individual to change his behaviour. The disadvantage is that the numbers we reach are small.

Group Health Education:

The groups are many – mothers, school children, patients, industrial workers – to whom we can direct health teaching. The choice of subject in group health teaching is very important; it must relate directly to the interest of the group. For instance, mothers may be taught about baby care; school children about oral hygiene; a group of TB patients about tuberculosis, and industrial workers about accidents.

10.4.2 Methods of Group Teaching

These have been classified as below:

) One – way or didactic methods:

- Lecture
- Films
- Charts
- Flannel graph
- Exhibits
- Flashcards

1. **Lectures:**

   Lectures are the most popular method of health teaching. In this, communication is mostly one-way, i.e., the people are only passive listeners; there is no active participation on their part in learning. How impressive and effective the lecture is, depends upon the personality and reputation of the speaker. A lecture does provide basic information on the subject, but it may fail to change the health behaviour of the people. Nevertheless lectures have an important place in the health education of small groups.

2. **Films, charts & Puppets:**

   These are mass media of communication. They can be of value in educating small groups.

Suspense Charts:

Each section of the charts is covered and is exposed one by one to reveal the story or ideas without exposing the whole chart at a time.

Puppets:

Puppets are dolls made by hand and a story can be narrated using them it is a popular teaching aid to health teaching.

3. **Flannel graph:**

   A flannel graph consists of a wooden board over which is pasted or fixed a

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piece of rough flannel cloth or khadi. It provides an excellent background for displaying cut out pictures and other illustrations. These illustrations and cut out pictures are provided with a rough surface at the back by pasting pieces of sand-paper, felt or rough cloth, and they adhere at once, put on the flannel. Flannel graph is a very chief medium, easy to transport and promotes thought and criticism. The pictures must be arranged in proper sequence based on the talk to be given.

4. **Exhibits:**

These consist of objects, models, specimens, etc. They convey a specific message to the observer. They are essentially mass media of communication.

5. **Flash Cards:**

They consist of a series of cards, approximately 10 x 12 inches – each with an illustration pertaining to a story or talk to be given. Each card is "flashed" or displayed before a group as the talk is in progress. The message on the cards must be brief and to the point.

They are pictures arranged in sequence, which illustrate a story support the cards in front of the chest and practice in order to make the teaching effective. Use a Pointer so that the picture is not covered by your hand.

) Two-way or Socratic Methods:

- Group discussion
- Panel Discussion
- Symposium
- Workshop
- Role playing
- Demonstration

1. **Group Discussion:**

Group discussion is considered a very effective method of health teaching. It is a tow-way teaching method. People learn by exchanging their views and experiences.

To be effective, the group should comprise not less than 6, and not more than 12 people.

There should be a group leader who initiates the subject, helps the discussion in the proper manner, prevents side-conversations, encourages everyone to participate and sums up the discussion in the end.

The proceedings of the group discussion are recorded by a "recorder", who prepares a report on the subject and agreements reached.

2. **Panel Discussion:**

Panel discussion is a novel method of health education. The success of the panel depends upon the Chairman.

The Panel consists of a Chairman or Moderator, and 4 to 8 speakers.

The Panel sits and discusses a given problem in front of a group or audience.

The Chairman opens the meeting, welcomes the group and introduces the panel speakers who are experts on the subject.

He introduces the topic briefly and invites the panel speakers to

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present their points of view. There are no set speeches, but only informal discussion among the panel speakers.

It is said that the discussion should be spontaneous and natural.

After the subject has been discussed by the panel speakers, the audience is invited to take part. If properly planned and guided, panel discussion can be an effective method of health education.

3. **Symposium:**

A Symposium is a series of speeches on the selected subject by experts. There is no discussion on the subject by the experts. In the end, the audience may raise questions and contribute to the Symposium.

4. **Workshop:**

The Workshop consists of a series of meetings. The total workshop is divided into small groups, and each group will choose a Chairman and a recorder. Each group solves a part of the problem with the help of consultants and resource personnel. Learning takes place in a friendly, happy and democratic atmosphere under expert guidance.

5. **Role Play:**

Role Play or socio-drama is a particularly useful device for putting up problems of human relationship. The group members enact the roles as they have observed or experienced them, e.g. the expectant mother in an antenatal clinic, the public health nurse on a home visit, etc. The size of the group should not be more than 25. Role play is followed by a discussion of the problem.

6. **Demonstrations:**

Practical demonstration is an important technique of the health education. We show people how a particular thing is done – using a tooth-brush, bathing a child, feeding an infant, etc. A demonstration leaves a visual impression in the minds of the people.

Education of the general public (Mass Approach) :

For the education of the general public, we employ "mass media of communication' – Posters, health magazines, films, radio, television, health exhibitions and health museums. Mass media are generally less effective in changing human behaviour than individual or group methods. But however, they are very useful in reaching large numbers of people with whom otherwise there could be no contact. For effective health education mass media should be used in combination with other methods.

Individual Approach

Advantage	Disadvantage
■ Credible	■ Expensive
■ Permit 2 way discussion	■ Time Consuming
■ Can be motivational, influential and supportive	■ Limited Audience
■ Most effective for teaching, caring and helping	

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Group Approach

Advantage	Disadvantage
■ Familiar, trusted and influential ■ Provide Motivation / support more than media alone ■ Can be inexpensive ■ Offer shared experiences ■ Reach large intended audience in one place	■ May not provide individual personal attention ■ Needs approval from organization Can be costly and time consuming

Mass Approach

Mass Media	Advantage	Disadvantage
News Paper	■ Reach broad intended audience rapidly ■ Can convey health news/ break thoughts more thoroughly than T.V ■ Intended audience has the chance to clip reread, en template and pass along materials	■ Larger circulating papers may take only paid advertisement ■ Exposure is limited only to one way ■ Article placement requires contacts and may be time consuming
Internet	■ Reach large number of people rapidly ■ Updated and disseminated information ■ Control information provided ■ Tailor information specifically for intended audience can be interactive ■ Demonstration can be by individual and graphs ■ Can use banner advertisement to direct intended audience	■ Can be expensive ■ Many people do not have access to internet ■ Intended audience must be proactive ■ May require monitoring ■ May require maintenance over time

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Radio	■ Range of intended audiences with known listening preference ■ Opportunity for direct intended audience involvement ■ Distribution is Expensive	■ Reaches Smaller intended audiences than T.V ■ Public service ads run infrequently and at low listening times ■ Many stations have limited formats that may not be conducive to health messages ■ Difficult for intended audiences to retain or pass on material
TV	■ Reaches potentially the largest & widest range ■ Combination of Audio visual is effective in emotional appeals and demonstration of behaviours ■ Can reach low – income audience ■ Specific programmes can reach specific intended audience ■ Opportunity for direct intended and audience involvement	■ Advertisement is expensive to produce ■ Running infrequently and in low viewing times ■ Message can be observed by commercial culture ■ Some stations reach small intended audience ■ Promotion can result in huge demand ■ Difficult to retain or pass on materials

10.5 Role and Responsibility of health educator

The seven areas of responsibilities which are shown below.

esponsi ility I Assessin Individual and Community eeds for Health ducation

- Provides the foundation for program planning
- Determines what health problems might exist in any given groups
- Includes determination of community resources available to address the problem
- Community Empowerment encourages the population to take ownership of their health problems
- Includes careful data collection and analysis

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- It is essential for healthy life
- to find out the vital health statistics in community

esponsi ility II lan Health ducation Strate ies, Interventions, and ro rams

- Actions are based on the needs assessment done for the community (see Responsibility I)
- Involves the development of goals and objectives which are specific and measurable
- Interventions are developed that will meet the goals and objectives
- According to Rule of Sufficiency, strategies are implemented which are sufficiently robust, effective enough, and have a reasonable chance of meeting stated objectives

esponsi ility III Implement Health ducation Strate ies, Interventions, and ro rams

- Implementation is based on a thorough understanding of the priority population
- Utilize a wide range of educational methods and techniques

esponsi ility I Conduct valuation and esearch elated to Health ducation

- Depending on the setting, utilize tests, surveys, observations, tracking epidemiological data, or other methods of data collection
- Health Educators make use of research to improve their practices.

esponsi ility Administer Health ducation Strate ies, Interventions, and ro rams

- Administration is generally a function of the more experienced practitioner
- Involves facilitating cooperation among personnel, both within and between programs

esponsi ility I Serve as a Health ducation esource erson

- Involves skills to access needed resources, and establish effective consultative relationships.

esponsi ility II Communicate and Advocate for Health and Health ducation

- Address diverse audience in diverse settings
- Translates scientific language into understandable information
- Formulates and support rules, policies and legislation
- Advocate for the profession of health education

10.6 Audiovisual Aids

Audiovisual aids play an important role in health education. They can be classified into three groups – purely auditory aids, purely visual and a combination of both auditory and visual aids

Media or materials in health education can be used for different purposes and for different groups of

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people. Learning and understanding seems to result when more senses, such as touch, sight and hearing are reached by the media.

If used properly they create interest and motivate people to learn. Learning is made more permanent because these aids supply a concrete basis for learning rather than abstract thinking.

10.6.1 Types of Audio - Visual Aids:

No health education can be effective without audio-visual aids. Audio-visual aids can be classified into 3 groups – (1) purely auditory;(2) Purely visual; (3) combined audio-visual.

(1) Auditory Aids

(2) Visual Aids

10.6.2 Combined Audio-Visual Aids

- Sound films
- Slide tape combination
- Television
- Computer & Internet
- A Knowledge of the advantages, disadvantages and limitations of each audio-visual and is necessary in order to take proper use of them. Audio-visual aids are means to an end; not an end in themselves.

10.6.3 Audio Visual Aids (Used in Mass Media:)

1) **Posters:** Posters are intended to attract public attention. Therefore, the material needs artistic preparation. The message on the poster should be short, simple, direct and one that can be taken at a glance and easy to understand. The life of a poster is usually short and needs frequent replacement. As a medium of health, education, posters are not effective in changing human behaviour.

   Posters should be colourful to catch the eye and convey the message clearly, Simple language and short sentences should be used. If used in the clinic, Outpatients department or health centers, they should be changed frequently. When possible explain the message to the learners and use them to supplement the teaching

2) **Health Magazines**: A good health magazine can be an important channel of communication. The material needs expert presentation.

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The Swasth Hind from Delhi and World Health from WHO are important health magazines. The health magazines stimulate awareness among people.

3) **Press:** Newspapers are the most widely distributed of all forms of reading material. They are an important channel of communication to the people.

4) **Films:** Films are very expensive to produce, and they get out-of-date very quickly. But film-shows attract large gathering.

5) **Radio and TV:** These are found nearly in every home. They are potent instruments of education. Radio talks should not exceed 15 minutes.

6) **Health Exhibitions**: If properly organized, health exhibitions can attract large numbers of people. Health exhibitions are used in connection with key points of interest – e.g., fairs and festivals, mass campaigns, etc.

7) **Health Museums**: A good health museum can be a very effective mass media of education, such as the one at Hyderabad in Andhra Pradesh.

8) **Indigenous Media**: Indigenous Media like katha-vartha, prabhat pheries, songs and dramas have roots in our culture. Health messages can be carried through these media.

10.6.4 Selection and uses of Audiovisual Aids

The following criteria are guides for the selection of the books and other printed teaching materials. How each applies in a given instance depends upon the teaching objectives, which have been set up to meet particular needs.

Students Activity

Divide students into group and encourage each group to prepare different types of AV-aid like poster, flash card, etc.

Organize an AV- aid exhibition in your school and conduct interschool competition

DO YOU KNOW?

The below has been given the benefits of bowling.

Now ask the students to identify the benefits of each activity

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10.6.5 Criteria for selecting Audiovisual Aids

1. The facts should be scientifically accurate
2. Needed materials should be present
3. All the information should be pertinent
4. It should cover the entire requirements
5. All the ideas should be essential, significant and important to clear understanding.

DO YOU KNOW?

A health tip to keep you fit

10.7 Administration and Organization

- The Government of India established a Central Health Education Bureau at Delhi in 1956 to promote and co-ordinate health education work in the country. Many State Governments in India now have health Education Bureau in their Health Directorates. There are also other special agencies in the country such as the Directorate of Advertising and Visual Publicity (DAVP), Government has a responsibility for the health education of the general public. Press Information Bureau, and the All India Radio (AIR), and TV which are active in health education work. At the International Level, there is the International Union for the Health Education, with headquarters in Paris, whose main task is to promote the creation of national committees and societies for health education.

SUMMARY

Health influences ones way of life, personal efficiency and helps the individual to attain the personal goals. Health education is a process aimed at encouraging people to want to be healthy, to know how to stay healthy and to maintain health.

The aim of health education is to help people to develop an awareness of health needs and problems.

In selecting audio visual aids for health education, the facts should be scientifically accurate, pertinent information and cover entire requirements and should be essential, important and clear to understand.

EVALUATION

FMR4M6

I. Choose the correct answer

1. The following is not an objective of health education
   a. Informing people
   b. Motivating people
   c. Guiding into action
   d. Distracting people
2. The principle of awakening of fundamental desire to learn is
   a. Interest

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b. Motivation

c. Credibility

d. Feedback

3. The more time-consuming approach of health education is

a. Individual approach

b. Group approach

c. Mass approach

d. Family approach

4. The pictures arranged in sequence which illustrates a story is known as

a. Posters

b. Puppets

c. Flash cards

d. Charts

5. The hand made dolls which narrates a story is known as

a. Puppets

b. Flash cards

c. Charts

d. Posters

II. Answer the following questions in one (or) two lines.

6. Define Health education.

7. Define audio visual aids.

8. List the criteria for selecting audio visual aids.

9. Enumerate areas of health education.

III. Write short notes

10. Differentiate the advantages and disadvantage of Group approach is health education.

11. List the methods of group teaching is health education.

12. Write about the Role and responsibilities of Nurse in health education.

IV. Write in detail

13. Describe the aims and objectives of health education.

14. Explain the principles of health education.

15. Classification of audio visual aids.

16. Describe the Stages in health Education.

17. Explain the methods of Group Teaching.

A-Z GLOSSARY

1. Concept (*கருத்து*) - an abstract idea
2. Comprehensive (*விரிவான/பரந்த*) - including or dealing with all or nearly all elements or aspects of something
3. Credibility (*நம்பகத்தன்மை*) - the quality of being trusted and believed in
4. Criteria (*அடிப்படை/கட்டளை விதிகள்*) - a principle or standard by which something may be judged or decided.

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5. Panel discussion (குழு விவாதம்) - is a specific format used in a meeting, conference or convention
6. Reinforcement (வலுவூட்டல்) - the action or process of reinforcing or strengthening.
7. Residue (மிகுதி) - a small amount of something that remains after the main part
8. Restoration (மறு சீரமைப்பு) - the action of returning something to a former owner, place, or condition
9. Statistics (புள்ளி விவரங்கள்) - the practice or science of collecting and analysing numerical data in large quantities

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INTERNET LINKS

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- https://www.slideshare.net/draneesalsaadi/health-education-principles-and-concepts
- https://www.ncbi.nlm.nih.gov/pubmed/15275179
- https://www.ncbi.nlm.nih.gov/pubmed/11586870

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UNIT

Pharmacology

FMZZNT

LEARNING OBJECTIVES

After mastering the contents of this lecture, Students will be able to,

- define the terminologies used in pharmacology
- list the importance of pharmacology for nurses
- enlist the sources of drugs
- enumerate the forms of medication
- describe about classification of drugs
- explain about the pharmacodynamics
- describe about pharmacokinetics

உற்றவன் தீர்ப்பான் மருந்து உழைச் செல்வானென்று
அப்பால்தான் கூற்றே மருந்து.

- திருக்குறள்

For patient, leech, and remedies, and him who waits by patient's side,
The art of medicine must fourfold code of laws provide.

11.1 Introduction

Medications are frequently used to manage diseases. Administration of medication is the main responsibility of a nurse. Hence it becomes important that nurses should have a sound knowledge of actions and effects of medications. Administering medication safely requires an understanding of all aspects of pharmacology.

All around the world, registered nurses play an important role in administering medication to patients in a typical busy hospital environment. This duty requires a huge amount of effort on behalf of nurses to stay updated about medical advancements and pharmaceutical drugs. Improving knowledge about medication requires a continuous education on drugs among nurses.

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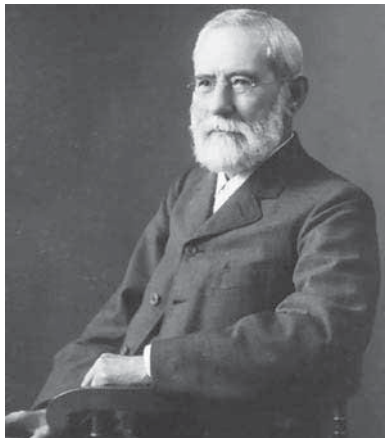

Schmiedeberg obtained his medical doctorate in 1866 with a thesis on the measurement of chloroform in blood. In 1872, he became professor of pharmacology at the University of Strassburg, receiving generous government support in the form of a magnificent institute of pharmacology. He studied the pharmacology of chloroform and chloralhydrate. In 1869, Schmiedeberg showed that muscarine evoked the same effect on the heart as electrical stimulation of the vagus nerve. In 1878, he published a classic text, ***Outline of Pharmacology*, and in 1885, he introduced urethane as a hypnotic.**

11.2 Definition:

The term pharmacology is obtained from the Greek word **"pharmakon"** meaning as drug and "logos" means the study or science. The term "drug" is derived from the French word "drogue" denotes" dry herb".

PHARMACOLOGY:- is the study of drugs. Drugs are the chemical substance that produce therapeutically useful effects.

Pharmacist: A person licensed to prepare and dispense drugs

Pharmacokinetics: It is the study of how medications enter the body, reach their site of action, are metabolized and exit the body

Pharmacodynamics: It is the study of drugs – their mechanism of action, pharmacological action and their side effects which deals with "what the drug does to the body"

11.3 Sources Of Drugs:

There are three varieties of sources – natural, semisynthetic and synthetic. Natural sources are plants, animals, microorganism, minerals, etc. semisynthetic drugs are obtained from natural sources and modified chemically later. Synthetic drugs are produced artificially.

The different sources of drugs are as follows:

Plants – morphine, atropine, digoxin

Animals – insulin

Minerals – ferrous sulphate, magnesium sulphate

Microorganisms – penicillin, streptomycin

Semisynthetic – hydromorphone

Synthetic – most of the drugs used today are synthetic – aspirin, paracetamol

Drugs are also produced by genetic engineering – human insulin, human growth hormone

11.4 Forms of Medication:

Medications are available in a variety of forms or preparations. The form of medication determines the route of administration.

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1. Solid forms are tablet, capsule, gelatine capsule (TAB).

2. Liquid forms are syrup, elixir (SYP)

3. Inhalation forms are aerosol, lozenge

4. Topical forms are ointment, lotion

5. Parenteral forms are powder, solution vial

6. Instillation forms are suppository, intraocular disk

DO YOU KNOW?

Anaphylactic reaction may leads to anaphylactic shock which is a medical emergency can lead to sudden death. e.g. penicillin.

11.5 Classification of Drugs

There following are a classification of drugs according to the action

1. **ANALGESICS:-** Drugs used to relieve pain.
2. **ANAESTHETICS:-** Drugs which causes loss of sensation.
3. **ANTI -PYRETICS:-** Drugs which reduce fever.e.g crocin
4. **ANTHELMINTICS:-** Drugs which destroy and expel worms.e.g mebandazole
5. **ANTIDOTES:-** Substance used to counteract effects of poison. eg large quantity of diluted alkali is given to neutralize acid poisoning.
6. **ANTACIDS:-** Substance that react with hydrochloric acid to decrease

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the activity of the gastric secretions e.g.gelucil

7. **ANTI-EMETICS:-** Drugs relieving or preventing nausea and vomiting.
8. **ANTI-HISTAMINES:-** The agents which used to prevent or relieve allergies.
9. **ANTI-COAGULANTS:-** Substance which inhibit or decrease blood – clotting process .
10. **ANTI-CONVULSANTS:-** Use to treat convulsion
11. **ANTI- SEPTIC:-** A Substance that inhibit the growth of bacteria.
12. **DIURETICS:-** Which increase the flow of urine.ex. lasix
13. **EMOLLIENT:-** Substance that soften, smooth and protect the skin.
14. **EXPECTORANTS:-** Increase the bronchial secretions and aid in the expulsion of the mucus.
15. **HYPNOTICS:-** Drugs that produce sleep.
16. **HYPOGLYCAEMICS:-** Drugs that lower the blood sugar level.
17. **MUSCLE RELAXANTS:-** Agents used for diminution of tension or functional activity of muscles.
18. **NASAL DECONGESTANTS:-** Drugs which used to relieve the nasal congestion.
19. **NARCOTICS:-** A drugs that reduce complete insensibility.
20. **SEDATIVES:-** Substance which lessen the body activity and induce sleep.
21. **STIMULANTS:-** Increase the functional activity of an organ or system.
22. **TRANQUILLIZERS:-** To calm nervous anxious, excited or disturbed helps client.
23. **VASODILATOR:-** It reduce blood pressure
24. **EMETICS:- Drugs which produce vomiting**
25. **MYDRIATICS:- Drugs which dilate pupil of the eye**

11.6 Importance of Pharmacology for Nurses

1. Understand drugs and how they can affect living things
2. Know the right dosage of drugs and not just quantity
3. Identify and respond to drug interactions, reactions and side effects and treat accordingly
4. Know when to use drugs because some conditions do not need drug therapy
5. Understand the process of drug intake, absorption, distribution, metabolism and elimination.
6. Identify the properties of ideal drugs and otherwise it will create problem.
7. Know the application of pharmacology in nursing with regards to the right of medication administration.

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A reviations sed e ardin ime of Administration

Abbreviation	Derivation	Meaning
A.C	Ante cibum	Before meals
P.C	Post cibum	After meals
O.D	Omni die	Daily (once a day)
H.S	Hora somni	At bedtime
S.O.S	Si opus sit	If necessary
B.D	Bis in die	Twice a day
T.I.D	Ter in the die	Three times a day
Q.I.D	Quater in die	four time a day
STAT	Statim	At once
Q	Quaque	Every

AM S

- Q4H:- Every 4 hours (6 Times a day)
  8-12-4
  8-12-4
- Q6H:- Every 6 hours (4 Times a day)
  6-12
  6-12

A reviations sed e ardin the oute

Abbreviation	Meaning
IM	Intramuscular
P.O	Per Oral
IV	Intravenous
SC	Subcutaneously
ID	Intradermal

11.7 Types of Order

Standing Order

This is one that should be carried out for a specified number of days or until another order cancels it. For example, standing orders given by the medical officer of PHC in emergency situations.

Prn Orders

It states guidelines for administering a medication when needed.

(e.g., pain killers, laxatives.)

One Time Order or Single Order

It is a written order for a medication which is administered only once, (e.g., preoperative medications.)

Stat Order

It is a medication order which is administered immediately and only once,

(e.g., INJ Lasix 20 mg IV stat.)

Telephone Orders

Sometimes after discussion with the doctor about the clients condition over the phone, the nurse may write the ordered medication on the physicians order sheet which is designated as "T.O." The physician must countersign the order at a specified time period, which is usually 48 hours.

11.8 Preventing Medication Error

To help prevent errors, perform 'three checks' and "six rights" when giving medication.

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- **THREE CHECKS:**

  Check each medication three times as a nurse:

  1. *BEFORE you our mix or draw up a medication,* check its label against the entry on the MAR. be sure that the name, route, dose, and time match the MAR entry. [medication administration record]
  2. *AFTER you prepare the medication,* and before returning the container to the medication cart or discarding anything, check the label against the MAR entry again.
  3. AT *THE BEDSIDE, check the medication again* before actually administering it.

Observing the "three checks" rule will help you to practice the "six rights"

11.8.1 Six Rights of Medication Administration

Practicing the six rights' will help to ensure accurate administration. This means the nurses will give the right medication to Right patient, by using Right dose, at the Right route in a Right time, and Right document ation is necessory for medication administration.

1. **RIGHT DRUG:**
   - Always check the doctor order before administer.
2. **RIGHT DOSE:**
   - Be sure that the dose is within the recommended range for the patients age and condition.
3. **RIGHT TIME:**
   - Exact time of administration of the medication is needed.
4. **RIGHT ROUTE:**
   - Be sure that the drug is in the proper form for the route ordered. Be sure about site of administration.
5. **RIGHT PATIENT:**
   - Always double check the patients identification. To ensure correct patient.
6. **RIGHT DOCUMENTATION:**
   - After administering of medication, document it immediately on the patients case sheet.

