ACCIDENT PREVENTION AND SAFETY EDUCATION (KHE 205)

B.Sc (Ed) Human Kinetics

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COURSE GUIDE

Introduction

This course will provide detailed information on safety and accident prevention in the school, work place and home. It will establish the hazards of safety and the control measures to be taken. This course justifies the need for safety programmes and education, safety skills and techniques in schools and its environment. This course explains safety education and safety programmes in schools and general safety skills and techniques in schools and the environment.

Course Aim

The aim of this course is to teach you the importance of safety Education, safety Education programmes and safety techniques available in schools and its environs.

Course Objectives

At the end of this course you should be able to:

1. Define safety, safe living and models for organising safety in Nigeria

2. Define accident and its classification, types, classes, risk factors and type I &II accident proneness.

3 Explain the types and kind of hazards, define industrial and workshop safety and its objectives, common, effects of industrial safety and general precautions while working in workshop.

4. Define the meaning of community and school environment safety, sample of school safety plans with general policies and explain the importance of road sign and the types of traffic signs.

5. Define emergency (first aid), differentiate between safety education and emergency Care and identification of the principles of first aid treatment and the requirement for emergency care.

6. Define wound, treatment, types of wound and bandages

7. Define respiration and explain the procedures for artificial respiration

8. Explain haemorrhage, classification, causes and social and economic consequences of haemorrhage

9. Define and describe the types, causes, signs, symptoms and management of shock.

10. Define fracture, dislocation, sprain, strain, burns and scald and describe the causes and emergency care procedures for them.

11. Define poison and state the causes, types, treatment, prevention and control measures against poison

Working through this course:
You will need to study for at least 30 hours to complete this course successfully. You also need at least 2 hours on each course per week. Each course has a stated and intended learning outcome(s) (ILOs) which must be achieved during the study of each unit. There is a self assessment exercise in each unit to be done by the student which will help you make progress.

Presentation Schedule
The presentation schedule sent to you gives you the important dates for the completion of your Tutor Marked Assignments (TMAs) and participation at facilitation. You are required to forward all your assignments at the right time without any deferment or plagiarisms. Plagiarism is falsification and it is unlawful, anyone culpable will be seriously punished.

Assessment
The assessment to this course is divided into two main parts. The first part is the Tutor Marked Assignments (TMAs) and the second part is the e-examination which is a computer based examination. In solving the problems in the assignments, you are meant to use the facts, knowledge and experience gathered in the course of the study. A link will be provided through which the assignment will be submitted between the stipulated time. The assignment will be evaluated within the given guidelines and a feedback provided. The TMAs will form 30% of the total marks for the course.
Each student will be required to sit for an e-examination which will last for one hour. The e-examination will form 70% of the course mark. The computer will be programmed to open at the beginning of the examination and end as scheduled automatically.

Tutor-Marked Assignment (TMA)
There are three(3) assignments that make up the tutor-marked assignment and they must be submitted for grading at the stipulated time as no extension shall be granted to any student after the due date unless for exceptional cases. The three assignments form the 30% of the course which is a Tutor Marked Assignment.

Tutors and Tutorials

Each student will be assigned to a tutorial group at their various Study Centre, date and time of the tutorials with the name and phone number of your tutor will be communicated to students through the Centre Director. 12 hours of tutorials will be provided for this course. Your assignments will be graded and correction made on them. You need to keep a close watch on the comments made by your tutor and identify any area where you are having difficulties. Your TMAs must be mailed to your tutor within the deadline stipulated and this will be marked and sent back to you almost immediately. Where you require assistance, do not hesitate to contact your tutor through phone, e-mail or direct discussion.

There may be situations where you will need to urgently make contact with your tutor when:

1.) You do not understand the assigned readings or any part of the study units.
2.) You find it hard to deal with your self-tests or exercises.
3.) You have a query or difficulty with your assignment, with comments made by your tutor on your assignment or with the grading system of the assignment.

You must ensure you attend all tutorials, this is the only avenue you have for physical contact with your tutor/facilitator and your questions will be answered immediately. You are at liberty to query any difficulty encountered during the course of the study.

There is a great advantage in getting actively involved in the group discussion and to benefit immensely from the course tutorials, you must have done your personal preparation and draw out your own questions, this helps you to be actively involved in the course tutorials.

Final Examination and Grading

KHE205 final examinations will last for one hour and will account for 70% of the total course grade. The examination will comprise of questions similar to the type of the tutor marked exercises you have initially practiced. Every part of the course will be assessed. You are to use the time gap between concluding the last unit and sitting for the examination for the revision of the entire course.

Revising the tutor mark assignment exercises with the comments made by the tutorial facilitators might be useful for the final examination. The final examination will cover every information from all parts of the course materials.

How to Get the Most from the Course

In this course you have the opportunity of working and studying through a well-designed study material at your own pace and at a time and place that suits you best. Read the material as against listening to a lecturer in the conventional school system. The content is complemented with audios teachings as well as watching related videos. In the same way that a lecturer might recommend some reading materials, the study units tell you when to read recommended books or other materials and when to undertake practical activities. Note that the study unit replaces the university lecturer. Just as a lecturer might give you class exercises/activities, your study units provide exercises for you to do at the appropriate time. Each of the study units follows a common format. The first item is an introduction to the subject matter of the unit and how a particular unit is integrated with the other ones and the course as a whole. Next is a set of learning Intended Learning Outcome(s) (ILOs) which state what you will be able to do by the time you have completed the unit. These Intended Learning Outcome(s) are set to guide your study. When you have finished a unit, you must go back and check whether you have achieved the Intended Learning Outcome(s).

If you cultivate the habit of doing this, you will make tremendous improvement in your chances of passing the course.

The main body of the unit guides you through the required reading from other courses. This will usually be either from your recommended books or from a reading section. Self-assessment exercises are interspersed throughout the unit. You are expected to work on them as well. Working through these exercises will help you to achieve the Intended Learning Outcome(s) of the unit and prepare you for the assignments and the examination. You should attempt the self-assessment exercise as you come across it in the study unit. There will also be several examples given in the study units; work through these when you come across them too.

Facilitation
You will receive online facilitation which is asynchronous. Your facilitator will summarise each unit of study and send to your mail weekly. The facilitator will also direct and coordinate your activities on the learning platform.

Do not hesitate to contact your tutor by telephone and e-mail if you:

- Do not understand any part of the study units or the assignment.
- Have difficulty with the self-assessment exercises
- Have a question or problem with an assignment or with your tutor's comments on an assignment.

Read all the comments and notes of your facilitator especially on your assignments, participate in the forums and discussions. This is the only chance you have to interact with others in the programme. You can raise any problem encountered in the course of your study. To gain the maximum benefit from course tutorials, prepare a list of questions before the discussion session. You will learn a lot from participating actively in the discussions.

Summary
KHE205 intends to introduce you to Accident prevention and safety Education with particular reference to safety, safe living and models for organising safety in Nigeria. Identifying all the safety hazards and knowing the precautionary measure for safety in school, Industry and our environment at large. Upon completing this course, you will be equipped with the skills and techniques for safety precautions.
You will as well be able to answer the tutor marked assessment as presented in each unit.

Modules

Module 1

Unit 1: Meaning of Safety and importance of Safety and Safe Living….....…

Unit 2: Safety Education and Safety Education Programmes in Schools….....…..

Unit 3: Meaning, Types, and Classification of Accidents ……....…

Unit 4: Causes and Prevention of Accidents …….....….....

Module 2

Unit I: Meaning and types of Hazards, Description of Environmental, Industrial Home and School hazards……

Unit 2: Industrial and Workshop Safety…….....…….

Unit 3 : Community and School Environment Safety…….....…….

Unit 4 :Road Signs and Road Safety Precautions…….....……

Module 3

Unit 1: Principles of Emergency Care…….

Unit 2: Basic Techniques of Emergency Care……....

Unit 3: Respiration Emergencies and Resuscitation…….

Unit 4: Haemorrhage: Types, classes and causes…….…….

Module 4

Unit 1: Shock Types and Management of Shock……

Unit 2: Fractures, Dislocations, Sprain and Strains…….....……

Unit 3: Burns and Conditions due to Abnormal Temperature……...…….

Unit4: Poisoning and Management……

MODULE 1

Unit1: Meaning of Safety and Important of Safety and Safe Living

Unit2: Safety Education And Safety Education Programmes In Schools

Unit 3: Meaning, Types, And Classes Of Accidents Classification

Unit 4: Causes and Prevention Of Accidents

UNIT 1 MEANING OF SAFETY AND IMPORTANT OF SAFETY AND SAFE LIVING

CONTENTS

1.0 INTRODUCTION

The link between safety and life is inextricable: safety is a value of life. Safety, by its ordinary definition, is the condition of being protected and free from harm. To be safe, we often seek to control hazards in our environment, for instance, poor roads. We all strive to avoid accidents but sadly, accidents occur nevertheless: at home, on the road, in the environment. The very fact that you are reading this means that at some point in time, you have deployed safety measures. Not many a person would doubt the claim by experts that safety includes an individual's awareness of risks hazards, accidents etc.; implementation of risks and accidents prevention and putting into practice necessary safe methods, techniques, process and safety culture while carrying out our daily activities. In our offices, we are thinking of safety when we install fire extinguishers and

ensure that electrical appliances are properly connected and cables properly fixed. Not doing so can easily cause bodily harm. Safety thus inheres everything we do, including sports, driving and, come to think of it, even stage plays.

2.0 OBJECTIVES

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

- Define safety
- Discuss the importance of safety and safe living
- Explain Safety knowledge practice and attitude

3.0 MAIN CONTENT

3.1 Meaning of safety.

Safety is a concept that relates to freedom from danger, injury, threat or risks, whether to life or property. If you drive a car, you probably always ensure it is in good condition: you check the engine oil, etc. On the road, you avoid reckless driving by making recourse to the rules you learnt at the driving school and the skills you have acquired through the years/months of being a road user. So, safety is not something necessarily imposed on you: your life depends on it. Crucially, to even be in a position to talk about safety, you need to have taken safety precautions. Engineers at your workplace wearing helmets and other protective gear are not necessarily being fashionable; they are conscious of safety. Nurses often use hand gloves and even the security agencies often use bullet-proof vests. They, like everyone else, have come to realize that safety is more than changing our bad habit or altering our ways of life.

3.2 Importance of safety and safe living.

Safety and safe living have the following merit

1. Reduce the likelihood of injury and accident. Safety reduces the chances of accidents or injury happening.
2. It helps to provide safe and healthy living.
3. It protects people from premature and unexpected death.
4. It helps to create a civilized and progressive society.
5. It helps to protect people from financial losses due to unnecessary responses to accidents and injuries.

6. It protects people from undue mental stress and tension.
7. It creates safety behaviors and attitudes in people for a safe living.
8. Safety helps to build healthy and safety-conscious individuals.

3.3 Safe living

Safe living simply means getting used to one's environment, including the physical environment and the people in the community. As we live in a rapidly changing and increasingly complex environment, the need becomes more urgent to recognize situations that could engender or cause hazards or risks. At the individual level, people learn to conduct their affairs in such a way that they do not constitute health and other hazards to others. Today in Nigeria, accidents involving motorbikes (okada) are frequent simply because most of those involved in its use for commercial purposes have not been properly trained, not to talk of developing the necessary personal attributes such as alertness, agility and coordination to keep other road users and the general environment safe.

As noted by an expert in the field, the establishment of safe practices in the exercise of daily activities, as well as safe use of facilities and equipment at home and workplace, are required for health and survival. A consideration of the welfare and safety of others therefore contributes to one's safety. It is indeed difficult to doubt the claims that an understanding of safety rules, regulations and standards, and the observance of these safety requirements are valuable aids to safe living, and that a person who can easily adapt to the usual hazards of life is one who has acquired traits of non-accident proneness which are expressed through the acquisition of knowledge, practices, skills and attitudes.

Knowledge

Generally, a knowledgeable mind is a safe one. To say the least, knowledge acquisition is an integral component of the behavioral change necessary for social safety. Without general knowledge of what goes on around us, including the nature and causes of accidents, we cannot be safe. If we had the requisite knowledge of environmental hazards and the knowledge of definite preventive actions and procedures, we are less likely to dispose of refuse in ways that would end up causing floods. Nor can we use the roads safely without proper knowledge of the nature, causes and consequences of accidents and how to prevent them.

Practice

As noted by an expert, human actions and practices, no matter how well-conceived, can involve certain amount of hazards. Therefore, they have some safety implications. This is where practice comes into play. Practice, they say, makes perfect. Habits involve learned behaviors through practice. Practice is therefore informed by knowledge. This is why it has been pointed out that a person whose habitual conduct conforms with the accepted safety practices and who evaluates these against the changing life situations so as to make necessary adjustment or adaptations in his habits is one who is conscious of the needs for a safe living in today's increasingly complex environment.

Skills and attitudes

But knowledge and practice are not enough: they must be complemented by the requisite skills. For instance, in the workplace, machines require skills to operate, dismantle and repair, which is why only those who have what it takes to use them are given access to them. Those skilled on the job can evaluate the potential hazards and damages and use the machines in such a way that the best results are, and can be, guaranteed. As it is probably well understood, skills develop with practice. For instance, if you have never played a football match, it is difficult to imagine a context in which anyone would be interested in your foot balling skills. By the same token, skills are needed to guarantee safe living. In addition; however, we need positive attitudes. This is because attitudes or dispositions go a long way to determine whether we can be safe or not. You have no doubt often seen otherwise knowledgeable people dumping refuse in the drainage, not because they are not aware of the dangers but simply because of their poor attitude. They want to cut corners and do not seem to care whether or not their actions eventually constitute hazards to the community.

Truth be told, safe living is impossible without a positive attitude to safety. A person who has a positive attitude towards safety is said to display the following characteristics:

1. Alertness;
2. Precaution;
3. Appreciation;
4. Thoughtfulness;

5. Regard for safety of others;
6. Respect for rules and regulation;
7. Orderliness;
8. Patience;
9. Willingness to accept convenience; and
10. Pride in safety achievement.

Knowledge, practice, skill and attitude towards safe living can be acquired through and organized safety education programme which should involve:

(i) Understanding the many hazards that persons must encounter in their various daily activities;

(ii) Developing attitudes that will predispose them to adjust properly to their environment; and

(iii) Mastering skills that will enable them cope with potentially dangerous situations.

Self assessment

1) What does safe living mean?
2) What are the valuable assets for a safe living?
3) Define Safety

4.0 CONCLUSION

From the discussion so far, it will have become clear that safe living is more than a theoretical construct; it involves conscious action. It involves avoidance of substance abuse, guaranteeing the security of residence and fostering harmony in the neighborhood. In addition, it involves reduction or outright elimination of the factors that cause stress and tension in the home and neighborhood. It involves an intricate chain of factors including knowledge, practice, skills and attitude. Needless to say, these factors are interwoven.

5.0 SUMMARY

The areas covered in this unit are:

- The Definition of Safety

- The importance of safety and safe living
- Safety knowledge, practice and attitude

6.0 TUTOR-MARKED ASSIGNMENT

1. Discuss the concept of safety and safe living
2. Explain the importance of safety and safe living
3. Describe safety knowledge, practice and attitude

7.0 REFERENCES/ FURTHER READING

Udoh C.O. (1991).Accident prevention and safety Education (1st edition). University of Ibadan.

Safety and industrial hygiene (2017).Safe hazard. https//industrialengineeringnotes.blogspot.com

UNICEF (1992) Basic Science and Health Education for primary schools in Uganda.www.n3dl.org/gsd/mood.

UNIT 2 SAFETY EDUCATION AND SAFETY EDUCATION PROGRAMMES IN SCHOOLS

CONTENTS

1.0 INTRODUCTION

Acquiring knowledge on safety should be paramount in our schools and society, as education encourages people to keep safe and live healthily.

2.0 OBJECTIVES

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

- Define safety and safety education.
- Discuss the importance and relevance of safety programmes in schools.
- Discuss the importance of individual awareness of the increasing environmental hazards in our community.
- Explain the models for organizing safety in Nigeria.

3.0 MAIN CONTENT

3.1 Safety Education.

According to Udoh (1991), safety education is the process of providing or utilizing experiences for favorably influencing understandings, attitudes and practices relating to safe living. It therefore involves the teaching of specific knowledge, skills and understanding that people need in order to

stay safe in a given situation. This then means that the goal of safety education is to enhance safe and healthy living.

As the expert noted, accidents statistics are often quoted as an important justification for safety education in schools, because they occasion deaths and serious bodily harm or injury. Whatever activity we engage in, it is important to play by the rules. After all, life, as it is often said, has no duplicate. This is why shortcuts, including speeding, driving rickety vehicles, walking railway tracks, swimming in unprotected and infested pools, are antithetical to safety.

Many Nigerians, in spite of enlightenment and education programmes organized by the Federal Road Safety Corps (FRSC) and various government organizations periodically, hold to the belief that whatever happens to them, including accidents, is the will of God. As a matter of fact, such people often resort to the use of proverbs justifying needless and baseless submission to what is erroneously thought to be the divine will. It is often the case, for instance, that road transport workers in the country fail to make necessary checks and repairs on their vehicles. Many drive to and from major cities conveying hapless passengers with worn-out tires and vehicles with faulty breaks telling anyone who cares to listen that they will make the necessary repairs "very soon" and restating the belief that every life is in the hands of God. In short, people remain adamant and indifferent to safety simply because they are careless and do not appreciate the enormity of the situation they are in until they have been involved in accidents, often with devastating consequences. Sometimes, it takes the death or grievous bodily injury to friends or loved ones before people become conscious of safety needs and rules and take necessary steps to prevent a recurrence.

3.2 Safety Education programmes in Schools

It is difficult to disprove the view that schools are critical infrastructure entrusted with the responsibility of creating responsible individuals of tomorrow. No one would doubt the fact that to ensure effective teaching and learning, a safe and secure environment is *sine qua non*. Students, teachers, administrative staff, security guards, cooks, and every other group of persons in the school environment need to be safe. This is why safety education programmes should be advocated in schools. Schools must embark on programmes on safety education in order to educate school children and students on the importance of safety and safe environment.

School safety has been defined as creating safe environment for children and students, starting from their homes to their schools and back. This would mean that they are free from any form of abuse, violence, psycho-social issues, disaster, fire, injuries, among others.

Why Safety Education In Schools?

Keeping schools safe is important because on leaving home every morning, children, in particular, will look forward to being in a comfortable environment that is in many respects another home away from home. Promoting school safety therefore creates a positive learning environment that can enhance growth and development. To be sure, the school is not the only place where safety education can be carried out. Before safety in school, there must be safety at home. It has been said, with justification, that the level of safety that obtains in any home is very much dependent on the knowledge, practices, skill and attitude of the adults towards safety. Safety education in the home is imparted by example and is therefore largely unstructured.

Schools, by their very nature, are a structured environment where learning takes place and teaching is central, unlike the home where any teaching that occurs in largely informal and not elaborately planned ahead of time. Safety education needs to be emphasized in the school curriculum to ensure the learning is done, not the hard way through unpleasant experiences. In school, all the factors and variables connected with accidents and safety can be discussed with the use of visual aids and research findings, to impart appropriate knowledge, inculcate appropriate skills, modify attitude, and improve behavior as it relates to safe living.

Teaching for safety

By now, it should be clear that safety education involves the impartation of specific skills, knowledge and understanding that pupils need in order to be safe in school and elsewhere. It should enable students to discover things for themselves. This goes beyond talking about safety and giving tests. Students need to be made aware of the dangers posed by unsafe practices. They should be shown how and why unsafe conditions or environment lead to undesirable events which may result in damage to property, fatal injuries or death. Teaching for safety therefore must be geared towards methods that will enable students to have confidence in themselves and to make corrections where necessary, knowing that their lives depend on it. The choice in the case of safety education will be dependent, among other things, on the: objectives to be attained; age of the group or students;

skills and abilities of the class members; intellectual capacity of the class; experience of the group; individual and group differences; space and time available; equipment and facilities available; competence, interest and ability of the teacher; and personality of the teacher.

In teaching for safety, procedures such as demonstrations, interview, questions and answers, oral reports, field trips, lectures, lecture-discussion, class discussion, experiments, problem-solving, panel presentation, review and survey, brainstorming debates, creative activities are all involved.

3.3 Patterns of instruction in safety

The four patterns for instruction in any health unit such as safety are incidental, integrated, correlated and direct teaching. Direct teaching is used in distinct subjects within the school curriculum like Mathematics, English or Geography; and when a teacher in Health Education includes a unit on safety in his regular Health Education course or curriculum, while correlated teaching approach uses other subjects fields. This involves building safety units into other school subjects which offer many opportunities. The following subject areas have been suggested as offering best opportunities for correlation with safety by the board of education of the city of New York for elementary and junior high school grades 3: Science, Social studies; Health Education, Language Art; Arithmetic (quantitative thinking); Art and Music; and Shop. This method, however, has some disadvantages, namely that teachers in many of these areas are not trained in safety education and will not make it a priority. In integrated teaching, safety is taught through other subjects, all with a focus on a common safety problem, with each subject making an input into finding solution to the common safety problems. Finally, incidental teaching is used often when disasters occur. Teachers latch unto the opportunity to teach safety education. Obviously, this approach is limited since it requires mishaps to occur before students are taught about safety.

The learning activities in the teaching for safety should provide opportunities for students to think quickly, to analyse problems, to weigh facts logically and to make the correct decision(s) and finally go on to implement such decisions. A safety education programme will include such procedures as lectures, lecture-discussion, class discussion, question and answers, demonstration, brainstorming debates, creative activities, solving problems and reports, field trips, interviews, guest speakers, project (individual and group) review and survey. In view of the above analysis, this requires schools to have safety education programme as part of the curriculum and must be able to demonstrate learning outcomes.

4.0 CONCLUSION

In this module you have learnt:

- Definition of safety education
- Safety education programmes in schools.
- The pattern of instruction in safety education
- Reasons why safety education is important in schools

5.0 SUMMARY

You have been introduced to safety education programmes reasons for safety education in schools by discussing its meaning and why safety education programmes is important in schools.

6.0 TUTOR-MARKED ASSIGNMENT

1. Define safety education
2. Explain the importance of safety education in schools
3. Discuss the pattern of instruction in safety education

7.0 REFERENCE/FURTHER READING.

Udoh C.O. (1991).Accident prevention and safety Education (1st edition). University of Ibadan.

UNICEF (1992) Basic Science and Health Education for primary schools in Uganda.www.n3dl.org/gsd/mood.

UNIT 3 MEANING, TYPES, AND CLASSIFICATION OF ACCIDENTS

CONTENTS

1.0 INTRODUCTION

Accidents are considered an important factor in natural selection or survival among living things, including an unorganized and uncontrolled environment. This makes accident appear as an inevitable phenomenon that must happen. But man, through his ability to organize and control his environment, is capable of reducing the impact of this phenomenon through an attempt to create a safe environment.

2.0 OBJECTIVES

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

- Define accident
- Explain the classification of accidents
- Discuss types of accident
- Discuss the classes of accident

3.0 MAIN CONTENT

3.1 What is accident?

Accidents are a phenomenon to which every one of us is susceptible. They could lead to serious injuries, death and damage to property. Advancement in science and technology has increased the potential for accident events with their consequences. Everyone should develop competence in recognizing hazards in our environment, attempting to remove needless ones, compensation for those we cannot remove and avoid necessary ones.

Accident has been defined as an unplanned unintended or unanticipated act(s) or event(s) which result in either injury, death, or damage to property (Udoh,1991). This definition appears to be deficient; it does not take into account the series of actions and events which resulted in some unanticipated or undesirable consequences. This means that focus should not be based mainly on the accident itself but also on the unhealthy related conditions, such as death or injuries or incapacitation. This shows that emphasis is placed on consequence rather than the series of events that lead to accident. Thus, what is referred to as accident depends on whether or not it caused injury. But from a legal point, the emphasis is on the antecedent of an accident in order to determine liability (Udoh, 1991). Tygerson (1997) is of the view that it is possible to study a class of events quite independently from consequences. Having pointed out that it is doubtful that any simple definition would cover all events resulting in the concept known as accidents.

