Introduction to Bioethics DPH 2119

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Introduction

- The word "**ethics**" is derived from the Greek word, **ethos**, which means custom or character.
- Ethics is an understanding of the nature of conflicts arising from moral imperatives and how best we may deal with them.
  - It deals with the choices we make and our actions in relation to those choices.
  - It deals with the choices made by both clinicians and patients and the duties and obligations of clinicians to their patients.
  - Medical ethics also deals with the choices made by society, the distribution of resources, and access to health care, and the dilemmas arising from them.

- An issue, mainly for the developing countries, has been the extent to which ethical principles are considered universal or as culturally relative – the *universalist versus the pluralist view*
- The challenge to international research ethics is to apply universal ethical principles to biomedical research in a multicultural world with a multiplicity of health-care systems and considerable variation in standards of health care

History

- History is unfortunately peppered with stories of abuse carried out in the name of medical research.
- The most dreadful of all atrocities was possibly conducted by Nazi doctors who used convicts for human experimentation.
- The discovery of these experiments stunned the whole world which led to the formulation of **Nuremberg** code to prevent recurrence of such episodes.
  - It was the first international code for ethics in clinical research laying down the guidelines for research on human subjects.

- It laid down 10 clear principles to be followed by researchers and made:
  - Voluntary consent essential
  - Allowed subjects to withdraw from the experimentation at any time
  - Banned experiments that could result in major injury or death of the subjects
  - And made mandatory to have preclinical data before experimenting on humans.

- Even Nuremberg code failed to terminate unethical research practices.
- Eventually a set of guidelines was adopted by the 18th World Medical Association (WMA)General Assembly, which was called the **Declaration of Helsinki.**
  - It contained 32 principles, which stress on:
  - Informed consent
  - Confidentiality of data, vulnerable population,
  - And requirement of a protocol, including the scientific reasons of the study, to be reviewed by the ethics committee.

- Though Declaration of Helsinki had created a stir in the medical community, medical atrocities continued.
  - The malpractice in the **Tuskegee Syphilis Study** in the US was possibly the next eye opener which ushered the **Belmont Report** in 1979.
  - Laid the foundation for regulations regarding ethics and human subjects' research in the US.
- With the increasing interest of pharmaceutical industries in carrying out research experiments in the developing and the underdeveloped countries, the Council for International Organizations of Medical Sciences (CIOMS)in association with World Health Organization (WHO) developed "**International Ethical Guidelines** for Biomedical Research Involving Human Subjects" in 1982.

Cardinal Principles of Ethics in Research

- The **four** principles of Beauchamp and Childress have been extremely influential in the field of medical ethics, and are fundamental for understanding the current approach to ethical assessment in health care.
  - **Respect for Autonomy**-stands for acting intentionally after being given sufficient information and time to understand the information.
  - **Beneficence** -is directed to promote the well-being of patients and society
  - **Non-maleficence-** implies ‘’*first do no harm*” which can be achieved by careful decision making and having adequate training.
  - **Justice -**deals with the equitable distribution of social benefits.

PRINCIPLES OF ETHICS IN MEDICAL RESEARCH

Principles of essentiality:

- Refers to whether the research is considered to be absolutely essential after a due consideration of the existing scientific knowledge in the proposed area of research.
- This should be scrutinized by an independent and responsible body of persons who, after careful consideration, come to the conclusion that the research is likely to benefit the humanity or environment.

- Principles of voluntariness, informed consent, and community agreement:

- Research participants should be fully apprised of the research and the associated risks and benefits.

- The participants should be informed of the right to abstain from the research or withdraw consent at any time.

- Where research entails treating any community, the principles of voluntariness and informed consent apply to the community as a whole and to each individual member.

- In case a person is incapable of giving consent, a legally acceptable guardian should give the informed consent.

Principles of non-exploitation

- The participants should be fully apprised of all the possible dangers that may arise during the research so that they can appreciate all the physical and psychological risks.
- Each research should include an in-built mechanism for compensation for the human participants either through insurance cover or by any other appropriate means to cover foreseeable and unforeseeable risks, and provide remedial action and comprehensive aftercare.

Principles of privacy and confidentiality

- The identity and records of the participants are as far as possible kept confidential (except when required for legal reasons).
- This is to avoid any form of hardship, discrimination or stigmatization as a consequence of having participated in the research.

Principles of precaution & Risks minimization

- Due care and caution should be taken at all stages of the research and experiment to ensure that the research participant and those affected by it including the community are put to the minimum risk.

Principles of professional competence

- Research should be conducted by competent and qualified persons who act with total integrity and impartiality.
- Who have been made aware of the ethical considerations to be borne in mind in respect of such research or experiment.

Principles of accountability and transparency

- The research or experiment should be conducted in a fair, honest, impartial, and transparent manner.
- Full disclosure is made by those associated with the research or experiment of each aspect of their interest in the research, and any conflict of interest that may exist.
- Full and complete records of the research should be retained for such reasonable period as may be prescribed:
  - for the purposes of post-research monitoring, evaluation of the research, conducting further research, and scrutiny by the appropriate legal and administrative authority,

Principles of the maximization of the public interest and of distributive justice

- The research or experiment and its subsequent application should be conducted and used to benefit all human kind.
- (and not just those who are socially better off), in particular, the research participants themselves and or the community from which they are drawn.

Principles of public domain

- The research findings should be brought into the public domain so that its results are generally made known through scientific and other publications.
  - his would help in consolidating the scientific knowledge base of the field being studied and would prevent the undue replication of studies which pose risks to some subjects.

Principles of totality of responsibility

- Professional and moral responsibility should be observed, for the due observance of all the principles, guidelines, or prescriptions of those directly or indirectly connected with the medical research.
- This extends to the institutes where this research is carried out, as well as the sponsors of the research.
- The research should be duly monitored and constantly subject to review and remedial action at all stages

Ethical theories

- **Deontology**
  - One should adhere to his duties and responsibilities
- **Utilitarianism (or Consequentialism)**
  - Based on consequences of an action
- **Virtue theory**
  - Takes into account the person's overall character
- **Principlism**
  - "a mixture" based on 4 principles…

Principlism

- ‘The **four principles’** approach
- The most widely used approach in Western bioethics:

1. Autonomy
2. 2. Beneficence
3. 3. Non-maleficence
4. 4. Justice

ETHICAL DECISION MAKING IN RESEARCH

- Although codes, policies, and principals are very important and useful, like any set of rules, they do not cover every situation, they often conflict, and they require considerable interpretation

Scenerios

- The research protocol for a study of a drug on hypertension requires the administration of the drug at different doses to 50 laboratory mice, with chemical and behavioral tests to determine toxic effects ▪ Tom has almost finished the experiment. He has only 5 mice left to test. However, he really wants to finish his work in time to go on a break with his friends ▪ He has injected the drug in all 50 mice but has not completed all of the tests. He therefore decides to extrapolate from the 45 completed results to produce the 5 additional results

- Many different research ethics policies would hold that Tom has acted unethically by fabricating data
- Actions that nearly all researchers classify as unethical are viewed as misconduct
- It is important to remember, however, that misconduct occurs only when researchers intend to deceive: honest errors related to sloppiness, poor record keeping, miscalculations, bias, self-deception, and even negligence do not constitute misconduct

- BY is a 46 year old post-menopausal mentally disabled woman with DCIS
- Caregivers from her “home” with power of attorney for health care decisions, bring her to the clinic for enrolment in STAR trial, randomized trial of tamoxifen vs. raloxifene for the prevention of breast cancer in high risk women.
- The physician who saw BY wants the IRB to reconsider the subject selection criteria for the STAR trial.

- The IRB debates the question: – Is it ethical to enroll a mentally incompetent patient in a Phase III randomized chemo-prevention trial?.
- Is it ethical to enroll a mentally incompetent patient in a Phase III randomized chemo-prevention trial?
- • Is it ethical to enrol BY in a randomized trial to determine which of two hormonal therapies is better at preventing cancer with the fewest side effects?

- Thankyou-

Ethics in Biomedical Research

Articulated in

"Principles of Biomedical Ethics (Beauchamp and Childress; 2009)"

and

"The Belmont Report"

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Some Key Terms on the Holocaust

- **Holocaust** - comes from Greek word *holokauston,* meaning "sacrifice by fire". Nazi persecution and planned slaughter of the Jewish people and others considered inferior to "true" Germans; Nuremberg Laws of 1935 stripping German Jews of their citizenship

- **Final Solution** – Nazi term referring to their plan to exterminate the Jewish people

- **Concentration camps** – a number of different types of camps, with different purposes, including extermination camps, labour camps, prisoner-of-war camps, and transit camps

A few facts about the Holocaust

- Began in 1933 when Adolf Hitler came to power in Germany and ended in 1945 when the Allied powers defeated the Nazis

- Once WWII began, Nazis ordered all Jews to wear a yellow Star of David on their clothing for easy identification/targeting

- In prison camps, prisoners were forced to do hard physical labour; torture and death within camps were common and frequent

- 11 million people of whom 6 million were Jewish were killed during the Holocaust

Outcomes of the Holocaust

- In the light of all the various and very serious transgressions, corrective action on the final outcome had to be effected on ordinary people's everyday lives with respect to research:
  - Autonomy
  - Beneficence
  - Justice

Principles of biomedical ethics

- Respect for Autonomy/Respect for Persons
- Non-maleficence
- Beneficence
- Justice

1. Respect for Autonomy

- **Capacities of self-governance**
  - Understanding, reasoning, deliberating, managing and independent choosing
- **Autonomous person**
  - "An individual capable of deliberation about personal goals and of acting under the direction of such deliberation" (Belmont Report, 1979)
- **Incorporates at least 2 ethical convictions**
  - Individuals to be treated as autonomous agents
  - Persons with diminished autonomy are entitled to protection

The Principle of Respect for Autonomy

- **Respect for Autonomy**
  - Acknowledge the right of others to hold views
  - Make personal choices
  - Take actions based on personal values & beliefs
  - Involves respectful action, not merely respectful attitude
  - Alleviate conditions that disrupt autonomous action

- **Disrespect for Autonomy**
  - Attitudes and actions that ignore, insult and demean others' right of autonomous action

Examples of Respect for Autonomy

- Tell the truth
- Respect for privacy of others
- Protect confidential information
- Obtain consent for interventions with patients
- When asked, help others make important decisions

2. Non-maleficence

- An obligation not to inflict harm on others
- Requires intentional refraining from actions that harm others
- In medical ethics, non-maleficence associated with the principle “above all [or first] do not harm”

2. Non-maleficence

- Rules of non-maleficence take the form "Do not do X"

- For instance…
  - Do not kill
  - Do not cause pain or suffering
  - Do not incapacitate
  - Do not cause offense
  - Do not deprive others of the goods of life

3. Beneficence

- Moral obligation to act for the benefit of others..

1. Protect and defend the rights of others
2. Protect harm from occurring to others
3. Remove conditions that will cause harm to others
4. Help persons with disabilities
5. Rescue persons in danger

3. Beneficence

- Two principles of beneficence
  - Positive beneficence
    - Provide benefits to others
  - Utility
    - Balance benefits, risks, and the costs to produce the best overall results

- Paternalism
  - Conflicts between beneficence and respect for autonomy

Non-maleficence Vs. Beneficence

- Rules of non-maleficence
  1. Negative prohibitions of action
  2. Must be followed impartially
  3. Provide moral reasons for legal prohibition of certain forms of conduct

- Rules of Beneficence
  1. Presents positive requirements for action
  2. Need not always be followed impartially
  3. Generally do not provide reasons for legal punishment when agents fail to abide by them

Paternalism: Conflict between Beneficence and Autonomy

- Paternalism:

> "*Intentional overriding of one person's preferences or actions by another person, where the person who overrides justifies this action by appeal to the goal of benefiting or of preventing or mitigating harm to the person whose preferences or actions are overridden*"

- Soft and Hard Paternalism

4. Justice

- Fair, equitable, and appropriate treatment in light of what is due or owed to persons" (Beauchamp and Childress, 2009)

- Injustice involves an act that denies people resources or protection to which they have a right

- Distributive justice involves the fair, equitable and appropriate distribution or allocation of resources, such as income, taxation, opportunities etc. among persons

4. Justice

- Principles of (distributive) justice
  1. To each person an equal share
  2. To each person according to need
  3. To each person according to effort
  4. To each person according to contribution
  5. To each person according to merit
  6. To each person according to free-market exchanges

Theories of Justice

- Several theories have been proposed to determine how to distribute, and/or redistribute social burdens and goods and services, including health care.
  - **Utilitarian**
    - Emphasizes maximization of public utility
  - **Libertarian**
    - Emphasizes rights to social and economic liberty
  - **Communitarian**
    - Justice through traditions and practices in the community
  - **Egalitarian**
    - Equal access to the goods valued by every rational person

Application of the Principles to Research

- **Respect for Autonomy/Persons**
  - Informed consent
  - Information
  - Comprehension
  - Voluntariness

Application of the Principles to Research

- **Beneficence**
  - Risks and benefits
    - Physical, Psychological, social
  - Balancing risks and benefits
  - Study design is relevant to risks/benefits
    - Randomization, placebos, control groups etc.
    - Sample size considerations

Application of the Principles to Research

- **Justice**
  - Distributing burdens and benefits of research fairly
  - Fair selection of individual participants
  - Fair selection of populations
  - Opposite of justice is exploitation

Case examples….

1. Seat belt and helmet laws?
2. Quarantining Cholera patients?
3. Laws criminalizing gay relationships?
4. Recruiting rural African-American men on a study to determine the natural progression of untreated syphilis in Tuskegee, Alabama, USA?

Thank you very much for your attention

Any questions????

BIOETHICS MCQ's

Doctors have a professional commitment to the care of their patients. Bioethics is thus central to the understanding of Medicine as a profession. There are a number of Ethical principles that are applicable to the health care professionals. The following ethical principles are identified in the traditional medical practice which establish ethical duties, obligations and rights and provide a standard for rationalization of ethical decisions.