11.8.2 Patient Rights:

In addition to the" "six rights" already discussed, patients also have the following rights.

- **RIGHT REASON:**

  Right to not receive unnecessary medication, for example sleeping pill should be give because the patient is very anxious or cannot sleep not for the convenience of the caregivers.

- **RIGHT TO KNOW:**

  This means that you tell the patient about name of the medication, why it is being given, its action, and potential side effects

- **RIGHT TO REFUSE:**

  The patient always as a right to refuse a medication.

Students Activity

Prepare an album on various forms of medication

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DEFINITION

Medication error can be defined as 'a failure in the treatment process that leads to, or has the potential to lead to, harm to the patient'.

These are not adverse drug reactions

Medication errors can occur in:

- choosing a medicine—irrational, inappropriate, and ineffective prescribing, underprescribing and overprescribing;
- writing the prescription—prescription errors, including illegibility;
- manufacturing the formulation to be used—wrong strength, contaminants or adulterants, wrong or misleading packaging;
- dispensing the formulation—wrong drug, wrong formulation, wrong label;
- administering or taking the drug—wrong dose, wrong route, wrong frequency, wrong duration;
- monitoring therapy—failing to alter therapy when required, erroneous alteration.

11.9 Systems of Medication Measurement

Metric system: Most commonly used and convenient system. Basic units of measurements are metre, litre and gram.

Apothecary system: Infrequently used and basic unit of measurements are grain, minim.

Household system: Least accurate and used only in houses. Basic units of measurements are teaspoon, tablespoon.

Conversion within systems:

1g = 1000mg, 1L = 1000ml

Metric	Apothecary	Household
1ml	15 to 16 minim	15 drops
4-5ml	1 fluidram	1 tsp
15-16ml	4 fluidram	1 tbsp
30ml	1 ounce	2 tbsp
240ml	8 ounce	1 cup
480 ml (apprx. 500 ml)	1 pint	1 pint
960 ml (apprx. 1 lt.)	1 quart	1 quart
4800 ml (apprx. 5 lt.)	1 gallon	1 gallon

11.10 Routes of Medication Administration

There are 5 major routes of medication administration that includes:

- **Oral route:**
  - Oral
  - Enteral (through enteral tube)
  - Buccal (placing between cheek and gum)
  - Sublingual (placing under tongue)
- **Parenteral route:**
  - Intradermal (under epidermis)

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- Subcutaneous (under dermis)
- Intramuscular
- Intravenous
- Intra arterial
- Intra cardiac
- Intra osseous (bone)

. **Topical route:**

- Vaginal administration
- Rectal administration
- Inunction (rubbing drug into skin)
- Instillation (placing drug into direct contact with mucous membrane)
- Irrigation (flushing mucous membrane with drug in solution)
- Skin application (Applying transdermal patch)

. **Inhalation or Pulmonary Route:**

- Through nasal, oral, endotracheal or tracheostomy tubes

. **Intraoccular Route:**

- Eye medication disk (inserting similar to contact lens)

Students Activity

Visit to a Pharmacy in Government Hospital

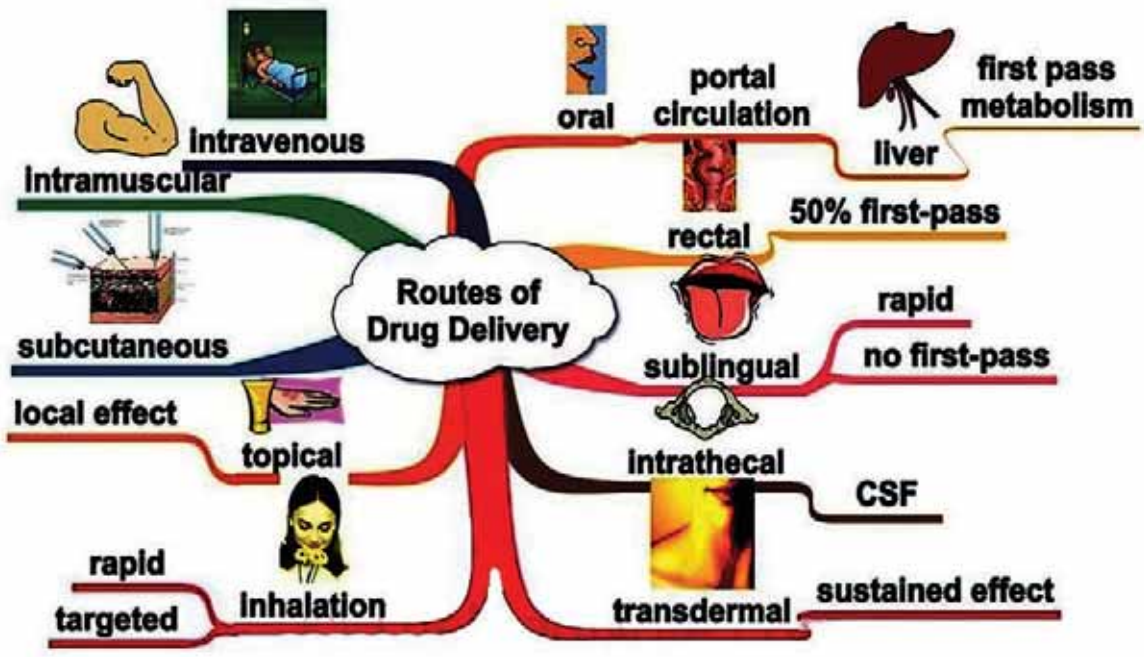
11.11 Pharmacodynamics

It covers all the aspects relating to "what the drug does to the body". It is the study of biochemical and physiological effects of drug and their mechanism of action at organ level as well as cellular level.

11.11.1 Types of Drug Action:

Different types of drug actions are follows:

Stimulation: Some drugs act by increasing the activity of specialised cells, eg., catecholamine stimulate heart to increase heart rate and force of contraction.



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Depression: Some drugs act by decreasing the activity of specialised cells, eg., general anaesthetics depress the central nervous system.

Irritation: Certain drugs on topical application can cause irritation of the skin and the adjacent tissues, eg., eucalyptus oil.

Replacement: When there is a deficiency of endogenous substances, they can be replaced by drugs, eg., Insulin.

Chemotherapeutic: Drugs are selectively toxic to infective organism or cancer cells, eg., antibiotics, anticancer drugs.

11.11.2 Effects of Drugs on the Body

THERAPEUTIC EFFECTS: It is the expected or predictable physiological response of medication. The drugs are administered for the following purpose.

1. **TO PROMOTE HEALTH;-** Drugs are given to the individual to increase the resistance against diseases (e.g. vitamins).
2. **TO PREVENT DISEASES;-** (e.g. vaccines and anti-toxins).
3. **TO DIAGNOSE DISEASE:-** (e.g. barium used in the X-ray studies).
4. **TO ALLEVIATE DISEASES:-** Certain drugs are given for the palliative effect or for the temporary relief of distressing symptoms but does not remove the cause or cure the disease (e.g. analgesics)
5. **TO TREAT OR CURE A DISEASE:-**
   - By restoring normal functions (e.g. digoxin).
   - By destroying the causative organisms (e.g. quinine in malaria.)

ocal and Systemic ffects

Local effects of a drug are expected when they are applied topically to the skin or mucus membrane.

A drug used for systemic effect must be absorbed into the blood stream to produce the desired effects in the various systems and parts of the body.

Adverse ffects

Adverse effect is any effect other than the therapeutic effect. These are generally considered severe responses to medication.

Side ffects

Side effect are the minor adverse effects side effects can harmful or harmless.

Aller ic eactions

A client can react to a drug as a foreign body and thus develop symptoms of allergic reaction. Allergic reaction can be either severe or mild. A severe allergic reaction usually occurs immediately after the administration of the drugs it is called *anaphylactic reaction*. A mild reaction has a variety of symptoms. From skin rashes to diarrhoea. Such as:

SKIN RASHES: (urticaria) Oedematous pinkish elevation with itching .

PRURITIS: Itching of the skin with or without a rash.

RHINITIS: Excessive watery discharge from the nose.

LACRIMAL TEARING: Excessive tears from the eyes.

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Students Activity

State any one drug that you are commonly using in your home for minor ailments and describe about its action and side effects.

Proven Human Teratogens:

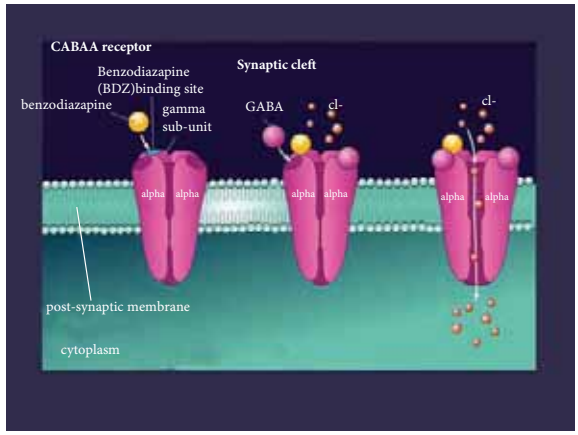
Drug	Abnormality
Thalidomide	Phocomelia, multiple defects
Anti-neoplastic drugs	Multiple defects, foetal death
Androgens	Virilization, esophageal, cardiac defects
Progestins	Virilization of female foetus
Stilboestrol	Vaginal carcinoma
Tetracyclines	Discloured teeth, bone defects
Warfarin	Nose, Eye, Hand defects, Growth retardation
Phenytoin	Cleft lip/palate, microcephaly, hypoplastic phalanges

DO YOU KNOW?

Teratogenic drugs:

A teratogen is an agent that can disturb the development of the embryo or fetus. This produce a congenital malformation (a birth defect) ex., radiation exposure, drugs used for maternal infection.

11.12 Mechanism of Drug Action



Two types of mechanisms

1. Non-receptor mediated
2. Receptor mediated

Non-receptor mediated mechanisms include:

1. By physical action like osmosis, absorption.
2. By chemical action like antacids, metals.
3. Through enzymes like angiotensin converting enzyme inhibitor.
4. Through antibody production like vaccines.
5. Placebo which is a dummy medicine having no pharmacological activity like distilled water.

eceptor mediated mechanisms include

1. Affinity: Ability of the drug to get bound to the receptor.
2. Agonist: Capable of producing pharmacological action after binding to the receptor.

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3. Antagonist: Capable of not producing pharmacological action after binding to the receptor.

Drug Potency: It is the quantity of a drug to produce a desired response. The lower the dose required for a given response, the more potent is the drug.

Drug Efficacy: It is the maximum effect of a drug.

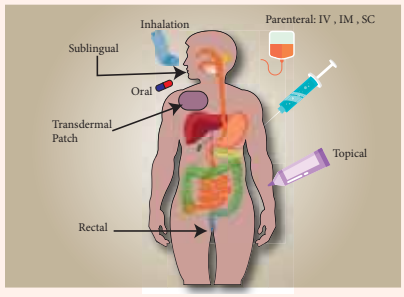
11.13 Pharmacokinetics

It is "what the body does to the drug". It includes absorption, distribution, metabolism and excretion.

FN9VQG

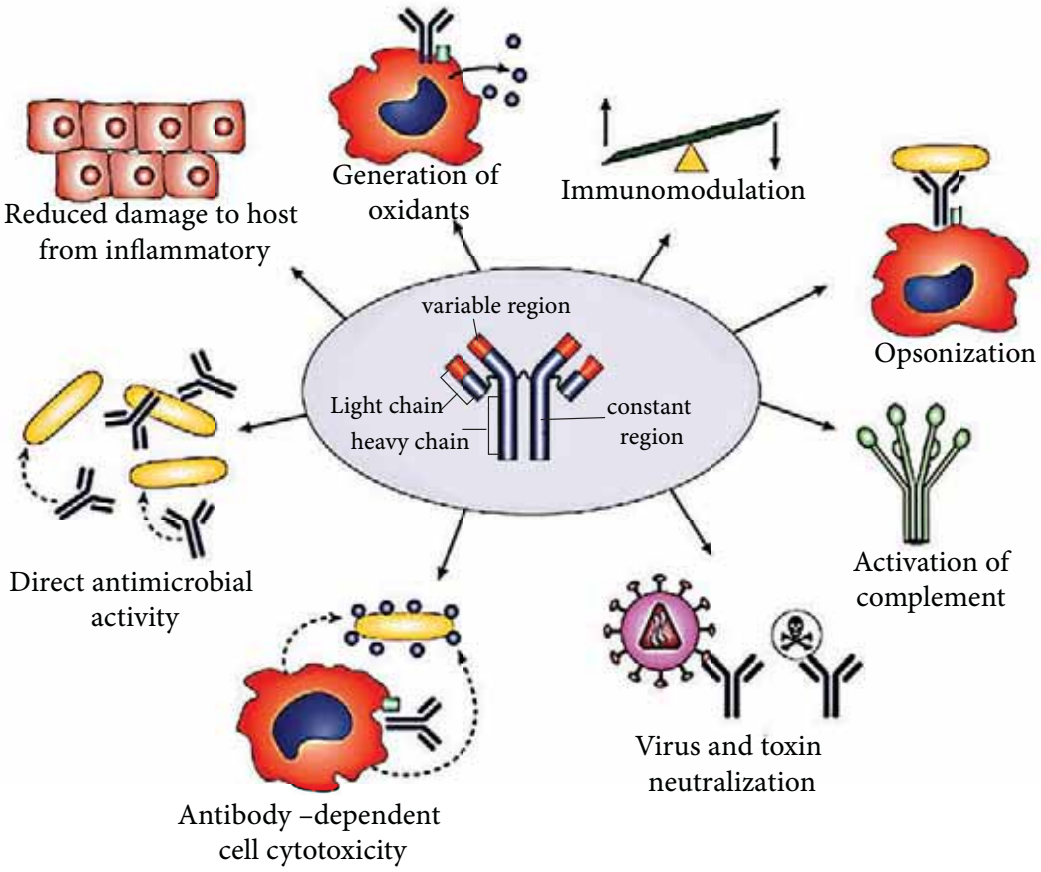
11.13 .1 Drug Absorption:

DEFINITION



"The process of movement of unchanged drug from the site of administration to systemic circulation is called as drug absorption".

It is the movement of a drug from the site of administration into the blood stream. There are various factors influencing drug absorption. It includes:



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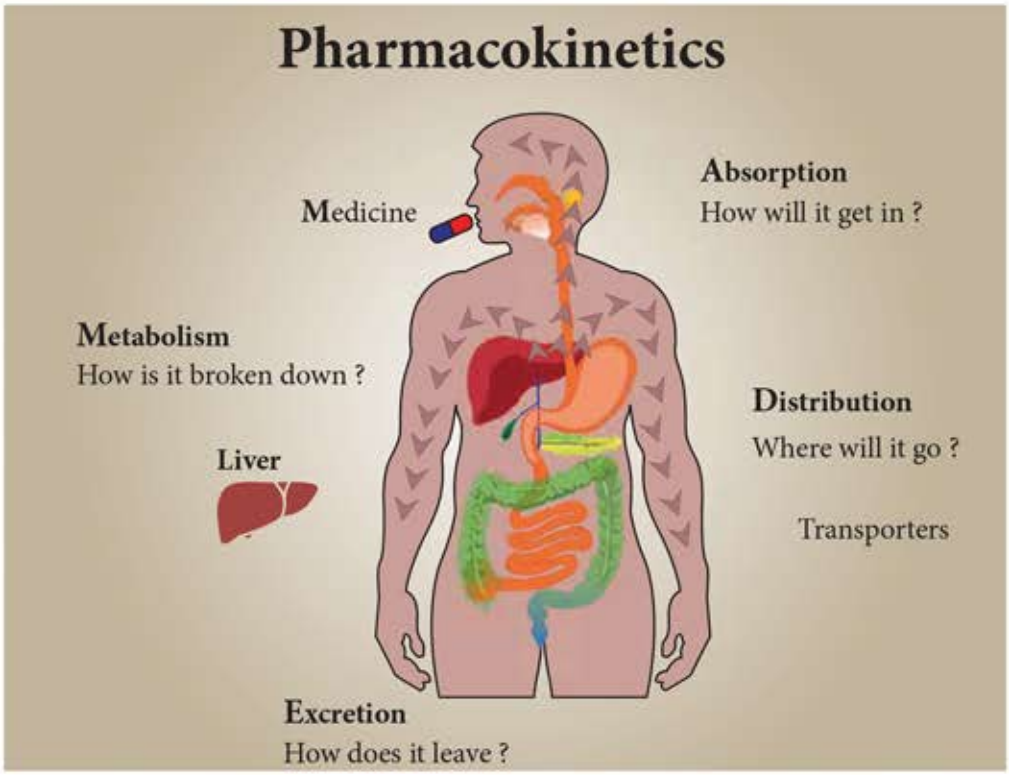


- **Physiological properties of the drug.** eg., lipid soluble form better absorbed than water soluble.
- **Route of drug administration.** eg., intravenous route directly enters the circulation.
- **Food** eg., milk and milk products decrease the absorption.
- **Presence of other drugs** eg., ascorbic acid increases the absorption of oral iron.
- **Gastrointestinal and other diseases** eg., gastroenteritis decreases drug absorption.

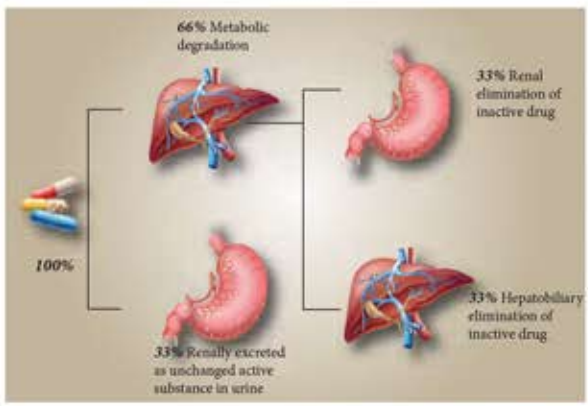
11.13.2 Drug Distribution

Drug distribution: refers to the reversible transfer of a drug between the blood and the extra vascular fluids and tissues of the body (for example, fat, muscle, and brain tissue). Drugs come into the circulation after absorption. From plasma drugs have to cross the capillary membrane to come to interstitial space then it cross the cell membrane and enter into the intracellular fluids.

11.13.3 Drug Metabolism

- Chemical alteration of the drug in a living organism is called drug metabolism or biotransformation.

Site: Liver is the main site for drug metabolism; other sites are GI tract, kidney, lungs, blood, skin and placenta.



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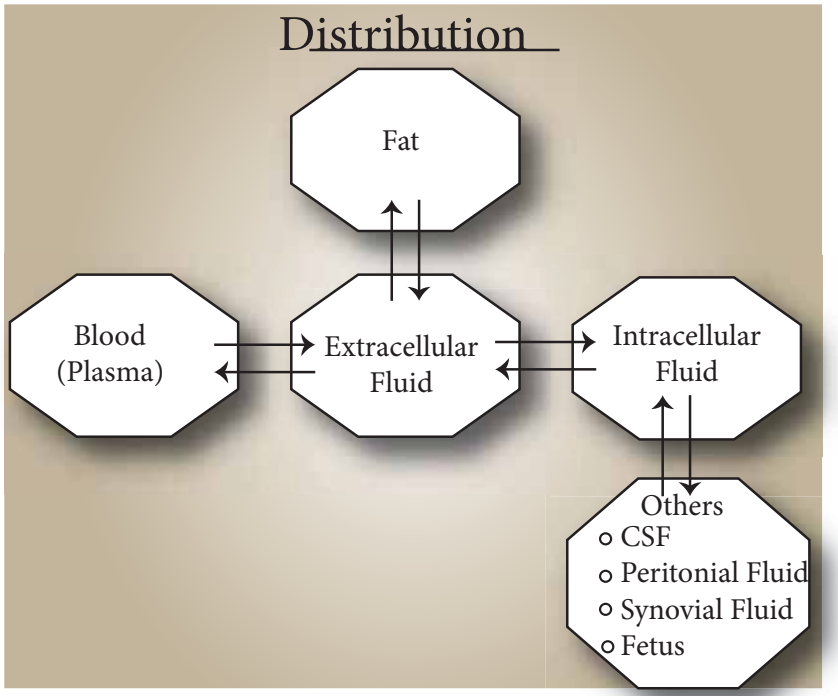

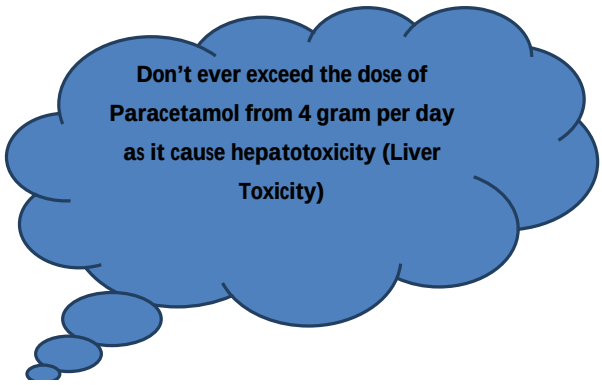

Factors Affecting Drug Metabolism

Age: Neonates and elderly metabolize to a lesser extent than adults.

Diseases: Liver diseases impair the drug metabolism.

11.13.4 Drug Excretion

Removal of the drug and its metabolites from the body is known as drug excretion. The main channel of excretion of drugs is the kidney; others include lungs, bile, faeces, sweat, saliva, etc.

11.14 *Nurses Responsibility in the Administration of Medications*

- Assess gag reflex and patients ability to swallow.
- Do not touch tablets.
- Head end of the bed should be elevated at least by 90 degrees to administer oral medications.
- Make sure the patient as swallowed the medication.
- It is essential to hand wash before preparation of drugs.
- Always check for patients history for allergies.
- Check the expired dates of drugs and before administering.
- Never administer medications prepared by another staff member.

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- Before administering unfamiliar drugs try to know the route of administration, dose or combination of medications.
- Explain the procedure to the client discuss the need for medication.
- Before administering the anti hypertensive medication check BP.
- Before administering an analgesics assess the type of pain it's intensity, and location.
- Report on error in medication immediately to the charge nurse and the physician.
- Record the date, time, name of the drug administered. The dose of the medicine and the strength immediately after the medicine.

SUMMARY

All around the world, registered nurses play an important role in administering medication to patients in a typical busy hospital environment. Improving knowledge about medication requires a continuous education on drugs among nurses.

EVALUATION

I. Choose the correct answer

1. The study that deals with chemicals that affect the body functioning is known as
   a) Pharmacokinetics
   b) Pharmacology
   c) Pharmacodynamics
   d) Anaesthetics
2. The Drugs which produce vomiting is known as
   a) Coagulant
   b) Sedatives
   c) Emetics
   d) Antacids
3. The abbreviation used to administer of they if necessary is
   a) SOS order
   b) STAT order
   c) prn order
   d) o.d
4. The expected or predictable physiological response of medication is termed as
   a) Side effect
   b) Toxic effect
   c) Adverse effect
   d) Therapeutic effect

FNIRS4

5. The process of movement of drug from the site of administration to systemic circulation is called as
   a) Absorption
   b) Distribution
   c) Metabolism
   d) Excretion
6. The main site for drug metabolism is
   a) Kidney
   b) Blood
   c) Liver
   d) Skin

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II. Answer the following questions in one (or) two lines.

1. Define Pharmacokinetics.
2. Define Pharmacodynamics.
3. List four sources of drugs.
4. Enumerate any four rights of medication administration.

III. Write short notes

5. Describe the different forms of medications.
6. Describe the different routes of medication administration.
7. Enumerate the factors modifying drug action.

IV. Write in detail

8. Explain the classification of drugs.
9. Explain about pharmacodynamics.
10. Explain about pharmacokinetics.

A-Z GLOSSARY

1. Drug Efficacy: (*மருந்து திறன்*) It is the maximum effect of a drug.
2. Drug or Medication: (*மருந்து*) Any substance that modifies body functions when taken into the body
3. Drug Potency: (*மருந்து சக்தி (அ) ஆற்றல்*) It is the quantity of a drug to produce a desired response.
4. Pharmacodynamics: (*மருந்தியல் இயக்கவியல்*) It is the study of drugs – their mechanism of action, pharmacological action and their side effects which deals with "what the drug does to the body"
5. Pharmacist: (*மருந்தாளுனர்*) A person licensed to prepare and dispense drugs
6. Pharmacokinetics: (*மருந்தினால் இயக்கவியல்*) It is the study of how medications enter the body, reach their site of action, are metabolized and exit the body
7. Pharmacology: (*மருந்தியல்*) The study that deals with chemicals that affect the body's functioning

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- http://www.slideshare.net/maryline1979/mdication-error-25474916
- http://www.study.com/academy/lesson/what-is-pharmacokinetics-definition-principles.html

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UNIT

Alternative Medicine and Practices in Nursing

LEARNING OBJECTIVES

After learning this chapter students will be able to

- gain knowledge and attain a favourable attitude towards AYUSH
- students will be able to define AYUSH
  - discuss the history of AYUSH
  - list the purpose, indications and contraindications of AYUSH
- describe the application of AYUSH.
- explain health services in Tamilnadu regarding AYUSH.