We proposed the following definitions:

An accident is a non-deliberate, unplanned event which may produce undesirable effects (injury, damage to property or death) and is preceded by unsafe, avoidable act(s) and condition(s). The following can be deduced from the definition above.

1. Non-deliberate Act

   This includes accidents such as falls, and drowning as well as disasters such as floods and earthquakes.

2. Unplanned event

   This implies the occurrence of something unexpected and unpleasant. The event must have been unforeseen and thus uncontrollable.

3. Undesirable effect

This is the consequences of or results from an event which is detrimental to health and well being. Safety education seeks to avoid events that lead to undesirable effects such as injuries or death.

4. Avoidable Events

This refers to events such as accidents which could have been avoided if care were taken or exercised as a result of safety awareness.

5. Unsafe Act(s):

actions caused by human indiscretion or errors of judgment which may lead to accident and or undesirable effects.

6. Unsafe condition(s):

This refers to those conditions in our environment such as carves in portions of Highways, slippery walls or floors, etc., which result in accidents.

7. Safety:

This refers to freedom from hazards: safety is relative protection from exposure to hazards, since it almost impossible to completely eliminate all hazards.

8. Hazard:

This is a condition which has the potential for causing injury or death. Examples are fire, gas explosion, gas leakage, floods and train disasters.

9. Risks:

This is an expression of possible con which is usually indicated by the probability of an accident occurring.

10. Disaster:

This is a saddening occurrence which results in the death and injuries to a large number of people.

3.2 Classification of accidents

Accidents can be classified either by types such as motor vehicles, falls, machines, drowning, fires (and accidents associated with fires) firearms, poisoning (solid/liquid, gases/vapours) etc., or according to classes of accidents such as motor vehicle/highway, workplace and within the community setting. In both classifications, three elements are always present – the host, the agent, and the environment. Look at the following examples with motor vehicle and fall accidents.

Motor Vehicle Accidents		Fall Accidents	
HOST (Driver)		HOST (Individual)	
AGENT	ENVIRONMENT	AGENT	ENVIRONMENT
(Motor Vehicle)	(Slippery Road Surface)	(Rug)	(Jagged rug edges)

All three elements must be present for accident to occur. One might say accidents operate on the ”All or None” law.

3.3 Types of Accidents

Motor Vehicle Accidents

These involve all mechanically or electrically driven highway transport vehicles in motion, both accidental events which result in serious injuries and or death fall under this type of accident.

Fall Accidents

These are accidents which result from falling from one level to another, such as from a tree branch or from the stairs in a house, or on the same level such as on a slippery floor, bathtub or slippery ground surface.

Drowning Accidents

These result from boat or canoe accidents and those resulting from swimming, playing in water or falling in water.

Fire, burns and accidents associated with fire

These include accidents from fires, burns including injuries sustained from conflagrations such as asphyxiation, falls and being struck by falling objects, but exclude burns from hot objects or liquids.

Machinery Accidents

These comprise all those accidents involving all types of machinery both in the industries and mechanized farms as well as in homes.

Poisoning by solids and liquids

These include accidents resulting from medicines as well as commonly recognised poisons included also are poisonous mushrooms, fruits and leaves

Poisoning by gases and vapours

This includes accidents due to carbon monoxide arising from incomplete combustion, involving cooking stoves, heating equipment and vehicles with the engine on. It excludes accidents conflagrations associated with transport vehicle in motion.

3.4 Classes of accidents

Accidents can be classified either by types such as motor vehicles, fire, machines etc., or according to classes of accidents such as motor vehicle/highway, home, workplaces and within the community.

Motor vehicles: These include those accidents which involved mechanically and electrically driven high-transport vehicles in motion both on and off the highway or street.

Workplace accidents: These include those accidents which arise out of and in the course of gainful employment or work except:

1. Work injuries to domestic servants, and
2. Injuries occurring in connection with farm are classified as home injuries.

Home Accidents:

These are accidents in the home and on home premises to occupants, guests, as well as trespassers. It also includes domestic servants but excludes other persons working on home premises. An example is a hired plumber working on a home plumbing problem.

Public Accidents: These include accident in public places or places used in a public way, not involving motor vehicles. Most sports and recreation death are also included in public accidents, but it excludes accident in the course of a person's employment. Each of these accidents is often divided into accident types. For example, the types of public accidents include:

1. Falls
2. Drowning
3. Firearms
4. Fires, burns and deaths associated with fire
5. Air transport
6. Water transport
7. Railroad transport etc

Home accidents will include:

1. Falls
2. Drowning (in the bathtub)
3. Gas poisoning
4. Food poisoning
5. Burns and death associated with fires
6. Cuts, and
7. Electric shock

4.0 CONCLUSION

Accidents could be any of the following such as motor vehicles, falls, machines, drowning, fire, Firearms, poisoning, which could be solid, liquid and gases or vapours, home or workplace accident. In all of the above forms of accidents, three elements are always present: the host, the agent, and the environment. All three elements must be present for accident to occur.

5.0 SUMMARY

This unit focused on the following areas;

1. The definition of accident
2. Explanation of the classification of accident
3. Types of accidents.
4. The classes of accidents

6.0 TUTOR-MARKED ASSIGNMENT

1) Define accident in your own way.
2) Outline the classification of accident
3) List the types of accidents that commonly occur in your environment.
4) Discuss the classes of accident.

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UNIT 4: CAUSES AND PREVENTION OF ACCIDENT

CONTENTS

1.0 INTRODUCTION

Accidents are overtly or covertly caused by human factors. It can also result from unsafe human behavior and or environmental hazards. This unit will explain the causes and prevention of accidents in our community.

2.0 OBJECTIVES

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

1. Explain the risk factors related to accident
2. Discuss the type I &II accident proneness
3. Describe the four functions of behavioral models for accident prevention.

3.0 MAIN CONTENT

3.1 Causes of accidents

Risk factors related to accident are discussed below

1) Risk-associated work Environment

There are conditions in place of work that can cause harm to workers. These conditions include: bad staircases, passages that are smoke-filled, floors that are slippery and uneven (as these could lead to falls), a poorly illuminated condition/environment which could cause vision impairment, poor ventilation which can lead to personal discomfort arising from heat, and irritation/toxic

problems. Others are disorderly movement and arrangement of equipment, as well as unsafe storage of chemicals, or inflammable substances/liquids with low flash-point, and so on.

2) Unsafe machinery

This is associated with the operation of machines. Injuries from unsafe machinery include abrasions, cuts incised wounds, puncture wounds, lacerations and outright amputation of a finger, or limb. Specific risk factors for these forms of injuries include the operations of faulty machines; inability to fix the machine parts adequately and inadequate knowledge about the working principles of the machines.

3) Human factors

a. Inadequate knowledge

Knowledge in matters of safety is essential to man because it enables him make necessary adjustments to his technological environment in order to live a safe and satisfying life. But unfortunately, knowledge of common safety rules is not as widespread as it should be, and quite often the information available is so spatial or superficial that man does not have adequate background to enable him to act sensibly for his own safety and the safety of others. For example, many a driver knows that speeding results in many accident events, but he fails to understand that even a speed of 50 to 56 km/h in traffic can be more hazardous than twice this speed on the high way. Another example of unhelpful partial knowledge is the case of being aware that electricity is dangerous, but being ignorant of the fact that standing in a pool of water which has contact with electric current would lead to death. In other words, many persons are involved in accident events simply because of ignorance.

b. Improper Attitudes and Habits

How we do things, the importance we place on what we do and why we do certain things or our failure to do certain things depend largely on our attitude. If a person has a positive attitude towards the needs to consult a doctor when ill he will not indulge in self-medication. In the same way, a person who has a positive attitude towards the safety will arrange to repair his broken chair as soon as discovered or at least remove it from where it may be used. A car owner who has a positive attitude towards safety will immediately run his car to a mechanic workshop when he suspects something might be wrong with his brakes. Taking a chance, procrastinating, driving too fast, doing welding work without protective gears, are all signs of improper attitude and habits which may lead to serious accidents.

c. Inadequate Skill

Accidents sometimes occur because people attempt to perform some feats for which they do not possess the ability or skill. An inexperienced swimmer is almost likely to drown because he lacks sufficient swimming skill. Sometimes people with sufficient skills have been involved in accident events when the level of skill drops as a result of physical factors such as poor vision, fatigue, muscular weakness, intoxication, or intense emotions. These factors, especially emotional pressures and intoxication from alcohol or some other drugs may also influence attitudes which make the individual ignore the need for safety in their behavior or actions.

d. Unsafe Behavior

Man is known to lag behind the changes that occur around him. In other words, man thrives on tradition; in the way things have been done. As a result, he has often not learned how to live safely amidst the powerful forces around him. Traditions and habits he was used to allowed relaxed carefree behavior in circumstances that now demand presence of mind and alertness for a safe living. Think of certain things you do sometimes without giving a thought to it or believing you are smart enough to get away with it or without thinking of how it will affect other persons. You cross the street without watching for traffic; you broke one of your favorable dishes and threw the pieces in the garden in anger; you plug on your electric stove and leave it there indefinitely; you smoke your cigarette in bed and so on. These are all unsafe behaviors which could lead to serious accidents. More than half of all accidents that occur can be prevented if the victims or perpetrators of such accidents had reacted properly to their environment.

e. Faulty Gadget and machines

Faulty machine part and working gadgets have been responsible for a considerable number of accidents in the various accidents settings such as the homes, schools, workplace and public highways. E.g. faulty machines in factories have been known to cause fatal accident. A fault in baulker lift, chain pulley worn-out parts of machines can lead to accidents; an automobile with brake failure or free steering wheel while in motion usually end up in an accident. Burst tyres while in motion have killed many motorists and their passengers. Also at home, faulty electrical appliances and homes chores machines have been responsible for a good deal of home accidents.

Other factors

Other natural factors like rainstorm, flood, earth movement/earthquakes, lightning, thunder, or the collapsing of weak building.

a) Improper personal dispositions like willful disregard for the rules of safety (working without safety gear), operating under the grip of extreme fear, mental instability, reckless behavior, impatience, wearing of long necked-ties, flowing gowns and shirts or magnetic materials, all of which could be trapped by operating machinery.
b) Physical/physiological disability, such as auditory impairment, poor vision, ill-health, influence of alcohol, overweight, accident proneness, fatigue, poor reaction time, and other forms of bodily problems.

3.2 Accident prevention/control

Accident prevention can be described as the preparation, plans and actions that are taken to stop or avoid an accident so as to prevent it from happening.

Accident is classifiable as unexpected and unplanned events giving an increased risk of injury, ill-health, death and property loss, damage to the environment, or any combination of the above. The prevention of accident includes the sum total of measures taken in an attempt to escape from injury, save lives, lessen the degrees of injury, cut down on possible loss of properties, compensation cost and treatment, etc. Accident is bound to occur measures to prevent it are not put in place. Prevention of accident is achievable by cooperation and commitment of everyone concerned.

Accident proneness

There have been speculations that some individuals are prone to accidents, no matter how careful they try to be. This speculation is borne out of the fact that some individuals generally have more than a fair share of accidents. Accidents proneness has therefore been classified into type I (Short term) with two subtypes, and type II (long term) with three subtypes by Fredrick Me-Guire

Type I Accidents	Crisis Reaction condition
Proneness (short term)	Reaction to transient condition
Type II Accidents	Character conditions
Proneness (long term)	Intra-psychic conditions
	Physical condition

Type I Accident Proneness

Sub-Type I Crisis Reaction: Example is a student worried about grades or a father worried about financial burden. Both are caused by stressful situations.

These are short-lived and the person concerned gets over his accident proneness when the crisis is resolved

Sub-Type II	Reaction to transient condition: this happens to an otherwise stable and normal person, who may be under pressure such as recovering from an illness which leaves him tired or overexerting himself which equally leaves the person tired and fatigued. The tiredness and fatigue consequently become a contributory factor to cause of accident or accident-prone. Again this situation is short-lived. It goes away with improved health condition.

Type II proneness

The type II accident-prone individuals are those who have relatively constant and long term pressures emanating largely from internal sources. There are three sub-types: character condition, intra-psychic conditions and physical conditions.

Character condition

There are those who possess the daredevil character traits usually identified by the behavior, because they attempt things which most other will not dare, such as breaking the law at will, running through red light at junctions, disobeying stop orders from traffic wardens at street/road junctions or going at top speed on the highway despite warning that there is serious danger ahead. These people are more likely to get involved in accidents more often than normal. Maturity with age, education, marriage or responsibility could change this dare-devil character trait.

Intra-Psychic Conditions

These conditions vary considerably and are characterized by such symptoms as tension, depression, irritability and compulsion, all of which may predispose accident. Conditions of this nature may last from several months to many years but can be overcome with treatment.

Physical Conditions

Conditions such as sterility, untreated diabetes and failing eyesight may hamper the ability of the sufferer to perform safely, leading or resulting in accident(s).

All the types described above may overlap or combine to produce accident-prone person. Everyone at one time or the other is accident-prone. When a person is in a state of accident proneness, accident may not occur, but the chances are that it is more likely to occur.

Prevention of Accident

Since most accidents are predictable as well as behaviorally caused, they may be avoided if appropriate counter measures are adopted. The application of counter measures is the best

approach to accident prevention and this can best be attained through a model for the modification of human behavior which may involve risk. The model is known as "Behavioral Model for accident prevention" and has four functions:

1. Identification of the relevant causes (1)
2. Prediction of their consequences (P)
3. Decision upon a course of action (D) and
4. Execution of the decision (E).

How the Behavioral Model (IPDE) for Accident Prevention Works

Identification: The first function of the model is to get a complete picture of the environment so as to identity (or perceive) objects or changes which may require offsetting actions.

Prediction: Following the identification of important elements in the environment and their relationship to each other, the person must then predict (judge, evaluate or assess) possible future relationship and outcomes. In other words, the person evaluates the nature of hazards(s).

Decision: A course of action is formulated with the intention to execute it. In other words, the person makes a decision in the light of his predictions (evaluation or assessment) of his environment.

Execution: A person takes an appropriate action guided by his identification, predictions and decisions relating to the hazards in the environment.

The complement of the entire four human functions leads to safety and safe living. An error in any of the four functions may result in injury or accident. For example, a housewife may identify correctly that there is water on the floor; predict that walking on it may result in possibility of a fall; decide to mop it is the best action, but fail to execute the action and the result is a nasty fall leading to a fractured arm –an accident that could have been avoided or prevented.

Accidents will continue to occur if preventive measures are not taken. Accident prevention can be achieved by commitment and cooperation of all concerned.

4.0 CONCLUSION

Causes of accidents are attributed to human and environmental factors. Accident is generally accompanied by economic and social consequences. Accident prevention requires identification of objects or changes in the environment.

5.0 SUMMARY

This unit discussed causes and prevention of accidents. Accident proneness detailing the type 1 and type 11 proneness was specifically explained. Prevention of accidents therefore, requires conscious efforts to identify and understand one's environment.

6.0 TUTOR-MARKED ASSIGNMENT

1. List the causes of accident in your environment
2. Describe the different types of accident proneness
3. Identify the four functions of behavioral models for accident prevention

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MODULE TWO

Unit I: Meaning and types of Hazards, Description of Environmental, Industrial Home and School hazards.

Unit 2: Industrial and Workshop Safety

Unit 3: Community and School Environment Safety

Unit 4: Road Signs and Road Safety Precautions.

UNIT 1: MEANING AND TYPES OF HAZARDS; DESCRIPTION OF ENVIRONMENTAL, INDUSTRIAL, HOME AND SCHOOL HAZARDS

CONTENTS

1.0 INTRODUCTION

One of the root causes of workplace injuries, illnesses and accidents is the failure to identify or recognize hazards that are present or that could have been anticipated. This unit explains the conceptual definition of hazard, differentiate hazard from risk and instil the understanding of the common types of hazards. The students would learn the impacts of hazards on health, environment and equipment. Also, the students would learn some important hazard assessment and management tips.

2.0 OBJECTIVES

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

1. Define and explain the types of hazards
2. Describe environmental, industrial, home and school hazards

3.0 MAIN CONTENT

3.1 Meaning and types of hazards

The word hazard is sometimes confused with the term "risk" which explain why many people use the terms interchangeably. Hazard is any source of potential damage, harm or adverse effects to a person, the environment, equipment, property, economy or organization. A hazard could be a thing (such as object), situation (like changes in workstations and processes), conditions (such as tools and equipment worn-out) or attitude/behavior (like poor maintenance culture). Risk, on the other hand, is the probability that harm (injury, illness, death or damage) could occur from exposure to hazard. Therefore, hazard simply means threat or future source of danger with a potential to cause harm to:

- People-injury, stress, disease, death
- Human activity- economic, educational, psychosocial, etc.
- Property- property damage, economic loss
- Environment- loss of fauna and flora, pollution, loss of amenities.

Types of Hazards

Hazards can be classified into different types in several using different criteria. The popular criteria often employed include energy source, origin and effects of the hazards

1. **Based on Energy Source**

Biological Hazards: They are associated with biological agents that are harmful to living organisms, and include wastes from hospital and research facilities that contain pathogenic organisms. These agents may be dispersed in the environment via water and air. Biological hazards include:

- ❖ Blood and other body fluids
- ❖ Fungi/moulds
- ❖ Bacteria
- ❖ Viruses

- Plants
- Animals
- Insects
- Animals droppings

Chemical Hazards: These are chemicals in which by virtue of their intrinsic properties can cause harm or damage to humans, properties the environment. Chemicals especially those in unlabelled containers can cause illness, irritations, breathing problems to humans when exposed to them. Such chemicals include:

- Liquids cleaning agents, paints, acids, alkali
- Vapours and fumes from welding or exposed solvents
- Gases like acetylene, propane, carbon monoxide, helium, hydrogen sulphide
- Flammable materials like gasoline and explosive chemicals
- Pesticides

Physical Hazards: These are naturally occurring processes in the environment with the potentials to create loss, harm or cause damage. Examples include:

- Natural disasters like flood, earthquakes, hurricanes, lightning
- Radiations like Electromagnetic force (EMF), radio waves
- High exposure to sunlight/ultraviolet rays
- Extreme temperatures
- Constant loud noise

Ergonomic Hazards: They are physical conditions that when exposed to, may cause injury or damage to the musculoskeletal system such as muscles, ligaments, tendons, nerves or bones of the back, wrists, ankles or knees; and can occur both occupationally and non-occupationally at schools, offices, homes, public spaces and facilities. Ergonomic hazards occur as a result of:

- Improper adjustment of workstations/chairs
- Frequent lifting of (heavy) objects
- Poor posture
- Repetitive awkward movement

- Vibration
- Poor lighting

Mechanical Hazards: They involved machinery or industrial processes with the potential to cause damage, harm or injury. Objects that constitute mechanical hazards include:

- Moving vehicles, aircraft, airbags
- Protruding/sharp machine parts
- Revolving objects
- Compressed gas and liquids

Psychosocial Hazards: These are hazards that affect the psychological and social wellbeing of an individual at the workplace, resulting in frustration, occupational stress, psychological trauma and at times workplace violence. Psychosocial hazards are related to:

- Work design, organization and management such as overtime, leave, work-hour requirement, job security
- Economic content of work such as salaries/wages, insurance
- Abuses/molestations such as sexual abuse, verbal abuse
- Racism and name-calling

2. **Based on effects of the hazards**

Health hazards: These are hazards with multiple sources of energy which usually cause acute or chronic illnesses. They include:

- Solvents, paints, toxic dust, gasses, vapours (chemical hazards)
- Loud noise, radiation, extreme temperature (physical hazards)
- Pathogens (biological hazards)
- Heavy lifting, vibration, awkward repetitive motions (ergonomic hazards)

Safety Hazards: These are the most common workplace hazards and they include:

- Spills on the floor, cords rolling across the floor, blocked aisles
- Working from height such as scaffolds, ladders, roofs
- Unguarded moving machinery parts

- ❖ Electrical Hazards such as frayed cords, missing ground pins, improper wiring
- ❖ Confined space
- ❖ Machinery related safety such as tag-out, lockout, boiler safety, forklifts, etc.

- **Economic Hazards:** These are situation or conditions capable of causing damage or loss of property, wealth and the economy. These include:
  - ❖ Natural disasters such as earthquakes, floods, droughts
  - ❖ Conflicts
  - ❖ Sanctions (internationally and locally)
- **Environmental Hazards:** These are hazards that affect the natural environment and the ecosystems. They include:
  - ❖ Earthquakes, floods, droughts
  - ❖ Extreme temperature
  - ❖ Pathogens
  - ❖ Poisonous gases and liquids
  - ❖ Radiations

3. Based on origin of the hazards

- **Natural Hazards:** These are naturally occurring processes with the potential to cause loss of life, property damage, social and economic disruption and land degradation. They include:
  - ❖ Tsunamis
  - ❖ Earthquakes
  - ❖ Volcanic eruptions
  - ❖ Wildfire
  - ❖ Desertification
- **Anthropogenic hazards:** These are hazards due to human behavior and activity. They include:
  - ❖ Loud noise
  - ❖ Nuclear explosion
  - ❖ Compressed gas and liquids
  - ❖ Radiation

- **Environmental Hazards:** These involved any single or combination of chemical, biological and/or physical agents in the environment resulting from either human activities or natural phenomena that negatively impacts the biotic and abiotic factors as well as the environment. These include:
    - ❖ Volcanic eruptions
    - ❖ Hurricanes
    - ❖ Pollutants like pesticides, heavy metals
    - ❖ Industrial wastes
    - ❖ Landslide
    - ❖ Extreme temperature
    - ❖ Radiation
    - ❖ Poisonous gas and liquids

3.2 Description of Environmental, Industrial, Home and School Hazards

ENVIRONMENTAL HAZARDS:

Industrial Hazards: These include any condition produced by industries that may cause injury or death to personnel, loss of products or property. Industrial hazards consist of four principal hazards. This is because industries employ many different processes involving a wide range of different raw materials, intermediates, waste products and final products. The hazards encountered are:

- ❖ Fire: This is the most frequent of the hazards which usually takes the form of skin burns and the severity depends on the exposure time and the intensity of the heat. Fire can also produce toxic fumes like carbon monoxide and cyanides. Physical structures can be damaged either by the intensity of the heat or combustion.
- ❖ Explosion: this is a large “bang” sound that is heard a distance away from the source as a result of the shock wave. Usually, the indirect effects of collapsing buildings, flying glass and debris cause far more loss of life and severe injuries than the explosion. The major types of explosion include:
    - i. Gas explosion: occur when a flammable gas mixed with air is exposed to an ignition source.

ii. Dust explosion: occur when flammable solids, especially metals, in fine powdered form are intensively mixed with air and ignited.

- ❖ Toxic/chemical release: sudden accidental or intentional release of toxic vapors in the air, public sewage systems, rivers, canals and other watercourses is a serious threat to public health with the potential of causing death.
- ❖ Environmental damage: The hazards of fire, explosion and toxic release may pose a severe threat to the environment. Suffice to say that, damage to natural resources such as plant and animal life can have serious long term consequences. For example, the destruction of trees is increasing the effect of global warming and extinction of animals are severely disrupting food webs, causing an increase in pests.

- **Home Hazards:** These are behaviors, events and objects that can cause damage, illness, injury or loss of life and property at home. Homes can be turned into a labyrinth of potential dangers when our valuable tools, decors and gadgets suddenly maraud as home hazards due to negligence, misplacement or miss-use. Home hazards include:
  - ❖ Sharp objects: objects like knives, safety pins, forks, screwdrivers and machetes are household necessities but in the hands of children could be very lethal. Sharp objects like knife could cause serious injury to children and adult alike.
  - ❖ Pools and bathtubs: A lot of drowning do occur at swimming pools and in bathtubs. Bathtubs have been reported to be one of the leading causes of domestic injury and death. Apart from drowning, pool chemicals constitute hazards as some can cause serious allergy.
  - ❖ Stoves/gas leaks and grills: According to the Home Safety Council, residential fires and burns are the third leading cause of unintentional home injury deaths and the ninth leading cause of home injuries. Flame from stoves, gas cookers and grills could cause burns or fire outbreak that could destroy property and various degree of burns.
  - ❖ Electrical appliances/Extension cords: Faulty extension cables and other electrical appliances are the leading cause of domestic fire. In addition, adults and children get electrocuted by these appliances. Children especially those that

always stuff things into their mouth usually get electrocuted when they bite a plugged-in extension cable.