Beneficence – The duty to do Good

Nonmaleficence - Preventing Harm

Autonomy - Right of Determination

Veracity – Honesty without Deception

Paternalism – Violating Autonomy

Confidentiality

Fidelity –Best interest of Patient

Justice – Equality with Everyone

1. The right to self – determinate and freedom from control of other is called:
    a. Beneficence
    b. Justice
    c. Fidelity
    d. Autonomy
    e. Veracity
2. The physician referred a patient to a psychiatrist due to the physician's concern about the patient's level of depression. The psychiatrist suggested a trial of antidepressant medication despite the patient's vehement refusal to take any prescription medication due to religious beliefs. The psychiatrist ignored:
    a. Beneficence
    b. Justice
    c. Autonomy
    d. Fidelity
    e. Veracity

3. A pharmacist recognizes that the patient has shown up for his refills of medication with his stomach growling so bad that it is louder than the clock in the counselling area. The pharmacist discovers that the patient is living on a limited income, has several children to feed and often goes several days without eating. As a result, the pharmacist obtains a list of local food pantries and provides assistance to this patient. This would be an example of:
    a. Fidelity
    b. Autonomy
    c. Beneficence
    d. Nonmaleficence
    e. All of the above

4. To act so that no harm is done to a patient would be defined as:
   I. Nonmaleficence
   II. Beneficence
   III. Autonomy

   a. I only
   b. III only
   c. I and II only
   d. II and III only
   e. I,II and III

5. A doctor who is an asthma educator who visits an impoverished area of Lusaka each month to provide asthma education would be excersing which ethical principle?
   a. Nonmaleficence
   b. Autonomy
   c. Beneficence
   d. Justice
   e. a and c
6. A doctor has been providing mental health counselling services to the patient for over one year who has developed an eating disorder. The doctor is not competent to provide counselling service addressing this significant concern. As a result, the doctor decides the best course of action is to refer the patient to a service provider who has specialised training in addressing the patient's eating disorder. The doctor has followed the ethical principle of:
   a. Autonomy
   b. Nonmaleficence
   c. Fidelity
   d. Veracity
   e. Justice

7. The doctor has worked with several patients throughout the day and he is scheduled to meet his hospital manager at the end of the day to submit all reports of that day. During the discussion the doctor tells the difficulties he had gone through throughout the day. The hospital manager is aware of the confidential nature of the information the doctor is sharing. However, the hospital manager shares one of the cases with her spouse, who works in registry department. Which ethical principle has been violated:
   a. Autonomy
   b. Veracity
   c. Confidentiality
   d. Justice
   e. None of the above

8. Mark is a 27 years old man who has a chronic back pain related to an old back injury. His pain is becoming difficult to treat, refractory to the usual analgesics. But his doctor hesitant to start narcotics because of the risk of addiction.so he decides to prescribe Niacin for its placebo benefits. Which ethical principle has been violated by the doctor?

a. Nonmaleficence
b. Beneficence
c. Paternalism
d. Autonomy
e. None of the above

9. A 12 year old child has undergone several treatment regimens for cancer over a period of years none of which have been successful. New treatments might offer some benefits but are considered unlikely to lead to a complete cure. Research trials indicate that the benefits can be between a few months to a year of life. After much discussion the parents are concerned that the potential side effects outweigh the possible extension of the child's life. They believe their child has already suffered enough over the years of treatment. If the physician goes ahead and gives the new treatment, what ethical principle will have been violated the most?
    a. Nonmaleficence
    b. Beneficence
    c. Autonomy
    d. Paternalism
    e. Justice
10. A 12 year old child has undergone several Treatment regimens for cancer over a period of years none of which have been successiful.The parents have heard of new treatment which clinical trials suggest might prolong life of some cancer patients by between a few months and a year. As a result they have requested that the treatment be given to their child. However, the specialist clinician at the hospital do not believe there would be any significant benefit for the child and do not give the new treatment, what ethical principle will have been followed by the physician?
    I.Beneficence
    II.Justice
    III.Paternalism

    a. I only
    b. III only
    c. I and II only
    d. II and III only
    e. None of the above

11. Mary is an intern pharmacist working in a busy pharmacy down town. Alice, a patient present to the pharmacy to purchase Plan B (an OTC emergency contraceptive).Mary is a catholic and believes emergency contraception is abortion and amounts to the killing of innocent human life. This has happened once before and other pharmacist was able to help the patient. But today she is the only pharmacist working and she refused to dispense Plan B to Alice. Which ethical principle she violets?
    a. Beneficence
    b. Nonmaleficence
    c. Justice
    d. Autonomy
    e. Veracity

Case: Question 12-13: Ms Edward is starting on a new medication for schizophrenia. The drug has a number of side effects, some of which are serious. She asks you several questions about the purpose of the medication and possible side effects. When you ask her what the physician told her about the medication, she reports that he said,'' *This is a multivitamin. I have got a lot of patients on this multivitamin and they are doing fine''*. It is obvious that her doctor does not want to tell her about the side effects of the drug because if he does, Ms Edward will not take it. So you dispensed the medication as a multivitamin.

12. Both the physician and Pharmacist seek for which ethics?
    a. Beneficence
    b. Justice
    c. Veracity
    d. Paternalism
    e. Autonomy
13. Both the physician and pharmacist violets which ethics
    a. Autonomy –Justice
    b. Veracity – Beneficence
    c. Veracity –Autonomy
    d. Nonmaleficence –Fidelity
    e. None of the above

Case: Question 14-15: Alick Banda, a 17year old patient was diagnosed with epilepsy and prescribed phenytoin 6 months ago. James a Pharmacist understands that Alick is embarrassed by the diseases and he is not convinced the doctor is right about the diagnosis. He thinks he does not need the drug. James tried to educate him on the med and the importance of taking it properly but it has not worked- he still omits doses frequently. He also continues to drive, and was recently in a non-injury accident. His father sometimes picks up his med, but does not seem to have knowledge of his son's disease or his non-compliance.

14. Today James doesn't want to counsel Alick about his med and compliance. Which ethical principle he mostly violates:
    a. Autonomy
    b. Beneficence
    c. Nonmaleficence
    d. Veracity
    e. Justice
15. If James disclose to the father that Alick is not taking the medicine, which ethical principle mostly she violates:
    a. Veracity
    b. Autonomy
    c. Beneficence
    d. Nonmaleficence
    e. Confidentiality

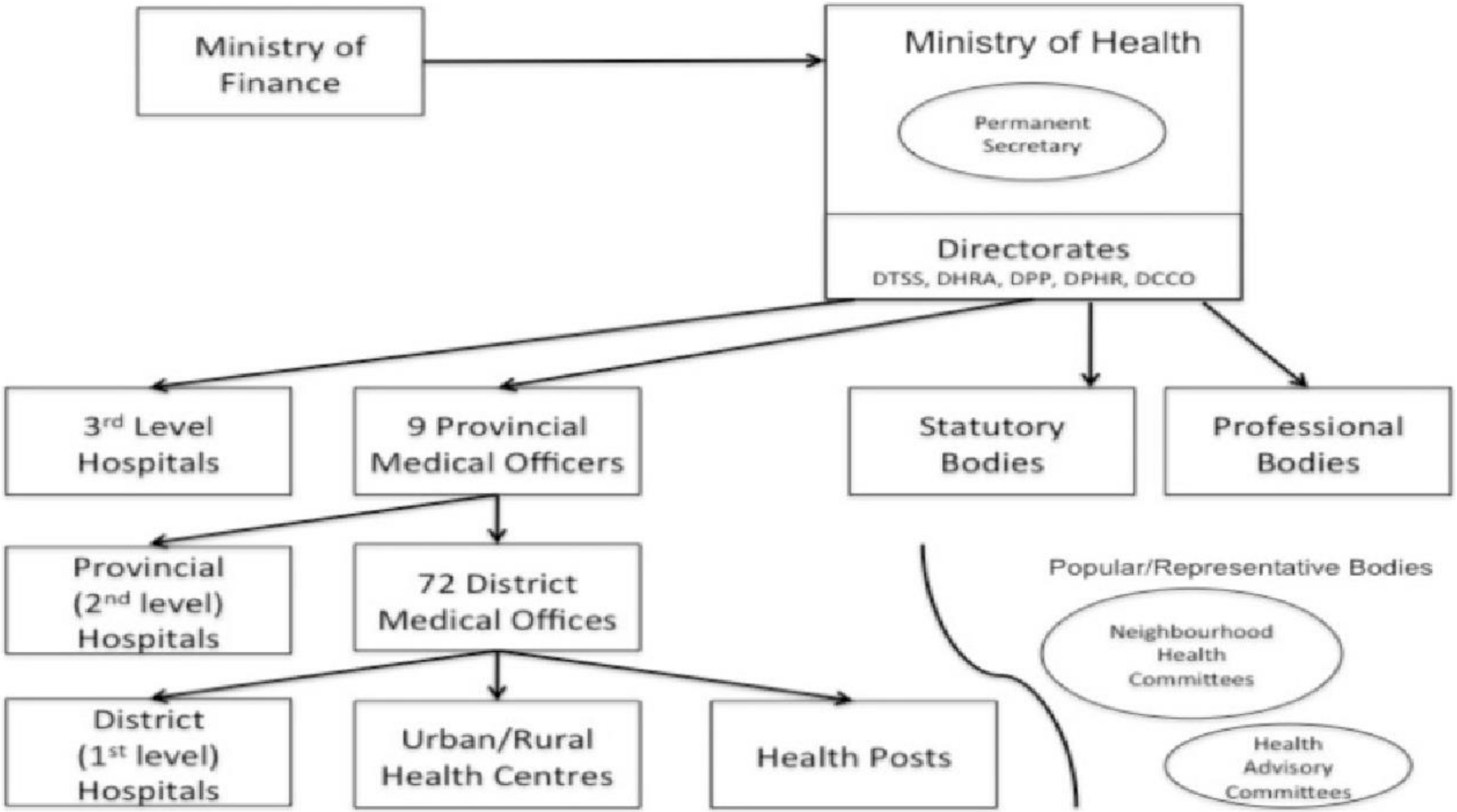
16. Which principle includes the notion of self-determination and non-interference with decisions?
    a. Beneficence
    b. Nonmaleficence
    c. Justice
    d. Fidelity
    e. Autonomy
17. When counselling a patient, you believe that you should spend time with patients who have adequate education to appreciate your instruction. Which ethical principle would you most clearly be violating?
    a. Autonomy
    b. Justice
    c. Nonmaleficence
    d. Beneficence
    e. None of the above
18. A regular client approaches you this morning with a beaming smile…you recognize Liz, distinctly remembering her agonizing journey through breast cancer diagnosis and subsequent therapy. You also remember her eye for detail and the well-researched questions she always seemed to pose. Liz is, after all, a high school teacher. Today, Liz has a bundle of papers in hand and requests a particular complementary product. The product has only recently been released on the market and you are unfamiliar with its content or mechanism of action. You are also weary of the complementary preparations for serious conditions, because they are not subject to clinical trials or stringent regulatory conditions of sale. Skimming through the printed articles you find little research based clinical evidence to support the claim that product helps prevent cancer related metastases or recurrence at primary site.
    Liz is convinced this is the treatment she wishes to take from now on… a "natural" product. Liz is now in remission and has decided she need not to be on the oestrogen-receptor antagonist any longer. The doctor's orders were to remain on Tamoxifen for good while- her case was a particularly aggressive type of breast cancer and all treatment options were utilised last year to establish remission; her doctors told her it was a very fragile situation, but Liz was not prepared to suffer any medication side effects any longer. What are the two contradicting ethics you will face in dealing with this case?
    a. Veracity
    b. Beneficence –Nonmaleficence
    c. Nonmaleficence –Autonomy
    d. Veracity –Nonmaleficence
    e. None of the above
19. The Bio Ethics science suggests that health care has moved, historically, to respect for autonomy from which model?
    a. Engineering
    b. Contractual
    c. Priestly
    d. Covenant
    e. Collegial

20. Primum Non Nocere means
    a. First, do no harm
    b. First, do not listen
    c. Never be the first
    d. The higher, the fewer
    e. Give nothing to the first
21. Fair distribution limits our duties of beneficence. What basic goods of others should be met before we dole out any luxuries
    a. Food, kindness, education
    b. Attention, compassion, consideration
    c. A job, a home, an education
    d. Nourishment, shelter, clothing
    e. Food, entertainment, companionship
22. According to the ethical principles, the benefits we are obliged to provide as healthcare professionals are specified in part by:
    a. Our upbringing and personal values
    b. Our relationship, role and agreements
    c. Our employer, the law and conscience
    d. Our contract with the hospital or clinic
    e. Our willingness to help
23. You are a male pharmacist working at night in the ward pharmacy alone and a female patient comes to your clinic wearing revealing clothes. She comes up very close to you and starts asking personal questions in a seductive tone. What could be your appropriate response?
    a. Refuse to attend to her
    b. Call in a nurse
    c. Use open ended questioning technique
    d. Ask about her personal life
    e. Refer her to another provider
24. The relationship between clinical research and medical practice is ethically considered. Which of the following best describes it?
    a. Research has been tightly regulated because a particular research may put a patient at risk for benefit of others
    b. Medical practice is focusing on the patient's own best interests and relies and considering benefit/risk ratio, so it is not very tightly regulated.
    c. There is distinction between research and medical practice
    d. Patient has to consent for any surgical or medical step of management or for accepting to be enrolled in research.
    e. All of the above
25. With regard to the relationship with pharmaceutical industry and medical field:
    a. There should be mutual pooling to promote welfare of the health institutions
    b. Doctors should regularly seek assistance for holiday abroad
    c. Should pay more attention to pharmaceutical literature
    d. Must strive to attend to academic activities such as panel discussions and lectures
    e. Meeting with pharmaceutical representatives is as good as looking at peer reviewed evidence base

INTRODUCTION TO COMMUNITY HEALTH (CONCEPTS)

DR PETER SIMOONGA

ORGANIZATIONAL STRUCTURE OF THE ZAMBIAN HEALTH SYSTEM



WHAT IS A COMMUNITY?