12.1 Introduction

A paradigm shift is occurring within our society wherein a growing number of people are adopting an expanded view of health which embraces a holistic perspectives rather than a purely allopathic one. As a result, we are seeking and using a variety of complementary and alternative healing modalities. In an effort to promote primary health care the World Health Organization (WHO) recommended in 1978 that traditional (alternative) medicine be promoted, developed and integrated wherever possible with modern, scientific medicine, stressing the necessity to ensure respect, recognition and collaboration among the practitioners of the various systems concerned.

Complementary and alternative medicine (CAM) has received an enormous amount of attention around the world over the past decade. Nurses need to be well informed about various CAM modalities that clients might be using because of the increased interest in CAM.

12.2 Definition

The National Center for Complementary and Alternative medicine (NCCAM) defines

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Complementary and Alternative medicine (CAM) as a group of diverse medical and health care systems, practices and products that are not presently considered to be part of conventional medicine.

According to the NCCAM, complementary and alternative therapies are not the same. Complementary medicine is used together with conventional medicine.

Conventional medicine is defined by NCCAM as medicine practices by holders of M.D (Medical Doctor) and D.O (Doctor of Osetopathy) degrees and by allied health professionals, such as nurse-practitioners or advanced practice nurses, registered nurses, physical therapists, and psychologists.

12.2.1 Reasons Why People Seek Cam Therapies

- Wanting greater control over their lives.
- Having a sense of responsibility for their own health care.
- Wanting a more holistic orientation in health care.
- Concern over the side effects of conventional therapies.
- Finding the results of conventional treatments to be inadequate.
- A desire for cultural and philosophical congruence with personal beliefs about health and illness.
- Dissatisfaction with conventional health care.
- Unwillingness to 'grin and bear' the effects of diseases.
- The rapid pace and ease in consumers' awareness of alternative therapies.
- Growing evidence of effectiveness of alternative therapies.

12.2.2 Principles Underlying Alternative Healing

In 1999, Eliopoulos identifies five basic principles underlying CAM:

- The body has the ability to heal itself.
- Health and healing are related to a harmony of mind, body and spirit.
- Basic good health practices build the foundation for healing.
- Healing practices are individualized.
- People are responsible for their own healing.

12.3 Types or Classifications of Cam Therapies

Alternative medicine is any practice that is perceived by its users to have healing effects of medicine.

Systems of Medicine and Healthcare

Department of Indian systems of Medicine and Homeopathy [ISM & H] was created in March 1995 and renamed as Department of AYUSH in November 2003 with a view to providing focused attention to development of Educational research in AYUSH.

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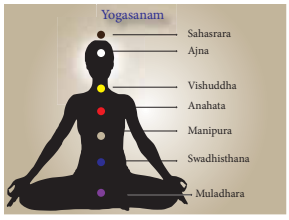
Classification of complementary and alternative medicine

Whole or Alternative Medical Systems	Mind – Body Intervention	Biological – Based Therapies	Manipulative and Body-Based Methods	Energy Therapies
■ Acupunture ■ Ayurveda ■ Homeopathy ■ Naturopathy	■ Meditation ■ Relaxation ■ Hypnosis ■ Art, music and dance therapy ■ Prayer ■ Imagery ■ Bio-feedback ■ Body-Mind Spiritual interventions	■ Herbal therapies ■ Aromatherapy ■ Special diet therapies ■ Mega doses of vitamins or minerals	■ Tai Chi ■ Yoga ■ Massage	■ Therapeutic touch ■ Reflexology ■ Electromagnetic ■ Therapy ■ Light therapy



AYUSH – generally means "Long Lived"

A – Ayurveda

Y – Yoga & Naturopathy

U – Unani

S – Siddha

H – Homepathy

We exercise at least 36 muscles when we smile

12.4 Objectives of Alternative Medicine

- To upgrade the educational standards of AYUSH.
- Quality control and standardization of drugs.
- Improving the availability of medicinal plant material, promotion and cultivation of herbs.
- To strengthen existing research institution and provide awareness, research programme on identified disease.

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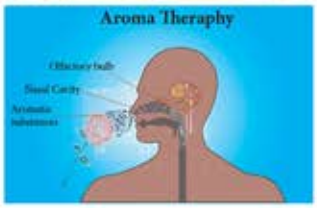

12.5 Types of Alternative Medicine

Ayurveda

Ayurveda literally means **"The Science of Life"** and it represents the oldest complex medical system about healthy lifestyle principle. [**Ayur**-life, **veda**- knowledge (or) science]

Students Activity

Album preparation – collect some medicinal plants, write its uses and make an album.

Ayurveda aims at making a happy, healthy and peaceful society. The two most important aims of Ayurveda are:

- To maintain the health of healthy people.
- To cure the diseases of sick people.

12.5.1 The Origin of Ayurvedic Medicine

Auyveda originated in the vedic civilization of India about 4,000 years ago. The origin of its teachings dates back to the ancient Indian scriptures [Vedas]

Atreys was the first great physician and teacher of ayurvedha. "**SushruthaSamhita**" is written by the great surgeon sushrutha who says "The physician, the patient, the drug and nurses are four feet of the medicine upon which the cure depends.

The great physician Charaka was written the charakasamhita in which he deals with ayurvedic surgery.

Ayurveda is regarded as the mother of all medical system.

- In India we had the ayurvedic system of medicine which can be traced of about 3000 B.C. Ayurveda stressed on hygiene, prevention of sickness, Inoculation against small pox, Lavatories, good ventilation, construction of hospitals, cultivation of medicinal plants.

12.5.2 Ayurvedic Perspective

- Ayurveda represents a holistic and simple form of healing approach
- Ayurvedic practice above all appeals to conscious prevention, healthy life style.
- Following a programme of positive change to include proper diet a regular

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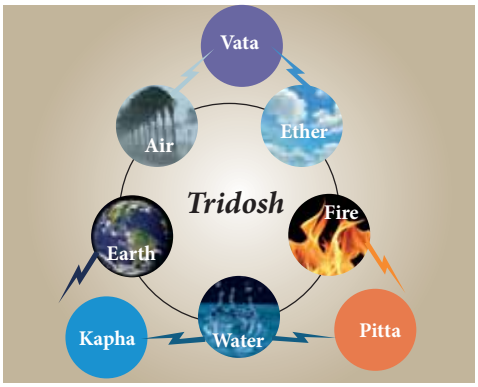
herb usage it is possible to remove various health problems.



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The central concept of Ayurvedic medicine is the theory that health exist when there is a balance between three fundamental bodily humors (or) doshas called [Vatha, Pitta, Kapha].

12.5.3 The Body Matrix

Life in ayurveda is conceived as the union of body senses, mind and soul. Thus the total body matrix comprises of the humours, the tissue and waste product of the body.

12.5.4 Causes of Disease

- It represent the balance between three biological principle [Vata, Pitta, Kapha], bodily tissues, their function, sensory organs, the mind and psychic consciousness.
- Imbalance [vata, pitta, kapha] can be caused by number of factors, including stress, lifestyle and improper diet.
- Imbalance of the body and bias from its natural balance results in different kinds of ailments.

12.5.5 Diagnosis in Ayurveda

There are three main methods mentioned in Ayurveda for diagnosing the Dosha imbalance and disease process in a person. They are –

1. Darsana Pareeksha – By observing the patient's physical signs and symptoms,

   Example – colour of skin, hair, eyes, behavior, body condition etc.

2. Prasna Preeksha – By asking minute questions regarding the imbalance of each Doshas.
3. Sparsana Pareeksha – By touching the patient. The pulse diagnosis, palpation, percussion and auscultation are included in this method.
4. Nadi Pareeksha (Pulse diagnosis) is a very important tool for diagnosis. The physician feels the radial artery pulsations on the wrist of the patient

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and through his experience he can get a clear picture of the milieu interior.

12.5.6 Treatment

The treatment in Ayurveda can be classified broadly into two:-

1. Shamana Chikitsa (Alleviating Therapy)
2. Sodhana Chikitsa (Purification Therapy)

Samana Chikitsa

This is specially done after the sodhana therapy and in less vitiation. Herbal medicines are used internally and externally to correct the derangement of functions of Doshas, Dhatus, Malas and Agni and also to increase the Immunity. The restoration of normality is brought about without any elimination.

Sodhana Chikitsa

The main aim of this treatment is to eliminate the internal causative factors of the disease. Large quantities of toxic bi-products are formed in the body as a result of continuous metabolic process. All though most of these toxins are eliminated naturally by the body's excretory system, some may get deposited in the various tissues of the body, which ensures the vitiation of Doshas, Dhatus etc. and then the normal functioning of the system is impaired. Similarly disease causing toxins accumulate in the body as a result of various factors like wrong body habits, wrong food habits, incompatible combination of food items, suppression of the body urges, emotional imbalance etc. Panchakarma therapeutic procedures are used to facilitate the elimination of such harmful factors.

DO YOU KNOW?

Nerve impulse travel at over 400 km /hr

We give birth to over 200 billion RBC cells every day

PANCHKARMA TREATMENT

[Cleaning process]

Nasyam – Purifies and strengthen Nasal passage.

Kizhi – Massage by medicinal oils over the body.

Panchakarma is the cornerstone to Ayurvedic management of disease. Pancha Karma is the process, which gets to the root cause of the problem and re-establishes the essential balance of 'Tridosha' (three doshas: Vata, Pitta and Kapha) in body.

Panchakarma is a Sanskrit word that means "five actions" or "five treatments". This science of purifying the body is an ancient branch of Ayurveda.

Panchakarma is designed to reduce symptoms and restore harmony and body balance. To achieve this an Ayurvedic Practitioner might rely on:-

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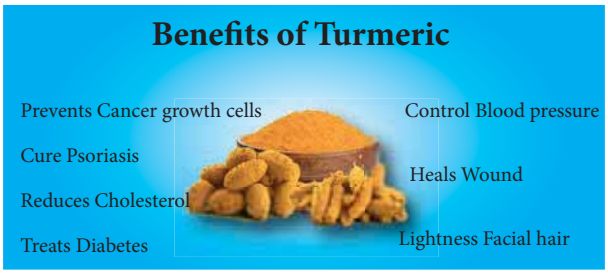
Blood – Purification

Massage – Medical oils, herbs.

Enemas (or) Laxativs – Cleanse your body of undigested foods.



Physician – should use his knowledge with humility, wisdom, service of humanity.

Medicaments – Food and drugs.

Nursing – Must know the skills of their art affectionate, sympathetic, intelligent, heat clean and Resourceful.

"ONLY THE SILENCE OF THE HEART CAN CURE THE ILLNESS OF THE MIND"

Patient – Co-operative and obedient to follow instruction of the physician.

- Regulation of diet as therapy has great importance.
- An individual's mental and spiritual development is influenced by proper treatment.
- Ayurveda stresses the use of plant based medicine and treatment with some animal products and added minerals.

DO YOU KNOW? Our blood is on a 60000 miles journey per day

12.6 Yoga & Naturopathy

12.6.1 Definition

Yoga is an ancient art based on harmonizing system of development for the body mind and spirit. The continued practice of yoga will lead you to sense of peace and well being and also a feeling of being at one with their environment.

12.6.2 Origin of Yoga

Yoga combines –

- **PHYSICAL EXERCISES**
- **MENTAL MEDITATION**
- **BREATHING TECHNIQUES.**

Yoga philosophy is an art and science of living. Yoga has its origin in the Vedas,

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The oldest record of Indian culture. It was systematize of by the great Indian sage **Patanjali** in the yoga sutra as a special **Darshana.** Yoga gurus from India later introduced yoga to the West, following the success of Swami Vivekananda in the late 19th and early 20th century. In the 1980s, yoga became popular as a system of physical exercise across the Western world.

"**SWAMI VIVEKANANDA"**- defines yoga

It is a means of compressing one's evolution into a single life or a few months or even a few hours of one's bodily existence.

Yoga is a science as well as art of healthy living physically, mentally, morally, spiritually.

"**Maharishi Patanjali**" rightly called as the Father of yoga, compiled and refined various aspects of yoga systematically in his "Yoga sutras".

The term "yoga" has been applied to a variety of practices and methods, including Jain and Buddhist practices. In Hinduism these include, they are:

12.6.3 Streams of Yoga

- Ashtanga Yoga-Discipline of mind.
- Hatha Yoga-Discipline of Body and Prana.
- Bhakti Yoga –Discipline of Emotions
- Karma Yoga- Discipline of Actions.
- Jnana Yoga-Discipline of Intellect

Tantra-

- Mantra Yoga
- Kundalini Yoga
- Swara Yoga, Nada Yoga, Laya Yoga etc.

A set of Asanas, Mudras, Pranayamas practiced with faith, perseverance and insight rejuvenates all parts of the body, by ensuring oxygenated and balanced blood supply.

12.6.4 Principles

- Yoga means a holistic approach towards the cause and treatment of disease.
- The basic approach of yoga is to correct the life style by cultivating a rational positive and spiritual attitude towards all life situation.
- Yoga also takes up the cleansing of the body as the first measure to fight disease.
- It preventing the disease and promoting health by reconditioning psycho-physiological mechanism of the individual.

Students Activity

Collect and stick pictures related to back pain.

Practice yogic postures to relieve back pain.

DO YOU KNOW?

June 21st is the international yoga day

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12.6.5 Treatment

Experts of various branches of medicine are realizing the role of these techniques in the prevention of disease and promotion of health.

12.6.6 Awareness

In recent times there is a growing awareness among the people about the efficacy and utility of yoga in keeping one fit at physical, mental, emotional, social, spiritual plans.

Students Activity

Yoga – practise breathing exercise and perform meditation

12.7 Naturopathy

12.7.1 Definition

Naturopathic medicine is based on a belief that the body heals itself using a supernatural vital energy that guides bodily processes.

12.7.2 Origin and Its Development

History of Nature cure movement started in Germany and other western countries with [Hydrotheraphy] "water cure". In credit of making world famous goes to Vincent preissnitz who was a farmer. Dr. HenryLindlahr was called as the "Father of Naturopathy".

12.7.3 Principles

- Acute diseases are our friends not enemies, chronic disease are the outcome of wrong treatment and suppression of the acute disease.
- Nature is the greatest healer. Body has the capacity to prevent itself form disease and regain health if unhealthy.
- In Naturophathy diagnosis is easily possible.
- Nature cure treats body as whole instead of giving treatment to each organ separately.
- Nature cure treats physical, mental, social and spiritual.
- Naturopathy does not use medicines. According naturopathy food is medicine.

The whole practice of Nature cure based on the following three principles.

1. Accumulation of morbid matter.
2. Abnormal composition of blood and lymph.
3. Lowered vitality.

It also believes that the human body possess inherent self constructing and self healing power.

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The five main modalities of treatment are air, water, fire, mud and space.

12.7.4 Diagnostic Methods

- **Facial diagnosis** – Studying the Facial expression.
- **Iris diagnosis** - Studying the condition of visceral organs.
- **Full life history** - Covering all the Facts of life.
- **Modern Clinical diagnosis.**

12.7.5 Treatment

- Water therapy – Water is the most ancient of all remedies.
- Air therapy - Fresh air is essential for good health.
- Fire therapy - Heating techniques are used.
- Space therapy – Fasting is the best therapy
- Mud therapy - Mud absorbs and dissolves & eliminates toxin.
- Food therapy - Nutritious diet is the only medicine.
- Massage therapy – By applying medicinal plant extracts.
- Acupressure - By applying pressure on selected points.
- Magneto therapy – Magnets influence health.
- Chromo therapy – Sun rays have seen colors – [VIBGYOR] employed through irradiation on body.

Students Activity

Collect the information regarding naturopathic centre.

12.8 Unani System of Medicine

12.8.1 Introduction

The Unani system of Medicine has a long and impressive record in India. It was introduced in India by the Arabs and Persians sometime around the eleventh century. Today, India is one of the leading countries in so far as the practice of Unani medicne in concerned. It has the largest number of Unani educational, research and health care Institutions.

12.8.2 Origin

Unani system of medicines originated in Greece and is based on the teaching of Hippocrates and Galen.

Unani medicine is substantially based on Ibn Sina's *The Canon of Medicine* (11th century).

The medical tradition of medieval Islam was introduced to India by the 13th century with the establishment of the Delhi Sultanate and it took its own course of development during the Mughal Empire, influenced by Indian medical teachings of Sushruta and Charaka. Alauddin Khalji (d. 1316) had several eminent physicians (Hakims) at his royal courts.This royal

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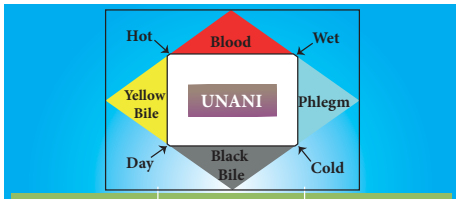
patronage meant development of Unani practice in India, but also of Unani literature with the aid of Indian Ayurvedic physicians.

12.8.3 Principles

According to principles of Unani, body is made up of following proximal qualities. They are

- Four basic elements of human body
- Qualities or states of human body
- Four "humors" of human body



Four Basic Elements of human body	Qualities or states of human body	Four " humors " of human body
Earth	Cold	Blood
Air	Day	Phlegm(Sptum)
Water	Wet	Yellow Bile
Fire	Hot	Black Bile

12.8.4 Diagnosis

Unani system has shown remarkable results in curing the disease like Arthritis, Lecucoderma, Jaundice, Liver disorder, Bronchial, asthma etc.,

At present unani system of medicine with its own recognized practitioners, hospitals, and educational & research institutions forms an integral part of the national healthcare system.

12.8.5 Modes of Treatment

- Regimental Therapy-includes venesection, cupping, diaphoresis, Turkish bath, massages, exercise, leeching
- Diet Therapy-Administration of specific diets.
- Pharmocotherapy-Mainly dependent upon local available herbal drugs.
- Surgery

February 11th is International Unani Day

Students Activity

Stick the pictures of herb and write its medicinal values.

12.9 Siddha system of medicine

12.9.1 Introduction

Siddha system is one of the older system of medicine in India. The term "Siddha" means achievements. It is of Dravidian origin and has its entire literature in Tamil language. The Siddha system is largely therapeutic in nature. Siddhars were saintly persons who achieved results in medicine.

12.9.2 Origin

Its origin is also traced to mythological sources belonging to the Shaiva tradition. According to the tradition, Lord Shiva conveyed the knowledge of medicine to his wife Parvati. The knowledge was passed from her to Nandi and finally it was given to the Siddhas. The word Siddha denotes one who has achieved some extraordinary powers (*siddhi*). This achievement was related to the discipline of mind and its superiority over body, and

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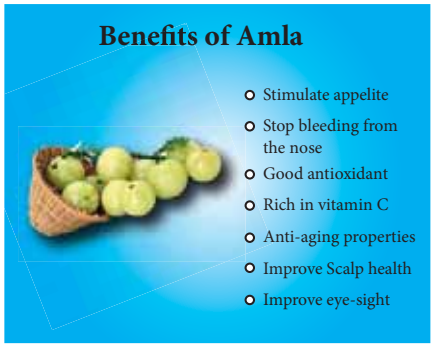
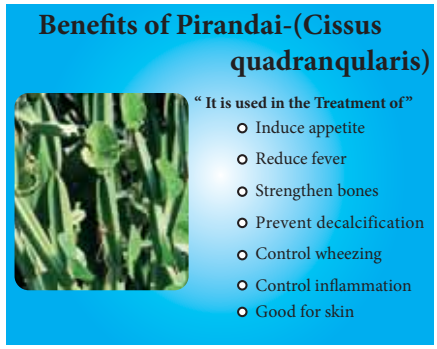
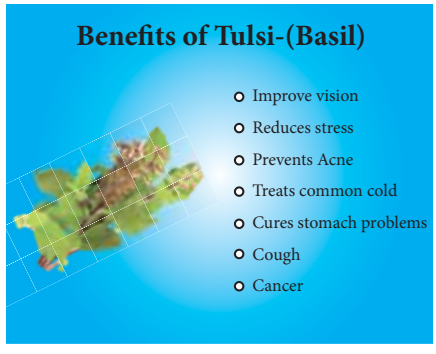
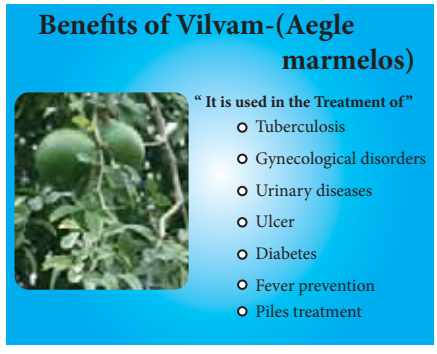
was accomplished through both yoga and medicine. Thus *siddhars* (practitioners of Siddha) became the symbols of psychosomatic perfection and so the Siddha medicine became a combination of medicine and yoga.

The tantrik *siddhi* was thought of in different forms such as *janmaja* (due to birth), *osadhija* (due to some medical elixirs), *mantraja* (due to magical incantations), *tapoja* (due to penance) and *samadhija* (due to meditation). The tantriks endeavoured to attain the Siddha by several means, one of them was through the use of certain compositions of compounds of mercury, sulphur, mica and several other metallic substances.









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12.9.3 Concept of Disease and Cause

When the normal equilibrium of three humors (*vatha*, *pitha* and *kapha*) is disturbed, disease is caused. The factors, which affect this equilibrium are environment, climatic conditions, diet, physical activities, and stress. Under normal conditions, the ratio between these three humors (vatha, pitha and kapha) is 4:2:1 respectively.

According to the Siddha medicine system diet and life style play a major role not only in health but also in curing diseases. This concept of the Siddha medicine is termed as *pathya* and *apathya*, which is essentially a list of do's and don'ts.

12.9.4 Diagnosis

In diagnosis, examination of eight items is required which is commonly known as *astasthana-pariksa*. These are:

- *na* (tongue): black in vatha, yellow or red in pitha, white in kapha, ulcerated in anaemia.
- *varna* (colour): dark in vatha, yellow or red in pitha, pale in kapha;
- *svara* (voice): normal in vatha, high pitched in pitha, low pitched in kapha, slurred in alcoholism.
- *kan* (eyes): muddy conjunctiva, yellowish or red in pitha, pale in kapha.
- *sparisam* (touch): dry in vatha, warm in pitha, chill in kapha, sweating in different parts of the body.
- *mala* (stool): black stools indicate *vatha*, yellow *pitha*, pale in *kapha*, dark red in ulcer and shiny in terminal illness.
- *neer* (urine): early morning urine is examined; straw colour indicates indigestion, reddish yellow excessive heat, rose in blood pressure, saffron colour in jaundice and looks like meat washed water in renal disease.
- *nadi* (pulse): the confirmatory method recorded on the radial artery.

Sl. No		Vadam	Pitham	Kabam
1.	Na(tongue)	Black	Yellow	White
2.	Varnam(Colour)	Dark	Red	Pale
3.	Kural(Voice)	Normal	High Pitch	Low
4.	Kan(eyes)	Muddy	Red	Pale
5.	Thodal(touch)	Dry	Warm	Chill
6.	Malam(stool)	Black	Yellow	Pale
7.	Neer(Urine)	Straw(Indigestion)	Red(Heat)	Saffron(Jaundice)
8.	Naadi(Pulse)	Confirmatory method recorded on the radial artery.		

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DO YOU KNOW?

WORLD SIDDHA DAY

14th APRIL

12.9.5 Concept of Drugs

The drugs used by the Siddhars could be classified into three groups:

- Thavaram (herbal product)
- Thathu (inorganic substances)
- Jangamam (animal products).

The thathu drugs are further classified as

- Uppu (water soluble inorganic substances or drugs that give out vapour when put into fire)
- Pashanam (drugs not dissolved in water but emit vapour when fired),
- Uparasam (similar to pashanam but differ in action),
- Loham (not dissolved in water but melt when fired),
- Rasam (drugs which are soft) and
- Ghandhagam (drugs which are insoluble in water, like sulphor).