- ❖ Gift wrappers and polythene bags: These are serious potential homes hazards especially to children. Gift wrappers and Polythene bags when wrapped around children's heads obstruct the nose and mouth thereby causing suffocation and death.
- ❖ Balloons: Objects like balloons, beads and parts of toys could block the airways when swallowed resulting in chocking.
- ❖ Corded blinds: Strangulation is another domestic safety hazards which usually happen when there is external compression around the neck. Children easily get things like window blind cords, drawstrings, and necklaces wrapped around their necks which often results in strangulation.
- ❖ Household hazardous wastes: These are discarded domestic items that are hazardous. These items are usually corrosive, toxic and ignitable materials that could be lethal. Examples include spent rechargeable batteries, fluorescent lamps, engine oils, drain cleaners, poisons and fuel. Children have been reported to have chewed and swallowed battery with devastating consequences.
- ❖ Chemicals: Pesticides, herbicides and rodenticides are very toxic and fatalities have been reported when manufacturers' instructions and precautions are not strictly followed. Some harmful chemicals occur naturally in certain geographical formation, such as radon gas and arsenic which could cause illness or death.
- ❖ Lead paint: This is especially bad for children because their developing bodies cannot efficiently eliminate toxic materials. Lead paints are known to be carcinogenic and have been termed hazardous.
- ❖ Poisonous gases: Gas such as carbon monoxide is a silent killer and has been tagged the number-one cause of poisoning death in urban centres. Carbon monoxides are products of incomplete combustion from motor engines, generating sets, ovens and furnaces.

- ❖ Moulds: These are tiny fungi that grow on moist surfaces at homes. They cause allergies and ill-health as well as digesting any material they grow on thereby weakening and damaging them.
- ❖ Wet/Slippery floors: Falls from wet or slippery floors most common home hazards and could spell doom for both young children and older adults. Falls down the stairs have been implicated in 75-96% young children's and older adults' injury.

- **School Hazards:** These are that can cause loss or damage to a school or its occupants. While school is designed to be a place for learning, certain activities, behaviors, item or substances could potentially injure staff and students/pupils engaging in normal day-to-day life in the school premises. Apart from natural disasters like flood, earthquakes and hurricanes that could cause loss and damages, the most problematic hazard is human behavior, particularly extreme violence. School hazards include:
  - ❖ Fire and burns
  - ❖ Dust
  - ❖ Wet floors as a result of spills
  - ❖ Sharp objects like pencils, pens, mathematical instruments
  - ❖ Excessive workloads
  - ❖ Laboratory chemicals
  - ❖ Sexual assault
  - ❖ Physical assault (Bullying)
  - ❖ Verbal assaults
  - ❖ Eyestrain
  - ❖ Pathogenic microbes
  - ❖ Back pains (from poor sitting position and heavy school bags)

EFFECTS OF HAZARDS ON HUMANS

Biological Hazards

- Food poisoning
- Infectious diseases
- Rashes
- Allergies
- Death

Chemical Hazards

- Affects the nervous systems
- Affects the digestive system
- Affects the circulatory system
- Irritation
- Affects cell structure (mutagenic)
- Causes cancer (carcinogenic)
- Causes occupational asthma and lung damage
- Death

Physical Hazards

- Irritation
- Industrial deafness
- Hypothermia (from excessive cold)
- Hyperthermia (heat stroke)
- Heat exhaustion/dehydration
- Death (in extreme cases)
- Giddiness, motion sickness
- Blood pressure and nervous system problems

Psychosocial Hazards

- Stress
- Anxiety

- ❖ Poor concentration
- ❖ Headaches
- ❖ Back pains
- ❖ Heart disease

Hazard Assessment: This is a careful examination of what, in your environment, could cause harm to people, damage, to property or loss of life so that you can weigh up whether you have taken enough precautions or should do more to prevent harm or damage.

Hazard Assessment Guides

1. Identify the hazards
2. Determine who might be harm
3. Determine what might be damage
4. Evaluate the probability of occurrence and decide on control measures
5. Record your findings and implement them
6. Review your assessment and update if necessary

4.0 CONCLUSION

Hazard is any event, phenomenon or activity that has the potential to cause the loss of life or injury, property damage, social and economic disruption or environmental degradation e.g. earthquake, flood, drought, tsunami and cyclone. Types of hazards depend on the classification criteria which include the source of energy, effects and origin of the hazards. Some types of hazards include physical, psychosocial, mechanical, industrial, environmental, ergonomic, chemical and biological hazards.

- **5.0 SUMMARY**
- This unit discussed:
- The meaning of hazards and the various types
- The description of environmental, industrial, school and home hazards
- The steps to hazards assessment
- **6.0 TUTOR-MARKED ASSIGNMENT**

1. Describe the various types of hazards, their causes and consequences.

2. Explain the steps involved in hazards assessment

- **7.0 REFERENCES/FURTHER READING**

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UNIT 2: INDUSTRIAL AND WORKSHOP SAFETY

CONTENTS

1.0 INTRODUCTION

Industrial and workshop safety are policies and procedures in place to ensure the safety and health of employees within a workplace. They involve hazard identification and control according to government standards and ongoing safety training and education for employees. Workplace safety policies prioritize the health and safety of employees in the industries in order to promote the wellness of both employees and employers. Common work safety concerns can include ergonomics, presence of hazardous chemicals, mechanical problems, noise pollution, restricted visibility, dangers of falling and weather-related hazards.

2.0 OBJECTIVES

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

- Define industrial and workshop safety
- Discuss the objectives of industrial and workshop safety
- Discuss the common industrial and workshop accident
- Discuss the effect of industrial and workshop accidents
- Discuss the causes of industrial and workshop accidents
- Discuss the common safety methods
- Discuss the general safety precautions while working in a workshop

3.0 MAIN CONTENT

3.1 Meaning of Industrial and Workshop Safety

Industrial safety refers to the management of all operations and events within an industry in order to protect its employees and assets by minimizing hazards, risks, accidents, and near misses. Industrial safety is overseen by federal, state, and local laws and regulations. The Occupational Safety and Health Association (OSHA) is the primary regulatory body in the United States dedicated to ensuring industrial safety. Industrial safety covers a number of issues and topics affecting safety of personnel and the integrity of equipment in a particular industry.

The following topics are generally discussed:

- **General Safety –** General aspects of safety which are common to all industries
- **Occupational Safety and Health –** Particularly associated with the occupation
- **Process and Production Safety**
- **Material Safety**
- **Workplace Safety –** Safety issues directly related to the workplace setting
- **Fire Safety**
- **Electrical Safety –** Arising from the equipment used
- **Building and Structural Safety –** Including installations as per existing building code
- **Environmental Safety –** Concerns the direct and indirect environmental impact of the industry

3.2 Objectives of Industrial and Workshop Safety

The objectives of industrial safety are as follows:

(1) Industrial safety is needed to check all the possible chances of accidents for preventing loss of life of employee, any damage to machine and material.

(2) It is needed to eliminate accidents causing work slowdown and production loss.

(3) It is needed to prevent accidents by reducing any hazard to minimum.

(4) It is needed to reduce workman's insurance rate and all the cost of accidents.

(5) It is needed to achieve better morale of the employees.

(6) It is required to have better human relations within the industry.

(7) It is needed to increase production means to a higher standard of living.

3.2.1 Common Industrial and Workshop Accident

There are various types of common accidents as follows:

(1) **Near Accident:** It is an accident with no damage or injury. It is also an accident in which there was no injury or property damage but where the potential for serious consequences existed.

(2) **Trivial:** It is an accident with very less damage.

(3) **Minor Accident:** It is an accident with damage and injury more than trivial.

(4) **Serious Accident**: it is an accident with heavy damage and a lot of injuries

(5) **Fatal Accident**: It is an accident with very heavy damage. There may be loss of lives also.

3.2.2 Effect of Industrial and Workshop Accidents

(A) Effect on the Owner of Factory

(i) Direct cost of an accident

1. Cost of the compensation paid to the workers.
2. Cost of the money paid for treatment.
3. Cost of the damaged tools, equipment and materials.

(ii) Indirect cost of an accident

1. Cost of the lost time of injured worker.
2. Cost of the time lost by other employees.
3. Cost of the delays in production.
4. Cost of the time lost by supervisors, safety engineers etc.
5. Cost of the lowered production due to substitute worker.

(B) Effect on Worker

1. The workers may get temporary or permanent disability.
2. If the worker dies, his family loses the earner and the compensation never equals to his earnings.
3. Accident also affects the morale of the employees working in the environment.

(C) Effect on Society

Work connected with injuries put a considerable burden on society, in that:

1 Cost of accidents is included in the products, so the society has to pay more prices for the industrial products.

2. If some industrial workers do not come under compensation act, the need for help from society is much greater.
3. Loss of production hours may cause fewer products in the market. So more prices if demand is more than production.

3.2.3 Causes of Industrial and Workshop Accidents

Heinrich (Herbert W. Heinrich, an American industrial safety pioneer from the 1930s) has estimated that 98% of industrial accidents are due to:

1. Faulty equipment
2. Disability of the employee,
3. Poor discipline,
4. Lack of concentration,
5. Unsafe practice,
6. Mental and physical unfitness for the job

Heinrich's findings indicate that human factor is the main contributor while only a minor proportion (10 per cent) of industrial accidents is due to physical causes, such as faulty equipment or bad working conditions.

Therefore, the general causes of industrial and workshop accidents are:

Human Causes

Accidents may occur while:

1. Working on unsafe or dangerous equipment, reciprocating and moving parts.
2. Operating machines without knowledge, authority, safety devices.
3. Working for long duration of work, shift duty etc.
4. Working with mental worries, ignorance, carelessness, dreaming etc.
5. Not using personal protective devices.

Environmental Causes

1. Working at improper temperature and humidity causes fatigue to the workers.
2. Poor plant layout etc.
3. Inadequate illumination.
4. Improper ventilation in the plant

Mechanical Causes

1. Continued use of old, poorly maintained or unsafe equipment.
2. Use of unguarded or improper guarded machines or equipment.
3. Unsafe processes, unsafe design and unsafe construction of structure.
4. Improper material handling system and improper plant layout.
5. Not using safety devices such as helmets, goggles, gloves, masks etc.

However, the other general causes of accidents in workshops are listed below:

1. Because of inexperience to work with equipment, tools, and machines.
2. Operating machine and equipment without knowledge.
3. Extra curiosity to work without knowing.
4. Due to poor working conditions.
5. Because of speedy work.
6. Inappropriate method to work.
7. Due to the use of improper tools.
8. Lack of discipline.
9. Due to carelessness.
10. Due to overconfidence.
11. Bad working environment.
12. Excessive over times duty by industrial workers.
13. Dangerous materials with which to work.
14. Lack of cleanliness.
15. Due to poor planning

3.2.4 Common Safety Methods

The common methods of safety are as follows:

1. Safety by construction or design.
2. Safety by position.
3. Safety by using fixed guards.
4. Safety by using interlock guards.
5. Safety by using automatic guards.
6. Safety by using trip guards.

7. Safety by using distance guards.
8. Safety by workplace layout and proper working conditions.
9. Safety by proper material handling.
10. Safety by using personal protective devices.

3.2.5 General Safety Precautions While Working in a Workshop

1. One should not leave the machine ON even after the power is OFF and until it has stopped running completely.
2. Operator should not talk to other industrial persons when he is operating a machine.
3. One should not clean, adjust or repair any machine while it is running.
4. One should not operate any machine unless authorized to do so by authorized person.
5. Always check that work and tools on machine are clamped securely before starting.
6. The floor should be kept clean and clear of metal chips or curls and waste pieces.
7. Defective guards must be replaced or repaired immediately.
8. One should not operate any machinery when the instructor is not in the shop.
9. One should not try to stop the machine with hands or body.
10. Always follow safe lifting practices
11. Always keep your body and clothes away from moving machine parts.
12. Stop the machine before making measurements or adjustments.
13. Never wear necktie, rings, and loose-fitting clothing while working.
14. Always wear overcoat or apron.
15. Stop machines before attempting to clean it.
16. Do not attempt to operate a machine until you have received operating instructions.
17. Be familiar with the ‘stop’ button and any emergency stop buttons on the machines.
18. Wash your hands carefully after working to remove oils, abrasive particles, etc.
19. Report all injuries to the foreman.
20. Keep the work area clean.
21. Keep your mind on the job, be alert, and be ready for any emergency.
22. Always work in proper lighting.

Self-Assessment

a. What is the meaning of industrial and workshop safety?
b. What are the objectives of industrial and workshop safety?
c. What are the common industrial and workshop accident?
d. What are the effects of industrial and workshop accidents?
e. What are the causes of industrial and workshop accidents?
f. What are the common safety methods?
g. What are general safety precautions while working in a workshop?

4.0 CONCLUSION

Industrial safety is the management of all operations and events within an industry in order to protect its employees and assets by minimizing hazards, risks, accidents, and near misses. It is important as it safeguards human life, especially in high-risk areas such as nuclear, aircraft, chemical, oil and gases, and mining industries, where a fatal mistake can be catastrophic.

5.0 SUMMARY

This unit discussed the following extensively:

- The meaning of industrial and workshop safety
- The objectives of industrial and workshop safety
- The common industrial and workshop accident
- The effect of industrial and workshop accidents
- The causes of industrial and workshop accidents
- The common safety methods
- The general safety precautions while working in a workshop

6.0 TUTOR-MARKED ASSIGNMENT

1. Discuss the meaning of industrial and workshop safety
2. Explain the objectives of industrial and workshop safety
3. Explain the common industrial and workshop accident
4. Discuss the effect of accidents
5. Explain Heinrich industrial causes of industrial accidents

6. Explain the general causes of accidents in the workshop
7. Discuss the common safety methods

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UNIT 3: COMMUNITY AND SCHOOL ENVIRONMENT SAFETY

CONTENTS

1.0 INTRODUCTION

School is a vital place for learning, acquiring skills and basic attitudes, which are retained with the students all through life. The physical school environment encompasses the school building and all its contents including physical structures, infrastructure, furniture, and the use and presence of chemicals and biological agents; the site on which a school is located; and the surrounding environment including the air, water, and materials with which children may come into contact, as well as nearby land uses, roadways and other hazards. School safety is a conscious and deliberate effort geared towards preventing and/or mitigating hazards by those who know the school and community best. With such synergy, they can successfully:

- assess the safety and security of school buildings, grounds, and surroundings,
- make a hazard mitigation plan and
- implement the plan.

Therefore, a safe school is one that is surrounded by a community that is committed to safety, structurally sound and can withstand potential hazards.

2.0 OBJECTIVES

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

- Define the meaning of community and school environment safety
- Why is school safety important?
- Sample of school safety plans: General policies
- General school safety policies in schools

3.0 MAIN CONTENT

3.1 Meaning of Community and School Environment Safety

A school environment is broadly characterized by its facilities, classrooms, school-based health supports, and disciplinary policies and practices. It sets the stage for the external factors that affect students. A positive school environment is defined as a school having appropriate facilities, well-managed classrooms, available school-based health supports, and a clear, fair disciplinary policy. There are many hallmarks of the academic, disciplinary, and physical environments of schools with a positive climate. Keeping schools safe allows children to look forward to being in an encouraging environment that promotes social and creative learning. When their basic safety needs aren't met, children are at risk for not feeling comfortable at school and may stop showing up, or they may remain on edge throughout the day. Promoting school safety creates an open space for kids to explore, learn and grow.

For students of of all ages, a learning environment that is safe is very essential, without which they will not be able to focus on acquiring the skills necessary for a successful future and education. In a situation whereby violence is a part of an educational setting, the students are affected in one way or the other. Although a child may not necessarily be a victim of casualty in a school environment, there exists a considerably high chance of him or her witnessing violent acts in the educational years. It is important to state that of a very great concern is the issue of school safety at every levels of government, be it local or federal. Boards of schools sit down with parents as well as teachers in order to discuss their plights and suggest solutions. Both the federal and the state governments are making decisive plans geared towards improving safety of schools and law, even as the nation comes to the realization of the dire significance of safety, and how it affects the future of children.

3.2 Why is School Safety Important?

The physical environment of school buildings and school grounds is a key factor in the overall health and safety of students, staff, and visitors. School buildings and grounds must be designed

and maintained to be free of health and safety hazards, and to promote learning. Studies have shown that student achievement can be affected either positively or negatively by the school environment. Policies and protocols must be in place to ensure food protection, sanitation, safe water supply, healthy air quality, good lighting, safe playgrounds, violence prevention, and emergency response, among other issues that relate to the physical environment of schools. School safety is important to protect all students and school personnel from violence that includes:

- Assaults
- Bullying
- Victimization
- Theft
- Classroom disorder
- Fights
- Robbery
- Use of weapons
- Sexual attacks
- Violent crime

3.3 Sample of School Safety Plans: General Policies

The sample of school safety plans included here is meant to give you a general idea of strategies that can be implemented to protect students, teachers, and visitors alike. All learners should be able to go to school and feel secure that they will not be facing physical or psychological harm.

The school safety plan will include the following types of information:

- A vision statement indicating the basic premise that all other policies will be based on. The school should be committed to making sure that all students are given the opportunity to learn in a safe and supportive environment. Teachers and administrators will work together with each other and people in the community, including law enforcement officials, to ensure that student safety is a priority.
- Specific programs and strategies for keeping students and staff members safe will be set out, including keeping the grounds neat and tidy, and security measures taken on a regular basis by staff members.

- A statement regarding the school's social and cultural environment. Teachers and staff members are expected to show concern for their pupils. Students are expected to behave in an orderly fashion. If a student has a concern about his or her safety, they are encouraged to bring it to the attention of a teacher, the principal, or vice-principal so that appropriate action may be taken.

3.4 General School Safety Policies in Schools

Irrespective of the type of a school, be it a parochial or a secular school, all schools have very specific policies that pertain to all aspects of the safety of members of staff as well as students'. Notwithstanding this, there exists a common guide to them all.

Dress Codes

The code of dressing is the first line of defence of a school. One of the many ways of ensuring a level playing field for all students is by ensuring that all students wear appropriate school uniforms. By so doing, identity of gangs by reasons of their dressing is eliminated, together with all possible inappropriate and/or hateful words and slogans on such clothing. School uniforms also removes all possible socioeconomic differences that may have otherwise existed among students.

Discipline/Student Conduct

Most schools make provision for students as well as parents to have the school's handbook. This book typical detail the rules guiding the conduct of students. Schools utilize such avenue to detail their policies. In general, the policies:

- Prohibit the usage of threats and/or languages that depict hatred
- Define exactly what a weapon is
- Prohibit off-campus behavior that affects the school/ student safety
- the school, including activities, functions, as well as events of the school
- Define harassment procedures, as well as their clear/interpreted definition of harassment
- Define what is meant by school property, including fields for sporting events, buildings, buses, areas used for recreation, as well as any other areas that are withing the supervision of the school
- Prohibit the wielding of weapons of any kind in an around any property that belongs to State very specific disciplines that are met-out as the punishment for infractions of any of the rules

Bomb Threats

Policies in handbooks should also spell out very specific guidelines for handling or addressing bomb threats. These guidelines may:

- Prohibit moves, statements, or actions that translates to threats regarding explosive devices
- State in specific terms the process for the authorities of the school to relate with the law enforcement agencies whenever there is an established case of bomb threats and hoaxes
- Define a very clear plan of evacuation for the school
- Prohibit the bringing of a hoax or explosive device to the school property as defined previously
- State very specific disciplines that will be consequential of infractions of any of the rules

Search/Seizure

Whenever there is perceived threat to safety or crime, it may be impressing on school officials to conduct the searching of a student, his or her personal possessions including lockers. Policies of schools should be clear on:

- The details of notice provided to students and parents before conducting a search
- Guidelines for staff regarding how a search is allowed to be executed
- The kinds of methods of search that will be discretionarily used by the school
- The type of action that may be required to follow-up the situation afterwards.

Acceptable Internet Usage

The internet is undoubtedly a very important tool for teaching . However, it is potent enough to impede the safety of students. Policies of a school should be clear on:

- The perimeters for conduct of students
- Acceptable Internet usage on computer systems of the school, tablets, as well as other digital devices
- The right of the school to monitor the usage of the school's internet as well as e-mail services
- The requirement by students and parents to sign an annual contract on internet usage, This contract will, among other things, be an acknowledgment by the parents, permitting the

student to use the school's internet; as well as the student's responsibility as it relates to complying with the guideline of the school

Bullying

A lot of handbooks also detail what bullying means, and the place of online bullying (cyberbullying) as it relates to this context. Such detail will:

- Define the perimeters of cyberbullying
- Define what is meant by bullying, both physical and verbal bullying
- Outline the implications of such actions as it relates to state laws
- Evaluate all procedures of discipline

Crisis Response

All school must put in place a plan for crisis plan which clearly defines an action plan to be implemented whenever there is a natural disaster or violent incidence. Such a plan should address:

- Roles of faculty in the management of the situation
- Guidelines for working together with authorities and local agencies
- Parental crisis notification
- Procedure for evacuation

School Terrorism

The handbook of student also spells out procedures for school terrorism/shooting.

- Outlines the steps required to report suspicious student or adult behavior
- Maintains effective controls for visitor
- Establishes measures to protect students and staff
- Outlines protocols for long-term prevention
- The details for follow-up actions to be taken

Cell Phone Procedures

Because of the the popularity of cell phones in schools, a lot of schools have a policy on no cell phone use. The meaning of this is that students should not have any phone that is turned on, or even present at all during school hours. Any student caught in possession of their cell phone will risk it being confiscated. Some other schools allow the use of cell phones only at strictly specified times, such as for assignments in the school, or at hallways between classrooms. However, this rules vary from school to school.

Sharing of Information

Federal and local laws detail the specific types of information that can be shared between schools, courts, law enforcement agencies, as well as social services. It is the responsibility of district of the school to be aware of these specifications, as well as to also detail procedures for student information sharing. Most of the laws provide for exception in sharing information about student during safety or health emergency.

4.0 CONCLUSION

Safe school environment is an important factor in students' feelings of safety and their overall achievement. Moreover, school staff cannot provide all the services needed to keep schools safe. Therefore, it is important for school staff to work with community leaders and families in a joint effort to establish safer school environments. It is also extremely important to implement culturally competent programs and initiatives to embrace community strengths. Partners can work together to establish district-wide safety policies and practices, implement appropriate violence prevention programming, and offer wraparound services and supports.

5.0 SUMMARY

This unit has provided the following details;

- The meaning of community and school environment safety
- Why is school safety important?
- Sample of school safety plans: General policies
- General school safety policies in schools

6.0 TUTOR-MARKED ASSIGNMENT

1. Discuss the meaning of community and school environment safety
2. Discuss why school safety is important
3. Discuss the sample of school safety plans: General policies
4. Discuss the general school safety policies in schools

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UNIT 4: ROAD SIGNS AND ROAD SAFETY PRECAUTIONS

CONTENTS

1.0 INTRODUCTION

The basic strategy of a Safe System approach is to ensure that in the event of a crash, the impact energies remain below the threshold likely to produce either death or serious injury. Hence, road traffic safety provides methods and measures that prevent road users from being killed or seriously injured. Traffic signs are a source of important information that can ensure our safety and the safety of those around us. It also creates awareness of road rules that can lower chances of accidents. They not only help in the smooth flow of traffic but also guide and warn people on how they should conduct themselves while on the roads. Road signs warn drivers and road users about the safety hazards as well as the conditions of the road; while also guiding them as appropriate.