“ A community is a social group determined by geographical boundaries and/ or common values and interest.”

(WHO expert Committee [1974])

CHARACTERISTICS OF A COMMUNITY

1. **The community has a defined geographical boundaries which has the beginning and the end.**
2. **The community is composed of people who live together in the defined boundaries of the community.**
3. **The community people share common interests, values, moral norms and codes.**
4. **The people in the community interact with each other and have free communication.**
5. **The community has organized social structure and system and common organization which carry various functions.**

WHAT ARE THE FUNCTIONS OF A COMMUNITY

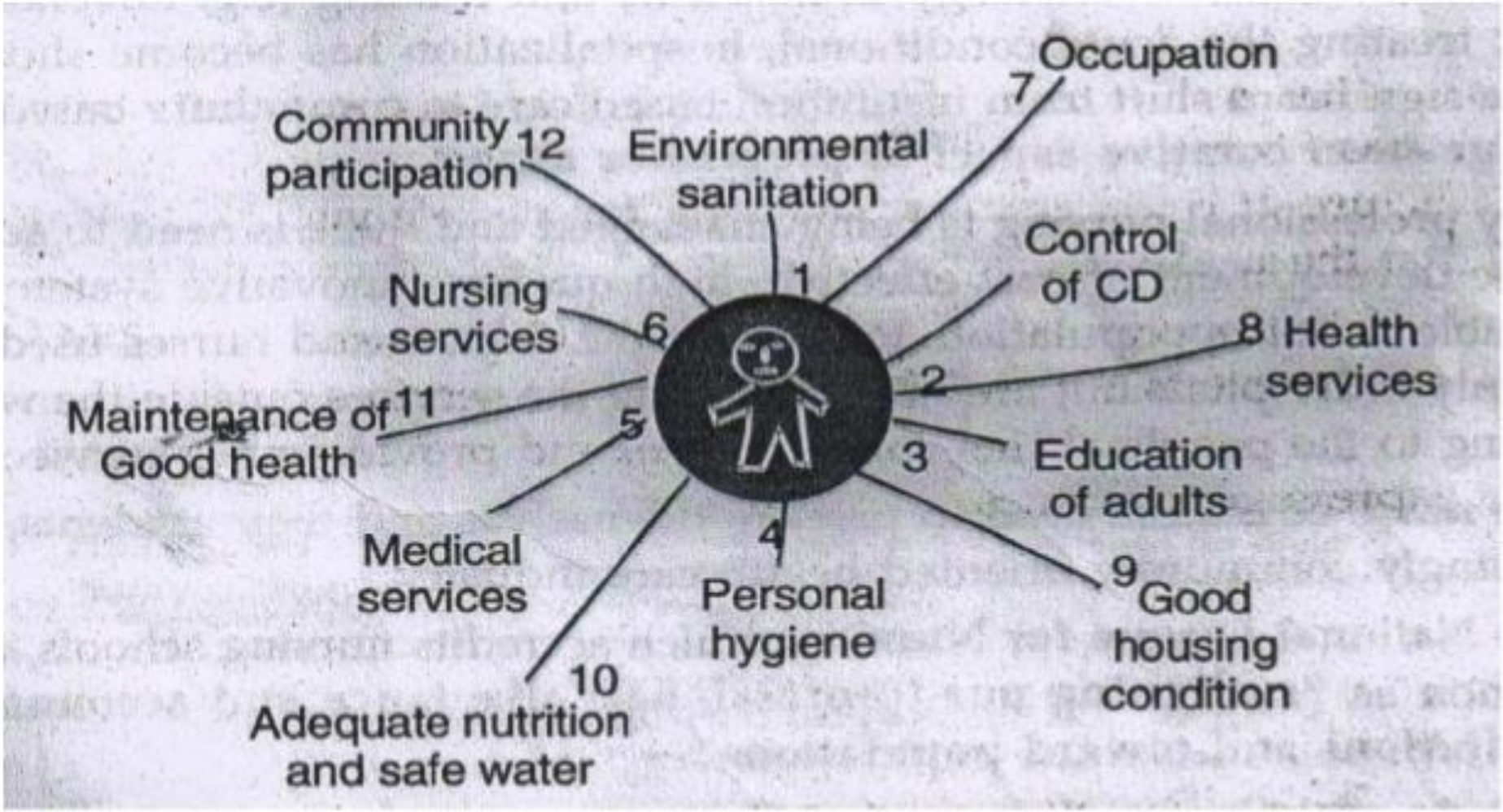
1. **It provides space for housing, shelter, socialization and recreation.**
2. **It provides means and facilities for livelihood.**
3. **Community provides opportunity for employment.**
4. **It takes care of socialization and education of its members.**
5. **It provides safety and security for its members by enforcement of norms and legislation formulated by the society.**
6. **It provides opportunities for people participation and communication.**

WHAT IS COMMUNITY HEALTH?

- **This refers to the health status of a defined group of people and the actions and conditions to promote, protect and preserve their health.**

- On the other hand **POPULATION HEALTH refers to the health status of a group of people not organized & without identity as a group or locality.**

C.E.A WINSLOW CONCEPT OF COMMUNITY HEALTH



OBJECTIVE OF COMMUNITY HEALTH

- **The objective of community health is to provide needs based comprehensive services which include the following:**

1. **Promotion and protection of health i.e. PRIMARY LEVEL PREVENTION.**
2. **Early diagnosis and treatment and control of further spread of disease i.e. SECONDARY LEVEL PREVENTION.**
3. **Control of disability and rehabilitation i.e. TERTIARY LEVEL OF PREVENTION.**

OBJECTIVE OF COMMUNITY HEALTH

- **The major emphasis is on primary level prevention with the active involvement of people.**

- **Majority of the health problems are preventable by simple measures.**

- **These measures include:**
  - *Safe drinking water.*
  - *Safe disposal of waste material.*
  - *Maintaining general cleanliness.*
  - *Immunization of children.*
  - *Traffic control.*
  - *Good nutrition.*
  - *Health checkup and mass screening.*
  - *Early diagnosis and mass treatment.*
  - *Health Education.*

OBJECTIVE OF COMMUNITY HEALTH

- **In community health the whole community is a client and the services should be focused.**
- **Thus it is important to:**
  i. **Know the community - COMMUNITY IDENTIFICATION.**
  ii. **Identify the health needs of the community - COMMUNITY DIAGNOSIS.**
  iii. **Understand underlying factors affecting health problems.**
  iv. **Plan and implement comprehensive services.**

COMMUNITY IDENTIFICATION

- **Is a process of exploring and knowing a defined community.**

- **Why know the community as a health personnel?**
  - ❖ ***For assessing its health status and determining the possible factors affecting the health of people in the community.***

COMMUNITY IDENTIFICATION

- **What are you looking out for?**
  - Geographical area, housing pattern and climate.
  - Population characteristics.
  - Life style of people.
  - Leadership pattern.
  - Family type, family size, & caste group.
  - Beliefs, attitude, values and customs etc.
  - Community environment.
  - Institutional facilities.
  - Voluntary organizations.
  - Channels of communication, telecommunication networks, travel modes.

COMMUNITY IDENTIFICATION

- **HOW WILL YOU OBTAIN THE INFORMATION ABOUT THE COMMUNITY?**

  - ***Making observation visits of the community.***
  - ***Formal and informal meetings and conversation with community people, leaders, organized groups etc.***
  - ***Discussion with health personnel and other workers in the community.***
  - ***Review of records.***
  - ***Formal sample survey of the community.***

COMMUNITY DIAGNOSIS

- **This is a written statement of health needs and health problems which are determined by analysis of data collected for community identification.**

- **The identified health needs/problems are prioritized for planning and implementing community health actions/community health treatment.**

COMMUNITY TREATMENT/COMMUNITY HEALTH ACTIONS

- Refers to the various health and health related activities which are planned and implemented to deal with identified health problems and health needs.

- **WHAT SHOULD YOU CONSIDER WHEN PLANNING HEALTH ACTIONS?**
  - ✓ **Nature of problems.**
  - ✓ **Effects of problems on health of people at large.**
  - ✓ **Felt needs & problems of the community.**
  - ✓ **Community resources and capabilities.**
  - ✓ **Health agency's objectives and policies.**

COMMUNITY TREATMENT/COMMUNITY HEALTH ACTIONS

- Community health services should be provided to all individuals irrespective to age, gender, caste, creed or colour.
- Community health services should be provided on a continuous basis so as to improve the health status of the community.
- Leaders or influential people of the community need to be involved in carrying out health related activities.
- Health authorities should define the objectives and purposes in relation to various programmes in order to achieve success.

DR PETER SIMOONGA

THE CONCEPT OF DISEASE SCREENING

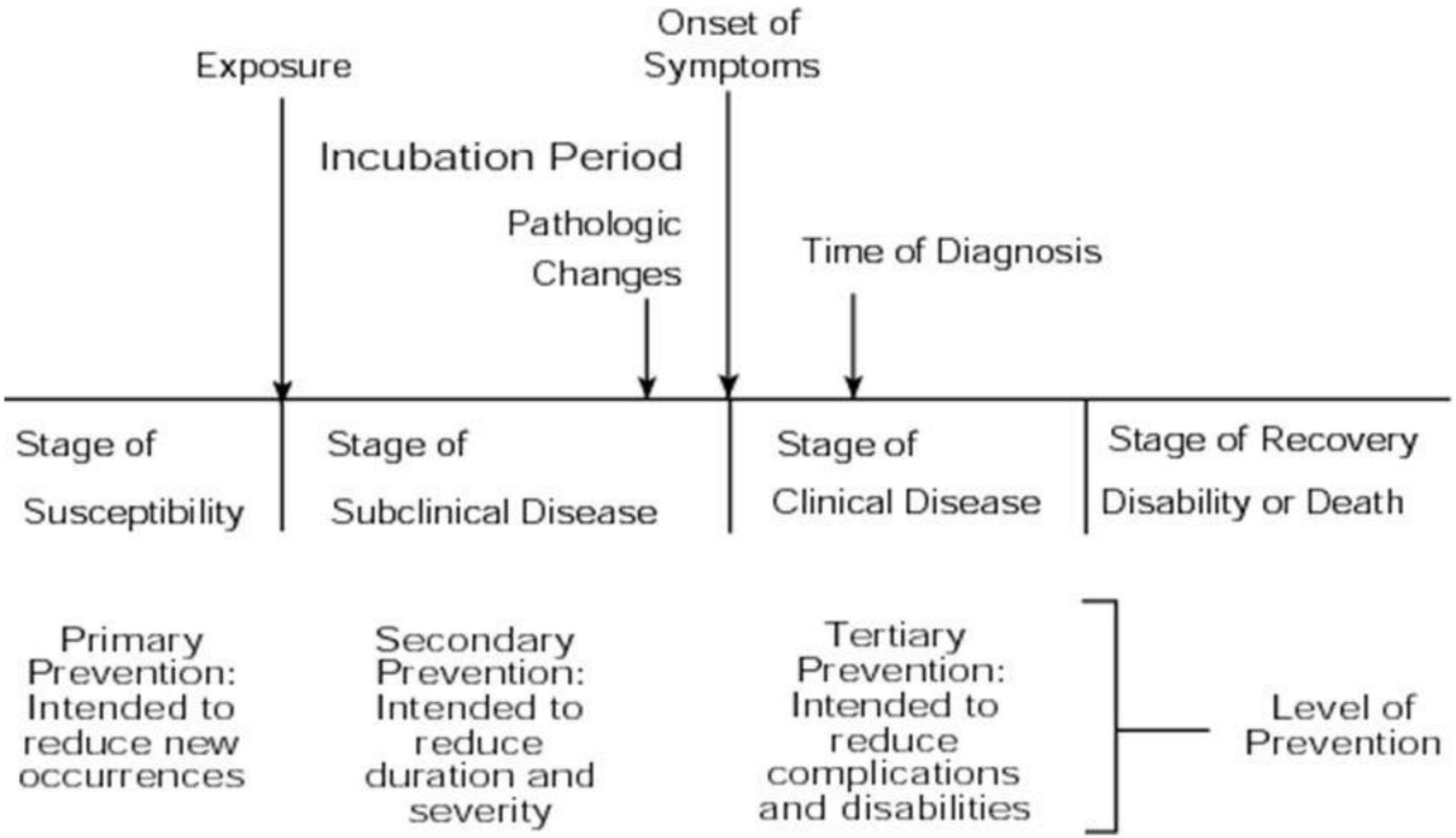
DR PETER SIMOONGA

INTRODUCTION

- **WHAT IS A DISEASE(aka illness)?**
  - Any harmful deviation from the normal structural or functional state of an organism, generally associated with certain signs and symptoms and differing in nature from physical injury.
- **WHAT IS HEALTH?**
  - Simple version - the state of being free from illness or injury
  - Complex version - A state of complete physical, mental and social well-being and not merely the absence of disease or infirmity. *(WHO)*
- **The study of disease is called pathology.**