The drugs used in Siddha medicine were classified on the basis of five properties:

- Suvai (taste),
- Guna (character),
- Veerya (potency),
- Pirivu (class)
- Mahimai (action).

According to their mode of application the Siddha medicine could be categorized into two classes: (1) internal medicine and (2) external medicine.

- Internal medicine was used through the oral route and further classified in to 32 categories based on their form, methods of preparation, shelf life, etc.
- External medicine includes certain forms of drugs and also certain applications like nasal, eye and ear drops and also certain procedures like leech application.

12.9.6 Treatment

The treatment should be commenced as early as possible after assessing the course and cause of the disease.

Treatment is classified into three categories:

- Devamaruthuvum (Divine method) - like parpam, chendooram, guru, kuligai made of mercury, sulphur and pashanams are used.
- Manuda maruthuvum (rational method) - medicines made of herbs like *churanam*, *kudineer*, *vadagam* are used.
- Asura maruthuvum (surgical method) - incision, excision, heat application, blood letting, leech application are used.

According to therapies the treatments of Siddha medicines could be further categorized into following categories such as Purgative therapy, Emetic therapy, Fasting therapy, Steam therapy, Oleation therapy, Physical therapy, Solar therapy and Blood letting therapy, Yoga therapy, etc.

- The diagnosis of the disease is by the identification of causative factors is through examination of pulse, urine, eyes, study of voice, colour of body, tongue and status of the digestive treatment.

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- The Siddha system is effective in treating chronic causes of liver, skin disease - Psoriasis Rheumatic problems, anemia, Bleeding, Ulcer etc.,
- The Siddha medicine which contains mercury, silver, arsenic, lead, sulfur is found to be very effective in treating disease.

Students Activity

- Exhibition for school mates with medicinal plant extracts and its uses.

12.10 Homeopathy

12.10.1 Introduction

Homeopathy is a system of natural medicine introduced and developed by a German physician, Samuel Hahnemann, at the end of the 18th century. Recognizing that the whole person-mind, body, spirit-is affected when there is illness, homeopathy seeks to treat that whole person. The focus is not the diseased part or the sickness, rather the totality of the individual. Homeopathic medicines, or 'remedies', stimulate the body's self-regulating mechanisms to initiate the healing process.

12.10.2 Definition

The theory or system of curing disease with very minute doses of medicine which in a healthy person and in large doses would produce a condition like that of the disease treated.

Homoios - like (or) similar.

pathos - feeling, suffering.

Law of similars which is the natural law of healing, diseases are heated by medicines, which are capable of producing in healthy persons, symptoms similar to those of the disease which it can heat in a sick person. - **Webster's Dictionary**

12.10.3 Origin of Homeopathy

The credit of deriving an entire system of therapeutics from this principle goes to the German Physician Christian Friedrich Samuel Hanemann in 1796 is based on his doctrine of like cures like, a claim that a substance that causes the symptom of a disease in

Founder - Samuel Hahnemann

Year - 1796

Healthy People would cure similar symptoms in sick people.

Homeopathy is a pseudo science- A belief that is correctly presented as a scientific

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It claims "Like cures like" dilution increases potency".

Homeopathy claims that Hippocrates may have originated homeopathy around 400B.C. When he prescribed a small dose of mandeake root to treat malaria.

In 16th century - **Paracelsus** declares that small dose of "what makes a man ill also cures him".

12.10.4 Concepts and Principle Of Homeopathy

Law of Similars

The law of similars is an ancient medical maxim, but its modern form is based on Hahnemann's conclusion that vast set of symptoms produced by any substance on a group of healthy individuals can be cured in a sick person by application of same substance as per homeopathic principles.

Ex: Preparation of Red onion - Allium ceper

According to the principle of homeopathy a person suffering from similar watering and burning of eyes and nose frequently seen with common cold can be treated by Allium cepa.

The cornerstone principle is Similia Similbus Curentur, "Let likes cure likes"

Single simple remedy:- Homeopathic medicines are usually administered ideally in single, simple and unadulterated form.

Minimum dose:- The homoepathic medicine selected for a sick person is prescribed in minimum dose, so that when administered there is no toxic effect in the body.

The Potentized Remedy:- Homeopathic remedies, though made from natural substances such as plants, minerals, animals, etc., are manufactured unlike any other medicine

Potentiation

The most characteristic and unique principle of Homeopathy is "Drug Dynamization" or potentiation. The crude drug substance is diluted and triturated or successed to increase its potency, only the medicinal power of the substance is retained and drug related side effects are eliminated.

The potentized medicine act as a triggering or a catalytic agents to stimulate and strengthen the defense mechanism of the body.

Vital force which regulates all the function of the body and maintain life.

Miasms

The word miasm comes from Greek work miasma which means taint, stain, pollution.

Each miasm is seen as the root cause for several diseases, which are chronic in nature. Miasms are either inherited at birth or acquired from environment during life time.

12.10.5 Three Levels of Homeopathic Therapy

- **First Aid**

  Homeopathy can be used in first aid to safely treat common ailments and

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occurrences, such as sprains and bruises, minor burns, skin irritations and reactions (including poison ivy, diaper rash and insect bites), teething pain, etc.

- **Acute Homeopathy**

  Acute health problems are those in which the symptoms will eventually go away on their own. They are temporary conditions, such as colds, flu, coughs, sprains, etc. A homeopathic remedy can be useful and attractive because it is safe, gentle and has no harmful side effects. Homeopathy can also be used to assist sensitive conditions such as pregnancy.

- Constitutional Homeopathy

  Constitutional homeopathy refers to the treatment of a person as a whole, including past and present symptoms. When accurately implemented, homeopathic constitutional care can elicit a profound healing response. Homeopathy can be extremely effective in treating chronic and long-term health problems. Recurrent ear infections can be treated with a homeopathic remedy for a longer period of time to strengthen the body's immune system and to prevent future occurrences.

12.10.6 Holistic and Individual Approach

Homeopathic approach is holistic as well as individualistic.

Such a variation of symptoms is found in respect of location of symptoms, their sensation, character, physical and mental attributes of the patients/ Scope and limitations:

- Complains during pregnancy, labour and puerperium.
- Common problems of children, acute or chronic which are not life threatening.
- Homeopathy can enhance the healing process and reduce the recovery period.
- Homeopathy can provide corollary assisstance, improve quality of life and act.

Obesity

Simple equation….. when you eat more than you use… it is stored in your body as "fat"

12.10.7 Advantages:-

- Basically Homeopathy is considered to be one of the safest forms of treatment.
- It improves the body's own healing power to be able to fight disease.
- These medicines do not have any side effects.
- These medicines are based on natural ingredients.
- It is very easy to use eg. Tiny sugar pills.
- It does not involve large expenditures.

12.10.8 Scopes of Alternative Medicine

- Areas of study in an alternative medicine doctoral program include
  - Acupuncture
  - Oriental medicine
  - Homeopathy

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- Students in doctoral program such as a Doctor of Naturopathic Medicine[N.D or N.M.D) gain the opportunity to improve their holistic skills and assist patient in private practices.
- Education in this field varies from certification courses to Ph.D depending on which specialization on alternative medicine practitioner chooses.
- Alternative medicine is the perfect field for those hoping to help heal people with traditional methods.

SUMMARY

Alternative medicine is any practice that is perceived by the users to have healing effects of medicine. Department of indian systems of medicine and homeopathy was created in march 1995 and renamed as department of AYUSH in November 2003. With a view to providing focused attention to development of educational research in Ayurveda, Yoga, Unani, Siddha, Homeopathy. Alternative medicine is the perfect field for those hoping to help heal people with traditional methods.

Students Activity

- Quiz on essential food substance used as medicine.

EVALUATION

I. Choose the correct answer

1. Atreya was the first great physician and teaches in the field of _____
   a) unani
) allopathy
   c) homeopathy
   d) siddha
2. Which treatment is designed to reduce symptoms in Ayurvedic treatment?
   a) yogasanam
   b) medicants
   c) panchakarma
   d) Acupunture
3. Path of knowledge in the field of yoga is
   a) karma yoga
   b) Bhakti yoga
   c) Jnana yoga
   d) Raja yoga

FPBEX2

4. World siddha day is celebrated on
   a) 14th May b) 15th June
   c) 16th September
   d) 14th April
5. Who is the founder of homeopathy
   a) Hippocrates
   b) Samuel Hahnemann
   c) Henry Lindlahr
   d) Charaks

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6. In siddha type of medicinal treatment which one is called as water soluble inorganic substance
   a) pashanam
   b) uppu
   c) uparasam
   d) Rasam

II. Answer the following questions in one (or) two lines.

1. What is Alternative medicine?
2. Define Ayurvedha.
3. What is panchamahabhutas?
4. What is body matrix?
5. Write the diagnostic process in Ayurveda?
6. Define yoga.
7. Write the types of yoga.
8. Define unani.
9. Define Homeopathy.
10. List three types of treament in Siddha.

III. Write short notes

11. Write the ayurvedic perspectives in treatment.
12. Write the diagnostic procedure in panchakarma.
13. Write the principles of Naturopathy.
14. Write about the Diagnostic methods in Naturopathy.
15. Write the basic principles used in siddha system of medicine.
16. What is law of similar in Homeopathy?

IV. Write in detail

17. Write in detail about the origin and principle of Ayurvedic treatment.
18. Explain the diagnosis and treatment of disease Ayurveda.
19. Explain the principles of yoga and Naturopathy.
20. Write the drugs which is used in siddha field and its treatment procedure.
21. Write in detail about the concepts and principles of Naturopathy and its treatment.

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A-Z GLOSSARY

1. **Aromatherapy:** (*வாசனை சிகிச்சை*) The use of aromatic plant extracts and essential oils for healing and cosmetic purposes.

2. **Acupuncture:** (*குத்தூசி மருத்துவம்/கூர் தூண்டல்*) Chinese medical practice in which fine needles are inserted in the skin at specific points, used in the treatment of various physical and mental conditions.

3. **Ayurveda:** (*ஆயுர்வேதம்*) Ancient Indian medicine, which is based on the idea of balance in bodily systems and uses diet, herbal treatment, and yogic breathing.

4. **Chromotherapy:** (*வண்ணத்தின் வழி சிகிச்சை*) Or color therapy, is an alternative medicine method. It uses light in the form of color to balance "energy" lacking from a person's body, whether it be on physical, emotional, spiritual, or mental levels.

5. **Homeopathy:** (*ஹோமியோபதி*) A medical practice that treats ailments by minute doses of natural substances that in larger amounts would produce symptoms of the ailment.

6. **Hydrotherapy:** (*நீர் சிகிச்சை*) Also called water cure, is a part of alternative medicine, that involves the use of water for pain relief and treatment.

7. **Meditation:** (*தியானம்*) It is the act of remaining in a silent and calm state for a period of time, so that you are more able to deal with the problems of everyday life.

8. **Pitta:** (*பித்தம்*) The seat of Pitha is between the heart and the navel. Sweat, lymph, heart, blood, stomach, urinary bladder, saliva, eye, and skin.

9. **Vadha:** (*வாதம்*) The seat of Vadham is below the naval. (Urinary bladder, pelvis, umbilical chord, thigh, bone, skin, nerve endings, musculature, joints, hair roots.)

10. **Yoga:** ((*யோகா*) *யோகா கலை*) It is a type of exercise in which you move your body into various positions in order to become more fit or flexible, to improve your breathing, and to relax your mind.

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- J.E,PARK 13 TH edition 'social and preventive medicine'

INTERNET LINKS

- http://nhp.gov.in/ayush-ms
- www:indian medicine.nic.in
- www.you tube.com/watch (yoga classes 20 minutes)

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UNIT 3

Documentation

FXB6R7

LEARNING OBJECTIVES

After learning this chapter students will be able to

- define Records and reports
- list the purposes of Documentation
- describe the principles of Documentation
- explain about Documentation Format
- describe about types of records
- enumerate about reports
- state the Nurses responsibility in record keeping
- illustrate with Examples of Documentation

13.1 Introduction

Document is described as any written or electronically generated information about a patient status or the care or the service provided to that patient. Nursing documentation is the record of nursing care that is planned and delivered to individual client. Nursing documentation is varied , complex and time consuming depends on the severity of the patient condition.

Records and reports are the essential components for implementation and evaluation of patient care in the hospital or community. Hence the documentation is consider as an integral part of nursing practice, and is necessary to ensure high quality of patient care. This chapter is to discuss about the importance of documentation which includes recording and reporting. The Nursing and Midwifery Council (NMC 2002) stated that 'good record keeping helps to protect the welfare of patients.

13.2 Definition

13.2.1 Documentation

It is the process of communicating in written form about essential fact. Records and reports are essential components of documentation.

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13.2.2 Records

It is a written communication that permanently document the information relevant to a client's health care management. (Sr.Mary Lucita)

Record is the valuable sources of data for all members of the health care team.

13.2.3 Reports

Reports may be oral or written form of documentation.

Report is an oral, written or computer based communication intended to convey information to other. (E. Angelina Jolie)

13.3 Purpose of Documentation

Communication

The primary purpose of documentation of client care is the communication among health care professional to promote continuity of care among departments throughout 24 hours.

Quality Assurance

It provides substantiation of quality of care. An audit is a review of record.

Reimbursement

Reimbursement for client care by insurance companies and other agencies are done after a review of client's records.

Legal accountability.

It serves as legal document. It may be used as evidences in court proceedings.

Research

Nursing and health care research is often carried out by studying client records.

Diagnosis

Documents are aids in diagnosis of patients' condition

Evaluation

Patient condition progress towards diseases condition will be evaluated based on his/her record.

Assessment

The nurse and other health care members gather assessment data from the client records.

Education

Members of the health team including students utilize these records as an educational tool.

Vital Statistics

Client records, registers and reports furnish the vital statistics.

Health Service Planning

Client record points out the health problems of the country and provides a baseline for local, state, national and international health service planning.

Mr. Arul is admitted in the Medical ward with fever. His temperature was 102°F. Sister Lucy gave Tab. Paracetemol at 8am and went. At 08.10 am, Sister Mary came and checked the temperature, it was 102°F. So, Sister Mary also gave one more Tab. Paracetemol.

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Mr. Arul did not tell Sister Mary that he took one tablet already. Patient had 2 tablets instead of one tablet. It comes under **Negligence and Malpractice**, which is one of legal issue. This is due to the poor communication between the sisters. Even if not able to communicate they should have entered in the patient chart. **Patient chart** is an ideal way of communicating the information to the next person. Since Sister Lucy did not record or enter in the chart, Mr. Arul had two tablets. This incident tells about the importance of recording and report.

13.4 Principles of Documentation

Accuracy in Charting

- Be specific and definite in using words or phrases that convey the meaning you wish expressed
- Words that have ambiguous meanings and slang should not be used in charting
- Chart objective facts, not your interpretations or opinions

✓	Ate 50% of the food served.	
X	Ate with poor appetite.	
✓	Refused medications.	
X	Uncooperative.	KEY;
✓	Seen crying.	✓ = correct
X	Depressed.	X = Wrong

Place the complaint of the client in quotation marks to indicate that it is his statement.

e.g. "Chest pain radiating down to the left arm"

Date and time

Document the date and time of each recording.

Correct spelling

It is essential for accuracy in recording.

Appropriateness

Record only information that pertains to the client's health problems and care.

Legal Protection

Accurate complete documentation will give legal protection to the nurse other health care professional of the institution and the client.

Accuracy

Client's name and identification data must be written on each page of the clients records and entries must be accurate.

Completeness

Document all information necessary to explain the events in a shift. Anyone reading the document should have a clear picture of what took place.

Brief

Only standard medical and nursing terminology and community recognized abbreviations and symbols should be used.

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Organizations

Recording of information on the clients must follow a chronological order charting statements must be logically organized according to time and content.

Omissions

Blank spaces are not to be left on the chart and avoid writing outside the lines of the charting format.

Confidentiality

Information within the chart is often of a personal matter as well as legal evidence of the care provided and should be available for the necessary health team members only.

Standard

Spell correctly

Use proper grammar.

Put signature.

- Affix signature, place at the end of charting at the right hand margin of the nurses notes.
- Sign each entry with your full name and status, e.g. SN for Student Nurse, RN for registered nurse.

All due Medicines are given to Mr.Govind at 8pm by G.Stella

(Mrs.G.STELLA,RN) Registered Nurse

Bed bath given to Mrs. Sivagami at 6 am by R.Grace

(MISS.R.GRACE,SN) Student Nurse

- In case of error.
  - Correct errors by drawing a single horizontal line through the error
  - Write the word error above the line, then sign your signature
  - No ink eradication, erasers or use of occlusive materials

GIIVE → GIVEN

13.5 Documentation Format

13.5.1 SOAPIER Format

S-SUBJECTIVE.=What patient tells you. (ex. I have leg pain).

O-OBJECTIVE.=What you observe(observe the leg for swelling/ injury and facial expressions).

A-ASSESSMENT.=The critical analysis and evaluation or judgement of the patient condition

P-PLAN.=What you are going to do.(plan for any nursing intervention to reduce pain, informing physician, giving medication and comfort position).

I-IMPLEMENTATION.=Specific interventions implemented like hot or cold fomentation, administration of medication etc.

E-EVALUATION.=Patient response towards nursing care(patient may say, I am feeling better, my leg pain is reduced).

R-REVISION.=Changes the treatment. (If the pain is not reduced modify the intervention).

13.5.2 APIE Charting

It is Similar to SOAP

- A-*Assessment*
- P-Problem Identification

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- I-Intervention
- E-Evaluation

13.5.3 Focus Charting

Focused only on nursing diagnosis, patient problem, signs and symptoms. It has three components (DAR)

- DATA – subjective or objective data that supports the focus
- ACTION – nursing intervention
- RESPONSE – Patient response to intervention

Ex:

- D – complaining of pain at incision site , pain score: 7/10
- A – Repositioned for comfort. -------Analgesics injection given.
- R – Patient states pain reduced, "Feels Much Better."

13.5.4 Computer-Assisted Charting

- Notes always legible and easy to read
- Quick communication among departments about patient needs
- Many providers have access to patient's information at one time
- Can reduce documentation time.
- Reimbursement for services rendered is faster and complete

13.6 Records

Records are one of the essential components of documentation.

13.6.1 Types of Records

1. Patients Clinical Records

   It is the record of events in the patient illness, progress in his or her recovery and the type of care given by the hospital personnel.

2. Individual staff records.
   - A separate set of record is needed for staff, giving details of their absences, their carrier development activities and a personnel note.

3. Ward Records

   These records are maintained in the each ward, such as
   - Census records.
   - Change in medical staff and non nursing personnel for the ward. (Duty roaster)
   - Inventory and stock records
   - Staffs Leave records
   - Admission records
   - Transfer records
   - Discharge records
   - Medicine records etc.

4. Administrative records

   These records are maintained purely for administrative purpose of the hospital or unit

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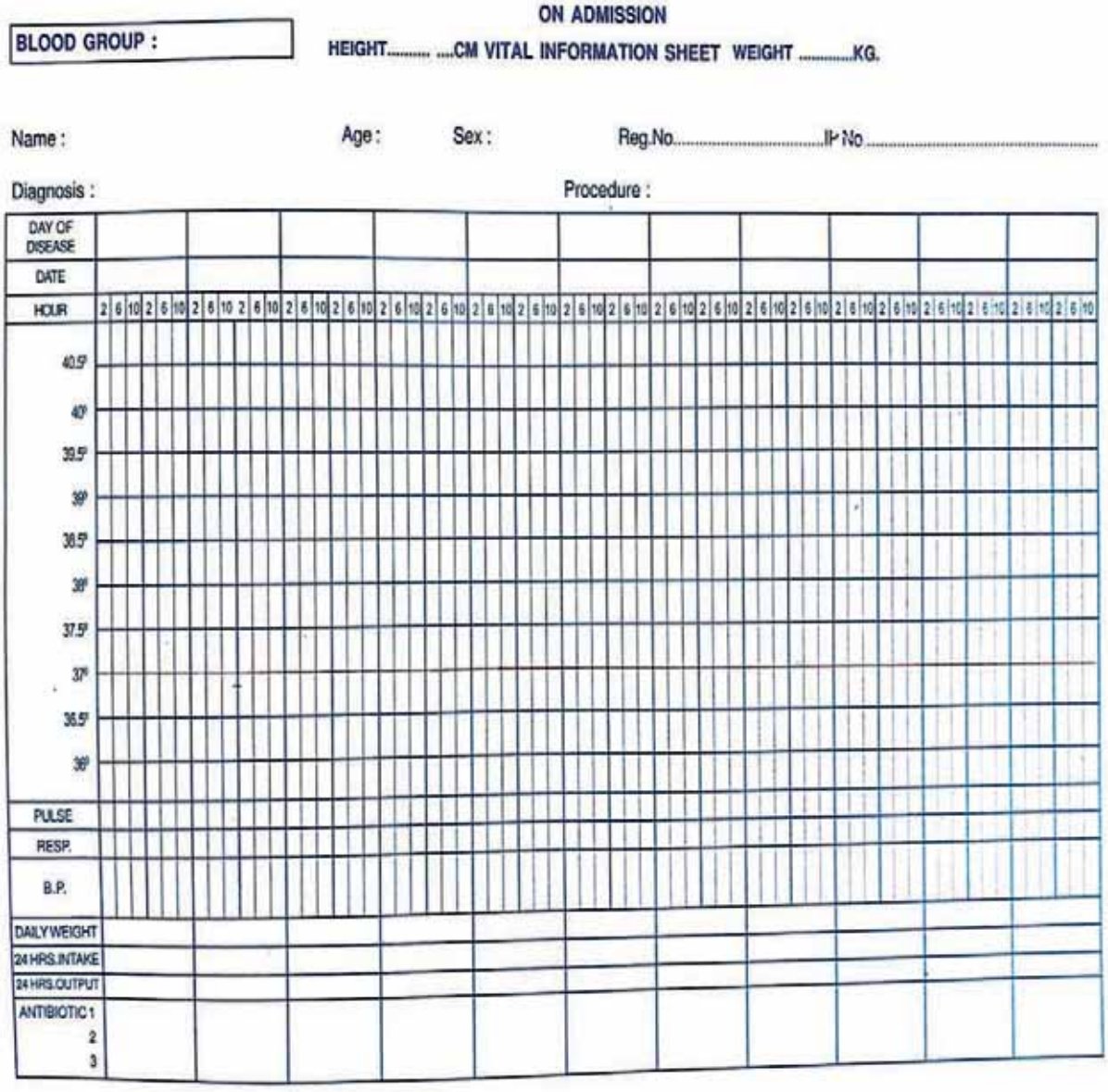
- Legal documents: for the patients with poisoning, assault, rape, burns etc.
- Research or statistics data records
- Audit and nursing audit records
- Quality of care records
- Personnel performance. records
- Other administrative records

13.6.2 Records Maintained by the Nurses

Vitals sign chart on this the temperature, pulse and respiration are written in a graphic form so that a slight deviation from the normal can be noted at a glance



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INTAKE AND OUTPUT CHART; Intake and out put chart to be maintained for the critically ill client those who received intravenous fluids, postoperative clients, clients with oedema, and client suffering with vomiting and diarrhoea,

INTAKE & OUTPUT CHART

Name of the Patient	Age	Sex	Marital Status	Inpatient No.

Service :	Ward :	Bed No. :

INTAKE					OUTPUT						
Date	Time	ORAL	IV FLUIDS	TOTAL	DATE	TIME	URINE	VOMIT	SUCTION	DRAIN	TOTAL

Mr.