3.0 OBJECTIVES

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

- Explain the meaning of road signs and their importance

3.0 MAIN CONTENT

3.1 Meaning of Road Signs and Road Safety Precautions

Road traffic safety are the measures and methods employed in the prevention of road users from being severely injured or even killed. Typical road users are cyclist, motorist, pedestrians, horse-riders, vehicle passengers, and passengers of on-road public transport (mainly buses and trams).

Best-practices in modern road safety strategy:

The fundamental plan of action of a Safe System approach is to guarantee that whenever there is a crash, the energies of impact is well below the threshold than can cause either serious injury or death. This threshold will differ between crash scenarios, depending on the protection level provided to the road users that are involved in such incidence. As an example, the survival chances of an unprotected pedestrian that got hit by a vehicle will diminish significantly at speeds that is above 30 km/h, while for a motor vehicle occupant that is properly restrained, the critical speed of impact is 50 km/h and 70 km/h for for side-impact crashes and head-on crashes respectively.

3.2 Importance of Road Signs

It is necessary for everyone to be aware of traffic signs and road rules. Traffic signs can give you important information that can ensure your safety and the safety of those around you and awareness of road rules can lower chances of accidents. Any person applying for a driving license is required to be familiar with road safety signs and traffic signals. They need to go through a written/oral test in order to obtain a driving license. Here are some of the ways in which traffic signs act as a traffic management tool:

- Road signs inform drivers of the correct lanes to take so that they can avoid blockages caused due to abrupt turns.
- Provide significant information about sensitive junctions and curves, speed limit, and presence of hospitals or schools nearby so that drivers can adjust their pace accordingly.
- Inform vehicle owners about available/restricted parking areas, entry and exit points, and more.
- Guide heavy, medium, and light vehicles with proper division of lanes.
- Ensure discipline on the roads by the implementation of lane discipline and overtaking rules.

- Inform motorists about directions to take, potential dangers ahead, and rules to follow on highways.

There are primarily three types of traffic signs that everyone should be aware of. The same are as follows:

Mandatory Traffic Signs

Mandatory traffic signs ensure free movement of traffic on the roads and make motorists and pedestrians mindful of rules, regulations, and prohibitions while using the roads. Violation of mandatory traffic rules is an offence under the law. Traffic signs like ‘One Way’, ‘No Entry’, and ‘Overtaking Prohibited’ are some of the examples of mandatory traffic rules.

Cautionary Traffic Signs

The cautionary traffic signs warn road users in advance about potential hazards and dangers on the roads. It helps drivers to be mentally prepared for any difficulties and bottlenecks while moving forward. ‘Steep Ascent’, ‘School Ahead’, ‘Narrow Road’, and ‘Dangerous Dip’ are some of the examples of cautionary traffic signs.

Informatory Signs

Informatory traffic signs help road users with information about the directions, distance, destinations, alternative routes, and important locations such as schools, hospitals, public toilets, and more. Some of the examples are ‘Right Hand Curve’, ‘Pedestrian Crossing’, ‘Cattle’, and more.

Importance of Traffic Signs and Road Rules

The alarming rate of road accidents is one of the biggest causes of worry. There have been many regulations and rules introduced to promote road safety. However, many of these regulations have not seen much success at the grass-root level. This is why it is important to educate people from an early age so that they grow up to be responsible citizens. Road safety rules are not only limited to be used by motorists and drivers but also by pedestrians, cyclists, and others. While on the road, one must carefully observe traffic signboards and follow the same with patience and consideration. This will not only ensure a smooth flow of traffic by bringing down congestion but also help people avoid potential mishaps while on the roads.

3.3 Federal Road Safety Corps (FRSC) in Nigeria

Federal Road Safety Corps (FRSC) is the government agency with statutory responsibilities for road safety administration in Nigeria. Founded in 1988, the Federal Road Safety Corps (FRSC) operates in all Nigeria states as well as the Federal Capital Territory and is the leading agency in Nigeria on road safety administration and management. In February 1988, the Federal Government established the Federal Road Safety Commission through Decree No. 45 of the 1988 as amended by Decree 35 of 1992 referred to in the statute books as the FRSC Act cap 141 Laws of the Federation of Nigeria (LFN), passed by the National Assembly as Federal Road Safety Corps (establishment) Act 2007.

The functions of the Commission generally relates to:

- Making the highway safe for motorists and other road users.

- Recommending works and devices designed to eliminate or minimize accidents on the highways and advising the Federal and State Governments including the Federal Capital Territory Administration and relevant governmental agencies on the localities where such works and devices are required, and
- Educating motorists and members of the public on the importance of discipline on the highway.

In particular, the Commission is charged with responsibilities as follows:

- Preventing or minimizing accidents on the highway.
- Clearing obstructions on any part of the highways.
- Educating drivers, motorists and other members of the public generally on the proper use of the highways.
- Designing and producing the driver's license to be used by various categories of vehicle operators.
- Determining, from time to time, the requirements to be satisfied by an applicant for a driver's license.
- Designing and producing vehicle number plates.
- The standardization of highway traffic codes.
- Educating drivers, motorists and other members of the public generally on the proper use of the highways.
- Giving prompt attention and care to victims of accidents.
- Conducting researches into causes of motor accidents and methods of preventing them and putting into use the result of such researches.
- Determining and enforcing speed limits for all categories of roads and vehicles and controlling the use of speed limiting devices.
- Cooperating with bodies or agencies or groups in road safety activities or in the prevention of accidents on the highways.
- Making regulations in pursuance of any of the functions assigned to the Corps by or under this Act.
- Regulating the use of sirens, flashers and beacon lights on vehicles other than ambulances and vehicles belonging to the Armed Forces, Nigeria Police, Fire Service and other Para-military agencies;

- Providing roadside and mobile clinics for the treatment of accident victims free of charge.
- Regulating the use of mobile phones by motorists.
- Regulating the use of seat belts and other safety devices.
- Regulating the use of motorcycles on the highways.
- Maintaining the validity period for drivers' licenses which shall be three years subject to renewal at the expiration of the validity period.

In exercising these functions, members of the Commission have the power to arrest and prosecute persons reasonably suspected of having committed any traffic offence.

3.4 Traffic Offences in Nigeria under Section D of the FRSC Art

On every road, there are road users such as motorists, pedestrians, cyclists, motorcyclists, passengers and animals. As a road user, it is expected that the road is used in accordance with the rules and regulations, every road user should be disciplined, careful and considerate to others, to ensure safer roads, thereby avoiding road crashes and or arrest and prosecution. In the exercise of the functions conferred by (510(4) of the Federal Road Safety Corps (FRSC) Act, 2007 establishment), members of the corps shall have the right to arrest and prosecute any person reasonably suspected to have committed any traffic offence(s).

It is therefore an offence to:

1. Be on any road without any lights or faulty lights, signs or reflectors or wrongful use of signals
2. Obstruct any section of the road with vehicles or in any other way that may affect free flow of traffic
3. Use a restricted road where it Is marked "one way" or "no entry"
4. Disobey speed-limits erected at road construction areas or any other road
5. Drive a vehicle without a valid learner's permit; driver's license or any other permit required by law
6. Drive a vehicle without a valid vehicle license of identification mark being displayed
7. Overtake another vehicle wrongfully
8. Disobey traffic light signals
9. Disobey or disregard road signs or pavement markings

10. Drive a vehicle, a two or three-wheel cycle on any road in a reckless or negligent manner that will be dangerous to other road users.
11. Drive a vehicle or motorcycle with forged vehicle papers
12. Drive a vehicle or motorcycle under the influence of drugs or alcohol
13. Drive a vehicle or motorcycle or any mechanically propelled engine that would result in the damage to any public presence, street light, traffic lights, road signs etc
14. Engage in any act of commission or omission by motorists which may constitute hazard to other road users
15. Remove from a vehicle, the sign, "Do not move"
16. Use a road that is under construction
17. Fail to move over to the slow lane to free up traffic flow
18. Uncover gravel or other unstable materials with tarpaulin or strong plastics to stop it spilling on the road
19. Cover number plates at the front and rear sides the vehicle
20. Load a vehicle above the weight or number of passengers required by law
21. Drive a vehicle with projected load
22. Obstruct a marshal in the performance of his duty
23. Drive a vehicle with damaged or shattered windscreen
24. Drive a vehicle with worn tyres or without spare tyre
25. Drive a vehicle that is mechanically deficient
26. Drive a vehicle without fire extinguisher
27. Assault a marshal on duty
28. Corrupt a marshal on duty
29. Fail to report at designated place by a traffic offender
30. Drive a vehicle that emits excessive smoke
31. Drive a commercial vehicle without a passenger manifest
32. Use your GSM phone while driving
33. Driver under 18 years of age
34. Ply the road by commercial drivers and conductors without badges
35. Ply the road without side and inner rear mirrors
36. Smoke or eat while driving

37. Drive a double-decker bus in Nigeria
38. Fail to use your headlight during inclement weather
39. Fail to signal when changing lanes, making a turn or pulling in front of another vehicle
40. Fail to properly secure under-aged children in an approved school safety seat or booster seat
41. Travel in a bed of a pick-up truck by any person
42. Fail to use belts while driving
43. Fail to pay any prescribed fine or other fees under the law
44. Provide incorrect address under the law
45. Reject accident victims by hospital medical personnel
46. Ride a motorcycle without a crash helmet properly strapped to the head and fastened under the chin
47. Drive with one hand

4.0 CONCLUSION

Road traffic signs and rules are essential to ensure road safety and efficient traffic movement. Road signs are put in place to regulate traffic flow, warn drivers of road conditions and safety hazards, as well as to guide travelers' to assistance. The colors and shapes of road signs simplify and standardize road regulations, guidance, directions, as well as warnings, so that everyone can comprehend them. Road sign colors and shapes also represent regulatory commands. It also gives travelers direction and guidance and, as well as warn of any impending hazardous conditions; and road symbols replace words and are internationally recognized.

5.0 SUMMARY

This unit has;

- Defined road signs
- Detailed the importance of road sign and the three types of traffic signs
- Detailed the role of Federal Road Safety Corps (FRSC) in Nigeria
- Detailed the traffic offences in Nigeria under section D of the FRSC act

6.0 TUTOR-MARKED ASSIGNMENT

1. Identify road signs as well as their meaning
2. Discuss the importance of road signs as well as the three traffic sign types
3. Discuss the role of Federal Road Safety Corps (FRSC) in Nigeria
4. Discuss the traffic offences in Nigeria as it applies to the Section D of the National FRSC act.

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Module 3

Unit 1: Principles of Emergency care

Unit 2: Basic Techniques of emergency care

Unit 3: Respiratory emergencies and resuscitation

Unit 4: Haemorrhage: types, classes and causes

UNIT 1: PRINCIPLES OF EMERGENCY CARE

Contents

1.0 INTRODUCTION

One of the essential aspects of understanding medical problems of an urgent or emergency nature is a thorough familiarity with the basic principles of emergency care commonly referred to as first aid. First aid is the art of giving quick and correct emergency care to someone who falls sick or gets hurt either in the home, school, place of work etc. In any injury or illness, there is often much that can be done to ease the pain or discomfort of the victim until medical aid arrives. When medical assistance is not quickly available, measures must be taken by a first aider in rendering emergency care that can save many lives or prevent untimely deaths.

2.0 OBJECTIVES

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

- Define emergency (first aid)
- Differentiate between safety education and emergency care
- Discuss the concept of emergency care
- Identify the principles of first aid treatment
- Identify some conditions that require emergency care

3.0 MAIN CONTENT

3.1 Meaning of emergency care

Emergency care or first aid is the quick measure or care given to the ill or injured persons, to prevent further injury, to lessen pain and to prevent shock. However, in the fullest concept of first aid, much more is involved than rendering of assistance at the time of the accident or illness. In fact, one of the basic principles of first aid is the prevention of accidents and their complications. With safety campaigns, basic instructions in first aid procedure and an understanding of the predisposing factors that may cause accidents, we can go far on cutting down the terrible toll in lives and injuries suffered by people every minute of the day.

3.2 Emergency care and safety education

In Module 1, Unit1 of this course, you have understood the meaning of safety education. Hence; we attempt to differentiate between safety educations and emergency care. While safety education is concerned with the prevention of accidents, first aid or emergency care refers to the immediate and temporary care given in cases of accidents and sudden illness before medical assistance is available. When accidents occur, it becomes important to minimize pain or save life until a medical assistance is available. This is where emergency care comes in. hence; you see that emergency care is not the same as accident prevention or safety education.

Objectives of emergency care

1. Sustaining and saving life at the time of accident or sudden illness.
2. Relieving pain and suffering in the victim
3. Preventing shock
4. Promoting quick recovery

5. Obtaining medical aid or transportation of accident victim or ill person to a place where he can receive proper care.

3.3 Principles of emergency care treatment

Having understood the objectives for emergency, let us look at the fundamental things or elements to be borne in mind in offering emergency care treatment. The first and foremost important thing for the person offering emergency care is speed. He should be fast enough as delay may worsen the situation or even result in the death of the victim. You should remember that the main purpose of giving first aid to injured persons or sudden illness is to prevent further harm, as well as for the purpose of reducing suffering and discomfort in the person.

Complications could arise from injuries if they are not properly handled during emergency care.

Therefore, the first-aider should know what to do, as well as what not to do. There are various measures that are available in offering first aid treatment to accident victims or sudden illness. These measures are explained below:

A. Speed: This is very important in handling emergency care because the end result in many of the injured cases depend entirely upon the early treatment.
B. The victim should not be moved immediately, unless it is absolutely necessary. However, the victim should be moved from the danger zone in cases of poisoning, drowning etc.
C. It is necessary to assess the situation to be able to locate the site of injury and to determine its extent.
D. In the case of a serious injury, first aid treatment should be given in the following order: stop bleeding, restore breathing and prevent shock or infection.
E. Give the victim honest and truthful supportive information to encourage him or her for a quick and better recovery.
F. If the victim is in right frame of mind to talk, try to engage him/her in conversation gently. This will help to reduce tension, eliminate some of the victim's emotional problems arising from the accident.
G. The first aider take a defined plan of action This gives the victim a kind of relief and feeling that at least something concrete is being done to help him/her.

H. Notify any person related to the victim e.g. parents, guardians etc. This is a vital step in an accident situation.

I. In a situation where medical aid does not arrive on time to the scene of an accident, arrangement should be made after first aid treatment for transportation of the victim to the nearest hospital where medical help should be obtained.

Some conditions that require emergency care

Although there are several conditions that require emergency case, few of them will be discussed briefly in this lecture, after which you will be able to think of others and explain how you can take care of them.

A. Wounds

Different kinds of wounds result from accident. It is imperative to be able to recognize these wounds in order to render proper emergency care. There are four types of wound:

I. Laceration, which is caused by tearing of the flesh
II. Abrasion, in which the skin has been scrapped
III. Incision, which is made by a sharp object or instrument
IV. Punctures made by a sharp-pointed instrument

Emergency care for wounds

I. Wounds with little haemorrhage (bleeding) need washing with clean or sterile water and soap. Then place a dry sterile gauze on the site of the wound and apply a clean bandage on it.
II. Wounds with severe bleeding require an immediate action to stop, so as to avoid excessive loss of blood and possible onset of shock. The application of direct pressure on the site of the bleeding with sterile dressing –clean napkin, towel or cloth and a tourniquet as a last resort will stop the bleeding.
III. Wounds inflicted by animals e.g. dog or snake bite should be given immediate and special attention to prevent complications. After receiving emergency care, the victim should be taken to the nearest hospital for medical care.

B) Shock

Shock results when the body does not function properly because of improper blood circulation. There are several factors which can lead to a state of shock. These include: bleeding, broken bones, severe burns, poisoning, reaction to drugs and severe stress and emotions. You should however note that, every injured person is potentially a victim of shock and should be regarded and cared for as such, whether signs of shock are present or not.

C) Poisoning

The first aid for gas or smoke poisoning is the removal of the victim from the danger area. Also, if the victim is not breathing properly, give him/her artificial respiration. If poison has been swallowed, speed and skill in emergency care administration are required. For swallowed poison, give water and milk. Also include vomiting by administering baking soda in water, provided that the poison swallowed is not acid, alkalis or any petroleum product.

D) Epileptic convulsions: If epileptic convulsion occurs to a child in the school, the teacher should take immediate emergency care. Characteristics of epilepsy include; loss of consciousness, convulsions, and kicking and beating about of the legs, hands and head which are then followed by prolonged stupor. After convulsion, allow him/her to sleep and his/her parents should be modified.

E) Nose Bleeding: This is often caused by a blow on the nose. Allow the victim sit upright in a place where he can get fresh air, with his head slightly tilted forward and warm him/her not to blow the nose nor breath through the nose, but through the mouth.

F) Burns: The objective of emergency care for burns is to relieve pain, prevent contamination and shock. Burns may result from either heat, or from chemical.

G) Bone and joint injuries: You were told that the bone is one of the most important tissues that give support and protects other delicate organs in the body. Joint injuries include dislocation of bones, sprains and strains at the joints. Dislocations should be treated as fractures until a medical doctor determines the nature of injury. First aid for sprains and strains include the application of cold pack or ice-bag on the affected part for several minutes. Apply an elastic bandage or adhesive

bondage crises-cross-wise around the affected joint to keep it immovable, then refer the case to a medical doctor for proper diagnosis and treatment.

3.4 First aid box (kit)

In administering emergency care, you can hardly succeed without the appropriate laity and enough items or supplies to be used. Every institution including the home, school workplaces should have adequate first aid kit supplies. These kit and supplies should be constantly checked to ensure that they are constantly replenished as necessary.

The emergency first aid kit and supply items are listed below:

a. Roller bandages (2.5cm by 9cm ; 5cm by 5cm).
b. Absorbent cotton wool.
c. Waterproof adhesive tape/bandages
d. Sterile gauze pads of various sizes
e. Sterile eyes pads
f. Triangular bandages (94cm x94cm)
g. Baking soda
h. Pair of scissors
i. Aromatic spirit of ammonia
j. Tourniquet
k. Analgesic
l. Ice-bag
m. Blankets
n. Hand brushes
o. Safety pins
p. Splints of various sizes
q. Paper cups
r. Table salt
s. Hot water bottle
t. Small bath towel
u. Hydrogen peroxide
v. Measuring spoon.

4.0 CONCLUSION

First aid is the initial emergency care given immediately upon arrival at the scene to an ill or an injured person. Emergency medical science plays a vital role in the nations' emergency and trauma care system, providing response and medical transport for millions who are sick and injured.

5.0 SUMMARY

This unit discussed the emergency care and safety education, principle of emergency care treatment, some conditions that require emergency care and first aid kit.

6.0 TUTOR-MARKED ASSIGNMENT

1. Define Emergency care
2. Explain the principles of Emergency care
3. Discuss conditions that require Emergency care
4. List 10 items in first aid kit.

7.0 REFERENCES/FURTHER READING

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UNIT 2: BASIC TECHNIQUES OF EMERGENCY CARE

Contents

1.0 INTRODUCTION

The basic techniques of emergency care were discussed in this unit. It explains the first consideration in caring for an open wound which is control of bleeding and minimizing infection possibility. It further explains animal bites and treatment care to be exercised to remove foreign body lodged in the body, functions of bandages and types.

2.0 OBJECTIVE

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

1. Define wound
2. Explain how to care for a wound
3. Explain how to treat contusions, animal bites and splinters
4. Discuss types of bandages and their functions

3.0 MAIN CONTENT

3.1 Definition and Care for wound

Wounds

A wound is an injury done by a cut, stab, blow, or tear to the skin tissue. It could be an open wound such as in the case of a cut, stab, and tear, or a closed wound such as in contusion. Wounds are the most common conditions for emergency care. Since there are different types of wounds, it is important that these are recognized in order to give proper emergency care.

Caring for wounds

In caring for most wounds, the first consideration is the control of excessive bleeding since wounds will bleed either externally or internally. Excessive bleeding can be very dangerous if not promptly controlled in one of the special ways described in lecture eleven which is most applicable to the condition.

Preventing Infection: The immediate thing to do to control bleeding especially if the wound is superficial and bleeding is not a serious problem is to reduce the possibility of the wound becoming infected with bacteria. Most wound death occurs not because of the wound itself but because of infections which penetrate into the body through the wound.

One of the best and simplest ways to minimize the possibility of infections is to clean the wound with mild antiseptic soap and water. You must be careful to wash dirt away from the wound and not into it and also be gentle so as not to irritate, injure, or further expose the tissues.

Any soap as long as it is non-irritating, can be used to clean the wounds, for it is better than using ordinary water. It is better if the soap contains antiseptic agent.

The first step in the treatment of any wound is the assemblage of dressings, bandages, scissors and such other articles that you will need. Then, thoroughly wash your hands with soap and water. Be sure that the surrounding that you are going to work in is clean. Where such a condition is not available as in emergency field conditions, you must be extremely careful not to touch the wound with your fingers and keep dressings and other articles to be used from becoming contaminated by the surroundings.

Ensure that you remove any dirty objects such as clothing from the immediate vicinity of the wound, remove any dirt on the surrounding skin and clean the surrounding skin as well as you can, before doing anything directly on the wound.

Dressings meant for direct application to a wound is marketed in specially sealed envelopes which are sterilized in order to be free from germs. You should open the envelope in such a way that you do not touch the part of the dressing that will be placed on the wound.

Avoid the use of a bandage as a dressing for wound because bandages are meant to hold dressings in place. The only time they can be used as a dressing is when there is no available dressing.

If you intend to use a dressing cream on the wound, apply the cream on the dressing and then apply the dressing on the wound. Do not apply the cream directly on the wound.

If the steps outlined above are followed carefully, many germs, dirt and debris will be removed and there will be less interference with the natural defense of the tissues themselves during the healing process.

The treatment of deep wounds is beyond your competence. Do not attempt to wash out any deep wound except under proper conditions, and by competent medical personnel because such wounds require expertise for their effective treatment. The only thing you can do in the way of an emergency care is to apply a thick protective sterile dressing and a firm bandage which helps control bleeding and keep the injured part at rest.

Need for Anti-tetanus Injections

Except for very minor cuts or scrapes of the skin, there is always the possibility of serious infections such as tetanus. In order to minimize the likelihood of tetanus infection, all wounds especially those sustained from street or farm injuries must be subjected to anti-tetanus treatment. There are two types of anti-tetanus injections although you will not be competent to administer them unless you have been professionally trained to do it. These are tetanus antiserum and tetanus toxoid.

Tetanus Antiserum: This serum prepared from the serum of horses that have been immunized against tetanus, contains a high concentration of protective substance known as antibodies which fight tetanus disease. When this serum is injected into a victim who may have been infected with tetanus, these antibodies prevent the development of the disease, in spite of the entry of its germs into the body through the wound.

This process by which an immunity to a disease is acquired by injection of antibodies (antiserum) is known as *passive immunization.* Its effect wears out as soon as it effectively combats the disease for which the antiserum was injected. In other words, it is only effective for the injury for which it was given as the antibodies are lost from the body quite rapidly. As a first aider, you must always advise a person to go for anti-serum injection, *unless* the person has previously been immunized against tetanus toxoid.

Tetanus Toxoid: Unlike tetanus antiserum, tetanus toxoid is prepared from tetanus toxin (the poison for tetanus germs). When this preparation is injected into the body, it stimulates it to produce its own antibodies against the disease. This process by which immunity to a disease is acquired by injection of a toxin (or a toxoid) of the germ is known as *active immunization* and this is one of the most effective methods of controlling and fighting many of mankind's common disease.

Active immunization is much better than passive immunization against tetanus germ. While tetanus antiserum wears out as soon as it effectively combats the disease, tetanus toxoid increases the person's production of antibodies that fight the disease any time. Booster shots also provide permanent protection.

3.2 Classes of Wounds and Treatment

Classes of wounds: Wounds are classified according to their nature of occurrence. The main classes are contusions, lacerated wounds; incised wounds, abrasions (scrapes), and punctured wounds.