Natural History of Disease

Progression of disease in individual *over time*



Primordial Prevention

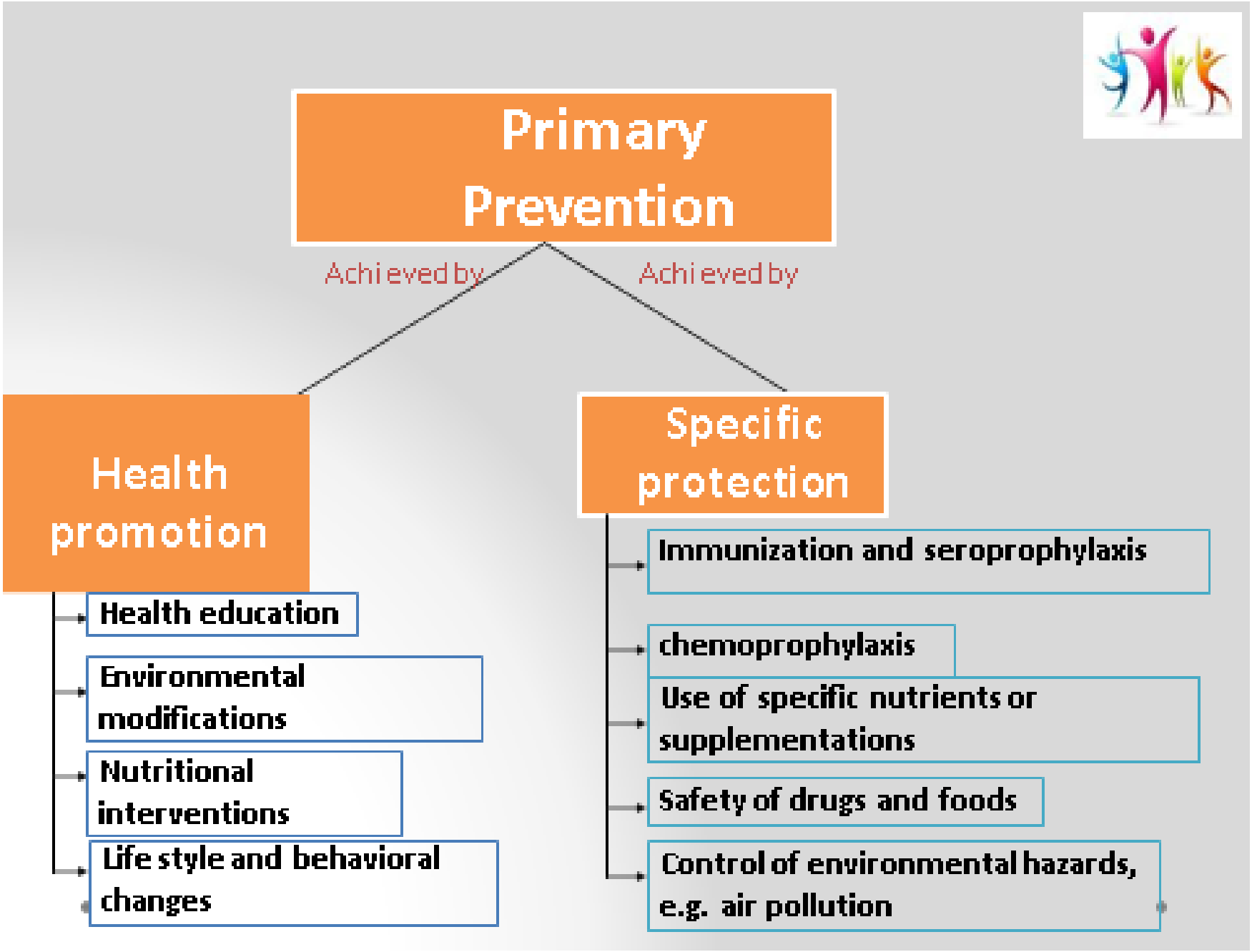
- Prevention of emergence or development of risk factors in countries or population groups in which they have not yet appeared.
- **INTERVENTION:** Individual and mass education.
- **EXAMPLES:**
  - ✓National programmes and policies on Food and nutrition
  - ✓Campaigns against smoking and drugs
  - ✓To promote regular physical exercise

Primary Prevention

- Action taken prior to onset of disease, which removes the possibility that a disease will ever occur.

- **INTERVENTION STAGE:** Pre-pathogenesis stage of disease.

- **MODES OF INTERVENTION:** Health promotion and Specific protection


Primary Prevention
Achieved by
Achieved by
Health promotion
Health education
Environmental modifications
Nutritional interventions
Life style and behavioral changes
Specific protection
Immunization and seroprophylaxis
chemoprophylaxis
Use of specific nutrients or supplementations
Safety of drugs and foods
Control of environmental hazards, e.g. air pollution

Secondary Prevention

- Action which halts the progress of the disease at its incipient stage and prevents complication.

- **INTERVENTION STAGE:** Early pathogenesis stage

- **MODES OF INTERVENTION:** Early diagnosis and Adequate/prompt treatment.

Tertiary Prevention

- All measures available to reduce or limit impairments and disabilities and minimize suffering caused by existing departures from good health and to promote the patients adjustment to irremediable conditions.
- **INTERVENTION STAGE:**Late pathogenesis stage
- **MODES OF INTERVENTION:** Disability limitations and Rehabilitation

SCREENING

- This is the search for unrecognized disease or defects by means of rapidly applied tests, examinations or other procedures in apparently healthy individuals.

- A key component of secondary prevention.

- Screening is designed to detect disease early in its asymptomatic stage whereby early treatment significantly retards disease progression or provides a cure.

Difference between screening and diagnostic tests:

	Screening tests	Diagnostic tests
1.	Done on apparently healthy population to detect potential cases or indicators.	Done on those with signs of a disease to establish presence or absence of disease.
2.	Applied to a community or group of people	Applied to individuals
3.	Based on one criterion or cut-off point	Based on evaluation of a number of evidences like symptoms, signs, and investigations.
4.	Generally less accurate and relatively less expensive	More accurate but also more expensive
5.	Not a basis of treatment	Forms a basis to initiate treatment
6.	Initiative comes from the investigator	Initiative comes from a patient.
7.	Simple, acceptable to patients and staff	May be invasive and cumbersome
8.	Generally chosen towards high sensitivity not to miss potential disease	Chosen towards high specificity

WHY SCREEN?

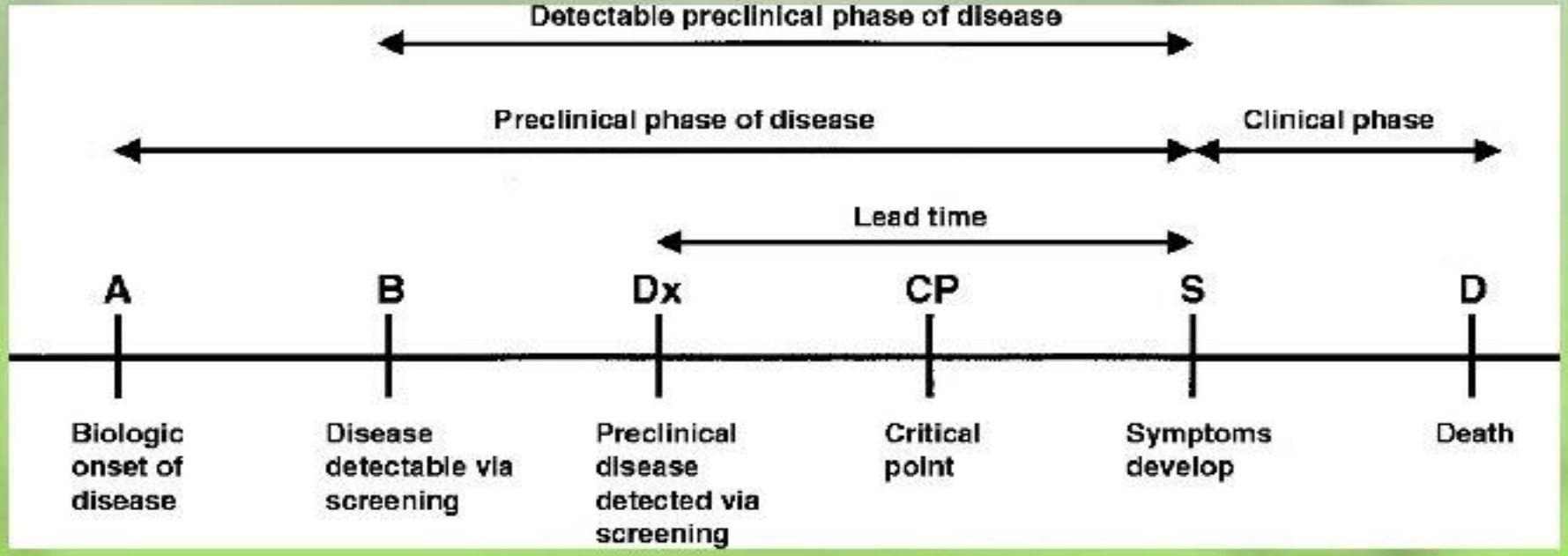
- **Case detection (Prescriptive screening)**
  - ❖e.g. neonatal screening, bacteriuria screening in pregnancy
- **Control of disease (Prospective screening)**
  - ❖e.g. COVID-19 screening of international travellers
- **Research purpose**
- **Educational opportunities**

WHEN TO SCREEN

Concept of Lead Time

"LEAD TIME" It is the period between diagnosis by early detection and diagnosis by other means.

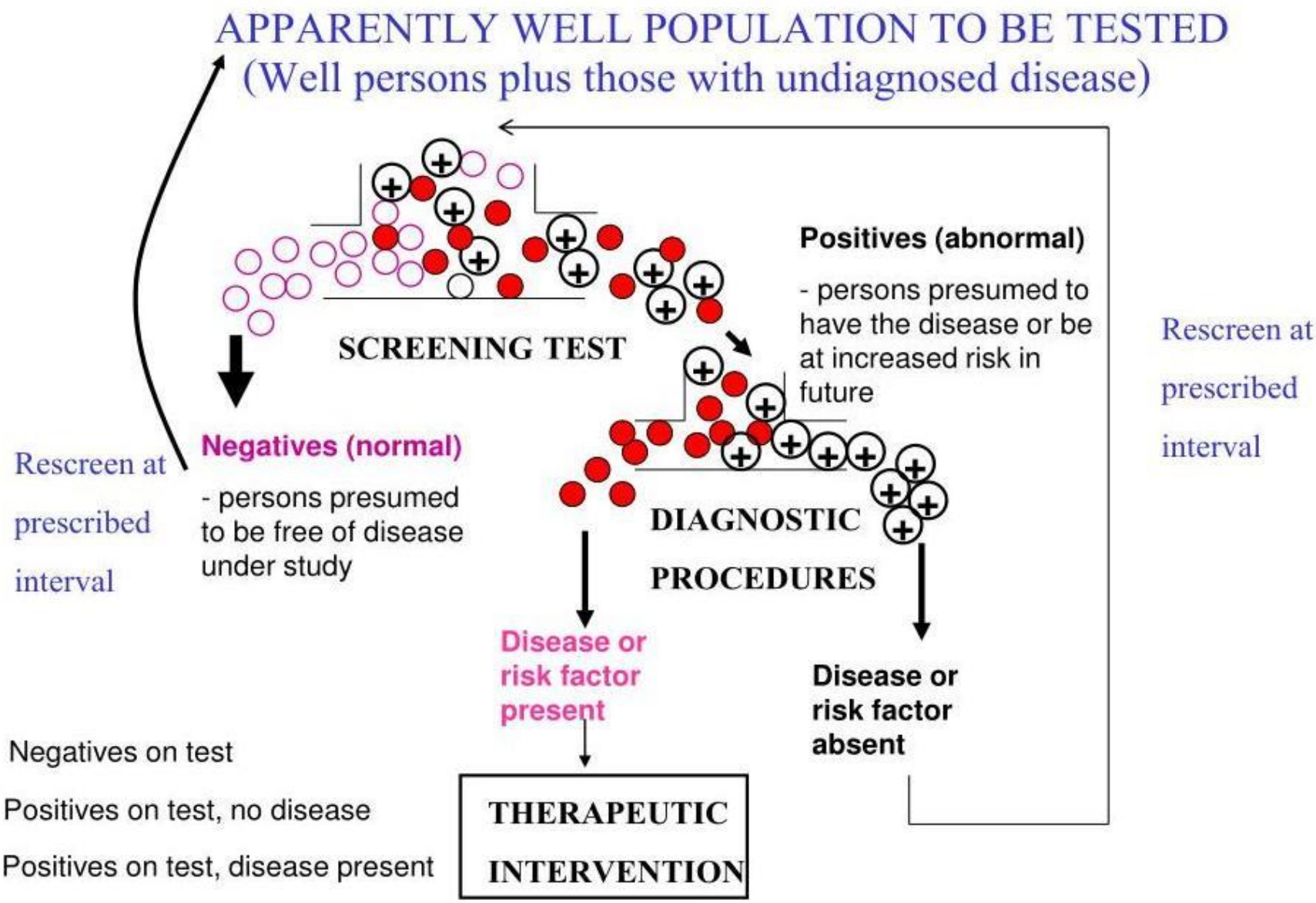
Detection programmes should be restricted to those conditions in which there is considerable time lag between disease onset and the usual time of diagnosis.



TYPES OF SCREENING

1. Mass screening
2. High risk or selective or targeted screening
3. Multiphasic screening
4. Multipurpose screening
5. Opportunistic and Case finding screening

OUTCOME OF SCREENING TEST



ANTHROPOMETRY AS A SCREEN TOOL FOR MALNUTRITION

DR PETER SIMOONGA
BScHB, MBChB, MScPATH, MPH

INTRODUCTION

- A branch of anthropology that involves the quantitative measurement of the human body.

- Commonly used to evaluate malnutrition (both under and over nutrition) by assessing the size, proportions and composition of the human body.

- Most measured values reflect the current nutritional status & do not differentiate between acute and chronic changes.