INTAKE & OUTPUT RECORD

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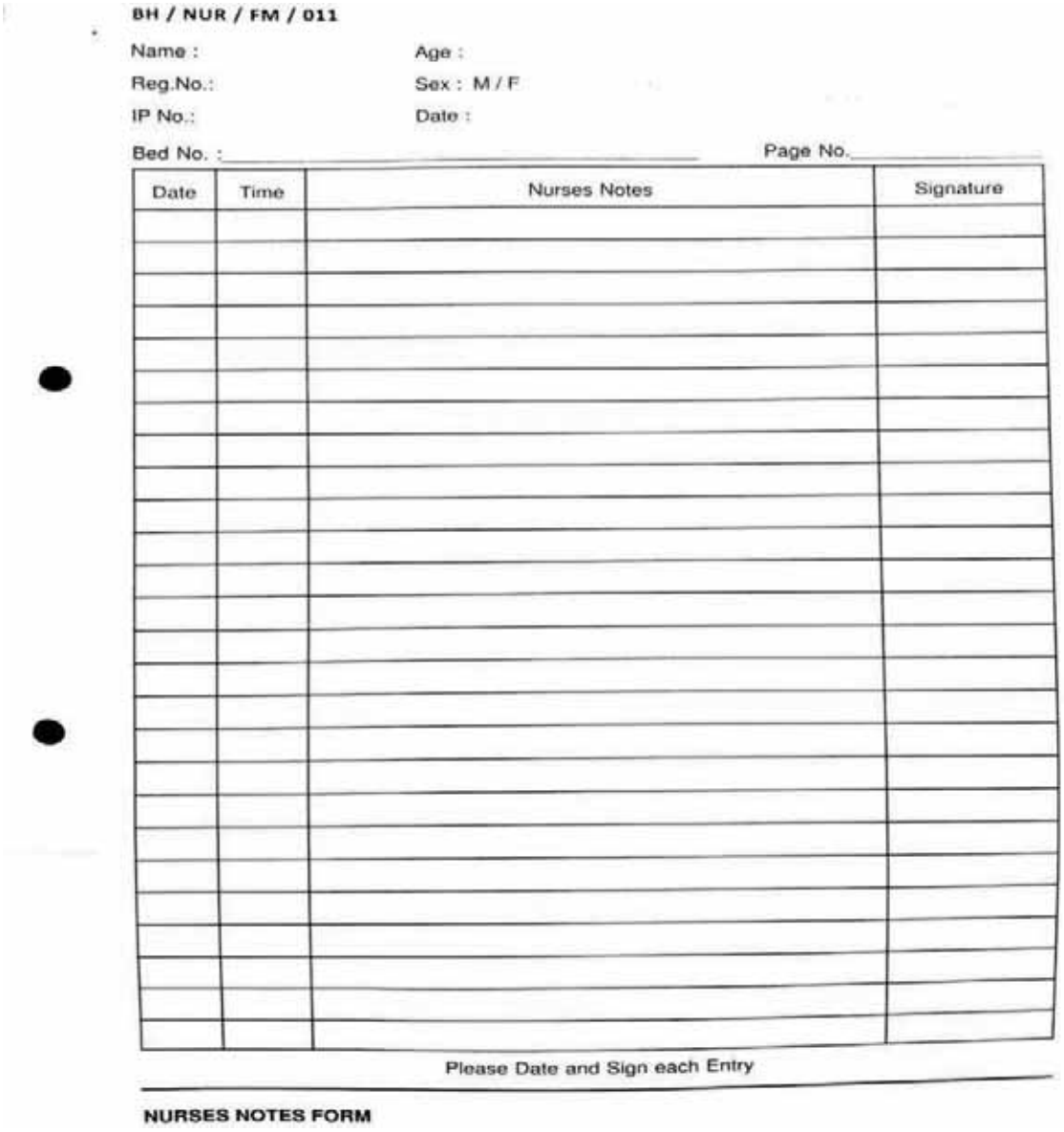
NURSES NOTES.

Nurses notes are a record of treatments and nursing measures carried out by the nurse which reflects the observation of the client.



BH / NUR / FM / 011

Name : Age :

Reg.No.: Sex : M / F

IP No.: Date :

Bed No. : Page No.

Date	Time	Nurses Notes	Signature

Please Date and Sign each Entry

NURSES NOTES FORM

13.7 Reporting

Reports may be oral or written form of documentation

13.7.1 Types Of Reports.

- Change of shift reports
- Telephone reports
- Family member reports
- Incident reports
- Legal reports.

. . . Chan e of Shift eports

- A change of shift reports is given by a primary nurse to the nurse who assumes responsibility for continuing care of the patient. The change of shift report might be given in written form or orally.

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- It provides basic identifying information such as patient condition, current appraisal of each patients' health status, current order by the physician, changes of medication, intravenous fluids, diet, activity level.
- Summary of each newly admitted patient.
- Report on patients who have been transferred or discharged.

. . . elephone eports

- Telephones and telemedicine equipment can link healthcare professionals immediately and enable nurses to receive and give critical information about patients in a timely fashion.
- Report the patients' current vital signs and clinical manifestation investigation etc.

. . . Family Mem er eports

- Nurses play a crucial role in keeping the patient family and updated about the patients condition nurses should clarify their doubts and record their patient condition.

. . . Incident eports

- It is a tool used by heath agencies to document the occurrence of anything out of the ordinary that results in harm to a patient, employee or visitor these reports are used for quality improvement.

Students Activity

1. Charting the vital signs for your own classmates.
2. Practice recording intake and output for you.

13.8 Nurses Responsibility for Record Keeping and Reporting

- Keep under safe custody of nurses.
- No individual sheet should be separated.
- Not accessible to patients and visitors.
- Strangers are not permitted to read records.
- Records are not handed over to the legal advisors without written permission of the administration.
- Handed carefully, not destroyed.
- Identified with bio-data of the patients such as name , age, admission number, diagnosis, etc. (Legal Issues?)

SUMMARY

Documentation is the process of communicating in written form about essential facts for the maintenance of history of events over a period of time. An effective health record shows the extent of health problems and other factors that affect the ability of the individual. Reports can be compiled daily, weekly, monthly, quarterly and annually. Registers provide indication of total volume of services and type of cases seen. Reports

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summarize the services of the nurses and/or the agencies. Thus the reports and records reveal the essential aspects of service in a logical order so that the new staff may be able to maintain continuity of service to individuals, families and community.

EVALUATION

I. Choose the correct answer

1. Which of the following documentation used by the head nurse to communicate information about patient has sudden hemorrhage to another head nurse in the next shift?
   a. Kardex record
   b. Assignment record
   c. Shift report
   d. Incident report

FXTXUH

2. Which of the following is an important characteristic of maintain a record?
   a. Accuracy
   b. Consequences
   c. Neatness
   d. Stability
3. An incident report is to be completed because the client climbed over the side rails and fell into the floor. The correct reporting of an incident involves which of the following?
   a. The witnessing nurse completes the report.
   b. Details of the incident are subjectively described.
   c. An explanation of the possible cause for the incident is entered.
   d. A notation is included in the medical record that an incident report was prepared.
4. The nurse is preparing the information that will be provided to the staff on the next shift. Which of the following should the nurse include in the inter-shift report to nursing Colleagues?
   a. Audit of client care procedures
   b. The client's diagnostic-related group
   c. All routine care procedures required by the client
   d. Instructions given to the client in a teaching plan
5. Nurse has made an error and is documenting such on the client's record and notes. The action that the nurse should take is to
   a. Draw a straight line through the error and initial it.
   b. Erase the error and write over the material in the same spot.
   c. Use a dark color marker to cover the error and continue immediately after that point.
   d. Footnote the error at the bottom of the page.

II. Answer the following questions in one (or) two lines.

1. Define records.
2. Define reports.

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3. Expand APIE.
4. What is focus charting?
5. List any two purposes of maintaining administrative records.

III. Write short notes

6. Write the principles in maintaining records.
7. Explain the types of registers.
8. Mention the characteristics of good record.
9. Role of nurse in maintaining records.

IV. Write in detail

10. Write the purpose of keeping records.
11. Explain the types of records.
12. Elaborate on classification of reports..

A-Z GLOSSARY

1. **Informed consent:** (*அறிவிக்கப்பட்ட முடிவு*) It is a person's agreement to allow something to happen based on full disclosure of facts, need to make an intelligent decision. The consent must be given voluntarily by a mentally competent adult.
2. **Incident report:** (*சம்பவ அறிக்கை*) An incident report is described as when something arises that could cause injury and which was not dealt with good care, so the detail incident report should be given by the particular staff or person.
3. **Protocol:** (*நெறிமுறை*) Protocol is a written plan specifying the procedures to be followed during care of patient with a selected clinical condition or situation.
4. **Standing orders:** (*நிலையான ஆணை*) Standing orders are the directions and the orders of specific nature. On the basis in the non availability of the doctor, the nurse and the health care workers can provide treatment to patients, at home, hospital or health institution and community.

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Case Study

Case Study: 1

1. Mr. John, 44 years old male came with the complaints of epigastric pain since two hours from today morning. The pain is of sharp, which radiates to the back. He also felt nauseated and vomited twice. On examination, she looked dull with considerable pain. His vital signs temperature was 98° F, with mild elevation in the pulse rate 88/min, his respiratory rate was 18/min and his BP was 120/80 mmHg. The patient had tenderness in the epigastric region with mild rebound tenderness.

– Maintain vital signs for this patient and record the above findings.

– Describe the physical examination method.

Case Study: 2

1. Mr. Somu 65 years old male, who is a chronic smoker and alcoholic came with the complaints of pain in the chest for last few weeks he is experiencing occasional tightness across his chest and sometimes it also radiates to his left arm. He looks distressed with tachypnoeic (44 breaths/min) and profuse sweating. He also has the evidence of peripheral cyanosis.

– Identify the condition and discuss the emergency management for Mr.Somu.

– Prepare a tray for oxygen administration and list the principles of oxygen administration

Case Study: 3

1. Mrs. Janaki 50 years old female who had been subjected to abdominal surgery is nill per oral in the immediate post operative period. The IV fluids D5 and RL on flow with 100cc /hr. As you entered the room and noticed that IV fluids has stopped running. The patient has poor skin turgor and is hypotensive. The patient tells you that the IV line is irritating and painful.

– What is your initial assessment for this patient?

– How do you calculate I/O chart?

Case Study: 4

1. Mrs. Rose is a 91 year old resident of a long term care facility centre who tells the nurse, “I have an ache in my right foot”. I must have stepped on something or twisted my ankle or maybe I got hit by a bug when I was outside yesterday. The nurse noticed that her right ankle is reddened,

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slightly swollen and warm. But her temperature is within normal limits. He has a strong pedal pulse.

- Explain the first aid for the above condition.
- Describe your observation.

History Collection Format

Patient Profile

- Name:
- Age:
- Sex:
- Place of Domicile:
- Education:
- Occupation:
- Income:
- Marital status:
- Religion:
- language:
- I.P. No. ward:
- Date of admission:
- Date of discharge, and diagnosis:
- Surgery: Name:
- Date, POD:
- Care started:
- Care ended:

Chief Complaints:

- According to the patient
- Complaints number of days it presents

IV) Past History

B. Past Medical/Surgical/Neurological History

- History of similar illness/episode in the past [date and duration]
- Any other complaints in the past [date and duration]
- Details of treatment undergone
- History of remission/Chronic illness
- Head injury/ headache/accidents/ seizure
- Infections
- Metabolic disorders/Hypertension
- Any other illness

Vii) History of Presenting Illness

Present medical history

- Details of each complaints
- Major chief complaint [Onset, Incident, Frequency, Course/duration, Precipitating factors, perpetuating factors
- Treatment undergoing
- Any associated medical complaints

Present Surgical History

- Pre Operative diagnosis and treatment
- Surgical plan
- Date of surgery
- Post operative day
- Surgical notes

III) Family history

- Genogram [3 generation]
- Description of significant family members

1. Composition Of The Family (Responsibility/role function

   Relationship with patient/Health Status)

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S.No family

Member

Age

Gender

Relationship

Educational Qualification

Occupation income

Health

Status

2. Attitude of the family towards illness of the patient.
3. Type of family(joint/nuclear/ extended)
4. Medical/Hereditary/Communicable diseases
5. Pedigree chart

II) Socio Economic History

- Bread Winner Of The Family, Monthly Income
- Environmental Sanitation, drainage open/closed (Electricity, Drinking Water, Ventilation and Sewage Disposal)
- Type Of Home

IV) Marital History

- Age of marriage
- Type of marriage (Consanguineous/ Non-Consanguineous)
- Number of children
- Others

V) Personal History

- Life style (smoking, alcohol and others), hobbies and nature of habits.)
- Diet
- Sleep pattern
- Menstrual history
- Elimination pattern
- Allergic history diet/drug

Physical and System WiseExamination

Major findings in physical and system wise examination.

VIII) Diagnostic Evaluation:

- S.No, date, name of
- The test
- Patient
- Value
- Normal
- Value

IX) Drug Chart:

- S.No name dose freq/route action side
- Effect
- Inferences
- Nurses
- Responsibility

X) Indentification of Needs and Problems of The Patient

XI) Nursing Diagnosis: {Prioritize Problem}

- Nursing:
- Assesment:
- Subjective:
- Data:
- Objective:
- Data:
- Clinical:
- Data:

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XII) Nursing Care Plan

- Nursing Diagnosis:
- Goal Planning/Intervention:
- Short Term:
- Long Term:

XIII) Health Education:

- Personal Hygiene
- Diet
- Exercise
- Medication
- Follow Up

XIV) Recording and Reporting

- Rationale
- Implementation:

Nurses Record

- Date
- Vital Signs
- Diet Intake/Output Medication Nurses
- Notes
- TPR & BP
- Evaluation
- Sign
- Name
- Age
- Sex
- I.P No
- Diagnosis
- Date of Admisson
- Time Planning
- Date Planning Implementation

Prioritizing the Care:

- 8:00 AM -8:30 AM Maintaing rapport with patient
- 8:30 AM -9:00 AM Checking vital signs
- 10:00 AM -11:00 AM Bed making
- 11:00 AM -12:00PM History collection
- 12:00PM-1:00PM Prioritizing the patient need

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MODEL QUESTION PAPER

CHOOSE THE CORRECT ANSWER:- 15 × 1=15

1. The functions of union ministry of health and family welfare are scheduled in
   a. article 246
   b. article 200
   c. article 250
   d. article 156
2. Which of the following is not a principle of IPR
   a. Credit principle
   b. Tolerance principle
   c. Respect principle
   d. Clarity principle
3. increased the rate and depth of respiration is
   a) apnoea
   b) hyperventilation
   c) hypoventilation
   d) tachypnoea
4. The oxygen concentration of around 24 to 25% will be delivered in flow rates of
   a. 2 liter/miniute
   b. 3 liter/miniute
   c. 1 liter/miniute
   d. 4 liter/miniute
5. The confirmatory test for HIV infection is
   a) RIA
   b) ELISA
   c) VDRL
   d) Western blot
6. Which of the following is a non ionizing radiation?
   a) gamma rays
   b) X-rays
   c) cosmic rays
   d) UV rays
7. Gingivitis is the inflammation of the
   a) tongue
   b) gum
   c) oral mucosa
   d) angle of the mouth
8. Which medical condition will develop from severe blood loss?
   A. Shock.
   B. Hypoglycemia.
   C. Anaphylaxis.
   D. Hypothermia.

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9. Enlarged bone on the side of big toe and angled outward is called as
   a) hammer toe
   b) spur
   c) bunions
   d) warts
10. The principle of awakening of fundamental desire to learn is
   a. Interest
   b. Motivation
   c. Credibility
   d. Feedback
11. The process of movement of unchanged drug from the site of administration to systemic circulation is called as
   a) Absorption
   b) Distribution
   c) Metabolism
   d) Excretion
12. The Drugs which produce vomiting is known as
   e) Coagulant
   f) Sedatives
   g) Emetics
   h) Antacids
13. Which treatment is designed to reduce symptoms is Ayurvedic treatment?
   a) yogasanam
   b) medicants
   c) panchakarma
   d) Acupunture
14. What type of immunity can develop by the administration of vaccine?
   a) Artificial passive immunity
   b) Artificial active immunity
   c) Natural active immunity
   d) Natural passive immunity
15. Which of the following is an important characteristic of maintain a record?
   a. Accuracy
   b. Consequences
   c. Neatness
   d. Stability

Question number 16 is compulsory. From 17 to 23 write any five of the following questions:- 6 × 2 = 12

16. What is inactivated or killed vaccine? Give example.
17. What is Pharmacodynamics?
18. What is wart?
19. Write the purposes of back care?
20. What is body matrix ?
21. What is vaccine? Give examples.
22. Write the objectives of UNICEF.
23. Define interpersonal relationship.

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Question number 24 is compulsory.from 25 to 31 write any five of the following questions:- 6 × 3 = 18

24. Explain the first aid management for an unconscious patient.
25. What is Bio-medical waste management?
26. What are the common problems occur in long term bed ridden patient?
27. Describe the different routes of medication administration.
28. Write the diagnostic procedure of panchakarma treatment.
29. Write the purposes of oxygen administration.
30. List the criteria for selecting audio visual aids.
31. Explain the barriers of communication.

WRITE ANY FIVE OF THE FOLLOWING QUESTIONS:- 5 × 5 = 25

32. Scope of nursing in India.

    (OR)

    Explain the health care delivery system in India.

33. Explain the various types of communication in nursing.

    (OR)

    Explain about Glasgow coma.

34. Write the need for universal precaution?

    (OR)

    What is CPR? Explain in detail about the indication, contraindication and steps of CPR

35. Mr. Raju 45 year old person with the following vital signs parameter.

    1) Temperature 97 F

    2) Pulse rate 120/min

    3) Respiration rate 40/min

    For the above patient what is your observation and first aid explain it in detail.

    (OR)

    Write the drugs which is used in siddha field and its treatment procedure?

36. Write the purpose of keeping records.

    (OR)

    Explain the classification and disposal of Bio-medical waste?

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Practical

Health Care Delivery System in India

Topic:- Health care delivery system in India

Visiting Place:-

1. Any Hospital
2. District Headquarters Hospital
3. Primary Health centre
4. Tertiary level centre primary hospital

Practical work:- Observation and recording

1. Hospital Environment
2. Hospital Routines and functions
3. Departments in the Hospital
4. Admission and discharge procedure

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Practical

Health Assessment

FY3TH5

Topic: Health assessment

1. Assessment Techniques
2. TPR
3. BP

2.1 Health assessment

1. Assessment techniques:-
   a) Inspection:- Find out the abnormal conditions of the external parts of the body
   b) Palpation:- Using the sense of touch and reveals any swelling, stiffness, hardness, Pain, Vibration etc.
2. Percussion:- Striking or tapping with fingers to find out any fluid collection or solid mass.
3. Auscultation:- To reveals sounds produced within the body by using stethoscope
4. Manipulation:- Moving with the body to find out rigidity or discomfort of the parts.
5. Reflex:-Automatic response to a stimuli
6. Olfaction:- Sense of smell. To identify the nature of the disease condition.

Recording of Vital signs:-

Temperature, pulse and Respiration

2.2 Vital Signs

Temperature, Pulse, Respiratory rate and oxygen saturation, blood pressure are called vital signs as indicators of health status. These measures indicates effectiveness of circulation, respiratory, neural and endocrine function because of their importance they are referred as

Vital signs

Responsibility for taking TPR

1. Identify the patient
2. Check the diagnosis
3. Ability to retain thermometer
4. Previous measurement and range of TPR

Equipment:- A clean tray containing

Sl. No.	Material required
1.	Bottle with dettol solution
2.	Thermometer
3.	Kidney tray
4.	Bottle with plain water
5.	Cotton swabs

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Sl. No.	Material required
6.	Soapy swab
7.	Wet and dry swab
8.	Pen and watch with second hand

Procedure:-

1. Bring the tray to the bedside and explain to the patient, who should be at rest, sitting or lying down
2. Make sure the patient has not just taken a bath or had a hot or cold drink within fifteen minutes
3. Take a thermometer from the lotion dip in clean water and wipe with cotton, using a circular movement from the bulb towards the hand. Avoid touching the part that goes into the mouth
4. Read the thermometer and be sure it is shakedown at 35°C (95°F) or below
5. Place the thermometer under the patient's tongue and instruct him not to bite it but to close his lips gently. He should not talk not cough
6. Keep the thermometer in the mouth for 1 to3 minutes (the time required may be written on the thermometer)
7. Place the tip of three fingers (never the thumb) gently cover the radial artery at the wrist
8. Feel the pulsation carefully before starting to count. Note the strength and regularity of the beats.
9. Using a watch with seconds hand or a pulseoxymeter, count the number of beats for one minute. It necessary, count longer to be sure and accurate
10. Feel or watch the rise and fall of the patient's chest
11. Count each rise and fall as one respiration. Count for a full minute.
12. While counting the rate, note also
    - (i) Rhythm - regular or irregular
    - (ii) Depth - Shallow, normal or deep
    - (iii) Sound - quiet or noisy
    - (iv) Any discomfort or difficulty in breathing
13. Record the temperature pulse and Respiration on the chart or in the TPR chart.
14. Taking and replacing thermometers should be in rotation making sure they remain in disinfectant for at least 3 minutes before being used for another patient.
15. After the procedure, clean and reset the tray for next use.

Blood Pressure:

Method of taking the Blood pressure

1. Explain the procedure to the patients and have him seated by a table or lying with the arm supported and relaxed.
2. Place the centre of the cuff of the BP apparatus over the brachial artery and wrap it smoothly and firmly around the patient's arm 5 cm just above elbow. Tuck the end in neatly .
3. Find the brachial pulse with the fingers and place the over it.
4. Close the screw valve and inflate the cuff until the pulse disappears and above that about 20mm mercury.

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5. Open the valve slowly and listen for the first sound while watching the manometer reading. The first sound gives the systolic reading. As air escapes, the sounds become louder and cleaner.
6. Continue to let air out slowly. As you listen the sounds suddenly become dull and at this point take the Diastolic reading.
7. Allow all the air to escape and the mercury to fall to zero.
8. Repeat the procedure, if there is any doubt about the reading.
9. Record the reading. The systolic pressure is always written over the Diastolic pressure eg. 120/80 mmHg.
10. Remove the cuff.

2.3 Oxygen Therapy-Cannula Method

Definition

A method by which oxygen is administered in low concentration through a cannula which is disposable plastic device with two protruding prongs for insertion into the nostrils.

Purpose

1. To relieve dysponea.
2. To administer low concentration of oxygen to patients.
3. To allow uninterrupted supply of oxygen during activities like eating, drinking, etc.

2.3.1 Procedure

	Nursing action	Rationale
1	Determine need for oxygen therapy in patient. Check physician's order for rate, device used concentration, etc	Reduce risk of error in administration.
2	Perform an assessment of vital signs, level of consciousness, lab values, etc. and record.	Provides a baseline for future assessment.

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	Nursing action	Rationale
3	Assess risk factors of oxygen therapy, patient and environment such as patients with the dangers of smoking when oxygen is on flow.	Reduces risk of danger to the patient.
4	Explain procedure to patient and relatives and inform them how to cooperate.	Reduces anxiety and ensures cooperation
5	Post "No Smoking" sign on the patient's door in view of patient and visitors	Oxygen supports combustion, smoking in oxygen area can lead to fire hazards.
6	Wash hands	Reduces risk of transmission of microorganisms.
7	Set up oxygen equipments and humidifier a. Fill humidifier up to the level marked on it with sterile water b. Attach flow meter to source, set flow meter in 'off' position. c. Attach humidifier to base of flow meter d. Attach tubing and nasal cannula to humidifier e. Regulate flow meter to prescribed level f. Ensure proper functioning by checking for bubbles in humidifier or feeling oxygen at the outlet.	Filling beyond this point will cause water to enter tubing. Flow meter helps in monitoring and regulating oxygen flow to patient Humidification helps in preventing drying of mucous membranes and promotes comfort of patient. Oxygen is a drug and is dangerous to administer at flow rates greater or lesser than prescribed level. Kinks in the tubing will obstruct flow of oxygen through tube.
8	Place tips of cannula to patient's nares and adjust straps around ear for snug fit. The elastic band may be fixed behind head or under chin	Proper fixing ensures comfort and prevents chances of cannula slipping from nostrils.
9	Pad tubing with gauze pads over ear and inspect skin behind ear periodically for irritation/breakdown	Constant pressure may cause skin breakdown.
10	Inspect patient and equipment frequently for flow rate, clinical condition, level of water in humidifier, etc.	Helps identifying any complications that may arise.

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	Nursing action	Rationale
11	Ensure that safety precautions are followed	
12	Wash hands	
13	Document time, flow rate and observations made on patient.	
14	Encourage patient to breath through his/her nose with mouth closed	Provides for optimal delivery of oxygen to patient.
15	Remove and clean the cannula with soap and water, dry and replace every 8 hours. Assess nares at least every 8 hours.	Presence of cannula causes irritation and dryness of the mucous membrane.

Special Precautions

1. Never deliver more than 2-3 liters of oxygen to patients with chronic lung disease, e.g. COPD (chronic obstructive pulmonary disease)
2. Check frequently that both prongs are in patient's nares.

Oxygen concentration will vary on many factors like patient's tidal volume and ventilator pattern.