Contusions: These are also known as bruises. Contusions are caused by a hard blow which results in breaking the tiny blood vessels in the tissues. These types of wound are simple to treat unless they are extensive or involve a fracture of internal organs. An extensive contusion such as may occur in the buttocks resulting from a heavy fall may present a problem in that the huge pool of blood may become infected with resultant abscess. Cases of this nature call for treatment with ice packs and antibiotics by mouth with hope, that the contusion will heal without becoming infected. If it is infected, there is need for surgical incision and drainage.

Treatment for contusions

1. Apply cold ice bag/pack or ice water to prevent further leakage of blood from the broken blood vessels into the tissue.
2. Rest the injured part so as to minimize further blood flow
3. After an interval of 24 hours or so, apply heat in the form of comfortable hot wet dressing or a heating pad.
4. If a contusion handled as indicated above does not begin to improve within 24hours, or continues to increase in size, the patient should be referred to the doctor.

If the injured person is suffering from Haemophilia (a blood disorder characterized by an excessive tendency to bleeding without clothing) he needs prompt medical aid regardless of the degree of the injury. Very severe contusion and those of specialized nature should be referred to the doctor without delay. These include severe blow on the head resulting in contusion of the brain or skull fracture, severe blows which bruise internal organs, which may lead to profound shock and heavy falls which produce large bruises deep within the muscle, and which if not handled appropriately may lead to the development of infection.

Abrasion (Scrapes): This is an irregular superficial open wound of the skin in which the outer layers of the skin are scraped off, as a result of a fall on a rough hard surface. Usually, there is very little bleeding unless the abrasion is very deep. Abrasion is usually accompanied by bits of foreign matter such as gravel, sand etc. which grind into the skin. Remove all the dirt first by flushing them with fresh hydrogen peroxide followed by gentle cleaning with antiseptic soap and water or detergent.

After cleaning the wound thoroughly, cover it with a single layer of non-adhering gauze or place a small amount of antiseptic first-aid cream or antibiotic ointment on the dressing before covering the wound. The cream or ointment will prevent sticking apart from the soothing effect it gives. You can then either bandage a sterile gauze pad in place or hold it with adhesive tape. If the gauze sticks when redressing the wound, soak it for a few minutes with fresh hydrogen peroxide solution or a solution of one-teaspoonful of salt to a quart of boiled water. This will soften it and make it easy to remove for redressing of the wound.

Lacerated Wounds: A lacerated wound is characterized by a jagged, ragged tearing of the tissues. This type of wound frequently accompanies contusions. When this is the case, the wound is technically known as contused lacerated wound. Most lacerated wounds are caused by objects with jagged sharp edges such as a saw. Also, a rabid dog can cause a lacerated wound when it bites someone.

Lacerated wounds may contain foreign matter which must be cleaned in the same way as for abrasions so as to prevent infection and ensure proper healing. In cleaning the wound's surrounding, make sure that you wash the dirt away from it.

Extensive lacerations (such as from motor vehicle accidents) call for definitive treatment which can only be given in the hospital. If confronted by such a case, simply cover the injured area with

a thick sterile dressing as in the case of very deep wounds, bandage it firmly in place and get the victim to the hospital as quickly as you possibly can.

If the wound is neither large nor deep, the edges can be drawn together and held in place with a device known as butterfly strips which can easily be cut out from ½ inch-wide adhesive tape. Fig 9.1 shows the simple procedure for making a butterfly strip while Fig 9.2 shows how a butterfly strip is applied into a lacerated palm and arm.

This technique is time-saving, painless and particularly useful with children, and also when the size or type of wound does not require sutures.

Incised Wounds (Cuts)

These are wounds made by single clean cuts. Examples are cut on the fingers or hand from broken glass while washing dishes, or from sharp knife when chopping meat, vegetables, or cuts on the foot from broken bottles or pieces of glass.

There may be profuse bleeding from deep incised wounds since an artery or large vein may also be cut. Treatment should include the covering of the injured part with a sterile pressure dressing. Medical assistance should be obtained immediately. However, a superficial cut which is a daily occurrence in any house can easily be treated by washing it thoroughly with soap and water and applying a dry non-sticking dressing. Use the butterfly strip described under lacerated wounds if the edges of the wound gape, to draw them together.

Very slow healing progress, evidence of swelling, increased tenderness or redness or streaks extending outward from the wound are signs that infections may have set in, and the case should be referred to the doctor without delay.

Punctured Wounds

A puncture is a perforation of the skin and tissues made by a sharp-pointed object; such as stepping on a nail, or stab with a dagger. Such wounds can have serious consequences if not promptly attended to because of infections. If a puncture wound has been sustained from the farm or street from rusty nail or any other rusty pointed object, it must be assumed that the wound is contaminated with tetanus germs, therefore immediate anti-tetanus injection is a necessity. Dog bites and bee stings are considered punctured wounds with equally serious consequences.

If a puncture wound is sustained under conditions where tetanus germs are unlikely to exist, just allow the blood to bleed freely, wash it thoroughly but gently with soap and water and cover it with dry dressing. Do not apply any ointment. Again if there is evidence of swelling, severe pain,

redness or tenderness after a day or two, let the patient see the doctor because infection may have set in.

Treatment for Animal Bites

Animal bites provide a special form of punctured wounds. These types of wounds are often torn, lacerated and bruised as well. They may be from animals or human beings, and they are dangerous because of the possibility of serious infections that may follow. What to do in the event of animal bite:

1. If it is impossible to reach the doctor or get to a hospital quickly, clean the wound with antiseptic soap or detergent solution; rinse it well with running water or salt solution which is as warm as the patient can comfortably tolerate.
2. Cover the wound with a thick sterile dressing and bandage in place, so as to immobilize the part at rest. Sling should be used in the case of an arm or hand.
3. The victim should be taken to the hospital as quickly as possible for immediate medical attention.
4. The accident should be reported to local health authorities (or hospital immediately.)

Bite from Rabid Animals

Bites from dogs, cats or any wild animal such as bats and other rodents present the danger of the possibility of infection with rabies (a dangerous infection of the brain). For this reason, an animal which has bitten a person should never be killed. Instead, it should be captured and kept for examination for rabies or held for observation for at least 15 days in order to ascertain if it has rabies. If the animal is killed at the time of the biting, the carcass should still be examined in the appropriate health department unit. If it is discovered that the animal was rabid, treatment of the victim against rabies must commence immediately or the victim will certainly die of the rabies infection.

Foreign Bodies Lodged in Organ or Body Part

The following emergency care procedures for all kinds of substances or objects such as pins, food, insects, splinter which become accidentally lodged in an organ or in a part of human body where they do not belong are adopted.

Foreign Body in the Eye

Any foreign body such as a speck of shoot which cannot be seen or easily removed should be attended by an ophthalmologist (eye specialist) immediately.

If however, the foreign body is under the upper lid, it can sometimes be removed by simply drawing the upper lid down over the lower lid. The irritation of this action will cause the eye to produce tears which help to flush the foreign body and to stick it to the lower eyelid from where it can be wiped off gently with a small moisten sterile gauze or cotton.

If the substance is not flushed out, adopt the following procedures:

1. Take hold of the upper lid eyelashes gently.
2. As the victim looks down, turn the lid back over a cotton swap, a clean match stick or a pencil.
3. If the speck is seen, wipe it off very gently with a small piece of moistened sterile gauze or absorbent cotton.

If the foreign body persists or is lodged on the cornea of the eye, over the iris, the victim must be referred to the doctor. But in the meantime, place a sterile cotton held in place by a light bandage or adhesive tape or eye pad over the eye in order to avoid painful and irritating movement of the eyeball.

Foreign Body in the Ear

Foreign bodies such as insects sometimes fly into the ear by accident. Sometimes too, foreign bodies such as beads are often put into the ear by children while playing.

Never attempt to extract any foreign body from the ear because you may only succeed in further pushing the body in, and may, in addition, injure the delicate eardrum.

Drop some warm olive oil, mineral oil or baby oil in the ear and allow it to remain there for a few minutes while the head is turned in the opposite side. Then, let the oil run out and the drowned object or foreign body may float out. Finally, clean the ear canal with a cotton-tipped applicator.

If the above measure does not remove the object, the victim must see the doctor without delay.

Foreign Body in the Stomach

Children are particularly prone to swallowing objects, and sometimes they do so by mistake. Unless it is a pin or sharp instruments, there is nothing to fear because such an object will be eliminated during normal faecal excretion. However, for pins, sharp objects, and other sharp instruments, the doctor must be consulted since an examination of the digestive tract through a fluoroscope may be necessary in order to determine what type of treatment is to be given.

Foreign Body in the Nose

Children playing with small seeds may accidentally put them in their nose, and insects can also fly into a person's nose. Usually, such foreign bodies can easily be expelled by sneezing which can be induced by ticking the opposite nostril or by sniffing pepper.

If the object is not expelled, do not attempt to hook it out of the nose as damage to the tissues may result or the foreign body may be pushed further into an inaccessible position. Under the circumstance, the victim must see a nose and throat physician.

Treatment of Splinters

A splinter that is just beneath the skin surface can easily be removed using a sterile needle by passing it through a flame until it glows and letting it cool.

1. Clean the skin which overlays the splinters with soap and water.
2. Split along the length of the splinter with the sterile needle until the end of it can be grasped with a pair of tweezers and gently pull it out to avoid breaking it.
3. Then, wash the wound with soap and water and cover with adhesive bandage.

A splinter that is large and lies deep in the skin should be treated in the same way as a deep puncture wound and dressed accordingly. A splinter under the fingernail should be referred to the doctor for removal in order to avoid some complications.

3.3 Types of Bandages and Their Functions

There are several kinds of bandages used in emergency situations to care for the injured. These are the roller bandages, triangular bandages and adhesive bandages (ready-to-use sterile adhesive dressing).

Functions of a Bandage

1. To hold dressings or splint firmly in place
2. To supplement a dressing by providing a clean protective covering for the body part affected.
3. To minimize further contamination of a wound

4. To immobilize partially and to rest the injured part as well as to help maintain body warmth at the affected part.
5. To apply and maintain pressure for the control of bleeding.

Roller Bandages

The roller bandage is the most commonly used bandage. This bandage which is generally sterilized usually come in several widths used for different situation:

1-inch bandage –used for finger and toe injuries

2-inch bandage –used for head, hands or limb of children or 3-inch bandage-used for arms or legs of adults.

3-inch bandage –used for thigh, groin or trunk.

Triangular Bandage

This type of bandage is usually made of bleached Muslim and it is generally supplied in sizes measuring about 54 inches in length at the base. It is useful in all kinds of emergency situations. It can be folded to make a cravat bandage or a tourniquet.

Triangular bandage is useful for bandaging injuries of the head (holding dressing in place in the case of extensive injuries) for the hand and foot, and for chest and back. It is also used for slinging.

Cravat Bandage

Cravat bandage which is obtained by folding triangular bandage to required width, can be used for a number of purposes. It is done by bringing the apex of the bandage to the centre of its base, then folding the bandage along its length one or more times until the desired width is obtained.

Cravat bandage is used for the jaw, face or an ear, for the head, and for fractured ribs.

Tourniquet

A cravat bandage can be used as a tourniquet by:

1. Tying the ends of the cravat to form a large loop around the place that is bleeding;
2. Placing a soft thick compress over the affected blood vessel;
3. Inserting a short stick or similar object through the loop and turning it until the bandage is sufficiently tight on the compress to give the proper amount of pressure.

4.0 CONCLUSION

Wounds are the most common conditions for emergency care. As such, the need to care for wounds and preventing infection when it occurs cannot be overemphasized. Thus, this unit explains different types of wound and care for wounds.

5.0 SUMMARY

This unit has discussed wounds and how to care for wounds, preventing infection, treatment for contusions, animal bites, splinters, types of bandages and their uses.

6.0 TUTOR-MARKED ASSIGNMENT

a. What is wound?

b. How do you care for wound?

c. Explain the treatment of Animal bites

d. Discuss the functions of bandage

7.0 REFERENCES/FURTHER READING

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MODULE 3, UNIT 3

UNIT 3: RESPIRATORY EMERGENCIES AND RESUSCITATION

Contents

1.0 INTRODUCTION

This unit will discuss the conditions which deal with respiration, the term respiratory emergencies, respiratory failure, signs and symptoms of resuscitation procedures and types.

4.0 OBJECTIVES

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

- Define respiration
- Explain the procedures for artificial respiration

3.0 Main Content

3.1 What is Respiration?

Respiration is a process by which oxygen passes from the air into the blood through the lungs, and carbon dioxide, a waste product is expelled. This simple description of respiration does not give all the full information about respiration as in a standard health science book. The atmospheric air we breathe in contains 21 percent of oxygen, 0.5 percent of carbon dioxide and the remainder (about 79 percent) is largely nitrogen. The air leaving the body has 16 percent oxygen, 4 percent

carbon dioxide and the entire nitrogen that was taken in in the first instance. Remember this information about expired oxygen which amounts 16 percent, because we shall refer to it later.

When breathing stops for whatever reason, the cells of the body become incapacitated because of lack of oxygen. This condition is known as *asphyxia.* If the cells of the brain are starved of oxygen, they can be destroyed in a matter of five minutes or less, and the person may die. The two body organs which work together in supplying the body tissues with oxygen which the body needs to function effectively are the lungs and the heart. The blood acts as a messenger between them. The heart pumps the blood to the lungs to carry oxygen which it transports to the body tissues. It picks up carbon dioxide from the tissues and it is transported to the lungs from where it is expelled. The cycle continues endlessly unless the person experiences anything that disrupts the respiratory process, thereby resulting in respiratory emergency.

3.2 Artificial Respiration

Artificial respiration is the procedure for causing air to flow into and from the lungs by mechanical means when natural breathing ceases. The objectives of artificial respiration are (i) To maintain the expansion and relaxation of the chest and (ii) to maintain an open airway or air passage through the mouth and nose.

3.2.1 General Procedures in Application of Artificial Respiration

a. Free the victims' mouth and upper respiratory tract of all obvious obstruction such as chewing gum, artificial (or false) teeth or tongue, debris of food, vomit or blood
b. Keep the victims' jaw and head fully extended by tilting the head backwards to keep the air passage as free and clear as possible
c. Loosen tight clothing and belt or straps. It the victims' clothes are wet, remove as many of them as can be removed without delaying artificial respiration.
d. Cover the victim with blankets or with anything else at hand to conserve body warmth.
e. Look at victims' neck to see if he is a laryngectomee or a "neck breather"
f. Begin artificial respiration immediately and continue without interruption until the victim is again able to breathe himself or is pronounced dead by a physician.
g. As artificial respiration is going on, send for a doctor.

h. When breathing has been established and it is certain that the victim is fully conscious, give him a teaspoonful or aromatic spirits or ammonia in a glass of cool water, some hot coffee or tea.
i. Do not allow the victim to stand or sit up, but his head may be raised a little to help in taking liquids. The liquids should be fed him until he is able to drink by himself without chocking.
j. Refer the victim, when his breathing has been resuscitated, to where adequate facilities for observation and further treatment are available.

3.3 Methods of Artificial Respiration

There are several methods of artificial respiration, each having its advantages and shortcomings. I shall discuss three of them which are commonly found in first aid books.

These are:

a. Mouth-to-mouth (or mouth-to-air ways) methods
b. The Holger Nielsen method
c. Cardiopulmonary resuscitation (CPR)

3.3.1 Mouth-to-mouth method

The mouth-to-mouth resuscitation is a method of artificial ventilation by which a rescuer's breath is forced directly into a victim's lungs. It is most quickly applied and effective method for reviving a person who has stopped breathing due to whatever reason: The method requires no equipment, yet it is the most practical and efficient emergency method for getting oxygen into any victim of respiratory failure, of any age. It is used in almost all circumstances except when there is severe injury to face and mouth.

Mouth-to-Mouth Resuscitation on a Child Age 8 or Older or on an Adult

1. Make sure the person is lying on a hard, flat surface. Look into the mouth and throat to ensure that the airway is clear. If an object is present, try to sweep it out with your fingers (wear disposable surgical gloves if they are available). Apply the Heimlich manoeuver if unsuccessful and the object is blocking the airway. If vomiting occurs, turn the person on his or her side and sweep out the mouth with two fingers. Do not place your finger in the mouth if the person is rigid or is having a seizure.

2. Tilt the head back slightly to open the airway. Put upward pressure on the jaw to pull it forward.

3. Pinch the nostrils closed with thumb and index finger. Place your mouth tightly over the person's mouth. Use a mouthpiece

4. Release the nostrils. Look for the person’s chest to fall as he or she exhales. Listen for the sounds of breathing. Feel for the person’s breath on your cheek. If the person does not

if one is available. Blow two quick breaths and watch for the person's chest to rise.

start breathing on his or her own, repeat the procedure.

The method is advantageous because the rescuer can:

a. Keep the victim's air passage open and can thus easily detect and correct any obstruction such as the tongue or any foreign matter.
b. Provide pressure to inflate the victim's lungs immediately
c. Move a much greater volume of air into the victim's lungs than with any other method of artificial respiration.
d. Watch the victim's chest to see if it rises and falls properly
e. Listen at the victim's nose and mouth to hear if air exchange is actually taking place.
f. Breath for the victim during transportation to hospital

Procedure

a. The first step is to ensure that airway is kept free and to prevent its blockage by keeping the victim's head tilted back and his jaw pulled forward.
b. Get air into the victim's lungs without delay
c. Ensure that the air being blown in does not escape through the victim's nose instead of actually getting into the lungs
d. Blow vigorously into an adult victim, but gently into children. When the victim's chest rises, remove your mouth and watch if it falls, to show that the victim is exhaling by the natural contraction of his own chest muscles. If the chest does not rise, increase the "head-back, chin-up" position and blow into the mouth deeply. Listen for the return rush of air.

When the victim completely exhales, blow the next deep breath. Repeat the inhalation every 4 and 5 seconds.

As soon as the air passage is clear and the lungs have been inflated, the victim will gasp and begin to breathe spontaneously. Gurgling or noisy breathing is indicative of the need to clear the throat of fluid or debris.

3.3.2 The Holger Nielsen's method

If ventilation of the lungs by mouth-to-mouth, or the Artificial respiration Silvester methods cannot be applied due to severe facial injuries or when the victim is trapped face down, the Holger Neilson's method can effectively be used. However, this method is not practicable when there are gross injuries to the upper limbs, shoulder girdle or ribs.

Procedure

1. Place the victim in a prone (face down) position on a flat surface. His hands should be placed one over the other, head placed on them and turned sideways so that his cheek rests on his hand
2. Kneel on one leg, just above the head of the victim and place the foot of the other leg near his elbow. You must be close enough to be comfortable when your hands are placed on the victim's back just below his shoulder blades, with the tips of your thumbs touching and four fingers spread downward and outward.
3. Application: keeping the elbows straight, rock gently forward until your arms are almost vertical, so that the weight of the upper part of your body exerts slow and steady pressure on your hands and directly downward on the victim's back. This exercise will force the air out of the victim's lungs.
4. Grasp the victim's arms just above the elbow and rock backwards, raising his arms and pulling them toward you, applying just enough force to feel the tension of the victim's arm, shoulder and back muscles. Remember the tension of the victim's elbows straight until the arms have been pulled as far forward and upward as reasonable tension will allow. Then, gently lower the arms on the ground to complete the phase and the full respiratory cycle.
5. Swing back so that your hands are again on the victim's back, ready to start another compression phase.
6. Repeat the cycle, starting with procedure No.3 (the expansion phase) to procedure No.5 (compression phase) at a steady rate of 12-15 times per minute, taking about the same amount of time (two and half seconds) with each phase.

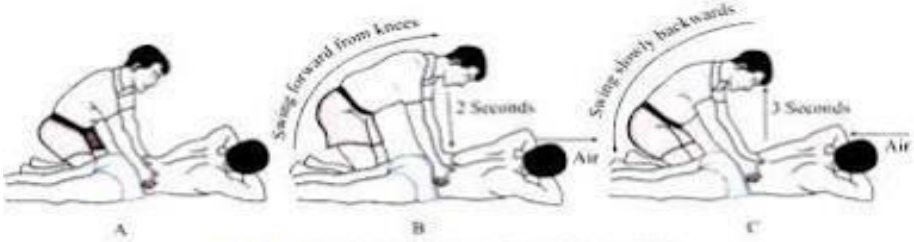

Fig. 8.43 Schafer's manual method for artificial respiration.

3.3.3 Cardiopulmonary resuscitation (CPR)

This consists of the use of chest compressions and artificial ventilation to maintain circulatory flow and oxygenation during cardiac arrest. Although survival rates and neurologic outcomes are poor for patients with cardiac arrest, early appropriate resuscitation—involving early defibrillation—and appropriate implementation of post-cardiac arrest care can lead to improved survival and neurologic outcomes.

4.0 CONCLUSION

In this unit, you are taught what emergency care is all about, and the difference between emergency care and safety education. You also learned about emergency care treatment, conditions that require emergency treatment, and emergency care box. Also, methods and procedures of artificial resuscitation were explained.

5.0 SUMMARY

We have seen that when accident occurs, it is important to minimize the pains, arrest further injuries or a determination of the condition of the victim or save life until medical assistance or personnel appears to take control of the situation. The objectives and principles of the emergency care is based on the need to save life and reduce suffering until proper medical care is given by a physician.

6.0 TUTOR-MARKED ASSIGNMENT

(a) What are the fundamentals requirements in offering emergency treatment?

(b) A young man fell from a building in a construction site, with severe injuries and bleeding. Using your knowledge of first aid in this unit, what would you do?

(c) Explain the procedures for Cardiopulmonary resuscitation

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MODULE 3, UNIT 4

UNIT 4: HAEMORRHAGE: TYPES, CLASSES AND CAUSES

Contents

1.0 INTRODUCTION

This unit discusses the escape of blood from the blood vessels (haemorrhage) and the various situations which lead to blood escape from its normal channel. In other words, this unit discusses the various types, classes and causes of haemorrhage. Also, you will learn how to develop the skills and ability to overcome or handle effectively, haemorrhage, when necessary.

3.0 OBJECTIVES

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

1. Define haemorrhage
2. Classify haemorrhage according to types and classes
3. Discuss the multiple causes of haemorrhage
4. Explain the social and economic consequences of haemorrhage due to nutrition and other factors
5. Identify the different types of risks involved in haemorrhage
6. Explain the myth of haemorrhage accident proneness.

3.1 Definition of Haemorrhage?

Haemorrhage is defined as an escape of blood from the blood vessels. The escape may occur from a wound of the skin; escape externally or into internal cavity such as the stomach or bowels, or may simply be poured out into the tissues as a result of a blow or similar injury. In all cases however, the escaping blood from the vessels is lost to the body circulation.

Haemorrhage is caused by a variety of factors including accidents, certain malfunctioning of the body system or disorder within the body. It is also regarded as a natural phenomenon in some individuals. *Haemophilia* is a disease in which bleeding occurs in a person and which takes a very long time than normal to clot or coagulate. Such a person is called a bleeder. The disease is almost confined entirely to the male members of the family. In other words, it is a hereditary disease which is manifested only in the male members of the family. The disease is characterized by a tendency to bleed uncontrollably even after quite slight wounds. The cause of the disease is defect in the ability of the blood to clot or coagulate. The coagulation time may be prolonged up to 12 hours or more, compared with a normal 4 to 10 minutes. Look up the meaning of coagulation in your dictionary and relate it to haemophilia.

The cause of the prolonged coagulation time is a deficiency in the composition of the blood plasma. The disease occurs predominantly in the white races. In other words, it is not common with the black race.

The immediate result of severe haemorrhage is great anaemia, so that in extreme cases, the bodily organs may be unable to continue their normal functions and the person dies as a result.

3.2 Classification of Haemorrhage

Haemorrhage is classified according to the vessels from which the escape of blood occur. These are *arterial, venous and capillary* haemorrhage (bleeding).

Arterial Haemorrhage: is a case in which the blood is bright, red and comes out in jets or spurts which correspond with the heartbeat. Haemorrhage from small arteries not too serious as the loss of blood may not be much before it is brought under control. There are however, certain arteries such as those of carotid in the neck, the axillary in the armpit, the brachial in the arm and the

femoral (or one of its large branches) in the leg which is quite vulnerable to injury that a person might bleed to death in three minutes or even less.