ANTHROPOMETRIC PARAMETERS

AGE DEPENDANT FACTORS

i. Weight
ii. Height
iii. Head circumference
iv. Chest circumference

AGE INDEPENDENT FACTORS

i. Mid-arm circumference
ii. Weight for height
iii. Skinfold thickness
iv. Mid upper arm/height ratio

WEIGHT

- Measurement of weight is the most reliable criteria of assessment of health and nutritional status of children

- Weight can be recoreded using a beam type weighing balance, electronic weighing scales or salter spring machines

WEIGHT

- Weight may also be approximated using the WEECH's formula

WEECH'S FORMULA

a) 3 – 12 months

Expected weight(kg) = age (months) + 9 / 2

b) 1- 6 years

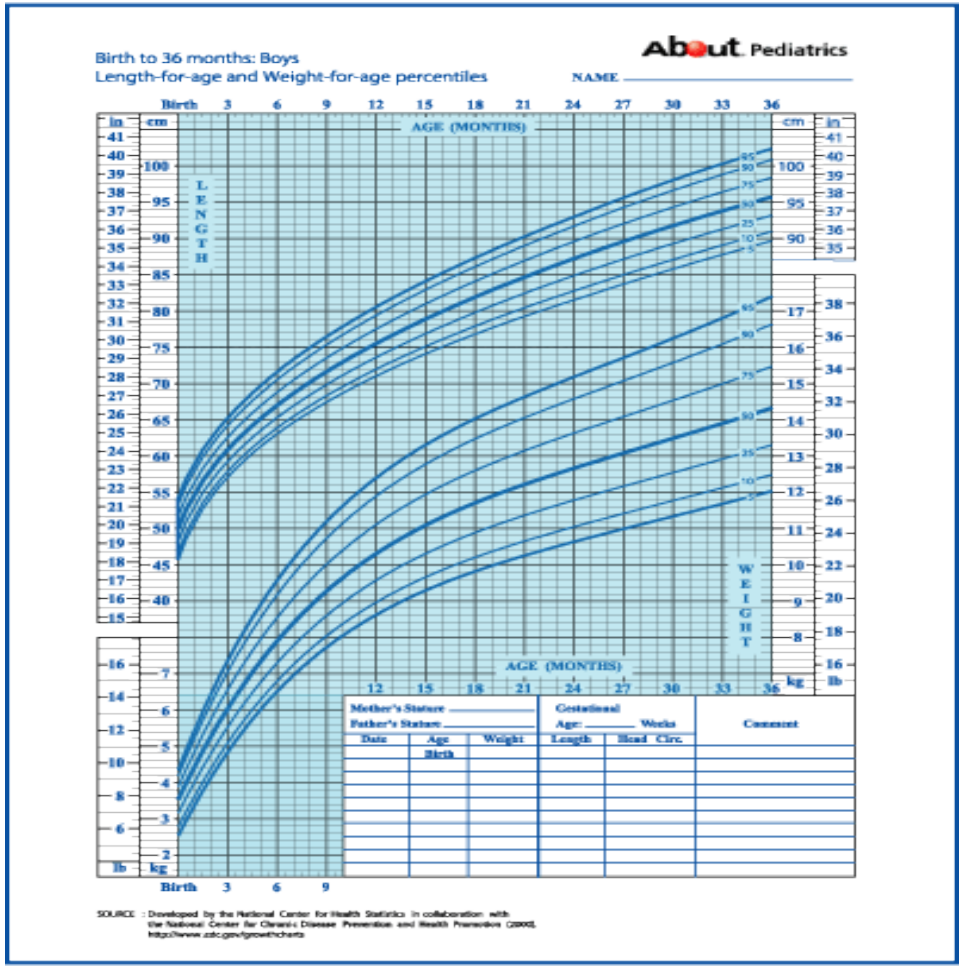
Expected weight(kg) = age (years) x 2 + 8

c) 7 – 12 years

Expected weight(kg) = age (years) x 7 - 5 / 2

Expected weight (kg)= age (years) x 3

- Periodic recording of weight on a growth chart is essential for monitoring the growth of U5 children



HEIGHT OR LENGTH

- Upto 2 years of age the recumbent length is measured with the help of an infantometer.
- In older children standing height is measured prefereably using a stadiometer.
- Nutritional deprivation over a period of time affects the stature or linear growth of the child .....(stunting is an indictor of chronic malnutrition).

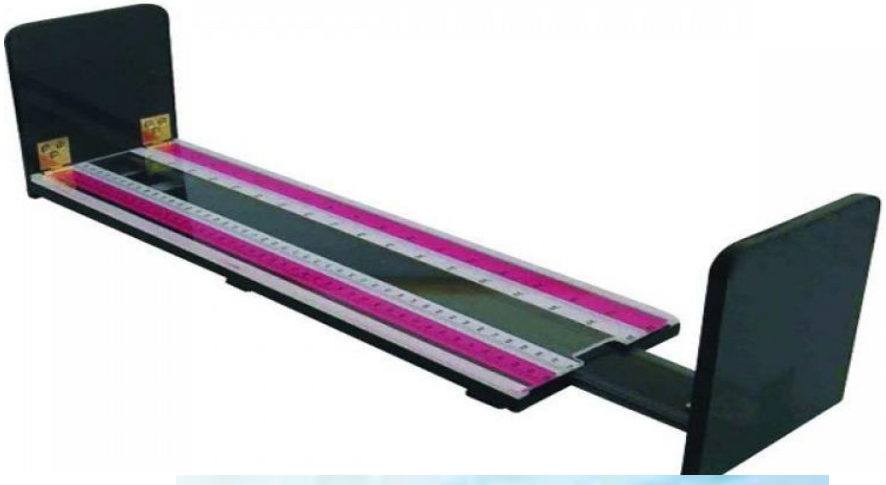


Table 2. Normal Growth Velocity by Age

Age	*Growth velocity per year*
Birth to 12 months	23 to 27 cm (9.06 to 10.63 in)
12 months to 1 year	10 to 14 cm (3.94 to 5.51 in)
2 to 3 years	8 cm (3.15 in)
3 to 5 years	7 cm (2.76 in)
5 years to puberty	5 to 6 cm (1.97 to 2.36 in)
Puberty	Girls: 8 to 12 cm (3.15 to 4.72 in)
	Boys: 10 to 14 cm (3.94 to 5.51 in)

WEIGHT-FOR-HEIGHT

- Weig-for-height = (weight of pt in kg/expected weight of normal child of same height) X 100
- Classification:
  - In acute malnutrition the child is “wasted” and thus
    - weight for age is low
    - height for age is normal
    - weight for height is low
  - In chronic malnutrition the child is “stunted” and thus
    - weight for age is low
    - height for age is low
    - weight for height is normal

ANTOPOMETRY: REFERENCE

Traditional reference:- Gomez, Waterlow

Recent:-

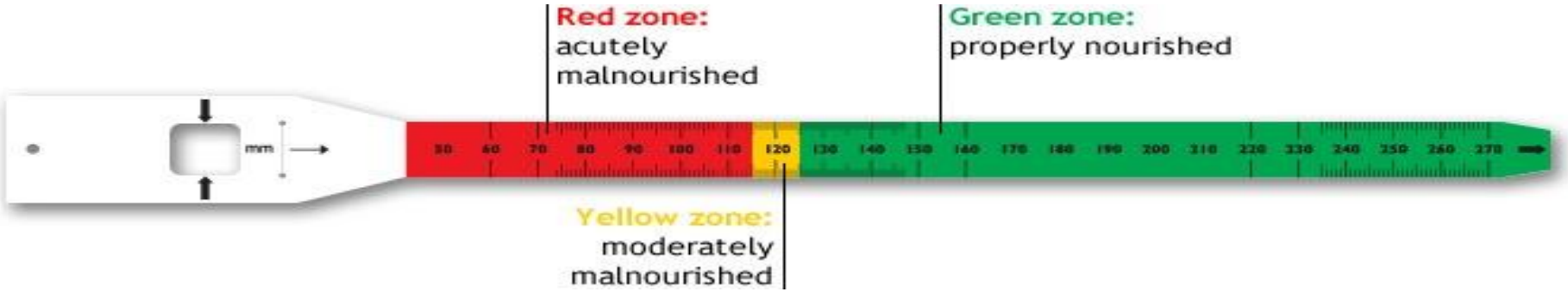
Stunting: Height for age

Wasting: Weight for height

Type	Normal	Mild	Moderate	Severe
Stunting(%)	90-120	80-89	70-79	<70
Wasting(%)	95-110	90-94	70-79	<85
Range	**+2 to –1 SD**	**-1 to –2 SD**	**-2 to –3 SD**	**-3/more SD**

MID-UPPER ARM CIRCUMFERENCE (MUAC)

- Conventionally measured over the left upper are, at a point marked midway between acromion and olecranon with the arm bent at right angle.
- In Zambia MUAC is commonly measured with a fiber glass tape on a standing or sitted child whose arm is hanging loose at the side.



- RED: < 11.5cm,YELLOW: 11.5 - 12.5cm , GREEN: > 12.5cm

ANTHROPOMETRY

ADVANTAGES

- Less expensiv & minimal training required.
- Readings are reproducible
- Objective with high specificity & sensitivity
- Measures many variables of nutritional significance
- Readings are numerical & gradable on standard growth charts

LIMITATIONS

- Inter-observers errors in measurement.
- Limited nutritional diagnosis
- Problems with referencing - local Vs international
- Arbitrary statistical cut-off points for what is considered as abnormal values.

URINALYSIS AS A SCREENING TOOL

Urine may be a waste material for the ordinary man but is an important guid for a physicain

INTRODUCTION

- Urine should be analysed as radpidly as possible, ideally within 30 minutes.
- Some unrine components such as casts are particulary vulnarable to disintergration and will only be detected if fresh urine is examined.
- When immediate examination isn't possible:
  - *The urine should be refrigerated but not frozen especially if sediment analysis is to be performed.*
  - *Refridgerated unrine shoul not be stored for more than 6-12 hours.*
  - *When due for analysis the urine should be brought to room temperature and mixed throughly before analysis.*

URINALYSIS

A. Physical Examination

Includes:

1. Volume.
2. Color.
3. Odor.
4. Reaction (pH).
5. Specific gravity.

C. Microscopic Test

Include:

1. Cells.
2. Crystals.
3. Casts.
4. Microorganism
5. Parasites.
6. Contamination

B. Biochemical Examination

Includes:

1. Proteins.
2. Sugers.
3. Ketone bodies.
4. Bile salts.
5. Bile Pigments.
6. Blood.

COLLECTION OF THE URINE

- Different specimen specifications:
  - First morning sample - concentrated urine for biochemical analysis, urine casts and crystals.
  - Random urine specimen - chemical screening, microscopic examination.
  - 24 hour urine sample - qantitative estimation of proteins, sugar, electrolytes and hormones.
- Mid stream urine specimen
- Clean catch urine

PHYSICAL URINE EXAMINATION

- VOLUME: Polyuria,oliguric or anuric.
- APPEARANCE/COLOUR:
  - Normal - amber yellow
  - Colourless - very dilute urine e.g. polyuria in DM
  - Yellow orange (highly coloured) - concentrated urine, excess; urobilin,bile pigments or carrot intake.
  - Red/Smoky - Increased RBC, myoglobin or beetroot or menstrual contamination.
  - Cloudy - phosphates & carbonates, urates & uric acid, pus cells, yeast, spermatozoa.
  - Milky - pyuria, fat, chyluria
  - Brown black - methemoglobin, alkaptonuria, melanin, levadopa, imipenem
  - Orange - rifampicin

ODOUR OF URINE

Normal odour

Fresh urine has aromatic odor

Abnormal odors

a. Ammonia smell: after prolonged standing

b. Fecal smell: due to urinary infection.

c. Fruity smell: ketosis

d. Mousy order : phenylketonuria.

e. Rancid : Tyrosinaemia.

f. Maple syrup odour : MSUD

pH

- Urine pH ranges from 4.5 to 8
- Normally it is slightly acidic lying between 6 – 6.5.
- Diet has an impact on urine pH; diets high in protein cause production of more acidic urine, while diets high in vegetable material yield a urine that is more alkaline.

pH

CAUSES OF ACIDIC URINE

- Acidosis - metabolic and/or respiratory
- ncontrolled diabetes
- Diarrhea
- Starvation
- Dehydration

CAUSES OF ALKALINE URINE

- UTI - caused by urease expressing organisims.
- Feeding
- Salicylate intoxication
- Obstructive uropathy
- CKD
- Respiratory alkalosis
- Renal tubular acidosis

SPECIFIC GRAVITY

- It is measurement of urine density which reflects the ability of the kidney to concentrate or dilute the urine relative to the plasma from which it is filtered.
- Normal : 1.001- 1.040.
- **Isosthenuria-**Persistent production of fixed low Specific gravity urine isoosmolar with plasma despite variation in water intake.
  - Indicates severe renal damage in which there is disruption of both concentrating and diluting abilities.