Oxygen concentration with flow rates

Flow rate	Oxygen concentration
1 Litre	24 to 25%
2 Litres	27 to 29%
3 Litres	30 to 33%
4 Litres	33 to 37%
5 Litres	36 to 41%
6 Litres	39 to 45%

2.3.2 Administering Oxygen by Mask Method

Definition

Administering oxygen to the patient by means of a mask (simple / venturi) according to requirement of patient.

Purpose

1. To relieve dysponea.
2. To administer higher concentration of oxygen.

Articles

1. Oxygen source
2. Mask (simple / or with venture adaptor high flow device of appropriate size)
3. Humidifier with distilled water
4. Flow meter
5. Gauze pieces
6. "No Smoking" sign.

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	Nursing action	Rationale
1	Determine need for oxygen therapy, Check physician's order for rate, device to be used and the concentration.	Reduces risk of error in administration.
2	Perform an assessment of vital signs, level of consciousness, lab values, etc. and record.	Provides a baseline for future assessment.
3	Assess risk factors of oxygen administration in patient and environment-like hypoxia drive in patients and faulty electrical connection.	Reduces risk of danger caused to patient. Oxygen is a combustible gas. Hypoxia drive in patients is essential to maintain respiration.
4	Explain procedure to patient and relatives and emphasize how he has to cooperate.	Reduces anxiety and enhances cooperation
5	Post "No Smoking" signals on the patient's door in view of patient and visitors and explain to them the dangers of smoking when oxygen is on flow.	Oxygen supports combustion; smoking in oxygen area can lead to fire hazards.
6	Wash hands	Reduces risk of transmission of microorganisms.
7	Set up oxygen equipments and humidifiers. a. Fill humidifier up to the level mark on it. b. Attach flow meter to source, set flow meter in 'off' position. c. Attach humidifier to base of flow meter d. Attach tubing and face mask to humidifier (if venture device is used attach the color coded venture adapter to mask as appropriate) e. Regulate flow meter to prescribed level	Filling humidifier above this level will cause water to enter into tubing. Flow meter helps in monitoring and regulating oxygen flow to patient. Humidification helps to prevent drying of mucous membranes and promotes comfort of patient. Oxygen is a drug and is dangerous to administer at flow rates greater or lesser than prescribed level.
8	Guide mask to patient's face and apply it from nose downward. Fit the metal piece of mask to conform to shape of nose.	To mask should be mould to face so that very little oxygen escapes into eyes or around cheeks or chin.

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	Nursing action	Rationale
9	Secure elastic band around patient's head.	Ensure comfort of patient.
10	Apply padding behind ears as well as scalp where elastic band passes.	Padding prevents irritation to skin around area.
11	Ensure that safety precautions are followed	
12	Inspect patient and equipment frequently for flow rate clinical condition, level of water in humidifier, etc	Identifies complications if they develop.
13	Wash Hands.	Reduces risk of transmission of microorganisms.
14	Remove the mask and dry the skin every 2-3 hours if oxygen is administered continuously. Do not put powder around the mask.	The tight fitting mask and moisture from condensation can irritate the skin on the face.
15	Document relevant data in patient's record.	

Special Considerations

1. The dosage of oxygen may be ordered as an FIO (Fraction of Inspired Oxygen) which is expressed as a percentage or as liters per minute.
2. The venture mask will have colour-coded inserts that list the flow rate necessary to obtain the desired percentage oxygen.

Flow rates and oxygen concentrations delivered using venturi mask

Nazzelcolour code	Flow rate (Litres per minute)	Concentration of oxygen to be delivered
Blue	3 Lpm	24%
Yellow	6 Lpm	28%
White	8 Lpm	31%
Green	12 Lpm	35%
Pink	15 Lpm	40%
Orange	15 Lpm	50%

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Oxygen administration by face mask

Images of different kinds of mask

2.3.3 ADMINISTERING OXYGEN USING OXYGEN TENT

Definition

Process of administering oxygen by means of tent, usually for infants which gives maximum comfort and most satisfactory results.

Description

An Oxygen tent consists of a canopy over the baby's bed that may cover the baby fully

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or partially and is connected to a supply of oxygen. The canopies are transparent and enables the nurse to observe the sick baby.

Advantages

1. Provides an environment for the patient with controlled oxygen concentration, temperature regulation and humidity control.
2. It allows freedom of movement in bed.

Disadvantages

1. It creates a feeling of isolation.
2. It requires high level of oxygen (10-12 liters per minute)
3. Loss of desired concentration occurs each time the tent is opened to provide care for the infant.
4. There is an increased chance of hazards due to fire.
5. It requires much time and effort to clean and maintain a tent.

Articles

Oxygen tent and oxygen source, humidifier.

Procedure

	Nursing action	Rationale
1	Explain and reassure the parents and child.	Helps in obtaining cooperation
2	Select the smallest tent and canopy that will achieve the desired concentration of oxygen and maintain patient comfort.	Increases the efficiency of the unit.
3	Tuck the edges of the tent under the mattress securely. This is especially important if the child is restless and can dislodge the tent by pulling the covers loose.	Dislodgement of tent leads to oxygen leakage.
4	Pad the metal frame that supports the canopy.	Protects the child from injury.
5	Flush the tent with oxygen (increase the flow rate) after it has been opened for a period of time, to increase the concentration of the gas, then reset the flow meter to the original level.	Oxygen is circulated in the tent to adjust the concentration.
6	Analyze and record the tent atmosphere every 1-2 hours. Concentration of 30 to 50% can be achieved in well maintained tents.	Concentration varies with the efficiency of the tent, the rate of flow of oxygen, and the frequency with which tent is opened to the outside environment.

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	Nursing action	Rationale
7	Maintain a tight fitting canopy whenever possible, provide nursing care through the sleeves or pockets of the tent.	Prevent oxygen leakage and disruption of the tent atmosphere.
8	Check child's temperature routinely.	Moisture accumulation may result in hypothermia.
9	No smoking sign should be pasted in the unit.	Oxygen helps in combustion.
10	Record the flow rate of oxygen, alteration in flow rate and child's reaction.	Serves as a communication between staff members.

Note:

1. Oxygen can be administered to babies using oxygen hood (Oxyhood).
2. Oxygen hood is a plastic device, which is kept over the head of the infant. It permits easy access to the child without loss of oxygen. It helps in efficient delivery of oxygen.
3. While placing hood over the head of the child, the edges of the hood should not rub against the child's chin, neck and shoulders.

Special Considerations

1. Mist is prescribed with oxygen therapy to liquefy secretions.
2. Humidified air may condense into water droplets on the inside walls of the tent, it is important to examine the child's clothing and bedding and change them as necessary to prevent chilling.
3. Electrical equipment used within or near the tent should be grounded properly.
4. It is preferable to monitor SpO2 of patent continuously.
5. Avoid the use of volatile, inflammable materials such as oils, grease, alcohol, either and acetone near the tent.
6. Nurses should be knowledgeable about the location and technique for using a fire extinguisher.
7. For the baby in oxygen tent, toys selected should be such that they retard absorption are washable and will not produce static electricity, e.g. woolen and stuffed toys. This ensures baby's safety.

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Practical 3

Hot and Cold Applications

Hot application is the application of hot agent, warmer than skin either in a moist or dry form on the surface of the body to relieve pain and congestion, to provide warmth, to promote suppuration, to promote healing, to decrease muscle tone and to softens the exudates.

Cold application is the application of cold agent, cooler than skin either in a moist or dry form on the surface of the body to relieve pain and body temperature, to anaesthetize an area, to check hemorrhage, to control growth of bacteria, to prevent gangrene, to prevent edema and reduce inflammation.

Classification of hot application

- Local
  - Hot water bottles
  - Chemical heating bottles
  - Infrared rays
  - Ultraviolet rays
  - Short wave diathermy
  - Heating lamps
  - Electric cradles
  - Electric heating pads
  - Warm soaks
  - Local baths
  - Hot fomentations
  - (compresses)
  - Poultice s
  - Stupes
  - Paraffin baths
  - Aquathermic pads
- general
  - **DRY HEATS**
    - Sun bath
    - Electric cradles
    - Blanket bed
  - **MOIST HEATS**
    - steam bath
    - hot packs
    - whirlpool bath
    - full immersion bath

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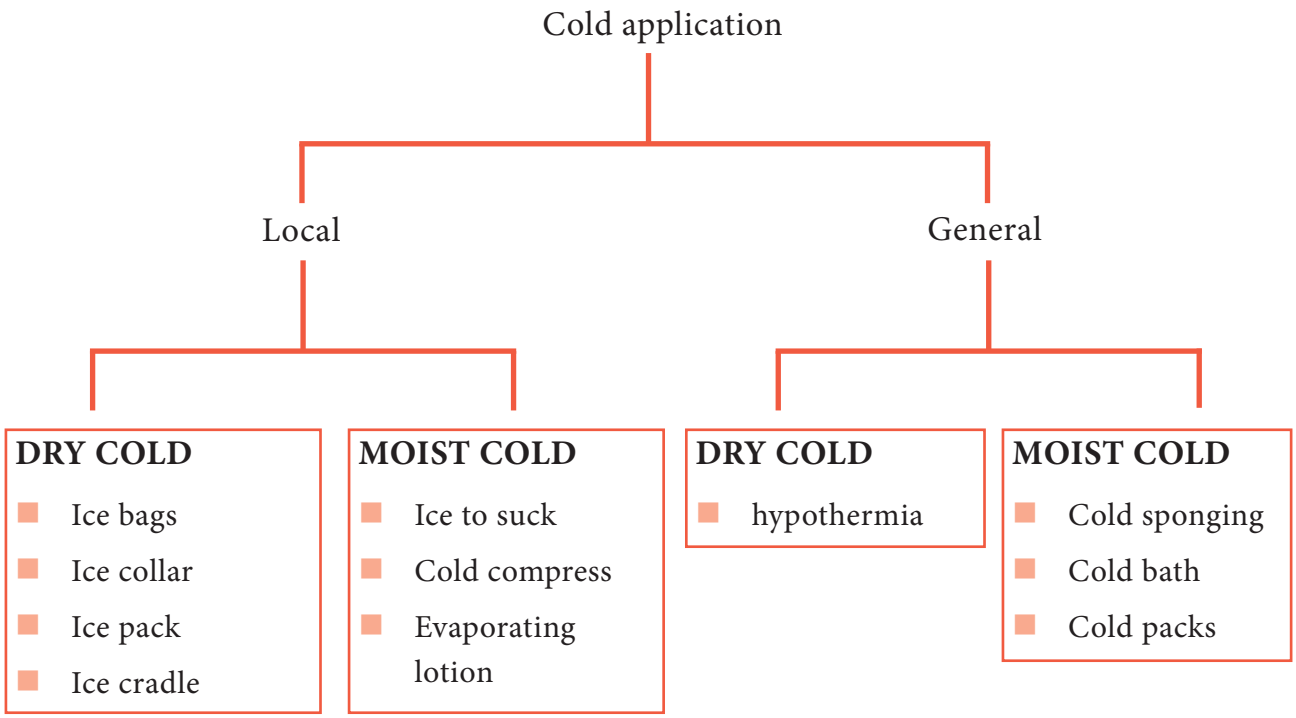
Classification of cold application



Effects of hot and cold applications

Hot Application	Cold Application
Peripheral vasodilation	Peripheral vasoconstriction
Increased capillary permeability	Decreased capillary permeability
Increased o2 consumption	Decreased o2 consumption
Increased local metabolism	Decreased local metabolism
Decreased blood viscosity	Increased blood viscosity
Decreased muscle tone	Increased muscle tone
Increased blood flow	Decreased blood flow
Increased lymph flow	Decreased lymph flow
Increased motility of leucocytes	Decreased motility of leucocytes

NOTE: SYMBOL CAN BE USED FOR INCREASED ↑
SYMBOL CAN BE USED FOR DECREASED ↓

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Therapeutic uses of local hot applications

- Heat decreases pain
- Heat decreases muscle tone
- Heat promotes healing
- Heat promotes suppuration
- Heat relieves deep suppuration
- Heat provides warmth
- Heat stimulates peristalsis

Therapeutic uses of local cold applications

- Cold relieves pain
- Prevents gangrene
- Prevents edema and reduce inflammation
- Controls hemorrhages
- Checks the growth of bacteria
- Reduce the body temperature
- Cold anaesthetize an area

Principles of hot and cold applicatons

1. Water is good conductor of heat.
2. Air is poor conductor of heat.
3. Heat always flows from hotter area to the less hot area.
4. Prolong exposure to moisture increases the skin susceptibility to maceration and skin breakdown, reducing the protection of the intact skin.
5. Moisture left on the skin cause rapid cooling due to evaporation of the moisture.
6. Presence of steam increases the temperature of the hot application
7. Oil acts as the insulator and delays the transmission of the heat.
8. Woolen materials absorb moisture slowly, but hold the moisture longer and cold off less quickly than the cotton materials.
9. When immersed in water the body becomes buoyant therefore the exercises are performed under water with less effort.
10. The temperature tolerance varies with individuals and according to the site and area covered.
11. The end organs of the sensory nerves of the skin convey the sensation of cold, heat pain and pressure. The sensation is interpreted in the brain.
12. Friction produces heat.

Contraindications of hot applications

- Heat is not used in malignancies
- Heat is not used in patients with heart, kidney and lung diseases
- Should not used in acute inflamed areas.
- Should not be applied on patients with paralysis.
- Should not be applied on open wounds
- Should not be applied when there is an edema associated with venous or lymphatic diseases.
- Should not be applied on patients with metabolic disorders.

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- Should not be applied on very young and very old patients.
- Should not be applied on clients with high temperature.

Contraindications of cold applications

- Cold should not be applied on clients who are in the stage of shock and collapse
- Cold should not be applied when there is edema.
- Cold should not be applied on clients with circulatory disorders.
- Cold should not be applied on patients with decreased sensation
- Patients with shivering and very low temperature,
- Cold should not be applied when there is infected wound.

Complications of hot and cold applications

Hot application	Cold Application
Pain	Pain
Burns	Blisters and skin breakdown
Maceration	Maceration
Redness of the skin	Gray or bluish discoloration
Edema	Thrombus formation
Pallor(secondary effects)	Redness(secondary effects)
Hyperthermia	Hypothermia

General instructions

- Asses the condition of the clients before and after the hot and cold applications.
- Maintain the correct temperature for the entire duration of the application
- Expose the client only to the safe temperature.
- Do not allow the clients to adjust the temperature control of appliance such as short wave diathermy, electric heating pads etc.
- Never ignore the complaints of clients however small they appear to be.
- Always make sure that the client is in position to remove the application
- The client must have a calling signal within reach
- Never leave a client alone even for a short period that cannot move from the appliances.
- A thin layer of petroleum jelly or oil should be applied to the skin prior the application of moist heat application.
- Do not use electrical appliances near to open oxygen. A small spark may cause explosion.
- Do not handle electrical appliances with the wet hands.

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- Hot and cold applications must be very carefully used when the clients is unconscious, anaesthetized or otherwise unable to respond pain.
- Any signs of complications should be recognized early, the procedure should be stopped immediately.
- After the procedure, dry the part gently by patting and not by rubbing to remove the moisture.
- In hyperpyrexia, the temperature of the body should be brought down gradually and steadily, sudden cooling is dangerous to the client.

3.1 Cold compresses

It is a local moist cold application. It may be sterile or unsterile. Sterile cold compresses are applied over open wounds or breaks in the skin. Cold compresses are made out of folded layers of gauze, lint piece or old soft linen, wring out of cold or ice water or in some evaporating lotion.

Article Required:

1. Large basin with ice.
2. Small basin with cold water.
3. Gauze pieces or small towels.
4. Waterproof pad.
5. Bath towel.

Procedure:

1. Explain the procedure to the client.
2. Wash hands.
3. Place the small basin with cold water into large basin with ice.
4. Place the compress in the cold water.
5. Keep the waterproof material under the part.
6. Check the area every 5 minutes.
7. Change the compress every 5 minutes or when it becomes hot.
8. Remove the compress after 20 minutes.
9. Put the area dry with a bath towel.
10. Make client comfortable.
11. Clean the equipment and place it in the proper place. Discard the used articles.
12. Wash hands
13. Document the care-time, site, duration of the application

Temperature for hot and cold applications

Sl.No	Description	Temperature	Application
1	Very cold	below15°c	Ice bag
2	cold	15-18°c	Cold packs
3	cool	18-27°c	Cold compress
4	tepid	27-37°c	Alcohol sponge bath
5	warm	37-40°c	Warm bath
6	hot	40-46°c	Hot soak , hot compress
7	Very hot	Above 46°c	Hot water bag for adult

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Ice Cap

Ice cap is a dry cold application. The ice cap used for the head, has a wide opening that allows it to be filled easily with ice chips, as does the ice collar, a narrow bag curved to fit the neck. Single use ice bags are frequently used.

Hot Water Bag

Hot water bags is also called hot water bottles, are rubber bags filled with hot water and used for heat therapy. It is used to manage pain, such as headache or arthritis, or keep yourself warm on a cold night. Hot water bottle are safer than electrical heating pads, which can start fires or cause electric shocks. Hot water bags may cause injury if we don't use carefully.

Cold Sponging

Cold sponging is used to reduce temperature in a client with hyperpyrexia. Large area of the body are sponged at one time permitting the heat of the body to transfer to the cooler solution on the body surface. Often wet towels are applied to the neck, axilla , groin and ankles where the blood circulation is close to the skin surface. Each area is dried by patting rather than by rubbing. Since the rubbing will increase the cell metabolism and raise the heat production. The vital signs are checked very frequently to detect the early signs of complications.

Cold sponging is hazardous to the client if the temperature of the body is brought down rapidly from a high temperature to a very low temperature. In cold sponging, the temperature of the water is kept between 65 and 90 degree F.

Tepid Sponging

Tepid sponging is a safe method to reduce the body temperature in high pyrexia. It is carried out on the order of a physician. The temperature of the water is kept between 85 and 100 degree F.

3.2 MEDICAL FOMENTATIONS: (STUPES)

Medical fomentations are moist heat applications, in which a medicine (e.g. turpentine) is applied locally to augment the effects of the hot compresses used. Stupes are commonly used to relieve tympanites by increasing the peristalsis and relaxing the muscle spasm.

Articles:

1. Kettle with boiling water.
2. Wringer with wringer rods placed in a basin.
3. Lint or flannel pieces, large enough to cover the area.
4. Plates (2)

A tray Containing:

1. Cotton balls in a container.
2. Forceps.
3. Olive oil or vaseline.
4. Paper bag.
5. Kidney tray.
6. Waterproof over and cotton pad.
7. Hot water bag with cover.

It will be necessary to insert a flatus tube to expel the flatus after the application of stupes.

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The drugs used are:

Turpentine (1 part) well mixed with olive oil (3 parts) for adults. For children, turpentine (1 part) with olive oil (6 parts).

To apply the Turpentine Stupe:

Take the turpentine and the olive oil in the correct proportion, mix them well and warm it by keeping the container in a bowl of hot water. Apply the warm oil mixture over the part, apply the hot compresses and follow the procedure as in hot compresses. After 10 to 15 minutes, insert the flatus tube and watch the expulsion of the flatus.

Arm Soak and Foot Soak:

A soak refers to either immersing a body part (e.g. an arm, foot) in a solution or to wrap a part in gauze dressings and then saturating the dressing with a solution. Soaks may employ either "clean technique". A sterile technique is indicated for any open wounds present on the area. Soaks are usually indicated for any one of the following reasons:

1. To apply heat, thus hastening suppuration and softening the exudates.
2. To apply medications.
3. To cleanse areas such as wound in which there are sloughing tissues.
4. To relieve edema, ischemia and muscle spasm.

The body parts to receive the moist heat application is submerged in a basin of warm water at 105 to 110 degree F. The duration of the treatment is usually 20 minutes. Ideally the temperature of the solution should be checked frequently and additional solution is added or the solution is replaced in order to maintain the appropriate temperature. The client should be in a comfortable position and the limbs are supported with pillows. Dry the surface throughly at the end of the treatment.

Infrared Rays: (Infrared Lamp)

Infrared lamps transmit infrared rays, which are visible heat rays beyond the red end of the spectrum.

Ultraviolet Rays: (Ultraviolet Lamp)

Ultraviolet lamps transmit infrared ray, which are invisible heat rays beyond the visible spectrum at the violet end. Both these rays are used therapeutically for the production of heat in the tissues.

Therapeutic Uses:

1. Promotes healing of decubitus ulcer.
2. Softens connective tissue.
3. Relieves pain and spasm of the strained muscle.

The radiation heat produced by the infrared and ultraviolet lamps are more intense than the heat given off from the heating lamps. The effects of the exposure to the ultraviolet lamps are

1. Pigmentation of the skin.
2. Production of Vitamin-D.
3. Bactericidal effects.

The duration of the treatment is usually 20 to 30 minutes.

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Precautions:

Observe the skin carefully during and after the treatment. The client and the therapist must use protective goggles during the treatment to shut out reflected harmful rays.

3.3 Sitz bath (hip bath)

Sitz bath is a method of applying heat using tepid or hot water to the pelvic or rectal area by sitting in a tub. The client is usually immersed from the mid thigh to the iliac crest. The temperature of the water is 110-115 degree F and the duration of the bath is 15 to 30 minutes.

Purpose:

1. To relieve congestion of the pelvic organs e.g. in dysmenorrhoea.
2. To relieve pain following cystoscopy.
3. To reduce inflammation.
4. To promote drainage of rectal abscess and haemorrhoids.

Solutions Used:

1. Potassium permanganate solution 1:5000
2. Boric acid 1 dram to 1 pint.
3. Eusol solution.

Contraindications:

1. Pregnancy.
2. Menstruation.
3. Renal Inflammation.
4. Increased irritability of the genital organs.

Procedure:

1. Test the water in the bath tub with a thermometer before the client is allowed to enter into the water.
2. Assist the client to the tub or into the sitz bath and position properly.
3. Wrap a blanket around the shoulders to prevent exposure and chilling.
4. Monitor the client closely for sign of weakness and fatigue and discontinue the bath if faintness, pallor, rapid pulse or nausea occurs.
5. Check the temperature of the water in between and keep it at the desired temperature by adding hot water.
6. Do not leave the client alone in the bath tub.
7. When the bath is completed, assist the client to come out of the bath and dry well.
8. If the client complaints of fainting or weakness, assist him out of the bath.
9. The client may feel sleepy due to the sedative effect of the sitz bath, so care should be taken to prevent falling.
10. Record the procedure.

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Practical

Medical and Surgical Asepsis

4.1 Aseptic Techniques

Aseptic techniques is the effort to keep a client as free from hospital micro-organisms as possible.

Principles of Asepsis

Three things that are extremely important is achieving asepsis are the reduction of time, trauma and trash.

1. Time: The time taken for any medical or surgical procedure is an important factor. Longer the time taken, have the possibility or greater exposure to contamination.
2. Trauma: Trauma occurred due to rough handling, excessive dead space, foreign bodies will contribute to infection.
3. Trash If refers to contamination by bacteria or foreign matter.

Essential Components of Maintaining Asepsis In a Hospital Include:

1. Hand washing, 2) Utilizing gloves, gown and mask as indicated 3) cleaning equipment, 4) Proper Handling of linens is the ways to prevent the spread of germs.

Types of Asepsis

The two types of aseptic techniques that the nurse practices are medical and surgical asepsis.

Medical asepsis: It is a clean technique which includes procedure used to reduce the microorganisms prevent their spread. Eg. Changing patient's bed linen daily, hand washing.

Surgical asepsis: It is a sterile technique which includes procedures used to eliminate the microorganism. Sterile technique is used where sterile instruments are used. Eg . In operation theatre.

Medical asepsis: Medical asepsis is commonly referred as clean technique. The goal is to reduce the number of pathogens or prevent the transmission of pathogens from one person to another. Techniques used should be appropriate to interrupt the spread of the known pathogen.

HAND WASHING AND SCRUBBING TECHNIQUE

4.2 Hand Washing

Definition

A technique of cleaning hands developed to prevent transmission of microorganisms

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Hand washing is a vigorous, prior to rubbing together of all surfaces of hands lathered in soap, followed by rinsing under a stream of water. The purpose is to remove soil and transient organisms from the hands to reduce to microbial counts over time.

Purposes	1) Cleanliness, 2) Aesthetic, 3) Remove soil and transient organism, 4) Reduce the total microbial counts – over time 5 to prevent cross infection
Indication	1. At the end of each task 2. Before going into clean areas (or) handling clean articles 3. Before surgical procedure, delivery 4. Before serving or eating food 5. At any time when necessary

Situation for hand washing: GARNER and FAVERS recommend that nurses wash hands in the following situations.