The nature of the damage or injury to an artery is important to the way the blood comes out. For instance, a partially cut artery will bleed more profusely than one that is clean cut. This is because the walls of an artery are elastic, so that if it partially cuts, the walls pull away from each other thus creating a larger opening through which blood spurts out. If however, the artery is completely cut, the elasticity of the walls causes the cut ends to contract. This contraction makes the opening smaller, thus reducing the flow of blood.

Arterial bleeding does not generally clot because of the fast rate of the flowing blood. Blood can clot only when there is a slow flow or no flow at all. Because of this characteristic of arterial bleeding, it is dangerous; hence external means must immediately be used to stop the flow of blood. Once you have successfully controlled arterial bleeding, ensure that the control is maintained successfully, and long enough for the injured person to be safely taken to the hospital for adequate care.

Venous Bleeding: is a case in which the blood comes from the veins. It is characterized by a slow steady flow of dark red blood because it has discharged its oxygen and is returning to the lungs via the right atrium and right ventricle of the heart to pick up fresh oxygen. Venous bleeding may be profuse sometimes, but it is generally easier to control than arterial bleeding. Also, the valves in the veins are so effective that they prevent blood from running back into the vessels and therefore constitutes no danger to life except in the case of ruptured varicose vein of the leg or when a serious internal injury is received. Immediate and effective treatment for varicose vein rupture is elevation of the leg and the application of a sterile compression over the bleeding area and elastic bandage over and above the point just tight enough to compress the vein.

Occasionally, the rupture of the vein occurs in the surrounding tissues without any external sign. When this happens, it is very painful, often producing a large black and blue mark observed on those who have fair skin. In addition to the same application as for the external bleeding, an ice bag should be applied for 24 hours or so followed thereafter by heat to hasten the absorption of the old blood.

Capillary Bleeding: Is a case in which the blood flows merely from the torn capillaries and come out in gentle oozes on the surface of the wound. Capillary bleeding stops very quickly and easily. Only in the case of haemophiliac disease mentioned earlier is it of serious importance.

Control of External Haemorrhage

Four principles are generally applicable to the control of external haemorrhage. These are:

1. Direct pressure on the bleeding point
2. Elevation of the wounded part
3. Pressure on the main artery supplying that point
4. Application of substances known as *styptics* which contract the blood vessels or help the coagulation of blood.

Direct Pressure

When a definite bleeding point is seen in a gaping wound, direct pressure is made with the finger followed by padding and bandaging. The more severe the bleeding, greater padding is better so as to minimize the loss of blood until the victim receives appropriate medical attention. The following is the procedure for the application of direct pressure:

1. Hold the edges of the wound together with the finger and cover it with a thick sterile gauze compress.
2. Use any clean fabric such as freshly laundered handkerchief, a piece of bed sheet or a sanitary napkin. Whatever the compress may be, bandage it firmly in place, using roller bandage, caveat, belt etc.
3. If the injury is to a leg or an arm, apply enough pressure to control bleeding, but not so much as to obstruct the flow of blood to the rest of the limb. Ensure that a pulse can be felt below the point where dressing is applied.

If the wound starts to bleed again, it is evident that the bleeding may be such that cannot be effectively controlled by pressure dressing. Other means such as pressure point or tourniquet should be considered.

Elevation of part

The elevation of the bleeding part, especially higher than the heart level is an important method of controlling haemorrhage, because the elevation which is applicable only in cases of bleeding from the limbs slow down considerably the flow or gushing out of blood. The higher the bleeding part is raised, the more effective is the control.

Pressure on Main Arteries

The point where an artery is relatively near the surface and where it passes close to a bony structure is known as *pressure point.* There are twenty-two such pressure points in the human body, eleven on each side of the body. About six of these are generally used to control most cases of severe external bleeding. Of the six, the easiest and most commonly used are the brachial point in the arm and the femoral point in the groin. Pressure points are, most useful where the application of a tourniquet would be dangerous or impossible. However, with the exception of the brachial and femoral points, pressure points are not always completely effective and they do little more than slow down the blood flow.

The pressure on the main artery of supply is an effective method of stopping circulation and consequently all bleeding. It is like stopping the flow of water to a whole community by closing the main pipe. The successful pressure of the main arteries takes place where these arteries lie close to bones and also near the surface of the skin, and the pulsation of the vessel can be felt. The pressure with the finger over the artery against a bone stops blood flow. The points where these pressures on main arteries can be applied are indicated in the following table:

Site of Bleeding and Major Artery Supplying The Part.

Site of Bleeding	**Location of Artery**
Bleeding in upper part of the scalp	Temporal artery –This may be felt and compressed immediately in the front part of the ear
Wound at the back of the head	*Occipital artery –Felt and can be compressed a short distance behind the mastoid process (i.e. the bony projection behind the ear)*
Bleeding from the face and neck	*Facial Artery* –This passes on to the face about an inch in front of the angle of the jaw across the jaw bone, against which the artery can be compressed.
All head and neck bleeding	A common *Carotid Artery –in the neck.* This is a short distance below the Adam's apple and the edge of the large sternocleidomastoid muscle. Bleeding from the head and neck can be reduced by pressing the artery straight back against the transverse process of the spinal column
Bleeding from the sole of the foot	*Subclavian Artery* –pressure on the artery is applied with the thumb directly downwards in the hollow behind the middle part of the collar-bone, so as to press the artery down upon the first rib.

Bleeding from the region of the elbow or forearm	*Brachial artery* –This is located on the inner side of the upper arm, behind the biceps muscles. Pressing it against the humerus will control bleeding to the forearm
Bleeding from the hand	*Radial artery and ulnar artery* –The former lies between the skin and the radius in front of the wrist and the latter is located just before it enters the hand near its inner margin. Pressure on these two arteries controls bleeding from the hand.
Bleeding from the lower limb	*Femoral artery* –Located in the centre of the groin. By compressing it backwards against the head of the thigh bone, bleeding from any part of the limb can be controlled.
Bleeding from the sole of the feet	*Posterior-tibial artery* –this lies about half an inch behind the inner side of the ankle. A pressure on this artery will control bleeding of the foot region.

Adapted from: Thomson, W.A.R., Black's Medical Dictionary, London: A & C Black, 1976

A. Temporal Artery
B. Occipital Artery
C. Facial Artery
D. Carotid Artery
E. Subclavian Artery
F. Brachial Artery
G. Radial and Ulnar Arteries
H. Femoral Artery

There are two other methods of direct pressure on the supplying artery or arteries. These are the forced flexion and the tourniquet methods.

Forced Flexion Method: This method is applicable in the case of bleeding close to the joints, such as the elbow, hip and knee. A pad is placed in the bend of the joint which is then flexed as completely as possible and then firmly bound in place. This method makes the artery to bend against itself and thus controls the bleeding.

The Tourniquet Method

This is applied when the bleeding is so severe that none of the methods I have discussed so far is likely to be effective. The method is used for temporary stoppage of the circulation in a limb, to

control bleeding. There are various forms of tourniquet devices, but the simplest is one improvised from a band such as that made by a handkerchief or scarf folded and tied round the limb, then twisted up by means of a rigid object passed beneath it.

The handle of the tourniquet should be prevented from untwisting by passing a second band round the limb, including the end of the handle within it before tying. A tourniquet can be applied to only the fleshy part of the thigh, leg, upper arm or forearm. It is important to leave a label on the tourniquet indicating when it was applied. No tourniquet should be left any longer than an hour. It must be loosened every fifteen minutes before re-tightening again if bleeding restarts.

Application of styptics: Substances known as styptics are applied when the bleeding is a general oozing of blood from the wound or when the bleeding comes from inaccessible part of the body such as the interior of the nose. The most important styptics are heat and cold. Although moderate warmth greatly increases bleeding, both ice-cold water and also water between 46^0 and 49^0 (115^0 and 120^0) (i.e. a temperature which the hand can hardly bear), favor clothing and contract the blood vessels. In fact, heat is much effective than cold if applied directly to the wound. Various drugs can be used to contract blood vessels and stop bleeding but these are used by qualified medical personnel.

3.3 Control of internal haemorrhage

Internal bleeding generally refers to bleeding into the chest, abdominal pelvic cavity or into any of the organs.

It is not as easy to identify a person who is suffering from internal haemorrhage as it is with external haemorrhage. There are important recognizable signs and symptoms which may suggest severe haemorrhage even though the actual bleeding may not be visible. These signs and symptoms are:

- Restlessness
- Thirst
- Faintness
- Dizziness
- Cold, clammy skin
- Dilated pupils
- Shallow or irregular breathing
- Thin, rapid, weak and irregular pulse beat; and

- Vague feeling of great anxiety

These symptoms are all similar to those of shock. Therefore the early onset of profound shock may be the only factor suggesting the presence of internal bleeding (although these signs can also suggest other serious injuries other than internal bleeding).

Internal bleeding is always an extremely serious condition which requires medical care as quickly as possible. There are general principles which must be adhered to in the control of internal haemorrhage.

1. The chief among these is to get the victim to lie down because in this position, the heartbeats less forcibly and the blood pressure is consequently lowered.
2. Effort must be made by the first-aider to prevent the victim from becoming excited. He should be kept quiet and calm.
3. He should be kept warm, but no stimulant must be given. Ice-bags or compress wrung out of cold water may be laid on the suspected site of bleeding.
4. Effort should be made to obtain medical attention without delay.

Nature causes of Internal Haemorrhage

Internal bleeding could be from an artery, a vein or capillaries, or it could be a combination of any or all the three sources. Internal bleeding is usually brought about by a tearing or bruising force which actually ruptures or tears apart one of the internal organs such as liver, spleen, or by a hole cut in a blood vessel as is the case when a bullet passes through the abdominal wall and pierces a large artery or vein. It is possible to bleed to death internally without a drop of blood leaving the body. Bleeding from the lungs or stomach will of course be noticeable if blood is coughed up, vomited or excreted in stool.

The following are examples:

1. Coughed up blood will be bright red and frothy if bleeding is from the lungs
2. The vomited blood will be bright red if bleeding into the stomach is quite recent. If however, the bleeding into the stomach has been going on slowly over a long period, the blood will be like coffee grounds.
3. For bleeding into the intestinal tract above the sigmoid colon, the blood will cause the stool to be jet black (the colour or tar).

4. Fresh stools will generally be streaked with the bright red blood if the bleeding is low down in the intestinal tract and if the bleeding is severe, the stool will consist almost wholly of blood.
5. When there is injury to the bladder or any part of the urinary tract, there is blood in the urine.

Aneurismal Bleeding: The aneurysm is a localized enlargement of the artery which results from the weakening of the arterial wall and which leads to its bulging out and blowing out eventually. Aneurysm bleeding is therefore a serious and dangerous type of internal bleeding resulting from a leakage from or rupture of an aneurysm.

Bleeding from special sites

The following terms (with their meanings) apply to bleedings from special sites.

Haemoptysis– bleeding from the lungs

Haematemesis– bleeding from the stomach

Epistaxis– bleeding from the nose

Haematuria– bleeding from the kidney or urinary passages.

Treatment of bleeding involving special sites

Nose bleeding: Keep the patient quiet and sitting in a comfortable position; loosen his collar; insert into each nostril a small wad of sterile absorbent cotton, allowing a little of the cotton to protrude from the nostrils and then gently but firmly compress the nostrils between your thumb and fingers steadily for about six minutes; keep the patient calm and reassured because anxiety and emotional tension can make the bleeding worse by raising the blood pressure. After six minutes, gradually release the pressure on the nose and watch for any further bleeding but do not remove the cotton wad for several hours, as the bleeding may start again. When you eventually remove the cotton wad, do so very gently.

Face and Scalp: Apply direct pressure on-site with fingers on bandage and pad the wound. If the bleeding is severe, apply pressure in addition on the facial, temporal or occipital artery.

Neck: Apply pressure on the carotid artery

Armpit or shoulder: Apply pressure on subclavian artery

Forearm: Apply pressure on the brachial artery with fingers, tourniquet or forced flexion at the elbow.

Hand: Elevate the hand and apply direct pressure with pad and bandage. If bleeding is severe, apply pressure on radial and ulnar arteries or tourniquet to the forearm.

Thigh: Apply pressure on femoral artery at the groin. Apply tourniquet if site of severe bleeding is low down.

Leg: Apply tourniquet to the thigh or forced flexion at the knee. In the case of ruptured varicose vein, apply a pad and bandage round the leg, extending above and below the wound and elevate the limb.

Foot: Apply direct pressure and elevate the foot. If bleeding is severe, apply forced flexion at the knee or pressure on the posterior tibial artery.

Blood Clotting

Blood clotting is a natural way of controlling bleeding. Any emergency effort to arrest bleeding is aimed at helping nature to perform its clotting function. The changes leading to clot formation are brought about by the release of a certain substance known as *thromboplastin* from the injured area and platelets. The thromboplastin acts upon another substance present in the blood known as *Prothrombin* in such a way as to convert it with the assistance of calcium to *thrombin.* Another substance in the blood known as *fibrinogen* is converted by the thrombins into a sticky network of blood clot. Any interference with any part of this clotting system will decrease the ability of the blood to clot as is the case of disease known as *haemophilia,* a condition with a tendency to bleed as well as the inability of the blood to clot.

4.0 CONCLUSION

Haemorrhage control is as important as respiratory emergency. Internal bleeding could be more dangerous than external bleeding because there is no way one can tell the seriousness of the condition nor the magnitude of the bleeding. The different types of haemorrhage were discussed and the classification.

5.0 SUMMARY

This unit focused on haemorrhage types, classes and causes. Also, various skills and ability to overcome or handle haemorrhage effectively was explained.

6.0 TUTOR-MARKED ASSIGNMENT

1. Define haemorrhage
2. What are the multiple causes of haemorrhage
3. What are the social and economic consequences of haemorrhage due to nutrition and other factors
4. Identify the different types of risks involved in haemorrhage
5. Explain the myth of haemorrhage accident proneness.

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Module 4

Unit 1: Shock Types and Management of Shock

Unit 2: Fractures, Dislocations, Sprain and Strains.

Unit 3: Burns and Conditions due to Abnormal Temperature.

Unit4: Poisoning and Management.

UNIT 1 SHOCK: TYPES AND MANAGEMENT OF SHOCK.

Contents

1.0 INTRODUCTION

We previously discussed haemorrhage (severe loss of blood) and how to control it. You learnt that severe loss of blood from whatever cause, is one of the major causes of shock.

Our body enters shock when we do not have enough blood circulating through the system to keep the organs and tissues functioning properly.

Shock can be caused by injury or conditions that affect the flow of blood through the body. Shock can cause multiple organ failure and lead to life-threatening complications, including death.

Therefore emergency care of a shock victim is most important.

2.0 OBJECTIVES

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

- Define shock.
- Describe the different types of shock
- Explain the causes, sign and symptoms of different types of shock.
- Outline the management of different types of shock.

3.0 MAIN CONTENT

3.1 Meaning of Shock

Shock is most commonly defined as the life-threatening failure of adequate oxygen delivery to the tissue and may be due to decreased blood flow, perfusion of tissues, inadequate blood oxygen saturation, or increased oxygen demand from the tissues that results in decreased oxygenation and cause organ dysfunction. Shock in physiology means, failure of the circulatory system to supply sufficient blood to peripheral tissues to meet basic metabolic requirements for oxygen and nutrients and the incomplete removal of metabolic wastes from the affected tissues. The term shock does not indicate a single entity but rather a complex physiological state which may occur as a result of many factors, any of which may alter the clinical picture considerably, both in character and degree. Initial symptoms of shock may include weakness, fast heart rate, fast breathing, sweating anxiety, and increased thirst. This may be followed by confusion, unconsciousness, or cardiac arrest as complications worsen. Proper first aid to help prevent or help in the treatment of shock victims is very essential when giving emergency care for any person seriously injured.

Signs and symptoms of shock

signs and symptoms of shock include the following:

- rapid, weak, or absent of pulse
- irregular heartbeat
- rapid, shallow breathing
- lightheadedness
- cool, clammy skin
- dilated pupils
- lacklustre eyes
- chest pain
- nausea
- confusion
- anxiety
- decrease in urine
- thirst and dry mouth
- low blood sugar
- loss of consciousness

Causes of shock

Anything that affects the flow of blood through your body can cause shock. Some causes of shock include:

- severe allergic reaction
- significant blood loss
- heart failure
- blood infections
- dehydration
- poisoning
- burns

3.2 Types of Shock

Shock is divided into four main types based on the underlying caused. The different types of shock are enumerated below:

1. Traumatic shock
2. Haemorrhagic (hypovolemic) shock.
3. Burn shock
4. Emotional shock
5. Anaphylactic shock
6. Electric shock.

(a.)Traumatic shock. Traumatic shock is a type of shock that is characterized by severe tissue damage caused by multiple fractures, severe contusions or burns. This results in a depressed condition of many of the body functions due to failure of sufficient blood to circulate through the body. Traumatic shock manifests when the loss of plasma through the capillary walls into extra vascular tissue spaces is constant, with the decrease in blood volume, and increase in blood concentration.

As a result of the decrease in blood volume, the various pressures becomes greatly reduced thereby giving rise to incomplete filling of the hearts, decreased cardiac output and a further loss of blood pressure.

(b.) Haemorrhagic (hypovolemic shock)

Haemorrhagic or hypovolemic shock is caused by serious haemorrhage (i.e. bleeding). This is a state of decreased blood volume or diminished volume of blood and body fluid. **Hypovolemic shock** is an emergency condition in which severe blood or fluid loss makes the heart unable to pump enough blood to the body The common causes of haemorrhagic shock include:

Loss of blood (external or internal bleeding or blood donation)

Loss of plasma, in case severe burns and lesions discharging fluid

Loss of body sodium and consequent intravascular water; e.g. in cases of diarrhoea or vomiting

(c) Burn shock

Burn shock occurs as a result of severe burns which manifest with extensive transudation of plasma from capillaries into the tissues of the burnt area. There is also a loss of plasma from the capillaries into tissue spaces of other parts of the body. As a result of toxic absorption, capillary dilation may also cause haemo-concentration and an increase in the number of red blood cells pro cubic millimetre.

(d) anaphylactic shock

This is a severe, potentially life-threatening allergic reaction which occurs within seconds or minutes of exposure to something you are allergic to, like peanuts or bee stings. Anaphylaxis causes the immune system to release a flood of chemicals which can cause you to go into shock; your blood pressure drops suddenly and your airway narrows, thus blocking breathing. Signs and symptoms include rapid weak pulse, skin rashes, nausea and vomiting. Common triggers include certain foods, medications insect venom and latex.

The net effect of anaphylaxis is such a serious shock that the person may die within minutes.

(e) Electric shock

An electric shock happens when an electric current passes through your body. This can burn both internal and external tissue and cause organ damage. A range of things can cause an electric shock, including:

- power lines
- lightning

- electric machinery
- electric weapons, such as Tasters
- household appliances
- electrical outlets

While shocks from household appliances are usually less severe, they can quickly become more serious if a child chews on an electric cord our puts their mouth on an outlet. Aside from the source of the shock, several other factors affect how serious an electric shock is, including:

- voltage
- length of time in contact with the source
- overall health
- electricity path through the body
- type of current (an alternating current is often more harmful than a direct current because it causes muscle spasms that make it harder to drop the source of electricity)

Symptoms of an electric shock

The symptoms of an electric shock depend on how severe it is.

Potential symptoms of an electric shock include:

- loss of consciousness
- muscle spasms
- numbness or tingling
- breathing problems
- headache
- problems with vision or hearing
- burns
- seizures
- irregular heartbeat

Electric shocks can also cause compartment syndrome. This happens when muscle damage causes the limbs to swell. In turn, this can compress arteries, leading to serious health problems. Compartment syndrome might not be noticeable immediately after the shock, so keep an eye on

your arms and legs following a shock. If someone else receives a shock, keep several things in mind to both help them and keep yourself safe:

- Don't touch someone who has been shocked if they're still in contact with the source of electricity.
- Don't move someone who has been shocked, unless they're in danger of further shock.
- Turn off the flow of electricity if possible. If you can't, move the source of electricity away from the person using a non-conducting object. Wood and rubber are both good options. Just make sure you don't use anything that's wet or metal-based.
- Stay at least 20 feet away if they've been shocked by high-voltage power lines that are still on.
- Check the person's breathing and pulse. If necessary, start CPR until emergency help arrives.
- If the person is showing signs of shock, such as vomiting or becoming faint or very pale, elevate their legs and feet slightly, unless this causes too much pain.
- Cover burns with sterile gauze if you can. Don't use Band-Aids or anything else that might stick to the burn.
- Keep the person warm.

3.3 Management and treatment of shock.

3.3.1 Emergency care for shock.

Regardless of the origin of shock, the most important to do is to restore the circulating blood volume by the administration of appropriate fluids either by vein or mouth. Glucose or saline solution should be given without delay.

If shock is allowed to progress, it may prove fatal, but the injury itself may not be.

In view of this, seriously injured persons must receive immediate treatment

Emergency preventive care for shock:

Keeps the patient lying down; this position favors the flow of a greater amount of blood to the head and chest where it is needed most. This position helps tremendously in promoting venom return, thereby also increasing cardiac output as the patient is placed with the head at 8-12 inches lower than the feet. This head-down position is the first essential step in the treatment of many types of shock. There are however three exceptions to the elevation of the patient's lower extremities.

- If there is head injury
- If breathing becomes increasingly difficult because of the elevation
- If patient complains of pains when elevation is attempted

The following activities or actions are essential in emergency care for shock:

- The first aider must make every effort to break contact between the victim and source of the hazard, injury or accident.
- In case of electricity, using a material that will not conduct electricity is crucial.
- Start artificial respiration and external cardiac massage if the heartbeat is absent or fibrillating.
- Keep the patient warm and quiet letting him lie in a semi-recumbent position after normal breathing has resumed
- Seek competent medical care. For example, electric victims are prone to hysterical outburst and may attempt to run about or act in a completely disoriented manner.

4.0 CONCLUSION

This unit discusses the meaning of shock, types, signs and symptoms of shock, as well as management and treatment of shock.

5.0 SUMMARY

You learnt that shock is serious depression of the vital function of the body that oftentimes follows or accompany many kinds of injuries. You were also told in this unit that prompt treatment of shock can make the differences between life and death. Prompt emergency care of shock helps in reducing the number of death cases as a result of shock.

6.0 TUTOR-MARKED ASSIGNMENT

a. Define shock
b. Mention the signs and symptoms of shock
c. Discuss the roles of a first aider in the management of shock
d. Discuss the various types of shock know to you

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Module 4

UNIT 2: FRACTURES, DISLOCATION, SPRAINS AND STRAINS

Contents

1.0 INTRODUCTION

The human skeleton serves as a framework for the body. It consists of many individual bones and cartilages. The major functions of the skeleton are: support, protection, and movement (motion). With support from the muscles, movement is made easy and possible.

During the course of this unit, you will learn about breaks in bones and why and how they break; dislocation of bones as well as problems associated with strains and sprains which affect the muscles, tissues and ligaments attached to them. In this unit, you will also learn the emergency care for all the problems associated with fracture, dislocation, sprains and strains.

2.0 OBJECTIVES

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

- Define fracture, dislocation, sprain and strain
- Explain the causes of fracture, dislocation, sprain and strain
- Identify the different types of fractures
- Describe the emergency care procedures for sprains and strains and fractioned skull

3.0 MAIN CONTENT

3.1 Meaning of fracture

A fracture is a break or crack in a bone. Fracture consists of a partial or complete break in the continuity of the bone. In more severe cases the bone may be broken into several pieces. A bone fracture may be the result of high force impact or stress, or minimal trauma injury as a result of certain medical conditions that weaken the bones, such as osteoporosis, osteopenia, bone cancer, or ontogenesis imperfect, where the fracture is then properly termed a pathological fracture. Fractures may involve the arm, the back; forearm; the hip; the neck; the leg; the pelvis; the ribs; the skull etc.