SPECIFIC GRAVITY

HYPOSTHENUA - Low specific gravity

- Indicates increased production of dilute urine
- Causes:
  - ✓ Diabetes insipidus
  - ✓ Polydepsia
  - ✓ Pyelonephritis
  - ✓ Glomerulonephritis
  - ✓ Use of diuretics

HYPERSTHENURIA - High specific gravity

- Indicates increased production of concentrated urine
- Causes:
  - ✓ Dehydration
  - ✓ DM
  - ✓ Adrenal insufficiency
  - ✓ Protein in urine

Clinical Significance of Urine Protein

Prerenal	Tubular
Disorders	
Intravascular hemolysis	Fanconi syndrome
Muscle injury	Toxic agents/heavy metals
Acute phase reactants	Severe viral infections
Multiple myeloma	
Renal	Postrenal
Glomerular disorders	Lower urinary tract infections/ inflammation
Immune complex disorders	Injury/trauma
Menstrual contamination	
Amyloidosis	Prostatic
fluid/spermatozoa	
Toxic agents	Vaginal secretions
Diabetic nephropathy	
Strenuous exercise	
Dehydration	
Hypertension	
Pre-eclampsia	

Clinical Significance of Urine Glucose

Hyperglycemia- Associated

- Diabetes mellitus
- Pancreatitis
- Pancreatic cancer
- Acromegaly
- Cushing syndrome
- Hyperthyroidism
- Pheochromocytoma
- Central nervous system damage
- Stress
- Gestational diabetes

Renal-Associated

Fanconi syndrome

Advanced renal disease

Osteomalacia

Pregnancy

CLINICAL SIGNIFICANCY OF URINE

KETONS

- Diabetic acidosis
- Insuline dosage monitoring
- Starvation
- Malabsorption/pancreatic disorders
- Strenuous exercise
- Vomiting
- Inborn errors of amino acid metabolism

BILIRUBIN

- Hepatitis
- Cirrhosis
- Biliary obstruction e.g. gall stones

UROBILINOGEN

- Hemolytic disorders
- Early detection of hepatobilliary associated pathologies

THE END

OVERVIEW OF GENETIC DISORDERS

DR PETER SIMOONGA

INTRODUCTION

- A genetic disorder is a disease that is caused by an abnormality in an individual's DNA.
- Abnormalities can range from a small mutation in DNA or addition or subtraction of an entire chromosome or set of chromosomes.
- Most Genetic disorders are quite rare and affect one person in every several thousands or millions.
- Genetic disorders may results by
  - Point mutation, or any insertion/deletion entirely inside one gene
  - Deletion of a gene or genes
  - Whole chromosome extra, missing, or both

TYPES OF INHERITED DISEASE

1. **Autosomal Disorder**
   - ❑ Autosomal Dominant
   - ❑ Autosomal Recessive

- EXAMPLES: downs syndrome, haemophilia, Sickle cell anemia.

2. **Allosomal Disorder**
   - ❑ X- linked dominant
   - ❑ X- linked recessive
   - ❑ Y- linked

- EXAMPLES: Kleinfelters syndrome, Turners syndrome.

3. **Mitochondrial Disorder**

Genetic disorders can also be classified as: SINGLE GENE DISORDERS, CHROMOSOMAL GENETIC DISORDERS or MULTIFACTORIAL GENETIC DISORDERS.

DIFFERENCES

AUTOSOMAL DISORDER	ALLOSOMAL DISORDER
These arise by gene mutation in autosomal chromosomes.	These arise by gene mutation in sex chromosomes (mainly X chromosome)
They affect the both sexes i.e males and females.	They affect more males than females.
The mutated gene can be dominant or recessive.	The mutated gene is recessive.
The suffer is homozygous or heterozygous. Eg Down syndrome, sickle cell anemia.	The suffer is hemizygous. Eg Klinefelter syndrome

Diagnosing Genetic Disorders

- **Personal Medical History**
- **Family Medical History**
- **Physical Examination**
- **Investigations:**
  - **Laboratory Tests**
  - **Imaging**

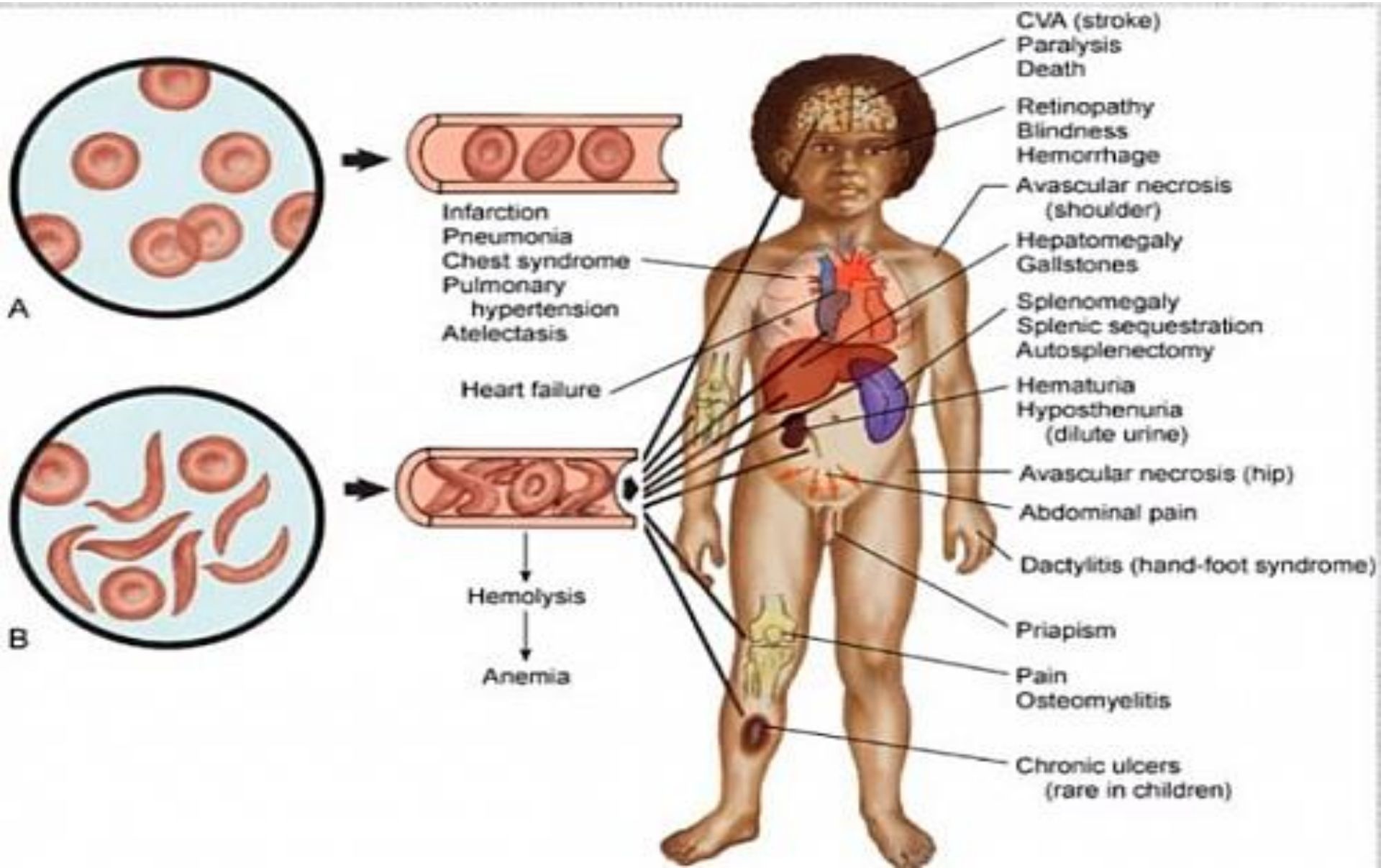
Laboratory Tests

- **Genetic testing**
  - **Molecular, chromosomal, and** biochemical genetic testing are used to diagnose genetic disorders.
- **Purpose of genetic tests**
  - Finding genetic diseases in unborn babies.
  - Finding out if people carry a gene for a disease and might pass it on to their children .
  - Screening embryos for disease
  - Testing for genetic diseases in adults before they cause symptoms.
  - Making a diagnosis in a person who has disease symptoms.

Single Gene Disorder (sickle cell anemia)

- The specific genetic mutation that results in sickle hemoglobin involves a substitution of thymine for adenine (from GAG to GTG) on the sixth codon of the genetic sequence.
- This leads to the coding of valine rather than glutamate on the sixth position of the hemoglobin beta chain.
- **Sickle** haemoglobin, the result of this mutation, has the singular property of polymerizing when deoxygenated.

Clinical Features of sickle cell anemia



TRISOMY

- A trisomy is a type of polysomy in which there are three instances of a particular *chromosome*, instead of the normal two.
- It is a type of aneuploidy (an abnormal number of chromosomes)
- If the chromosome pairs fail to separate properly during cell division, the egg or sperm may end up with a second copy of one of the chromosomes (non
- disjunction).
- If such a gamete results in fertilization and an embryo, the resulting embryo may also have an entire copy of the extra chromosome
- osome

TRISOMY

- The most common types of autosomal trisomy that survive to birth in humans are:

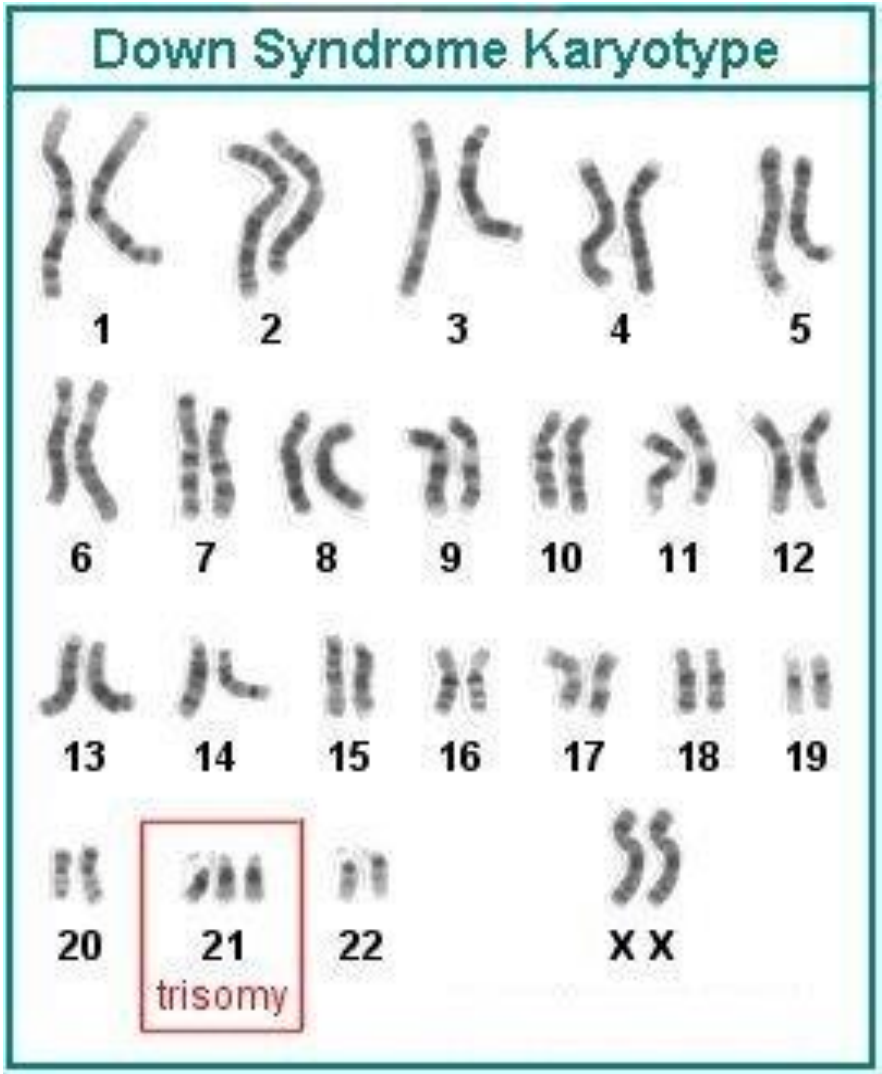
  ✓Trisomy 21 (Down syndrome)

  ✓Trisomy 18 (Edwards syndrome)

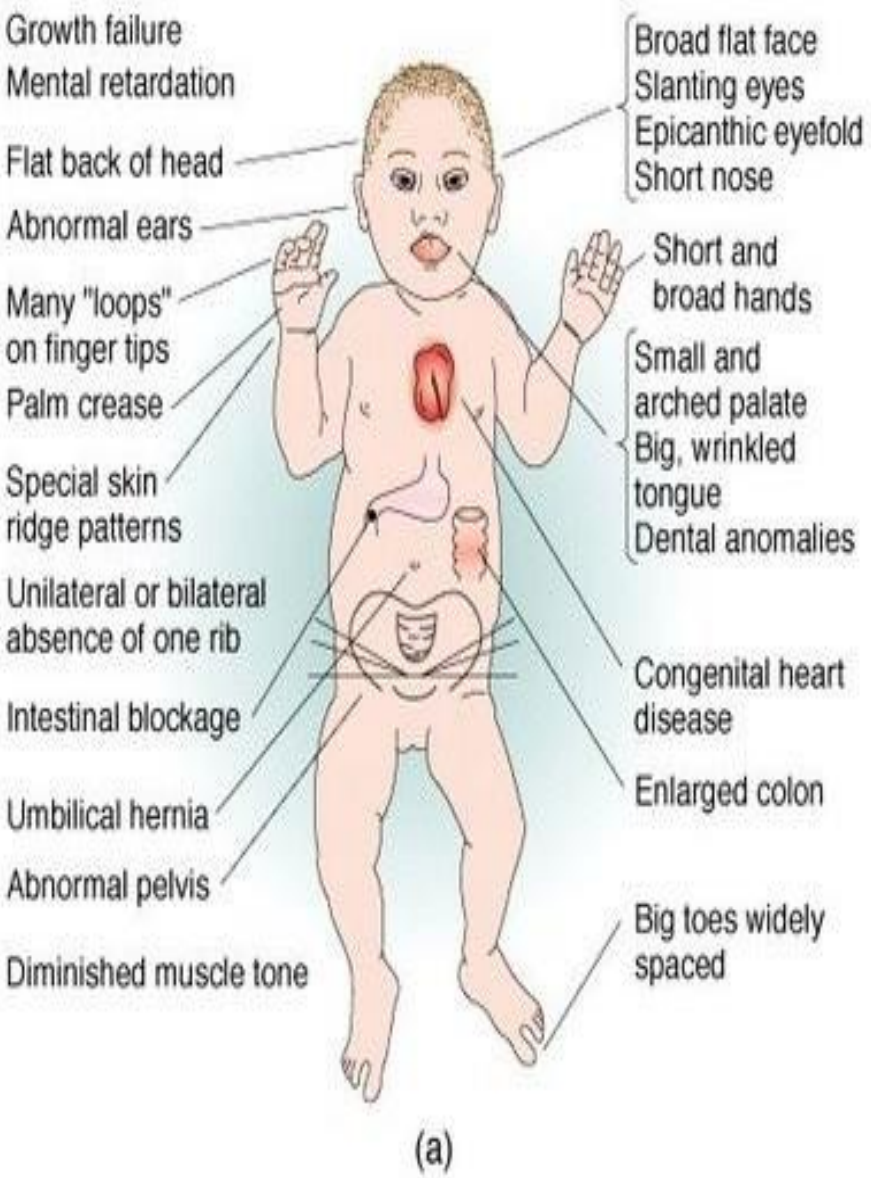
  ✓Trisomy 13 (Patau syndrome)