1. Before contact with clients who are susceptible to infection.

   Ex: New born infants, clients with leukaemia clients who are HIV positive.
2. After caring for an infected client.
3. After touching organic material.
4. Before performing invasive procedure such as administration of injections, catheterization and suctioning.
5. Before and after handling dressing (or) touching open wounds.
6. After handling contaminated equipment.
7. Between contacts with client in high risk units.
8. After removal of sterile and non-sterile gloves.

Steps of effective hand washing

Step 1: Wash Palms and fingers.
Step 2: Wash back of hands.
Step 3: Wash fingers and knuckles.
Step 4: Wash thumbs.
Step 5: Wash finger tip.
Step 6: interlocking of hands.
Step 7: Wash wrists.

Guidelines for maintaining hand washing

1. Cut nail shorts to prevent accumulation of dirt.
2. Remove jewellery to ensure through cleaning.
3. Remove the wrist watch and push long uniform sleeves above wrists.
4. Respect the surface of the hands and fingers for breaks (or) cuts in skin and cuticles.

Medical Hand Washing:

Equipment:

1. Warm water
2. Antimicrobial soap/Regular soap
3. Clean towel

Procedure:

1. Remove wrist watch and push long uniform sleeves above wrists.
2. Avoid wearing rings.

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3. Be sure finger nails are short and field.
4. Stand in front of skin, keeping hands and uniform away from sinks surface. (it hands touch sink during hand washing repeat it).
5. Open tap and wet elbow hand (hold hands below level).
6. Avoid splashing water against uniforms.
7. Regulate flow of water so that temperature is warm.
8. Wet hands and lower arms thoroughly under running water. Keep hands and forearms lower than elbows during washing.
9. Apply 1 ml of regular or 3 ml or antiseptic liquid soaps to hands lathering thoroughly.
10. Wash hands using plenty of lather and friction for at least 10 to 15 seconds.
11. Interlock fingers and rub palms and back of hands with circular motion atleast 5 times each.
12. Areas under nails are often soiled clean them with nails of other hand (or) clean stick.
13. Rinse hands and wrist thoroughly keeping hands down and elbow up.
14. Dry hands thoroughly from fingers to wrist and forearms with towel.
15. Discard towel in soiled bin.
16. Turn off water.

Surgical hand washing /scrubs:

Aseptic technique is designed to eliminate all micro organisms, including spores and pathogens, from and object and to protect an area from microorganism.

ARTICLES;	1. Soap/antiseptic detergent 2. Running warm water – to rinse soap and thorough hand wash 3. Nail brush in antiseptic lotion 4. Mask and cap

Principles:

1. A sterile object remains sterile when touched only by another sterile object.
2. Only sterile object may be on a sterile field.
3. An object hold below a person' s waist is contaminated.
4. A sterile object becomes contaminated by prolonged exposure to air.
5. When a sterile surface come in contact with a wet it contaminated the surface of sterile object.

Steps to procedure:

1. Ensure that nails are short.
2. Respect hands for abrasions and cuts.
3. After medical hand wash, wear cap and mask.
4. Turn on water.
5. Wet hands and arms under running take warm water and lather with soap to 5cm above the elbows.
6. Hand should be hold above elbows use circular movements to wash palms, back of hands, wrists, forearms and interdigital spaces or 20-25 seconds.
7. Rinse hands and arms thoroughly under running water.
8. Clean under nails of both hands.

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9. Scrub nails of each hand with 15 strokes using microbial agent.
10. Holding the brush perpendicular scrub palm, each side of thumb and fingers and posterior side of hand with 10 strokes each.
11. Scrub from wrist to 5cm above each elbow.
12. Entire scrub should last for 5 to 10 minutes.
13. Discard brush to soiled bin.
14. Take care not to touch the tap or sides of the sink during the procedure.
15. Use a sterile towel to dry one hand moving from fingers to elbow.
16. Repeat drying of the other hand using a different towel/use one side to dry one hand reverse side for other hand, if only one towel in available.
17. Discard towel to the solied bin.
18. One assist person to stay while surgical hand washing.

After care:

- Turn off water.
- Towel should be sent to laundry for washing.
- Washed nail brush to be kept in disinfectant solution tray.
- Soap to be kept in soap box and antiseptic solution to kept in cupboard.

WEARING OF GOWN, GLOVE AND MASK

4.3 Gowning

Wear clean or disposable gowns or plastic aprons during procedures to prevent the nurse's uniform likely to become soiled.

Indication:

1. When the nurses changes the dressings of a client with extensive wounds, burns.
2. During delivery procedure and surgical procedure.
3. Client with more susceptible to infection.
4. For strict aseptic diagnostic procedures like FNAC. Lumber puncture, bone marrow biopsy etc.

Purpose:

1. To prevent soiling of clothing during contact with the patient.
2. To protect health care personal from coming in contact with infected materials.

Steps to procedures:-

1. Pick up a sterile gown and allow it to unsoiled keeping inside of the gown towards the body without allowing the outside of the gown to touch any area.
2. With hands at shoulder level, slip both arms into armholes simultaneously. Ask the assisting nurse to bring the gown over shoulder.
3. The assisting nurse fastens the ties at the neck. Overlap the gown at the back as much as possible and faster the waist, ties or belt.
4. Prevent the gown from becoming wet.
5. While removing the gown avoid touching soiled parts on the outside of the gown. Roll up the gown with soiled part inside and discard in the appropriate container.

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4.4 Gloving

Gloving is defined as the putting up of a pair of sterile gloves to protect own hand from pathogenic micro organisms and to avoid contamination of a sterile areas by hand.

Purpose:

1. To protect the nurse from the pathogenic microorganisms.
2. To safely use her hands to handle without contaminating any objects.

Indication:

1. Contact with open wound.
2. For strict aseptic diagnostic procedures.
3. Handle with infected materials like blood, Urine, Faeces etc.
4. Nurse or health personnel with any cut injury in hands or fingers.
5. For surgical procedure and delivery procedure.

Steps to procedure:

1. When the glove packet is collected from the autoclaved bin and places flat on the sterile towel.
2. The packet of powder is removed from the glove pack and the hands are powdered.
3. Identify right and left hand.
4. Pick up the left glove with the right hand by the inside turned down cuff.
5. Carefully push the fingers of the left hand into the glove until it reaches the cuff.
6. Pick up the right glove by putting the gloved hand under the cuff.
7. Carefully push the fingers of the right hand into the gloved hand into the glove and pull the glove cuff over the cuff of the down.
8. Now pull the cuff on the left glove completely over the glove cuff to the left hands.
9. Adjust the gloves.

4.5 Wearing Masks

Mask are worn to reduce the risk for transmission of organisms by the droplet contact, air borne routes and splatters of body substances.

Purpose:

1. The mask should be worn by personal who work close to the client if the infection is transmitted by large particle aerosol.

Eg. Measles, mumps, acute respiratory diseases in children.

2. The mask should be worn by all personal entering the room if the infection is transmitted by small particle aerosols (droplet nuclei) eg. Pulmonary tuberculosis.

Steps to procedure:

1. Find top edge of mask (usually has thin metal strip along edge).
2. Hold the mask by top two strings tie two top ties at the top of the back of the head with ties above ears.
3. Tie two lower ties snugly around the neck with the mask well under the chin.
4. Ensure that the mask covers the mouth and the nose adequately.

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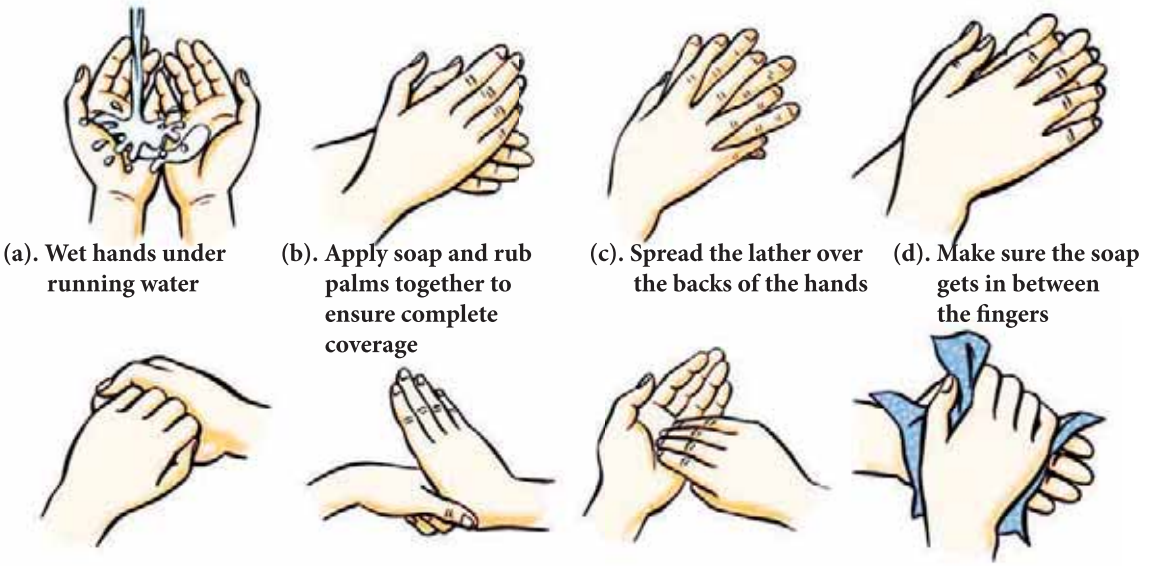
5. If glasses are worn, fit the upper edge of the mask under the glasses.
6. Avoid unnecessary talking and if possible sneezing or coughing.
7. When removing a mask with strings first untie the lower stringe of the mask
8. Discard a disposable mask in the waste container.
9. Wash the hands if they have become contaminated by accidentally touching the solid part of the mask.

STEPS OF HAND WASHING



(a). Wet hands under running water
(b). Apply soap and rub palms together to ensure complete coverage
(c). Spread the lather over the backs of the hands
(d). Make sure the soap gets in between the fingers
(e). Grip the fingers on each hand
(f). Pay particular attention to the thumbs
(g). Press fingertips into the palm of each hand
(h). Dry thoroughly with a clean towel

STEPS OF SURGICAL HAND WASH

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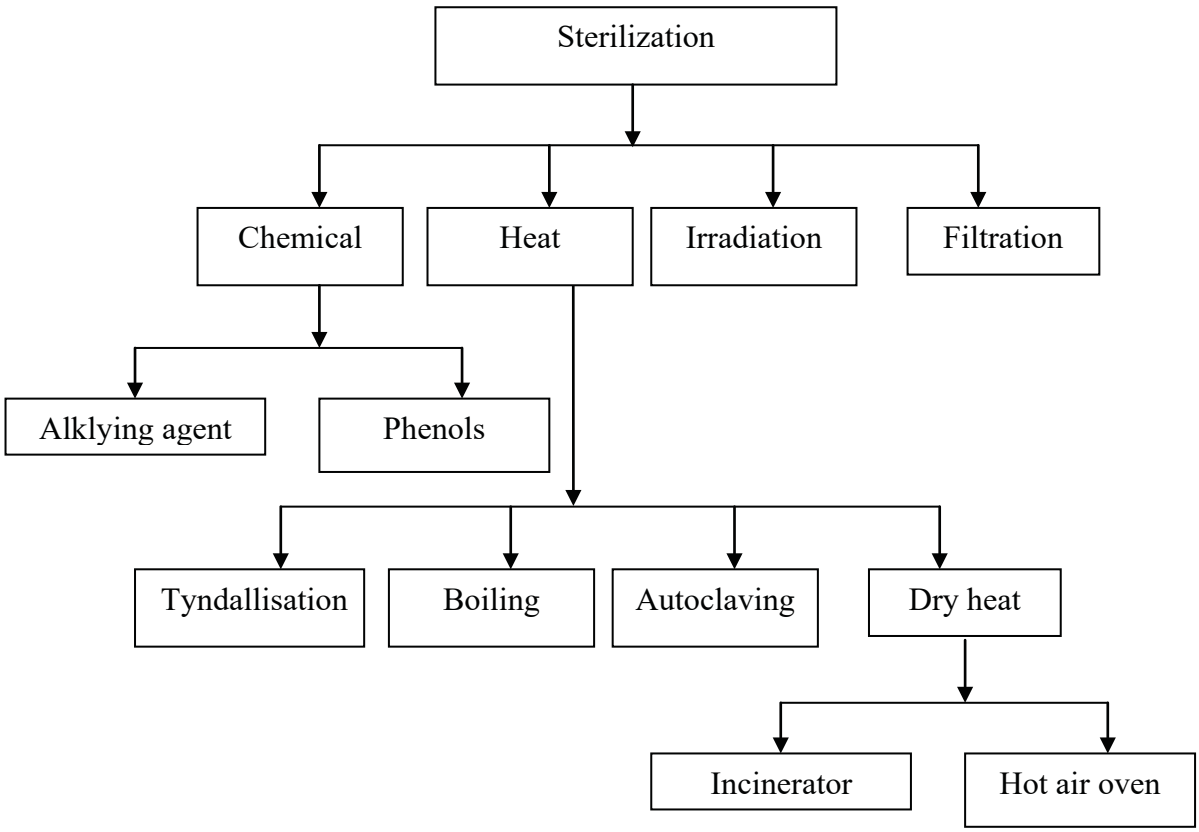
Practical

Sterilization



5.1 Definition

It is the practice to reduce or eliminate contaminants (such as bacteria, viruses, fungi and parasites.

5.2 Methods of sterilization

1. **Heat:** It is rapid and reliable method to destroy the small and heat resistant objects.
2. **Chemicals:** It is slow corrosive and used for heat – sensitive objects and for long surface.
3. **Filtration:** It requires membrane filtration apparatus and only used for liquids.
4. **Irradiation:** Ionizing irradiation is reliable but expensive and it is used to sterilize the rooms.

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5.2.1 Heat

1. **Tyndallisation:** Rapid steaming at 100°C of culture media n each of three successive days, allowing spores to germinate and to be subsequently killed.
2. Boiling: This method is suitable for enamel metal, glass and rubber wares.

Bowl sterilizers are used for large articles.

Instrument sterilizers are used for smaller articles.

Points to be remember:

- See that articles are quite clean and completely immersed in the water which also must be clean.
- Only after the water comes to the boil start timing. If more articles are added the sterilization to be must begin again
- Boil vigorously for 5 minutes boiling will not kill spores.
- Remove articles with sterile chattel or other lifting forceps on to a sterile surface.

3. Autoclaving: This is a reliable method. This is the method used for most articles.

Points to remember:

- All the articles should be clean and dry before packing.
- The hole in the drums must be open with placing into the autoclave and closed immediately on taking them out.
- Bundle should be not too large and not tightly packed. Steam should be able to penetrate to the centre.
- Rubber gloves should in 5 lbs for 15 mins.
- To autoclave bottles of fluid, loosen the screw caps. Evacuate the steam slowly.

General instructions:

- The articles being sterilized should with stand high temperature.
- The wrapper and the container should allow penetration of the steam into the article.
- The inner champers must not be too full nor the contents arranged too compactly.
- The temperature and pressure of the steam should be high enough to kill all the micro organisms including spores.
- The destruction of a bacteria depends upon the length of time the articles are exposed to steam under pressure. If the time is increased to the exposure the pressure is reduced.
- In operating an autoclave, it is important to remember that all the air in the inner chamber must be driven out and entirely replaced by steam.
- The articles should be left in the autoclave for a short times after the procedure is over to dry materials.

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4. Dry heat:

Sterilizing of glassware including syringes is often done in a hot air oven at 160°C for one hour. Spores as well as organisms are killed. Rubber will not stand up to this heat. This method is effective for dressing towels and gowns.

Two methods are used:

1. **Incineration:** Used for disposal of dressings laboratory media and human tissues. Incinerator may cause unacceptable environmental pollution.
2. **Hot air oven:** It is used for objects which can not tolerate moisture. Mostly used for glass ware, oils and powders.

Disinfection: Destruction of organisms by chemical is used in the following circumstances.

1. **Environmental:** Disinfection of excreta, floors, furniture, linen and fabrics.
2. **Instruments/Equipments:** Sterilization of heat sensitive objects in contact with patient.
3. **Skin and Wounds:** Removal of pathogens.
4. **Food medication:** Preservation in prevention of spoilage.
5. **Water:** Removal of pathogens.

5.2.2 Chemical sterilization

It is the method used for eye instruments and other delicate instruments.

Points to remember:

- Articles must be clean and free from pus, blood or oil.
- It must be completely immersed in the disinfectant.
- The disinfectant should be of a certain strength and articles must be in contact with it for a certain length of time.
- After sterilization articles must be well rinsed in sterile water before use.

Types of chemicals:

A Alkylating agents:

They are capable of killing bacteria, spores and viruses. They are the acceptable chemical alternative to usual heat treatment. This include:

1. **Formaldehyde:** Used for instruments and machines sterilization.
2. **Gluteraldehyde:** Used for instrument sterilization.
3. **Ethylene oxide:** Used for rubber and plastic articles sterilization.
4. **Propiolactone:** Used for gaseous sterilization.

B Phenols:

It includes acids and semi synthetic compounds in soap solution. It is used for contaminated surfaces.

Advantages:

This is the method used to sterilize the articles that are destroyed by heat.

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Disadvantages:

1. This disinfectants does not destroy the spores.
2. Some disinfectants are injurious to the skin and articles.

Important points to remember:

- They should be used in correct strength.
- The articles should be fully submerged in it.
- They should be placed for a sufficient length of time.
- They should not be injurious to the skin and articles.
- The article should be thoroughly cleaned to remove the organic material.

Fumigation or gas sterilization:

The agents that are commonly used for fumigation are formalin tablets and ethylene oxide liquids. The exposure will destroy all types of bacteria, Viruses and most of the spores. The best results can be obtained with high concentration of gas and humidity.

Disadvantages

The smell of formaldehyde is irritant to the eyes, skin and mucus membrane.

5.2.3 Irradiation

IV) URAVIOLET LIGHT STERILIZATION:

Ultraviolet sterilization is effective for disinfecting working surfaces.

Disadvantages:

1. Bacteria in shadows are unaffected.
2. It does not penetrate.
3. Prolonged exposure to the ultraviolet rays causes conjunctiva damage and also injurious to the skin and tissues.
4. It is expensive.

5.3 Preparing articles for sterilization

1. The articles should be carefully arranged so that those needed first are on top.
2. They must be loosely packed for steam to penetrate.
3. Drums must the perforations opened.
4. Bundles should have a double wrapper.
5. For proper sterilization of instrument it should be free from dried blood or discharge.
6. Rubber tubing should be cleaned with cold water then with hot and soapy water. The inside must be thoroughly clean.
7. Sharp instruments, knives and needles should be dealt with separately to avoid cuts and puncture.

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Practical

Public Health Procedures

Topic:- Hospital and its Environment.

Visiting place :- Any Hospital.

Practical work:- Survey.

1. Cleanliness of the ward.
2. Sanitary conditions of the ward.
3. Chlorination.

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Practical

Urine Analysis

FYVH23

7.1 Test for Sugar - Benedict's test

Benedict's test is used as a simple test for reducing sugars. A reducing sugar is a carbohydrate possessing either a free aldehyde or free ketone functional group as part of its molecular structure. This includes all monosaccharides (eg. glucose, fructose, galactose) and many disaccharides, including lactose and maltose.

Benedict's test is most commonly used to test for the presence of glucose in urine. Glucose found to be present in urine is an indication of Diabetes mellitus

Apparatus:

Benedict's solution (fresh; certainly not more than 3 months old), Dropper, Test-tube, Test-tube holder.

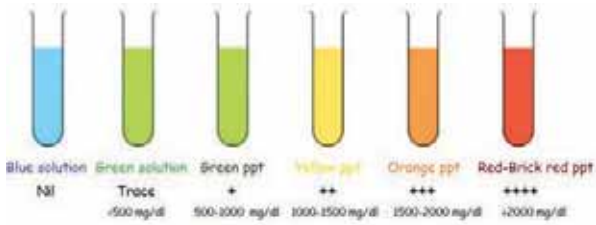
Quality checking of the Benedict's solution: Benedict's solution is blue in color. In order to check purity of Benedict's solution take 5 ml of Benedict's solution in test tube and heat it. If it does not change color, it means, it is pure.

Procedure:

- Take 5 ml (one teaspoon) of Benedict's solution in the test-tube.
- Holding the test-tube with the holder, heat it over a spirit lamp till the Benedict's Solution boils without overflowing.
- Drop 8 to 10 drops of urine into the boiling Benedict's solution.
- After again boiling the mixture, let it cool down.
- While cooling, the mixture changes color.
- Observe the color change and precipitate formation and analyze the test result

Result interpretation:

The colour of the mixture serves as a guide to the amount of sugar in the urine:



(ppt – precipitate)

Color	Approximate glucose mg/dl	Indication
Blue solution	Nil	
Green solution	<500 mg/dl	Trace
Green ppt	500-1000 mg/dl	+
Yellow ppt	1000-1500 mg/dl	++

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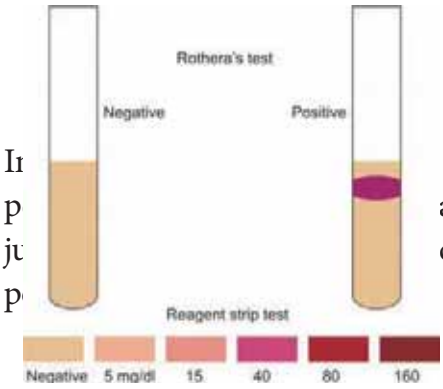
Color	Approximate glucose mg/dl	Indication
Orange ppt	1500-2000 mg/dl	+++
Red to Brick red ppt	>2000 mg/dl	++++

7.2 Test for albumin

- Fill three-fourth of a test tube with filtered urine (filtering removes pus if present).
- See the reaction of the urine is acidic. If found alkaline, add one drop of acetic acid and make it acidic.
- Heat the upper third of the urine over sprit lamp and allow it to boil.
- A cloud may appear either due to phosphate or albumin.
- Add acidic acid drop by drop in to the test tube.
- If the urine is still cloudy it indicates the presence of albumin.
- If it becomes clear it indicates the presence of phosphates.
- No albumin is presence in the normal urine.
- If the urine is highly acidic or highly alkaline, the reading will be false.

7.3 Test for acetone

- Take 5 ml of urine in a test tube and saturate it with ammonium sulphate.
- Add a small crystal of sodium nitroprusside and mix well.
- Slowly run along the side of the test tube liquor ammonia to form a layer.



- In purple at the junction indicates a

Special points

- Keep reagent tablets in a cool, dry place at a temperature below 86°F(30° C).
- Do not refrigerate the reagent tablets and strips.
- Keep the container tightly closed.
- Do not use discolored or outdated tablets or strips.

7.4 Test for bile salts (hey's test)

- Take half of urine sample in a test tube.
- Sprinkle sulphur powder on the surface of the urine.
- If the powder sinks down to the test tube, it indicated the presence of bile salts.
- This is because, bile salts reduce the surface tension of the urine and allows the sulphur powder to sink down.

Test for bile pigments

- Fill three-fourth of a test tube with urine.
- Add iodine drops along the sides of the test tube, so as to form the layer on the surface of the urine.
- A green color at the junction of the two liquids indicates the presence of bile pigments.
- Discard the urine and clean the test tube.

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Practical

Elimination Need

8.1 Offering and Removing of bed pan

Bed patients usually need to use a bedpan about once or three times a day. The ward may be closed with a screen for this purpose as a routine. However if a patient makes request for a bedpan at another time, you should meet the request with understanding and without delay.

Method of giving a bedpan

1) Screen the bed.
2) Bring a covered bedpan to the bedside and place it on the stool. The bedpan should be clean and dry. In cold weather, warm if first with hot water pad the seat of the bedpan. If the patient is very weak and emaciated.
3) Protect the bed with a rubber sheet if necessary.
4) Place the bedpan on the bedside of the patient.
5) Place your left hand beneath the lower back to aid the patient in raising the buttocks and place the bedpan in position without force. Adjust the bedpan comfortably for the patient. Lower and leave him alone unless he is too ill or weak.
6) Get a toilet tray ready and bring it to the bedside.