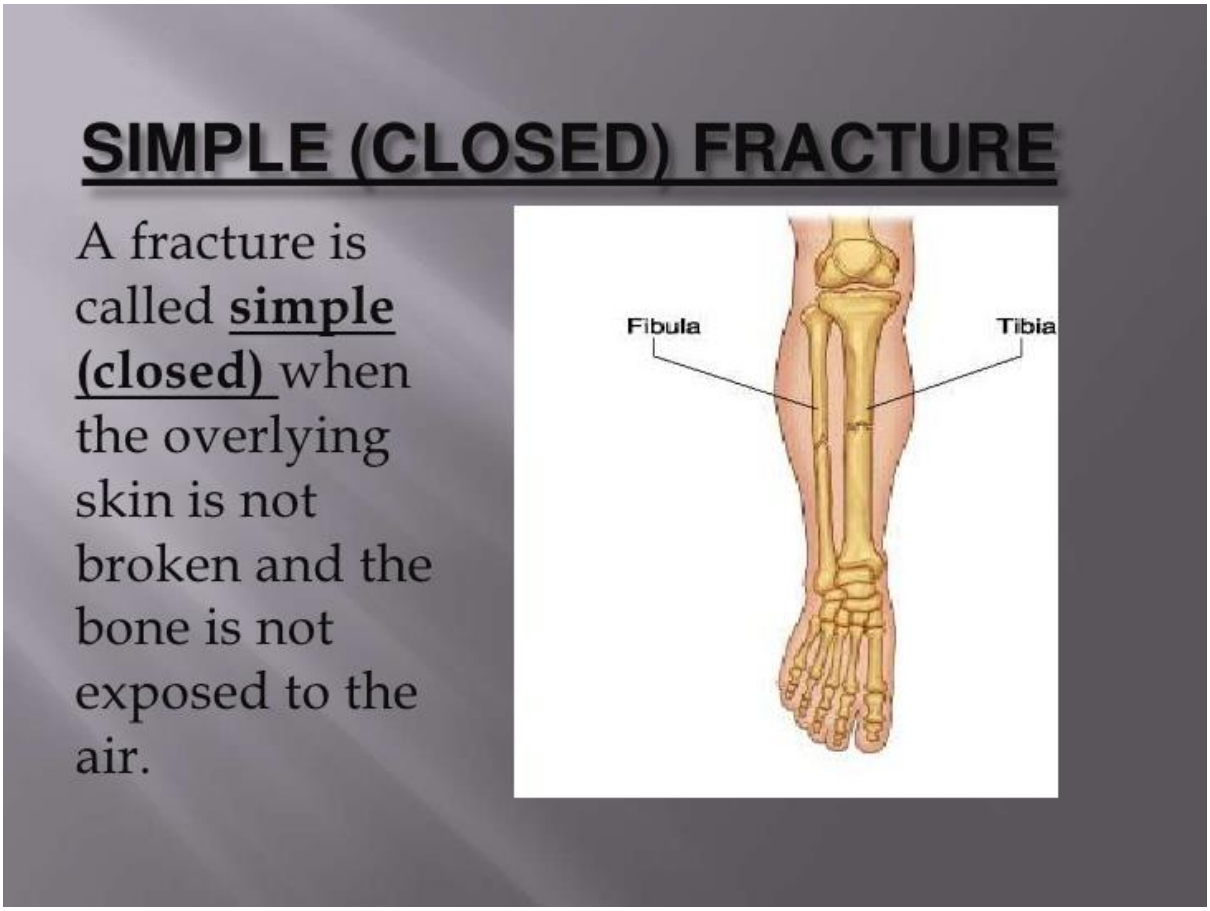
3.1.1 Classification of fracture

Fractures may be classified according to aetiology (which could be extrinsic or intrinsic).

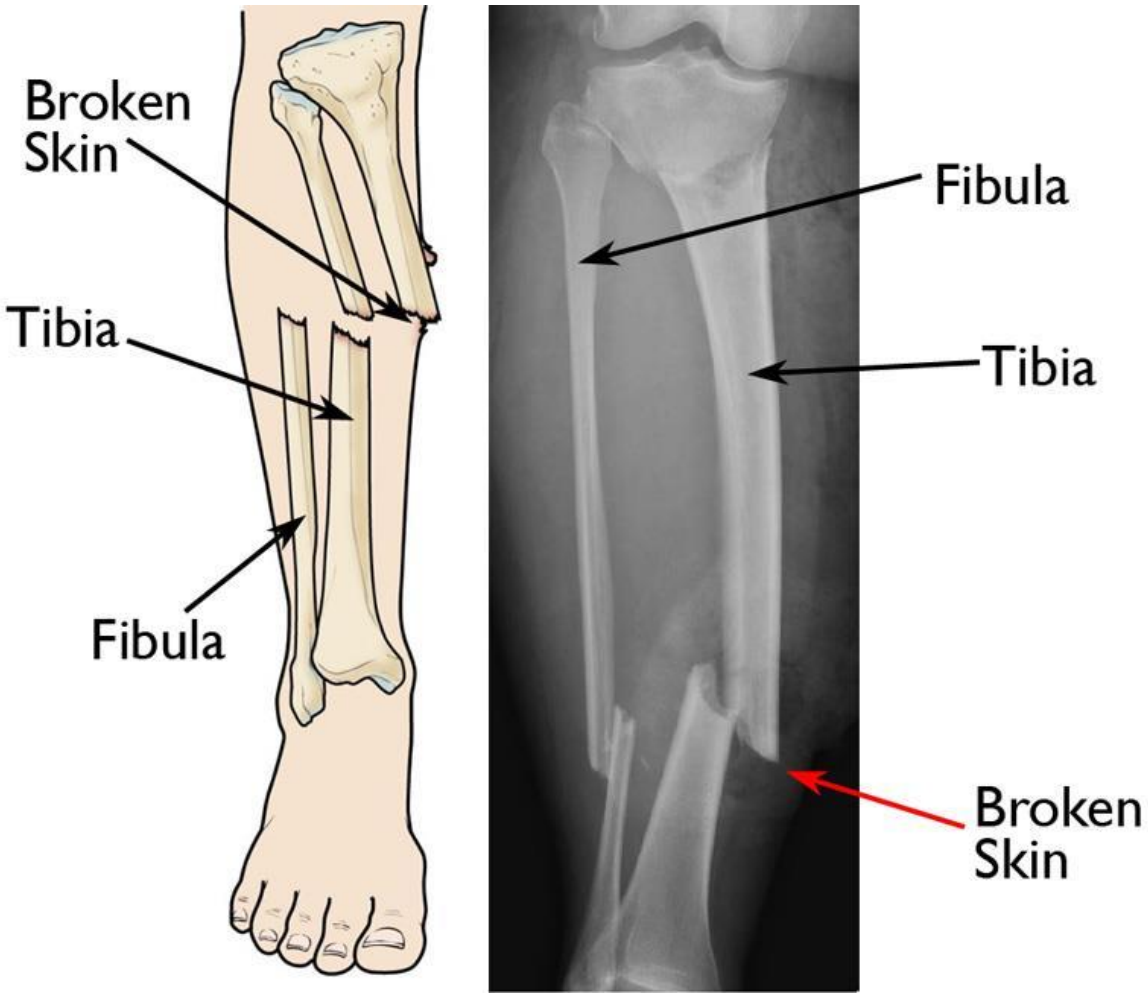
1. Fractures caused by sudden injury
2. Fractures caused by fatigue or stress
3. Pathological fracture, due to underlying bony or systemic disease

3.1.2 Types of fractures:

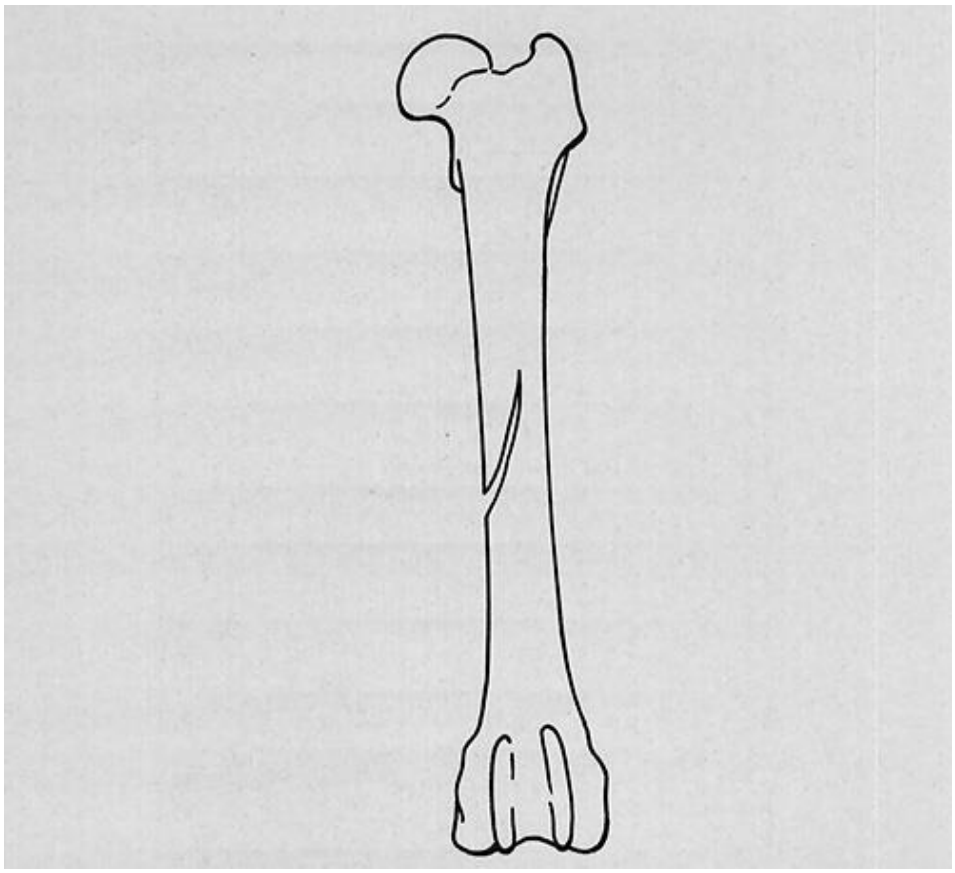
a. closed or simple fracture: this is the type of fracture in which the bone is broken but the wound is not open.



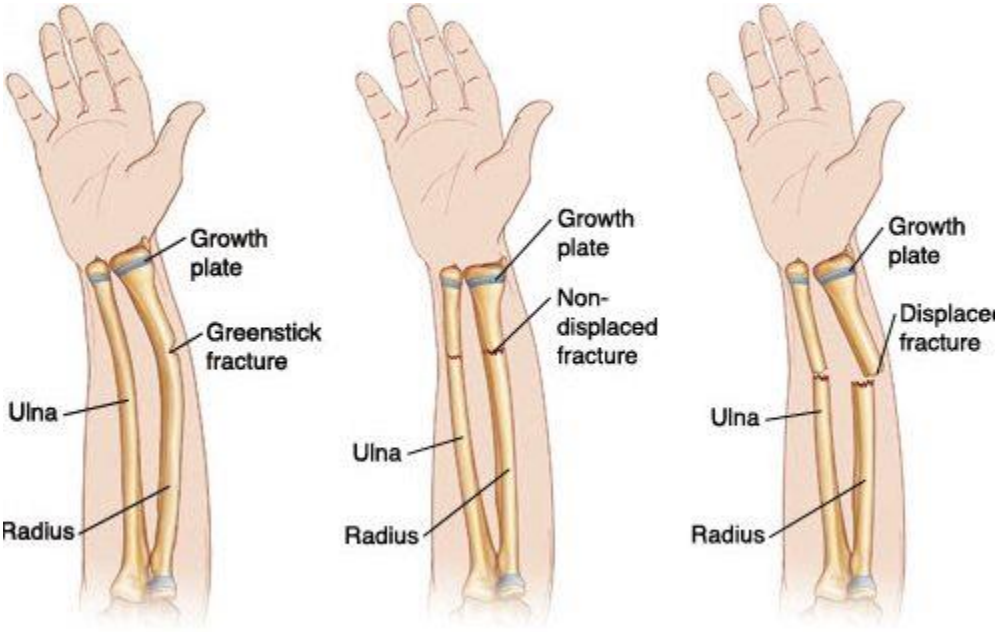
b. Open fracture: This type of fracture unlike the closed fracture is seen with the outside environment. This may occur through a large wound in the soft tissue and the skin or through a tiny puncture wound.



c. Incomplete fracture: The bone has not completely broken, some portion of the bone remains intact.



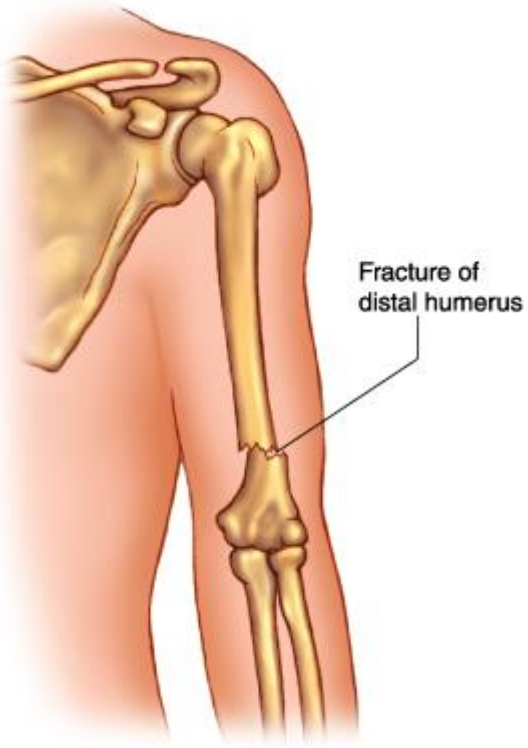
d. Greenstick fracture: is an incomplete break in the bone, usually in the case of children bone fracture. The bone could also be bent because of the pliability of the bone of children which has not become completely ossified.



e. Comminuted fracture is a fracture in which the bone is broken in several places. Comminuted fractures are difficult to reduce and fit because they have no inherent stability.

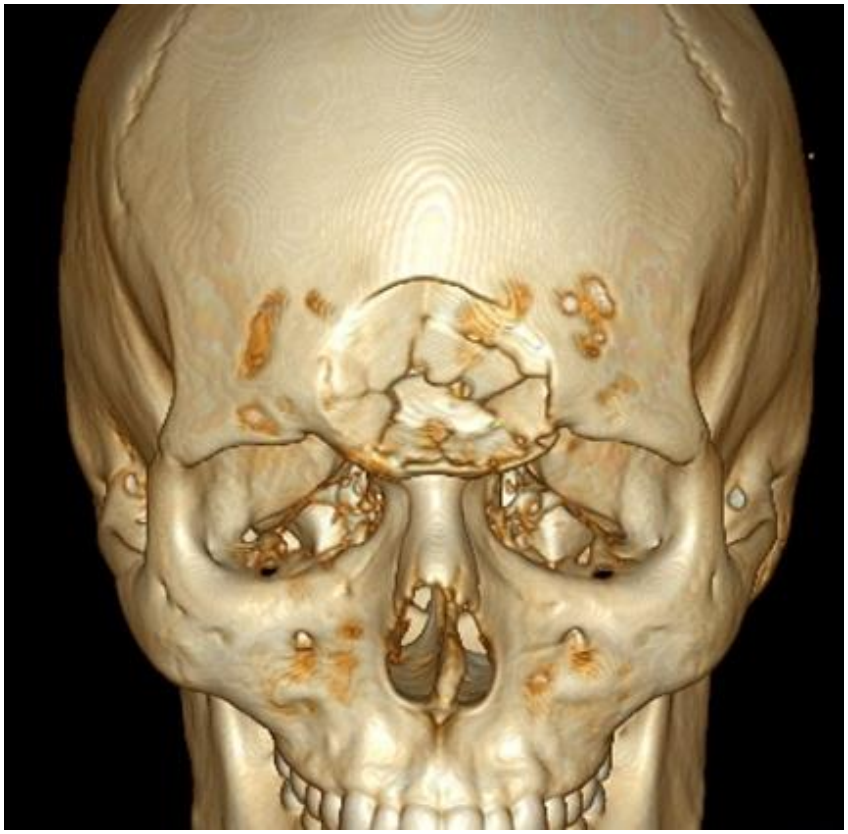
f. Compound fracture is when a bone is broken and damaged and pierces the skin. In this type of fracture, there is damage to the tissues and the danger of infection is high because of the broken skin.

g. Complicated fracture is a fracture of the bone which is associated with some injury to some important internal organs or structures such as brain, spinal cord, lungs, nerves, lever etc.



h. Impacted fracture is a type of fracture in which the broken ends of a bone are driven into another.

i. Depressed fracture happens when the broken part of the bone is driven inwards as in the case of a fracture of the upper part or sides of the skull.



3.1.3 Signs of fracture

a. Pain at or near the site of the fracture
b. Tenderness or discomfort at the site of the fracture
c. Swelling about the site of the fracture
d. Loss of power. The injured part cannot be moved
e. Deformity of the limb
f. Irregularity of the bone that is fractioned
g. Crepitus, that is, bone grating may be felt or heard
h. Unnatural movement at the site of the fracture

3.1.4 First Aid and Treatment for fracture

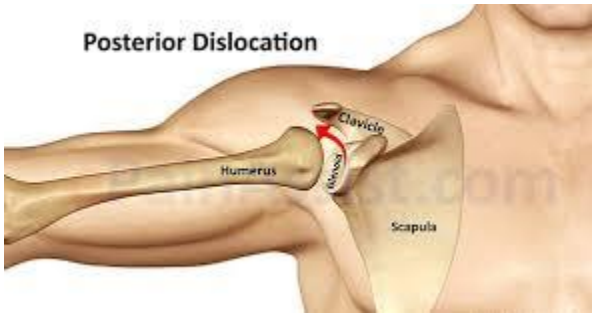
The aim of first aid for victims of fracture is to prevent further injury before proper medical care by a qualified personnel takes over. The under listed steps will help in treating or assisting the victims of fractures.

1) Let the victim lie on his back. Do not sit him up
2) Turn his head slightly away from the injured side.

3) Keep the victim warm
4) Do not give pain reliever immediately
5) In severe cases like the compound fracture, cover the wound with sterile dressing or clothing and bandage, while stopping the bleeding
6) Splints and proper support should be applied to the victim where he is lying to lessen the damage of increasing pain and more damages when moving the victim
7) Move the victim carefully to the hospital

3.2 Dislocation is the displacement of one or more bones at a joint

A dislocation is when connected bones slip out of position in a joint. Dislocations are caused by falls and hard impacts, such as in sports injuries, and are common in teens than young children. The injuries require emergency care to avoid further damage. The most frequently dislocated joints are those of the shoulder, elbow, fingers and the lower jaw, last of which can occur sometimes from yawning or from a blow on the chin.



3.2.1 Signs and symptoms of dislocations

A joint is where two or more bones come together.

A joint may be dislocated if:

1. There is pain at or near the joint dislocated
2. It is swollen at the joint
3. There is difficulty in moving the affected area
4. The limb assumes an unnatural position at the joint (deformity of the site)

3.2.2 Emergency care for Dislocations

1) Do not attempt to force a fracture or dislocation back into place. This could cause further injuries
2) Stop the joint from moving using a bandage for an arm injury, make a sling to support the arm for a leg injury, use pudding or broad-fold bandages.
3) To give extra support for an injured arm, lie it in place by bandaging around the sling and the chest
4) Once you have stopped the joint from moving, take or send the injured person to the hospital
5) Keep checking the breathing, pulse and level of response. Check the circulation beyond the bandages, say every 10 minutes and loosen if necessary.

3.3 Sprains

3.3 Sprains is a joint injury in which one or more joint capsules are stretched or torn. This type of injury is always caused by sudden twist with the weight of the body thrown into the joint while it is in a bad position.

3.3.1 Signs and Symptoms

1) A sprain causes severe pains at the joint
2) Swelling and tenderness to touch at the affected joint
3) Discolouration and difficulty in using the joint

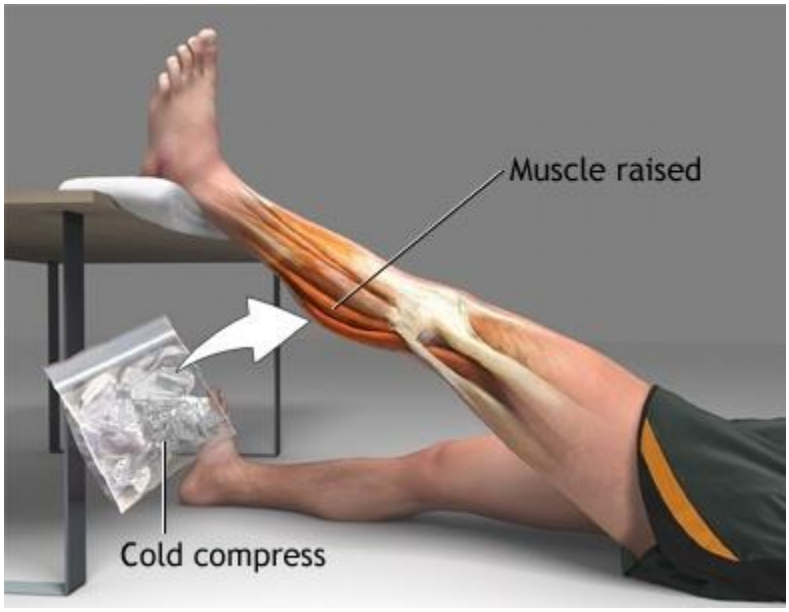
3.3.2 Emergency care for sprains

1) Raise the joint affected and place it in a most comfortable position
2) Keep the joint cold by running cold water, cold compressors or ice bags
3) If a bandage is used to stabilize the joint, make sure that it is wet and cold

4) Do not allow the patient to use the affected part or move the affected part until a doctor sees it
5) Where in doubt, treat as a fracture

3.4 Strains

Strains occur when a person makes a vigorous or unsuspected movement or when he uses his muscles in lifting heavy weight improperly. During this process, some muscle structures or ligaments or tendons are turned. The victim may not be aware of the damage at the time it occurs, Strains may affect the back or legs.



3.4.1 Signs and symptoms of strains

1) Sharp pain at the site of the injury
2) Muscle stiffness and spasm which makes movement difficult
3) There is swelling and severe cramp in the case of a strain in the limb (leg or arm).
4) If the back is affected in the strain, the patient may be unable to stand upright

3.4.2 Emergency care of strains

1) Place the victim in a suitable position
2) Relax the muscle spasm by gentle massage
3) Bandage the leg to give support to the affected part during healing

4) Apply cold compress like bags to cool the site and to stop any internal bleeding
5) Take the victim to the hospital for proper medical treatment and care.

4.0 CONCLUSION

You have learnt the terms: fractures, dislocations, sprains and strains. You learnt the emergency treatment and management of fractures, dislocations, sprains and strains

5.0 SUMMARY

During the course of this unit, you learnt that fractures are classified according to their causes and you were also told the general signs and symptoms of fractures, dislocations, sprains and strains.

6.0 TUTOR-MARKED ASSIGNMENT

1) Classify fractures according to their types.
2) Describe the first aid for a fractured leg.
3) Outline the emergency care of the following (i) Dislocation (ii) Sprains
4) Discuss the signs and symptoms of the following (i) Fractures (ii) Dislocation (iii) Sprains

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UNIT 3: BURNS AND CONDITIONS DUE TO ABNORMAL TEMPERATURES.

Contents

1.0 INTRODUCTION

The human system is affected by temperature difference. For example, cold or heat when applied to a localized area results in burns. Also when a person stays in a placed where the temperature is very high for a long period of time, under certain conditions, he may experience certain types of illness such as heat cramps, heat shock or heat exhaustion. The knowledge of these conditions is important to the emergency provider since they occurred almost anywhere including the home, the school, the workplace and within the community.