Trisomy 21 (Down Syndrome)

- This is a chromosomal condition caused by the presence of all or part of an extra 21st chromosome.
- **Mosaic Down syndrome.** In this rare form of Down syndrome, children have some cells with an extra copy of chromosome 21.
- **This mosaic of normal and abnormal cells is caused by abnormal cell division after fertilization.**
- **Translocation Down syndrome.** Down syndrome can also occur when part of chromosome 21 becomes attached (translocated) onto another chromosome, before or at conception.
- **These children have the usual two copies of chromosome 21, but they also have additional material from chromosome 21 attached to the translocated chromosome.**



Features of Down Syndrome

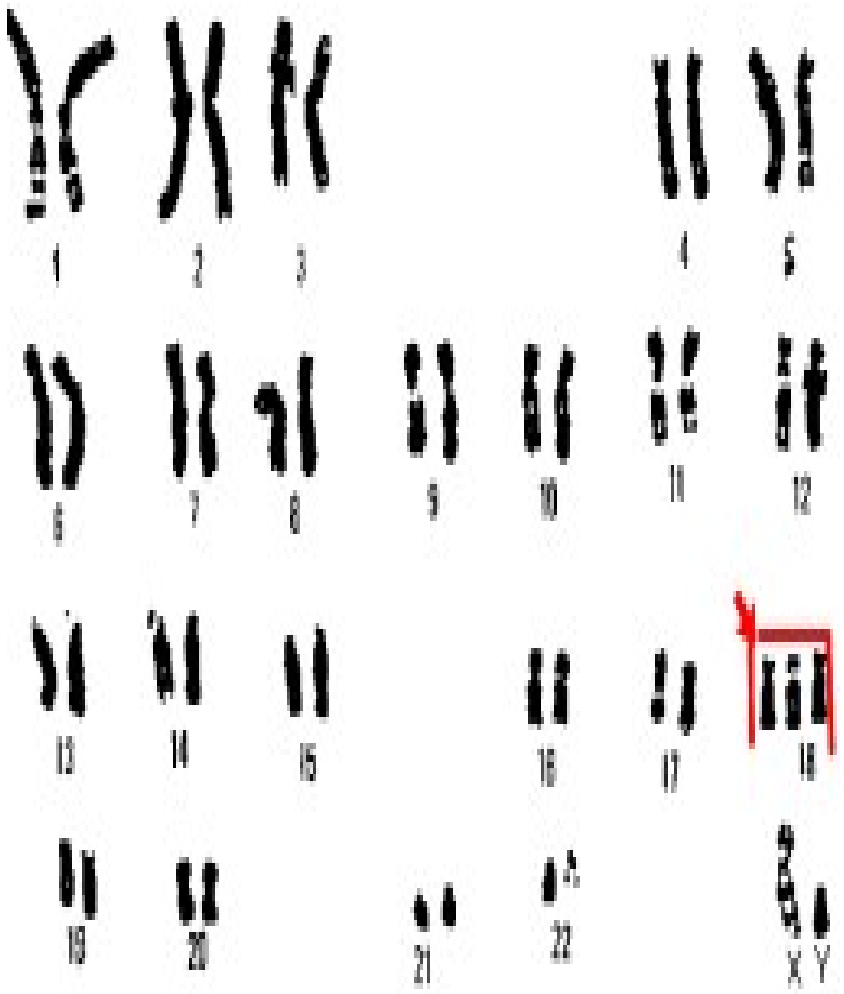


Features of Down Syndrome

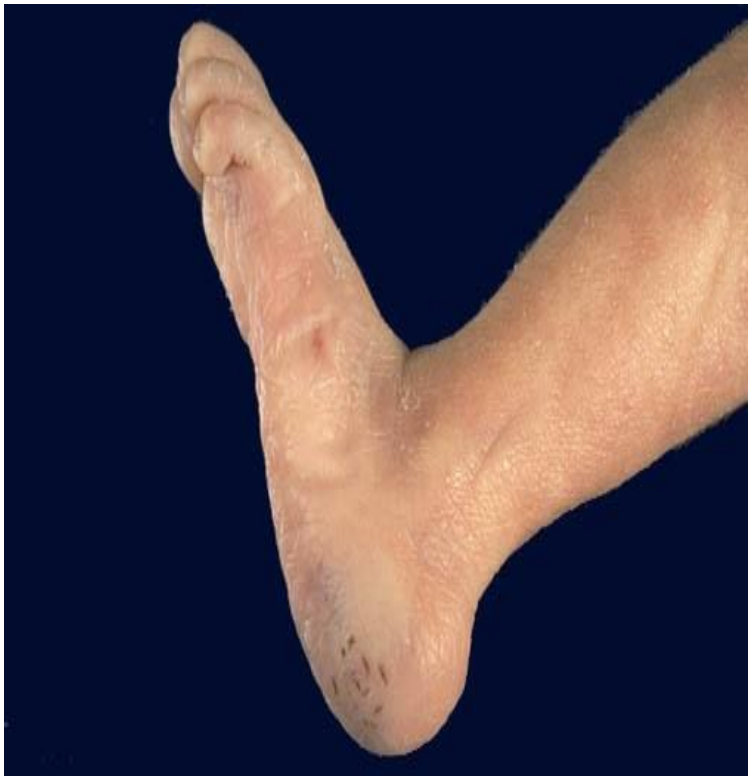
- Short height
- Severe mental deficiency with decline in the IQ with age
- Brachycephaly with flat face and occiput
- Flat and low nasal bridge
- Upward slant to palpebral fissures
- Malformed large ears
- Epicanthal folds of the eyes
- Brushfield spots in iris
- Renal anomalies
- Prominent and protruding tongue (scrotal tongue)
- Simian crease
- Clinodactyly of 5th digit

Trisomy 18 (Edward Syndrome)

- **Edward's Syndrome** also kwnon as **Trisomy 18** (T18) or Trisome E.
- It is a genetic disorder caused by the presence of all of an extra 18th chromosome (Trisomy 18) due to meiotic nondisjunction.
- Edward's Syndrome occurs in around 1 in 6,000 live births and around 80 % of those affected are female.



Features of Edward Syndrome



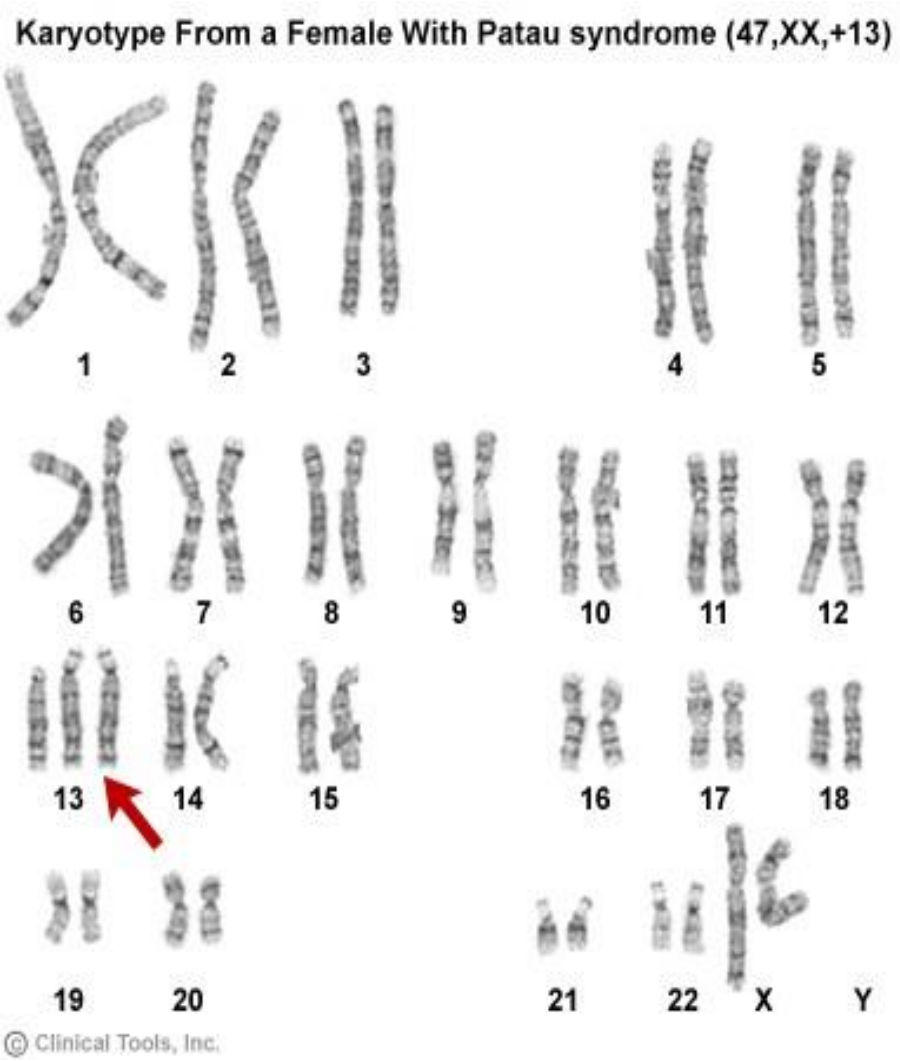
Features of Edward Syndrome

- Mental deficiency
- Growth retardation
- Prominent occiput with elongated head
- Webbing of the neck
- Short sternum
- Micrognathia
- Low-set malformed ears
- Ventricular septal defects
- Renal anomalies
- Clenched fists with overlapping of fingers
- Hypoplastic nails

TRISOMY 13 (PATAU SYNDROME)

- **Patau Sundrome**, also known as Trisomy 13 and Trisomy D.
- Is a chromosomal abnormality, a syndrome in which a patient had an additional chromosome 13 due to non-disjunction of chromosomes during meiosis.
- Some are caused by **Robertsonian Translocations**.
- The extra chromosome 13 disrupts the normal course of development, causing heart and kidney defects, amongst other features characteristic of Patau syndrome.

Patau syndrome



FEATURES OF PATAU SYNDROME

- Mental deficiency
- Low birth weight
- Abnormal development of frontal lobe
- Absence of corpus callosum
- Hypoplasia of cerebellum
- Sloping forehead
- Scalp defects
- Malformed ears
- Congenital heart defects
- Renal tract anomalies
- Microphthalmia
- Bilateral cleft lip/palate
- Polydactyly with rudimentary digits
- Rocker-bottom heel

Klinefelter syndrome

- A genetic condition caused when someone has two X chromosomes and one Y chromosome. 47, XXY (or XXY).
- XXY is usually caused by nondisjunction during meiotic cell divison.
- Because people with an XXY chromosome arrangement have a Y chromosome, they are considered genetic males.
- Most XXY individuals develop as males, often not knowing they have an extra chromosome.

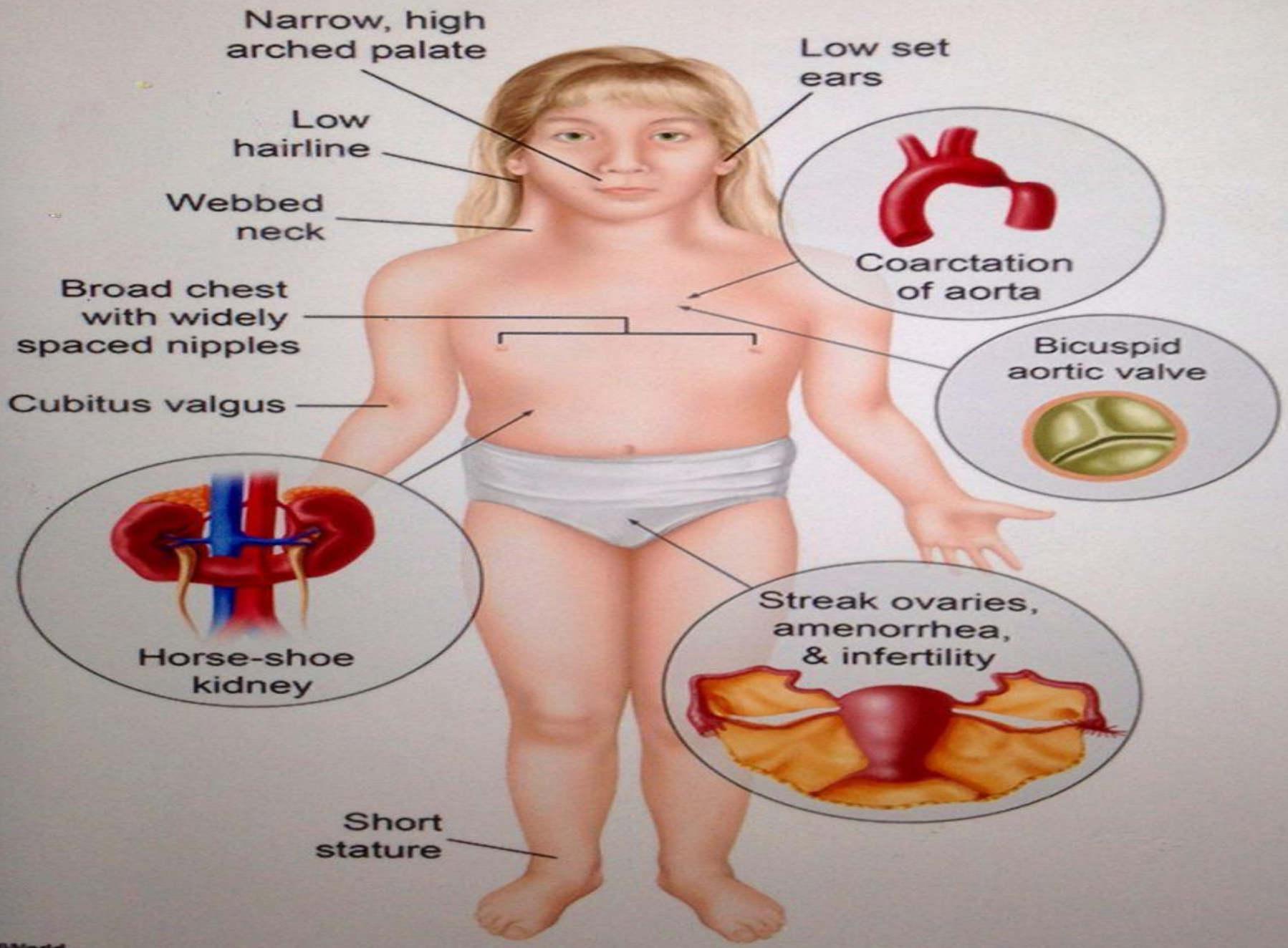
Klinefelter syndrome

- The XXY chromosome arrangement affects primarily sexual development.
- Typically, testes don't fully develop, and the levels of the hormone testosterone (important for male sexual development) are lower than average.
- As adults, nearly all XXY males are unable to make sperm and so cannot have biological children.
- Many men discover their condition only after they seek medical help for infertility.
- Changes that appear at puberty can include low growth of facial and body hair, development of breast tissue, and small testes.