Contents of the tray are

S. No.	Items
1.	Jug with warm water
2.	Soap
3.	Wash cloth and towel
4.	Bowl with rag pieces or cotton
5.	Long artery forceps.
6.	Kidney tray and paper bag

To Remove and empty the bed pan:-

1) Let the patient wash himself if he is able to do so. Help him pouring water over the genitals. Remove the bedpan and give the patient water and soap for hand washing.
2) If the patient is helpless use moistened rag pieces or cotton and the artery forceps and clean from front to back to prevent a infection. Turn him on his side while removing the bedpan (a second person may be needed to help).
3) Make the patient comfortable.
4) Cover the bedpan, take it to the toilet room.
5) Observe the contents.

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6) Empty the content and rinse the bedpan with cold water. Then clean it with the brush kept in soap solution. The bedpan may be soaked in disinfectant for one hour or sterilised if there are facilities for dui so.

7) Remove other articles from the bedside. Clean and put them back in proper place.

8) Wash your hands well. Remove the screen and leave them until tidy, record the time and observation.

8.2 Offering Urinal

Definition:- Bed rest or immobility can interfere with micturition (act of passing urine). It does not allow the patient to have the normal position for emptying the bladder.

For a man who has not been able to reach the toilet facilities he may stand at the bedside and avoid into a plastic or metal receptacle for urine. If he is unconscious or enable to stand at bedside the assistant needs to assist him to use the urinal.

Purpose

1. Provide a container for collection of urine
2. To measure the urine output
3. For observation of colour and consistency of urine

Indications

1. For patient with impaired mobility due to surgery, fracture, injury
2. Elderly man (aging impaired micturition) may require urinal more frequently to avoid urinary incontinence
3. For mobile person who is able to go to bathroom, does not required the urinal

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Practical

SPECIMEN COLLECTION

A specimen may be defined as a small quantity of a substance or object which shows the kind and quality of the whole (sample).

Specimen collection defined as the collection of the specimen for the purposes of diagnosis, treatment and recovery.

Preparation of the clients

- Explain the procedure to the patient. It helps to gain the client's trust and cooperation.
- When preparing the client the nurse's explanation should be clear, straight forward and complete.
- Some test requires more detailed instruction to promote cooperation and ensure accurate specimen collections especially when the client has to modify his behavior before the test and when he will be collecting the specimen himself.
- Be sure that the client has understood clearly and correctly the information.
- Proper understanding of the procedure will help to gain informed consent.
- Provide a appropriate container and explain how to use it.
- In case of collection of urine, instruct the client to wash the genitalia with soap and water, then rinse it in water before collecting the specimen.
- Instruct the client not to contaminate the outside of the bottle.
- Instructions to use gloves and other barriers as necessary.

Preparation of the equipment

- All specimens are collected in clean and dry containers.
- Use containers with wide mouth.
- Sterile containers are used for culture.
- Wax lined disposable cups are used for sputum and stool specimens.
- Large containers are used for 24 hours urine specimens.
- Sterile test tubes are used to collect fluids.
- Clean slides are used to collect smears.
- No antiseptic solution must be present in the specimen bottle as they may hamper the growth of micro organism and thus obscure the results.

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Collection of urine specimen

9.1 Method of collecting single urine specimen

Single urine specimen means the amount of urine voided at a time. Usually the morning specimens are collected. The amount of 100-120 ml of urine will be sufficient for the usual tests.

After cleaning the genital, the client passes urine into clean urinal or a clean kidney tray or directly in to specimen bottle, taking care not to spill the urine on the outside of the container.

Method to collect Midstream specimen for culture

Ask the client to clean the genital area with soap and water then rinse in water alone. In female clients the labia are separated for cleaning and kept apart until the urine has been collected. In male client, the foreskin should be retracted and the genital area penis is cleaned before the collection of the urine.

The client begins to void in to the toilet, commode or bed pan. Than the client stops the stream of urine, the sterile container is positioned and continues to void in to the container. When enough urine has been voided, for specimen, the client stops the stream again; the container is removed and then finishes voiding in the original receptacle.

Method of collecting 24 hours urine specimen

24 hours urine specimen means to collect all the urine voided in 24 hours. The collection of urine begins at 6AM and discard the whole urine. All the subsequent voiding should be measured and collected in the bottle which is labeled. Continue to collect till morning. Ask the client to void at 6 AM on the next day and add it to the previously collected.

Method of collecting urine specimen from unconscious clients and children

In male babies or unconscious male clients, take a test tube, a barrel of syringe or nirodh or condom with rubber tubing and is attached to the penis. It is kept in place by adhesive tapes. In female attach a wide mouthed container or a funnel with rubber tubing to the vulva by means of a T binder. The rubber tubing is connected to a bottle and the urine is collected in the bottle.

Method of collecting sputum specimen

Water proof disposable sputum cups or wide mouthed containers are used to collect the sputum specimen. The client should be given the container and is instructed to raise the material from the lungs and not simply expectorating the saliva or discharges from the nose or throat. The sputum should be collected before brushing the teeth and the food. Mouth can be rinsed with plain water, not any antiseptic mouth washes.

Method of collecting stool specimen

Water proof disposable sputum cups or wide mouthed containers are provide with necessary instructions. The client passes stool in a clean bedpan. A small amount

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of stool is removed with a stick or spatula and is placed in the container. Discard the stick in the waste bin.

9.2 Collecting stool specimen for routine examination

DEFINITION

Collection of a small quantity of stool sample in a container for testing in the laboratory.

PURPOSE

To test the stool for normal and presence of abnormalities.

ARTICLES

1. A Clean specimen container.
2. A spatula for putting the specimen into the container.
3. Dry bed-pan (for helpless patients). Additional bedpan for rinsing and cleaning.
4. Laboratory requisition form.
5. Clean gloves.
6. Waste paper (for wrapping used spatula).
7. A pitcher of water (for helpless patient).
8. Tissues / towel.

PROCEDURE

	Nursing action	Rationale
1	Check the physician's order and 'Nursing Care Plan'.	Obtains specific instruction and information
2	Identify the patient.	Helps to perform the right procedure for the right patient.
3	Explain to patient the procedure and make clear what is expected of him/her.	Aids in proper collection of specimen.
4	Give the labeled container and spatula to the patient with instructions. ie. To defecate into clean dry bedpan. Not to contaminate specimen with urine.	
5	Done gloves	
6	For helpless patient assist patient on to the clean bedpan	
7	Leave him with instructions	
8	When done, remove and keep aside the bedpan after placing the second one for cleansing.	

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	Nursing action	Rationale
9	Collect about 2cm of formed stool or 20 to 30ml of liquid diarrheal stool	
10	Once the specimen is collected send it to lab with the appropriate requisition forms.	
11	Wash and replace the reusable articles	
12	Dispose off the used spatula wrapped in waste paper.	Prevents contamination
13	Wash and dry hands.	Prevents cross contamination.
14	Record information in the patient's charts.	

Special considerations

1. Send specimen to be examined for parasites immediately, so that parasites may be observed under microscope while viable, fresh and warm.
2. Inform if bleeding hemorrhoids or hematuria is present.
3. Postpone test if woman has menstrual periods, until three days after it has ceased.
4. Consider that intake of folic acid, anticoagulant, barium, bismuth, mineral oil, vitamin C, and antibiotics may alter the results.
5. Use two bedpans for helpless patient- one for collecting specimen and another for cleaning.

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Practical

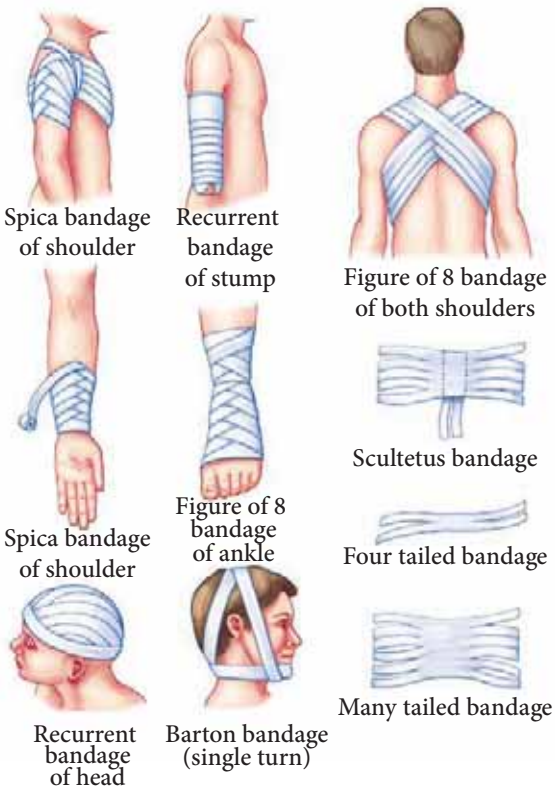
Application of Bandages

FZ5D3Q

10.1 Introduction

A bandage is a piece of material used either to support a medical device such as a

- Dressing
- Splint
- Support or
- To restrict the movement of a part of the body



Uses

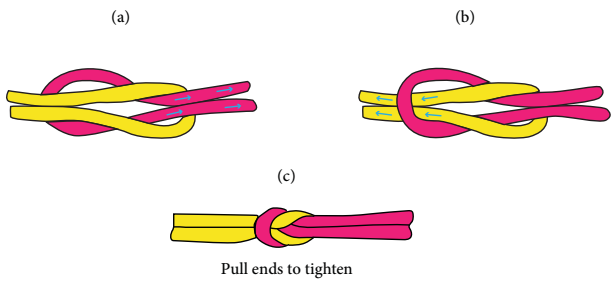
Bandages are used to:

1. Maintain direct pressure over a dressing to control bleeding.
2. Keep dressings or splints in position.
3. Support a limb or joint.
4. Prevent movement.
5. Prevent or reduce swelling.
6. Help in lifting and carrying casualties.

10.2 Types

1. Triangular bandages
2. Roller bandages

A reef knot is used to tie the ends of the bandage, because it is flat and will not slip. The rule for tying a reef knot is 'right over left then left over right'.



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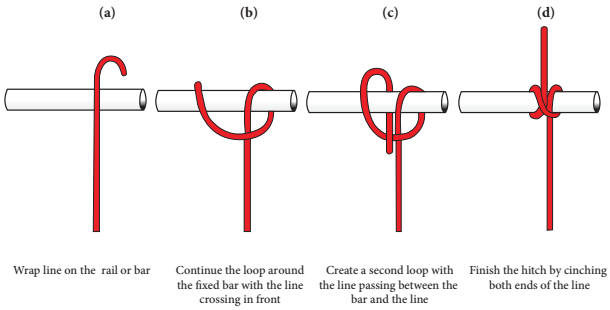
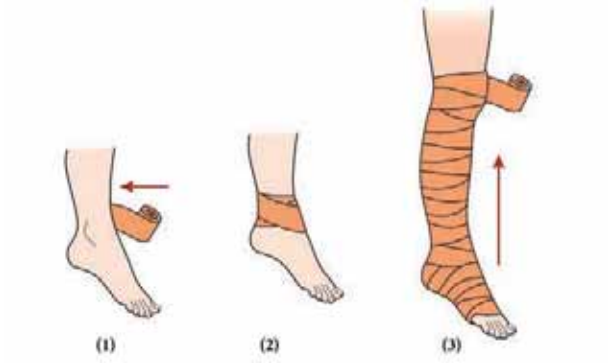
A clove hitch made from a narrow bandage, is placed round his wrist. The ends of the bandage are taken around the neck and tied.

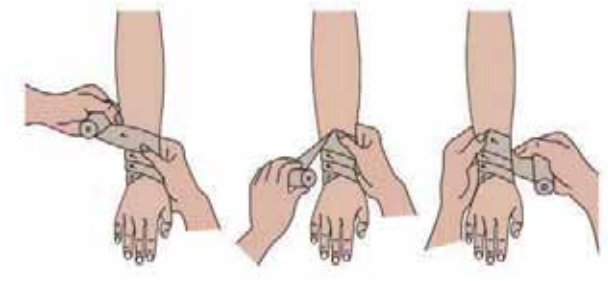


Simple Spiral Bandage:



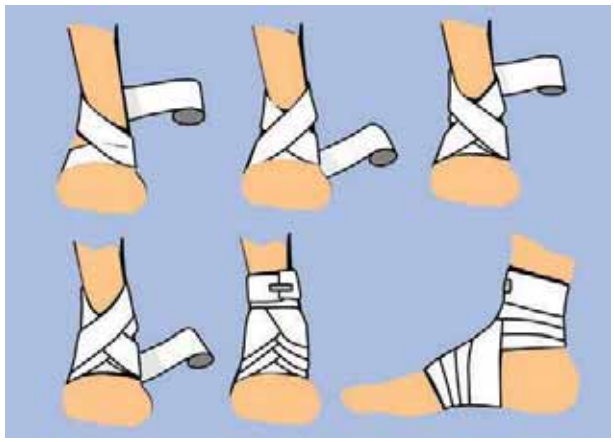
This is used on fingers or other uniform surfaces. This bandage is just round in spirals.

Reversed Spiral Bandage:

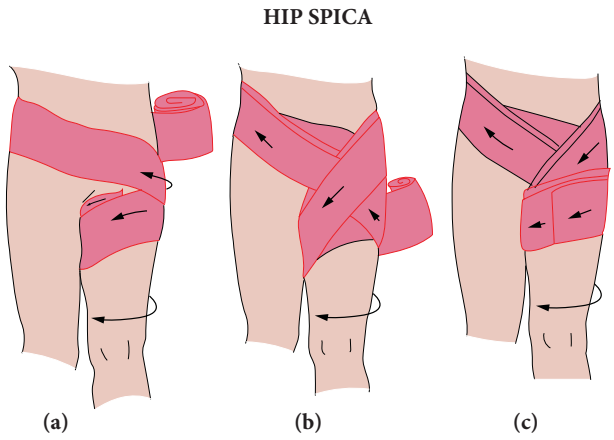


This is used on limbs where the thickness of the part varies. e.g Fore arm & Legs.

Figure of Eight



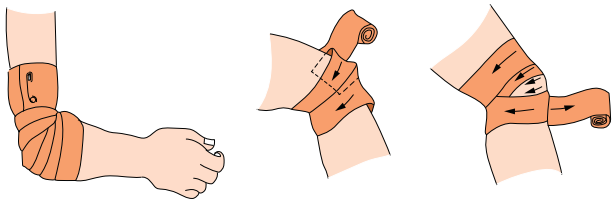
This may be used on limbs instead of the reverse spiral also for the hand and foot.



Spica:

This is used for shoulder, hip and thumb. And this is a modified figure of eight.

Divergent Spica:



This bandage pattern encloses a flexed joint or projection. It is used for a flexed joint. e.g Elbow, knee, heel.

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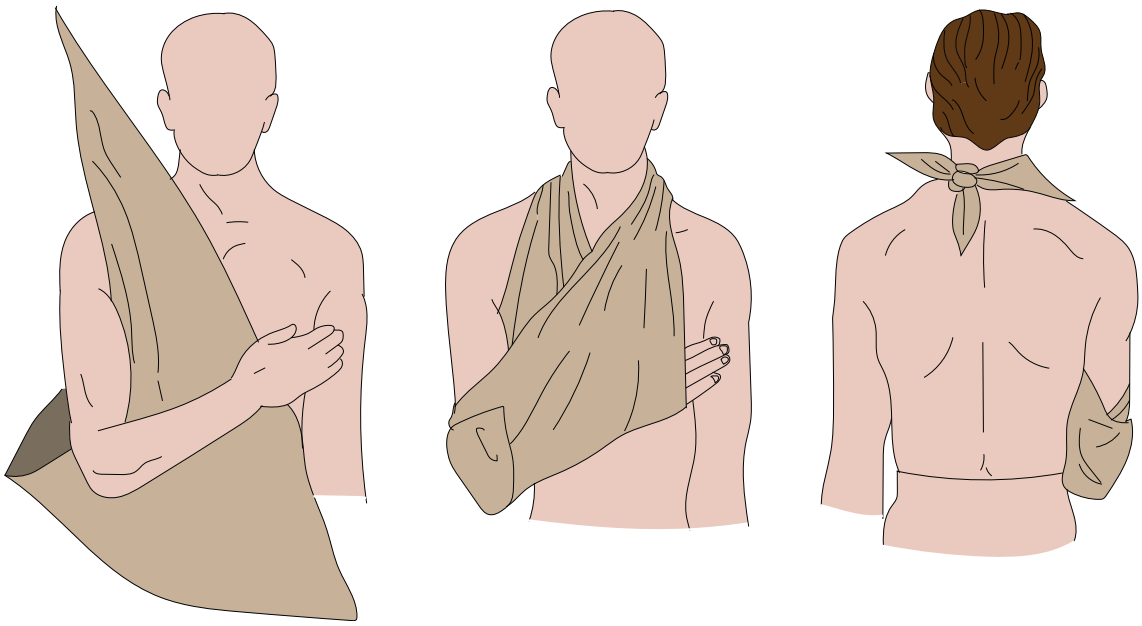
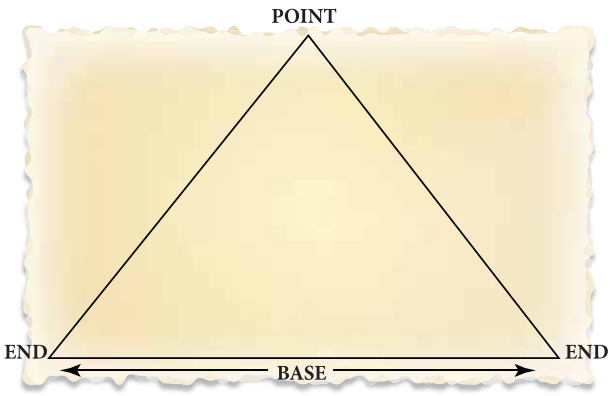
Triangular Bandage:

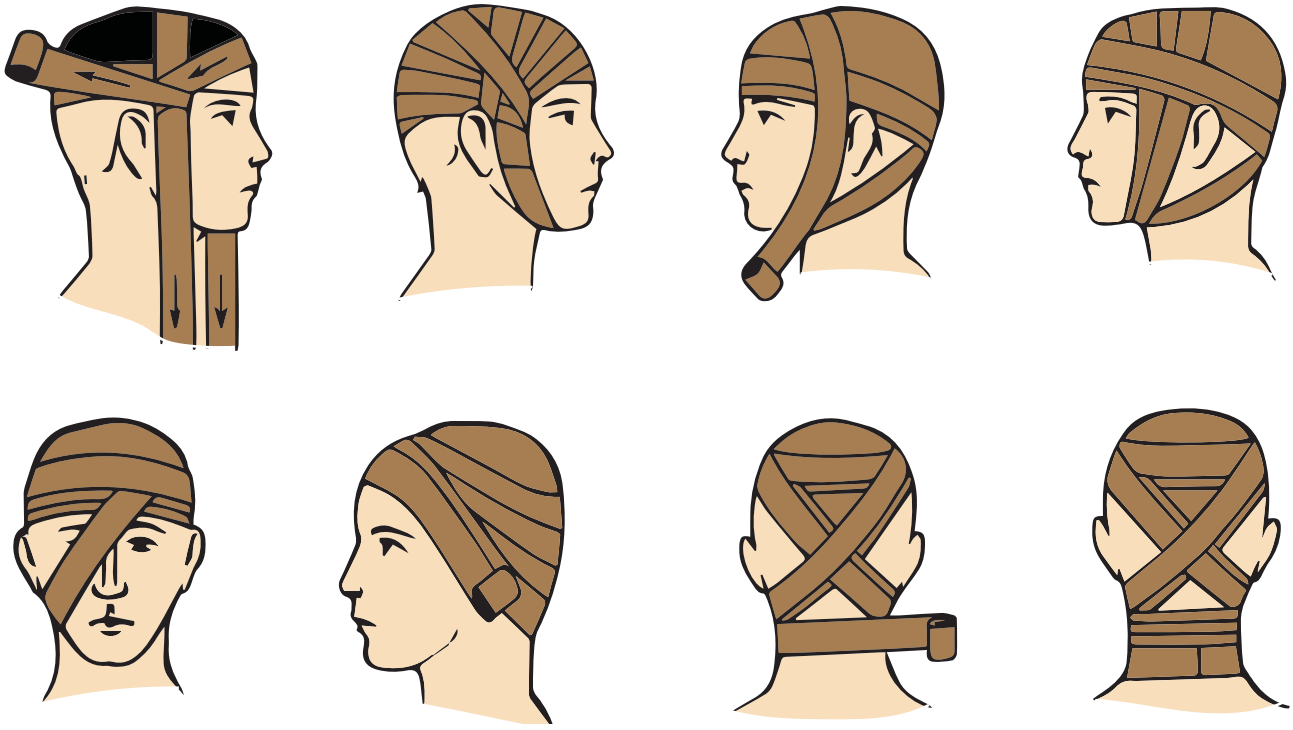


A triangular bandage is used in treating a fracture of the collar bone. It helps to keep the hand raised high up, giving relief from pain due to the fracture.



10.3 Special Bandages:

Capeline bandage for head.



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- one end being continued round the scalp and other going order it
- scalp turn secured by horizontal turn
- capline bandage completed

Eye and Ear Bandage

10.4 Patterns used in Bandaging

1. Circular turns, as used for head and trunk.
2. Simple spiral, for parts of uniform thickness, eg. Fingers wrist.
3. Reverse spiral, used on limbs where the thickness of the part varies, e.g forearm leg.
4. Figure-of-Eight

This may be used on limbs instead of the reverse spiral also for the hand and foot.

5. Spica, used for the shoulder, hip and thumb
6. Divergent Spica, for a flexed joint, e.g elbow, knee, heel
7. Recurrent to cover tips of fingers or a stump.
8. Special bandages such as the capeline for the head, eye bandage, ear and breast bandages.

10.5 Application of Bandage

Preliminary Assessment

- Check the doctors order to see the specific precautions if any regarding the positioning and movement.
- Assess the patients need for application of bandage.
- Monitor vital signs.
- Assess the patients mental status.
- Assess the need for pain medication
- Assure the patient, the patient's family.
- Assess the adequacy of circulation by noting surface temperature, skin colour, and sensation of body parts to be wrapped.
- For tying the bandage a 'reef knot' must be always used.
- The knot should be made where it does not hurt the skin or cause discomfort.
- Tuck the loose ends of the bandage out of sight.
- Not in use the triangular bandages should be folded narrow. Bring the two ends to the centre and fold again. It becomes a packet which measures 16 x 9 cm handy to carry.
- Wrinkled Bandages are uncomfortable.
- Never ignore any complaints of pain experienced by the patient. This should be invested and the cause is removed immediately.

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- Do not use extra turns in order to use all the bandages.
- When completed, fix the bandage with a circular turn and secure it with a safety pin or other suitable materials such as adhesive strapping.

Preparation of the patient

- Explain the sequence of the procedure to the patient and explain how the patient can assist you.
- Place the articles needed conveniently in the bed side table.
- Bring the patient to the edge of the bed.
- Provide privacy.
- Help the patient to assume comfortable and correct position.
- Perform hand hygiene.

Rules for Application

- Face the patient.
- When bandaging left limb, hold the head of the bandage in the right hand vice versa.
- Apply the outer side of the bandage over the pad and wind it around the injury twice so that it is firm.
- Bandage from below upwards over the limb. Also make it a roll to apply bandage from the inner side to the outer side.
- See that the bandage is neither too loose nor too tight.
- Roll bandage so that each layer covers two-thirds of the earlier layer. Fix the bandage by pinning it up or using adhesive plaster. The usual practice of tearing the final end into two long tails and tying them up is quite satisfactory.

Articals Required

1. Correct width and number of bandages.
2. Disposable gloves (if necessary)
3. Safety pins
4. Scissors
5. Adhesive tapes
6. Rubber Sheet (if necessary)

Procedure

- Apply bandage from distal point toward proximal boundary using variety to turns to cover various shapes of body parts.
- Unroll and very slightly stretch bandage
- Over lap turns by one half to two thirds width of bandage rolls.
- Apply additional rolls without leaving any uncovered skin surface. Secure last bandage applied.
- Remove gloves if worn and perform hand hygiene.
- Assess distal circulation when bandage application is complete and atleast twice during 8 hours period.
- observe the bandage site for 5 – P

It comes in various widths lengths and types of material. For best results, use different widths for different body areas.

For e.g

Fingers	—	1 inches
Hand & arm	—	2 to 2.5 inches
Leg	—	3 to 3.5 inches
Trunk	—	4 to 6 inches

Five 'P'
- Pain
- Pallor
- Pulselessness
- Palpate skin for warmth
- Paralysis

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