2.0 OBJECTIVES

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

1) Define burns and scald
2) Identify the different types of burns
3) Explain the treatment and emergency care of burns

3.0 MAIN CONTENT

3.1 Burn

Burn is an injury to the skin which may also involve the underlying tissues resulting in the destruction of cells in the area. Burns are caused by a variety of factors, such as:

1. Dry heat, examples of which are a piece of hot metal or sun. The burn resulting from the heat of the sun is called thermal heat.
2. Contact with any object which is charged with a high tension electric current or by lightening.

There are two kinds of electric burns:

(i) When the current passes through the body burning or destroying tissues as it goes, making a deep burn which may be smaller on the surface than below and slow to heel. This usually causes third place burns.

(ii) When the cause is an electrical flash, but the burns are not deep and are usually first or second degree burns.

3. Friction resulting from contact with a revolving object such as a wheel (known as brush burn) or a fast-moving rope or wire.
4. Chemical burns: Corrosive chemicals in contact with the skin can cause burns. Chemical burns can be caused by thousands of chemical substances, most of which are either a strong acid or a strong base. Common agents include: sulphuric acid as found in toilet cleaners, sodium hypochlorite as fond in bleaches, halogenated hypochlorite as found in paint remover.
5. Burns caused by Radiation: This type of burns may be caused by excessive exposure to X-rays or from careless contact with radioactive substances due to nuclear reactions, atomic bombs, cyclotrons and linear accelerators. Damage caused by exposure to radiation takes few days or weeks to manifest itself. The degree of burns depends on the amount of radiation absorbed, rate of absorption and the part of the body exposed to the radiation.

3.1.1 Scalds

A scald is an injury caused by moist heat such as boiling liquids (water), boiling stew, steam, hot oil or tar.

The effects of burns and scalds are the same. The seriousness of a burn and the ability of the burn to heal fast or otherwise depends upon the depth to which the injury extends. A burn is generally

classified according to the degree of involvement of the skin, that is, the depth to which the skin tissues are injured.

3.2 Types of Burn

The severity of a burn depends upon the depth to which the tissues have been injured and this also determines the method of treatment. For the purpose of treatments, burns are classified into first degree, second degree and third degree.

1) First Degree Burns - In first degree burns only the outer (superficial) layer of the skin is damaged. There is pain, redness of the skin, swelling of the skin but no blisters. An example of this type of burn is a sunburn or a mild scald resulting from steam from boiling water. No scar is formed when healed.
2) Second Degree Burns: In this type of burn, the surface layer of the skin is involved as well as the deeper layers of the skin. Tissue fluids escape into the damaged tissues causes blister which are easily broken. Because the skin layer is easily broken, there is a possibility of infections. A severe burn caused by hot water is an example of Second Degree burn, and can cause serious systemic effects (shock and other complications). The skin may not be totally damaged in second degree burns; it is still capable of satisfactory healing without extensive scar formation.
3) Third Degree Burns: This involves the destruction of the entire skin and thickening of the area involved. In most cases, deeper tissues such as the muscles are partially or totally damaged. Because of the extensive damage to the skin and the underlying tissues, regeneration of the skin at the point of injury is very slim. Skin grafting is very necessary for that type of injuries because the scar left after healing do not contract. Damage and final deformity may not be ascertained easily or if the victims' life is in danger or not, but the general principles is that the greater the area involved the higher the degree of the danger of the damage.

3.3 Treatment and emergency care of burns

3.3.1 General Procedures for the treatment of Burns and scalds.

1) Efforts must be made not to handle the affected areas more than necessary.
2) Do not open the blisters if there are many of them.
3) Avoid the applications of lotions of any kind.

4) Do not attempt to remove clothing.
5) The affected area should be covered with a prepared dry sterile dressing if possible. If there is no prepared dry sterile dressing use clean lint freshly washed or any similar material, etc.
6) The affected area should be bandaged firmly except when blisters are present or suspected in which case the bandage should not be tight.
7) Immobilize the area affected, if possible.
8) Treat for shock.
9) For a major burn case, remove the patient to the hospital as quickly as possible.
10) For minor burn case, give large quantities of warm fluids preferably warm tea sweetened with sugar.

3.4 Emergency treatment for each type of burn

First Degree Burn.

1) The affected area should be immersed in cold water to relieve pain and degree of tissue destruction considerably.
2) Areas involved may be patted or coated lightly with a paste or antiseptic ointment not only to relieve pain but also to prevent the damaged skin from drying up and cracking as well as minimizes the possibility of infection.
3) Take the victim to the medical centre for proper treatment.

Second Degree Burn

1) Any grease or dirt on the skin should be gently cleaned, using sterile absorbent cotton or a gauze pad and mild antiseptic soap.
2) Any stubborn grease should be removed off the skin with any ordinary household dry cleaning solvent followed by soap and water.
3) Before the application of an ointment, you should soak the part affected in a solution of carbonate of soda cooled until it is quite cold.
4) After soaking the part affected for about 20 minutes and drying it gently with a sterile compress, apply any good ointment on the affected part.
5) Opening of blisters increases the possibility of infection. Therefore, if they must be opened, they must be done with extreme care.

Third Degree Burns

1) Remove all clothing in the affected part including foreign bodies
2) Keep victim in reclining position with feet slightly elevated to prevent shock even when transporting the victim to the medical centre.
3) Keep the affected area covered with clean cloth or sterile dressings.
4) Give the victim water to drink periodically until medical attention is given.
5) Take victim to the hospital for proper treatment and care

A. Burns caused by chemicals

These differ from the burns caused by heat. They cause tissue damage. Chemical burns from corrosive reagents should be treated as advised under the standard for splashes of the skin.

1) Flood the area with plenty of water for 10 – 15 mins
2) After flooding with water, remove clothing from the area affected and apply neutralizing agents. e.g. acid burn should be treated with ordinary soda (2 tablespoonfuls to a quarter of water)
3) If the burn is caused by an alkali, treat area with vinegar and dilute with half water. Burns caused by phenol should be flooded with ordinary alcohol or rub alcohol on the affected area and rinse with water.
4) Take victim to the hospital for proper medical attention.

B. Burns caused by electric current

A danger to tissues caused by electricity is usually at the sites of entrance and exit of current. The damage is always greater than one can see or imagine by just examining the skin at the site of injury. This may take several days to manifest. However, the greater danger to life associated with electrical burns is the interference with the proper functioning of the heart and lungs. e.g. current passing through the chest affects the heart, respiratory centre, and the brain.

The following Guidelines are useful in the emergency care of burns caused by electric current:

1. If the victim is still in contact with the electric circuit, switch off the current.
2. Use a very dry wood or cloth and pull out the victim from the scene.
3. Give artificial respiration if breathing has ceased.

4. Treat for shock.
5. Move victim to the hospital for proper treatment and care.

Minor electrical burns of the skin and underlying tissues should be treated as burns caused by excessive heat

C. Burns caused by radiation

Victims of burns caused by excessive explosive to radioactive substances, such as x-rays can be treated with the following guidelines:

1. Take the victim to the hospital for proper examination and treatment.
2. Move the victim to the shower or drench the victim with water continuously for about 10 minutes. Move the victim to the medical centre for proper attention and treatment.

3.4 Conditions due to abnormal temperature.

Abnormal temperature of concern to emergency care providers includes heat stroke, heat exhaustion, heat cramps and frostbite. Some places where these occur are engine rooms, blast furnaces, smelting industries, line kilns, foundries, enamelware, brewing industries and glassblowers, pottery industries laundries, canneries, etc.

A. Heat stroke

Heat stroke is a dangerous condition which may come on either suddenly or may follow heat exhaustion. Signs and symptoms include:

1. Unconsciousness which comes on rapidly but may be preceded by headache, irritability and vomiting.
2. The face is flushed and the skin is hot and dry.
3. The pulse is high and full and bounding
4. Temperature which rises very rapidly may be very high and the victim dies in a short time if the temperature is not lowered quickly.

Treatment for Heat stroke

1) Remove clothing and place victim in a bathtub of cold water.
2) If victim cannot be plunged into cold water, pour cold water on him and wrap him in a wet sheet and fan him continuously.
3) While administering the on-going emergency care, quickly send for medical aid since a careful medical supervision is essential for recovery from heat, since recovery from heat stroke is generally very low

B. Sign and symptoms of heat exhaustion

Heat exhaustion is less serious than heat stroke and sufferers are mostly those people who are not used to hot weather, and those who have a tendency to perspire profusely. It occurs more frequently in women than in men. Signs and symptoms include: (1.) headache (2) dizziness (3) nausea (4) vomiting (5) abdominal cramps (6) collapse and unconsciousness (7) pale face with cold clammy perspiration. (8) weak pulse and shallow breathing (10) temperature may be normal or slightly raised.

Treatment for Heat Exhaustion

1. Remove victim to a cool and comfortable place and place him in a reclining position.
2. Loosen or remove as much of his clothing as possible. Cool the body with the help of a fan or place cool moist cloth on his forehead and wrist.
3. If victim is conscious, give him salt solution in water or salt tablets.
4. If victim complains of feeling cold, keep him comfortably warm.
5. Watch victim very carefully in case the condition changes to heat stroke as this can happen sometimes
6. On recovery, do not allow the victim to sit up for some time, until he has recovered completely

C. Heat Cramps – Heat Cramps result from loss of a great deal of body salt during hot weather. The condition develops in some individuals who are exposed to prolonged high temperatures and who drink large amount of water because of excessive sweating thereby losing a great deal of body Salt.

Signs and symptoms

1. Severe muscle cramps and pain especially in the calf of a leg and in the abdomen.
2. Faintness and dizziness
3. Exhaustion

Emergency care for Heat Cramps.

The treatment for cramps consists simply of giving adequate amount of salt either in solution or through salt tablets.

4.0 CONCLUSION

This unit has taught you what burns are, classification and types of burns. You were also taught that abnormal temperature creates emergency care conditions.

5.0 SUMMARY

You have learnt that burns are classified according to how they are caused such as dry heat, moist heat, electric current, and corrosive chemicals. You were also told that burns can be first, second and third degree burns. You were thought that irrespective of the cause or type of burns, speed of action and immediate medical care must be given.

6.0 TUTOR-MARKED ASSIGNMENT

1. Define burns
2. Describe the different types of burns
3. Describe the emergency care for different types of burns
4. List and discuss conditions due to abnormal temperature other than burns.

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UNIT 4: POISONING AND MANAGEMENT

Contents:

1.0 INTRODUCTION

Fire disaster is caused by fire; haemorrhage is caused by injury such as cut to blood vessels; fractures are caused by forces which break the bone; burns are caused by extreme heat and so on. This unit deals with poisoning which is caused by a variety of factors. I shall also discuss the different types as well as the effects and emergency care procedures for the different types of poisons.

3.0 OBJECTIVES

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

- Define of poison
- Discuss the causes of poison
- Identify the various types of poison
- Describe the general treatment for poison
- List the preventive and control measures against poison
- Describe the various ways poisons enter the body; and
- Explain the effects of poisons in the body.

3.0MAIN CONTENT

3.1 What is a poison?

A poison is any substance which, when introduced into the body or absorbed by a living organism, either injures health or destroys life. The action of poison can be slow or fast, depending on the potency or the quantity that is ingested or absorbed into the body. A poison can either be swallowed in form of solid, liquid or powder by way of the mouth, or injected into the body in liquid form or inhaled into the lungs.

3.2 Causes of poison

1. A person may be poisoned by accident. This is very common with young children who have access to the family drug cabinet where aspirin, iron or other drugs are stored and they swallow them. They may also drink kerosene or petrol believing it to be water. Some adults may also take too much of a drug by mistake or take drugs that have expired.
2. Adults and teenagers may deliberately poison themselves by taking poison or an overdose of certain drugs because they want to die (suicide) or because they want to draw other people's attention and sympathy to themselves. Such persons are definitely imbalanced in their minds and should be regarded as mentally ill.
3. There are some people who are poisoned by their enemies, by eating poisonous foods or taking poisonous drinks.

Poisons that are swallowed

The concern of this lecture is with accidental poisoning and how to manage it when it occurs. You no doubt expect me to give you a list of poisons or poisonous substances so that you can become aware of them. I am going to disappoint you because this is not possible since a great many substances are harmless if properly used but become poisonous if improperly used or if used in the wrong amount. For instance, nearly all drugs and medicines are potentially both beneficial and harmful. Their effects are determined by the method of use, and the amount taken into the body. The effect of a poison is dependent upon several factors including the amount of the intake, the toxicity of the substances, the age and body weight of consumer as well as individual tolerance

level. However, if you insist, the following are a few non-medicine poisons that must be kept out of children's reach"

1. Petroleum products (kerosene and petrol)
2. Paint solvents
3. Pesticides
4. Cosmetics
5. Cleaning agents (containing silver nitrate)
6. Rat poisons (containing arsenic, copper)
7. Plant sprays (containing mercury, copper)
8. Weed killers (containing arsenic, zinc)
9. Antiseptic (containing iodine)
10. Solution (containing lead)
11. Acids such as sulphuric, hydrochloric and nitric acids etc; and
12. Alkalis such as potash, caustic soda, ammonia and line (calcium oxide calcium carbonate).

Poisons that are inhaled

A person can be poisoned by inhaling poisonous gas or vapours and the effect can be just as fatal as swallowing poison. The most common poisonous gas is carbon monoxide which is a product of incomplete combustion of any carbon-containing material (fuel) used by standing motor engine, cooking gas and heating appliances. Furnaces, water heaters, refrigerators and petrol engines are the most common sources of carbon monoxide poisoning. A motor vehicle with the engine on can produce enough carbon monoxide in 15 to 30 minutes to saturate the interior of the car or that of a small garage. Gas, coal and oil appliances that are burned in hearth with chimney produce carbon monoxide when the smoke duct in the chimney or other ventilating system is blocked or malfunctioning so that insufficient free air reaches the flame. Any person who remains in such carbon-monoxide filled place will definitely be exposed to carbon monoxide poisoning. Poisonous vapours from insecticides, cleaning fluids, weed killers, plant sprays and leaking gas appliances can also be fatal when inhaled in sufficient quantities.

Poisons that are absorbed

There are quite a number of substances that can be absorbed directly through the skin in large enough quantities to be poisonous. This is true of some insecticides, plant sprays and cleaning fluids which are capable of producing general toxic effects or severe local irritation which tend to increase the amount and rapidity of absorption.

Poisons that are Injected

Have you given a thought to the possibility of you being shot with poisonous arrow? If this thought has never crossed your mind, I am not surprised because the possibility may be remote. However, bees, wasps, scorpions do as much as poisonous arrow when they bite or sting. Some spiders bite and so do rattlesnakes. These creatures inject poisons into their victims.

Effects of Swallowed Poisons

As soon as poison gets into the body, it acts in various ways, depending on the nature of the substance, and the quantity that has entered the system, as well as the individual's constitution. Let us examine the effects of poisons which are swallowed. We shall consider four effects.

1. *Caustic effects:* Consider poisons such as acids and alkalis which produce burning and corrosion of the tissues with which they come in contact with, and may more or less burn a hole in the victim's stomach. If the victim survives, he will have a permanent scar right from the upper digestive tract down to the stomach. The corrosive acids and alkalis likely to be swallowed include: Acids-Sulphuric acid, hydrochloric acid, nitric acid, oxalic acid and carbolic acid; and alkalis –potash, caustic soda, lime (calcium carbonate) and ammonia.
2. *Cytotoxicity effect:* Disturbance of normal function of the cells of certain body tissues. The cell may die as a result of this disturbance. Although a disturbance of the general function of the cells may bring about the death of the tissues involved, similar to that produced by caustic substance, the effect can be temporary disturbance that may be reversible and cure itself when the poison is removed.
3. *Individual constitution:* Certain substances when swallowed may act as poison to individuals who are exceptionally sensitive. This sensitivity may be acquired or inherited and may in fact, constitute no problem to another person.

4. *Swallowing sleeping pills and alcohol:* Both sleeping pills and alcohol act as strong depressants of the central nervous system (CNS) while some insecticides such as chlordane or certain drugs such as strychnine produce extreme stimulation of the CNS. Both depression and stimulation can lead to death with the overdose of these substances. Muscatine, a toxic substance in poisonous mushrooms affect a special part of the CNS to the point that breathing and heart actions are depressed and the action of intestinal tract increased.

Effects of Inhaled Poisons

Carbon monoxide, which is the most common poisonous gas, has a peculiar effect on the body that makes it an extremely dangerous poison. It combines readily with the haemoglobin in the red blood cell. The red blood cell's affinity to carbon monoxide is about 250 times greater than for oxygen. As the ability of the blood to pick up oxygen from the lungs and carry it to the tissues decreases, health quickly becomes impaired and death may occur quickly unless the situation is quickly reversed whereby carbon monoxide is completely eliminated to enable the haemoglobin pick up oxygen. The table below, culled from Alton L. Thygerson's Accident and Disaster, p243 described the various effects of carbon monoxide concentration in the body.

Effects of Carbon Monoxide

Amount of CO	Effects
Up to 100%	No effect, no long-lasting or chronic effects; can be flushed from the body with clean air.
10 to 20 %	Headache
20 to 30%	Headache and fatigue; impaired judgment
30 to 40%	Headache and fatigue and nausea
40 to 50%	Collapse
50 to 60%	Coma, Convulsion
60 to 70%	Respiratory failure, depressed heartbeat and death.

Source: Alton L. Thygerson, Accidents and Disorders, Englewood Cliffs, New Jersey: Prentice Hall, Inc1977, p.243.

Effects of Insect Bites and Sting Poisons

Common insects which are known to be dangerous in this country are bees, wasps and scorpions. Some snake bites are also known to be dangerous. There are however, some other insects in other parts of the world whose bites or stings are very fatal. Insect bites are particularly dangerous for persons who are allergic to insect bites and sting apart from the poisons which these insects inject into their victims. Most deaths attributed to insect bites have often resulted from the anaphylactic reactions from the stings. You will recall that in Unit 2 anaphylaxis was described as a condition of extreme sensitivity exhibited by certain persons to the injection of foreign material into the tissue –a reaction characterized by pain, swelling, eruption, and feverish feeling, which occasionally follows an injection of certain types of serum or sting from an insect. The venom from the insects especially that from Hymenoptera family such as bee and wasp, results in respiratory obstruction caused by swelling and congestion of the bronchial tubes and anaphylactic shock.

The bite of the *back window spider* injects a toxic venom into the body of the victim. This causes various neurological disorders, but the main effect is muscle spasm, usually starting from the bite area. Complete recovery of a previously healthy victim takes place within a week. The brown recluse spider is thought to be the more dangerous species. The venom injected may cause the death of surrounding tissues and the destruction of red blood cells.

General Treatment for Poison

1. Find out the type of poison taken by the victim. He may be conscious enough to be able to tell you or you may discover an empty bottle beside him if he is unconscious.
2. If victim is conscious of his surrounding and recognizes you, try to make him vomit, except if the victim has swallowed kerosene, petrol, acids or alkalis. To get him to vomit,
    i. Tickle the back of his throat with finger or a spoon
    ii. If this does not work, give him concentrated salt solution to drink. Use two spoonfuls of salt in a glass of water.
    iii. If you are unable to get him to vomit, you must seek professional help immediately by rushing him to the hospital, together with whatever evidence

you can lay your hands on which suggests the nature of the poison swallowed.

iv. If the victim is not breathing at all or not breathing well, you should apply mouth-to-mouth artificial respiration or if the mouth is burned, use any of the other methods of applying artificial respiration. See lecture 10 for the procedures for administering the various methods of artificial respiration.

Treatment for Special Poisons

1. For corrosive substances such as acids and alkalis, there are often burns around the lips and chin, and the victim will be in severe pain. If you can identify the poison, the basic emergency care is neutralization of a strong acid with a weak alkali and a strong alkali with a weak acid.

   Caustic soda is a strong alkali which can be neutralized by diluted vinegar drink or by giving diluted hydrochloric acid. A strong acid poison can be neutralized with sodium bicarbonate (baking soda) solution.

   For corrosive acid, except for carbolic acid, give the victim lime water, chalk and water, small amount of diluted milk of magnesia or a teaspoonful of baking soda in a glass of water. This will help to neutralize the acid.

   For corrosive alkali, give large amount of lemon or orange juice or equal volumes of vinegar and water. After effecting first neutralization in both cases of acid and alkali ingestion, give victim milk, raw eggs beaten up in milk or any food oil, flour in water for protective covering and coating of the tissue.

   Note: Do not waste time if you do not know the nature of the poison swallowed or if there is nothing at hand for treatment. Under the circumstance, just give the victim a large quantity of water and then take him to the hospital for professional attention.
2. For kerosene or petrol ingestion, you must act quickly because these poisons are dangerous and often give rise to serious type of pneumonia. Swallowing kerosene or petrol is more common with children. Signs include vomiting, diarrhoea and cough, and the victim looks very pale. Do not attempt to wash out the stomach or try to force him to vomit. Refer the victim to the hospital as soon as possible.

3. For aspirin poisoning, the patient often breathes rapidly and he may be flushed, may sweat and may have convulsions. The victim must be referred to the hospital immediately.

   Note: Don't try any home treatment or remedy since you are not medically qualified. Remember you are to give only the emergency assistance that is within your competence. When you do not have the expertise to cope with a situation, your best approach is to waste no time in seeing that the victim receives professional help immediately.

Treatment for Barbiturate Poison

Most depressant drugs are sedatives which when taken in proper doses, are relatively safe but when taken in overdose, they prove fatal. Barbituric acid derivatives including the most commonly used drug, Phenobarbital is the most commonly used depressant.

Signs and symptoms of Barbiturate poison: The principal signs and symptoms are:

- Drowsiness
- Mental confusion
- Hallucinations
- Slurred speech
- Very shallow breathing; and
- Weak pulse

Treatment

1. Give the victim an emetic if available, to induce vomiting by whatever means possible. An emetic is to wash out the stomach repeatedly by giving the victim large amounts of warm water to drink. As much of the barbiturate as possible should be removed
2. Apply artificial respiration as necessary
3. Remove victim to hospital as soon as possible.

Preventive Measures against Poisoning

The exercise of reasonable care and common sense in the use and storage of potentially poisonous substances is the most important factor in the prevention of accidental poisoning. Further preventive measure is buttressed by proper maintenance and usage of equipment which, in the course of either normal or defective condition may give off poisonous fumes. The above preventive measures can be achieved by:

1. Ensuring that medicines, cosmetics, cleaning fluid, rat poisons, insecticides are kept where they cannot be reached by children
2. Ensuring that drugs and household chemicals are not stored in food containers;
3. Ensure that all medical preparations are clearly labeled;
4. Ensure that the purpose and dosage of a medication are clearly indicated on the label and that such instrument is understood by you.
5. Not taking any medicine in the dark, because you cannot read the inscriptions or instrument in the dark.
6. Not keeping prescription drugs after they have served the purpose for which they were initially prescribed. Never give another person someone else's prescription without first checking with your doctor.
7. Not keeping known poison in a medical cabinet, the kitchen or any place food is stored;
8. Avoiding the use of any kind of cleaning fluid near a flame or where the ventilation is deficient;
9. Thoroughly washing the hands and any other exposed parts after using rat poison, plant spray, or insect spray.
10. Making certain that you do not stay in a closed room in which an insect spray has just been used or allow food to remain exposed in such a room;
11. Avoiding the operation of a petrol motor in an unventilated room;
12. Avoiding the use of a gas or kerosene stove in an unventilated room
13. Inspecting regularly, all appliances using utility gas or kerosene so as to be sure that they are working properly as well as venting correctly; and
14. Not giving aspirin or any other medication containing salicylate to a very sick child with high fever and great loss of body fluids except under medical supervision.

4.0 CONCLUSION

Poison in whatever form to the body is dangerous. Bite and sting from insects or animals can lead to severe allergic reaction. Therefore, preventive measures against all poisons or poisonous substance require a great care and really helpful.

5.0 SUMMARY

In this unit you have, learnt the definition of poison, causes and effects of poison, treatment of poison and preventive measures against poison

6.0 Tutor-Marked Assignment

1. Define poison
2. Explain the causes and effects of poison
3. Describe the several treatments for poison

7.0 REFERENCE/FURTHER READING

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