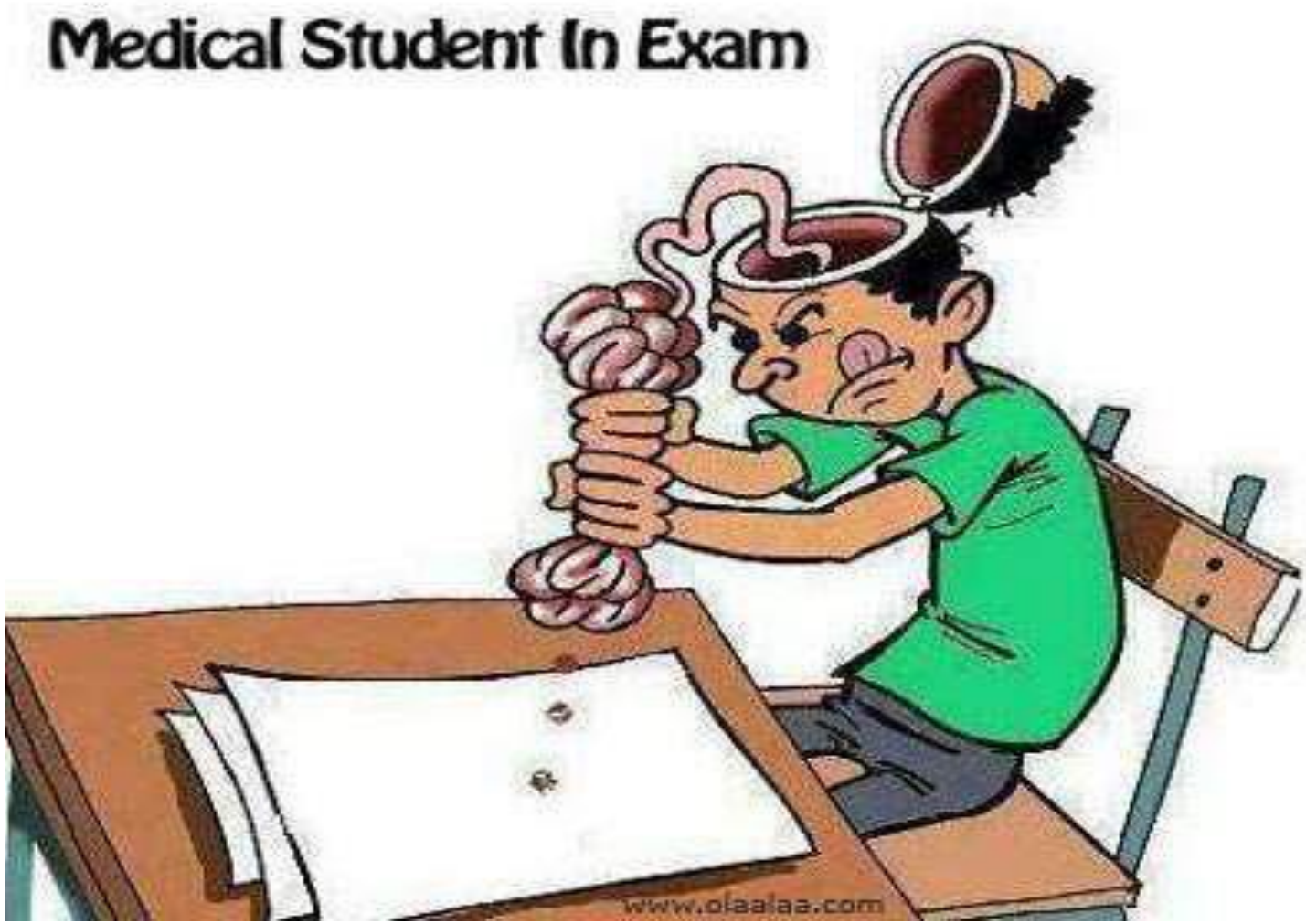
Turner Syndrome

- Turner syndrome is caused by a missing or incomplete X chromosome.
- People who have Turner syndrome develop as females.
- The genes affected are involved in growth and sexual development, which is why girls with the disorder are shorter than normal and have abnormal sexual characteristics.

Turner syndrome



THANK YOU FOR YOUR ATTENTION



Community based education and First Aid

Definition

- **Community-based education** is a set of learning strategies that are used by teachers in order to connect young students with the community to address a problem or work toward a solution to a community problem.
- This type of learning is beneficial for both, the students, as well as the community as students, are gaining valuable practical knowledge which assists them in overall development, on the other hand, it helps the community to work toward solving problems that will ultimately benefit them.

Aim of the Course

- This course in Community Based Education (CBE) and Scientific Method (SM) is designed to provide the student with an understanding of the community and methods of learning medicine in the context of the community in which patients live.
- Additionally, it introduces the student to principles of scientific method (research) as the basis for medical practice and the importance of evidence-based practices.
- Students apply the research skills to the community context.

Objectives

1. Describe and apply basic epidemiology techniques.
2. Describe the process of research proposal development.
3. Define community health as opposed to individuals' health.
4. Prioritize community health problems together with the community.
5. Make a community diagnosis.
6. Formulate a community health research proposal.

Other objectives

- Perform basic life support (cardiopulmonary resuscitation)
- Perform first aid maneuvers for common community health hazards
- Define a community in terms of its demographic characteristics and administrative structures, social, cultural, economic, religious and political dimensions
- Construct a detailed family tree
- Observe and record environmental factors and the work of governmental and nongovernmental organisations (NGOs) in the community.
- Study a household with particular reference to day to day budgeting, nutrition, waste disposal , water supply, leisure, work and religion.

Course Content

WEEK 1 PRE-FIELD

- **Scientific Method (Research)**
- **Introduction to Community Health**
- **Introduction to the association between individual/community risk factors and selected body variables**
  - Blood pressure and risk factors for high blood pressure
  - Urine variables and risk factors for urine abnormalities with special reference to high blood pressure and bilharzias
  - Anthropometric measures

WEEK 2 AND WEEK 3 - FIELD

- **Data Collection**
  - Meet with key community leaders and prioritize the health problems of the learning site
  - Make a community diagnosis

- **Conduct the following surveys:**
  - blood Pressure
  - urinalysis
  - an Anthropometric survey
  - bilharzia survey

WEEK 4 POST FIELD

- Data analysis
- Report writing
- Report presentation
- End of course examination

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OVERVIEW OF FIRST AID

M. MWELWA


Dislocaton
Poisoning
HeartAttack
Seizure
Fractures
Bandages
Shock
First Aid
Strain
Burns
Insulin Shock
CPR

Introduction

- Unintentional injury continues to be a major cause of morbidity and mortality
- **First aid is an important part of everyday life at home, work or at play.**
- **Not every incident requiring first aid is a life and death situation.**
- **However, proper first aid can mean the difference between life and death**
- **Common sense and a few rules are the keys to effective first aid**

- A person who gives treatment for the one suffering from a disease or an accident, to improve his condition is called an” aides” and the medical treatment given as aid is called “ first aid”
- If an accident happens in the workplace, you cannot be a helpless witness, since simply standing by can potentially worsens the situation.
- This is why it’s important to have at least a basic knowledge of first aid.

Definition

- First aid is the immediate and temporary care given to the victim of an accident or sudden illness until medical services can be obtained.
- First aid is the assessment and intervention that can be performed by a bystander with minimal equipment until appropriate medical personnel arrives

cont

First Aider: is someone who gives immediate assistance or help in the case of injury or sudden illness before the victim can be taken to a health worker/hospital.

Signs of an emergency

- Screams
- Calls for help
- Breaking glass
- Screeching tires
- Empty medicine bottles
- Damaged electrical wires
- Smoke or fire
- Blood
- Spilled chemicals
- Difficulty breathing
- Clutching chest or throat
- Abnormal skin color
- Confusion
- Drowsiness
- Distress

Unusual Sights

Unusual Sounds

Unusual Smells

Guiding principles/aims of First aid

- The key guiding principles and purpose of first aid, is often given in the mnemonic "3 Ps". These three points govern all the actions undertaken by a first aider.
- Prevent further injury
- Preserve life
- Promote recovery

AIMS OF FIRST AID

Main aims of first Aid

1. **To presearve or save life by maintaining the life sustaining body functions** i.e. air way, breathing, circulation.

2. To prevent condition from deterioration or prevent further or additional injuries e.g. diverting possible danger - directing traffic around the accident site or moving the patient away from dangerous situation (e.g. fire), Stop bleeding, treat shock, treat other injuries.

Aims of First Aid

3. **To alleviate suffering and promote recovery by preventing present injuries becoming worse** e.g. when you wrongly move a patient with fractured spine you may cause damage to the spinal cord. Reassure casualty, Relieve pain, Handle with care and Protect them from further harm

4. **To organize expert help** e.g. sending someone to fetch a clinical officer and safe transport to hospital. Call ambulance abd give precise direction and condition of the victims

Philosophy of First Aid

Philosophy of First Aid

- In the pre-hospital setting, the key contributors to survival and recovery from illness and injury are prompt and effective maintenance of the body's primary functions:

1. Airway
2. Breathing
3. Circulation
4. Bleeding control (life threatening)

Importance of first aid:

The importance of first aid is hard to overestimate. Among the major benefits of first aid are the following:

- Providing quick medical treatment until professional assistance arrives.
- First aid helps ensure that the right methods of administering medical assistance are provided.
- Knowledge in first aid also benefits the individuals themselves.
- It affords people with the ability to provide help during various emergency situations.

IMPORTANCE OF FIRST AID TRAINING

- You may be the first person on a scene and you will require to help to save life.
- Friends may ask you about how they could help others.
- You can organize classes where you live/work.

Golden rule's of first aid.

- Do first things first quickly, quietly and without fuss or panic.
- Give artificial respiration if breathing has stopped-every second counts.
- Stop any bleeding.
- Guard against or treat for shock by moving the casualty as little as possible and handling him gently.
- Do not attempt too much-do the minimum that is essential to save life and prevent the condition from worsening.
- Reassure the casualty and those around and so help to lessen anxiety.
- Do not allow people to crows round as fresh air is essential.
- Do not remove clothes unnecessarily.
- Arrange for the removal of the casualty to the care of a Doctor or hospitals soon as possible

What to do when managing an emergency

- Keep calm
- Take charge of the situation
- Ensure safety of self and casualties
- Assess for serious and urgent symptoms
- Reassure casualty
- Call/ ask for help
- Give emergency care
- Tell helpers what to do
- Send for medical help

GENERAL PRINCIPLES OF FIRST AID

- Prioritize and determine the injuries or cause for sudden illness. After immediate problems are under control: -ask exactly what happened (victim/bystanders).
- Look for emergency medical identification i.e. Diabetic band that may give a clue to the cause of sudden illness.

GENERAL PRINCIPLES OF FIRST AID

- **Look for and know how to look for signs and symptoms, injuries, etc,** (assessing priorities).
- Determine what is wrong and how severe or dangerous it is.
- Breathing (listen and look at the rise and fall of his chest if necessary).
- Colour of the skin (for dark skinned people, note the palms, soles and the lips).
- Circulation of blood (by taking pulse-noting Shock.)
- External bleeding (check under clothing and part of body under)
- Levels of consciousness-noting alertness, pupil reaction, verbal response.

GENERAL PRINCIPLES OF FIRST AID

- Check for Fractures, open wounds or burns etc.
- Do not move a victim unless it is necessary for safety reasons.
- Keep victim in the position best to his condition or injuries; do not let him get up or walk about.
- Protect the victim from unnecessary manipulation and disturbance –control the crowd.
- Keep the victim warm-use blanket or cover available, over and under him.

Specific principles when managing a casualty

1. Make diagnosis (determine nature of injury/ problem)

- History from casualty, relatives, by standers
- Signs and symptoms

2. Treatment

- Aims at preserving life, preventing condition from deteriorating, reducing and alleviating pain and suffering

3. Transport to the hospital by suitable available transport.

QUALITIES OF A GOOD FIRST AIDER/CARE GIVER

The first aider/care giver should know:

- How to preserve (keep) or restore respiration.

  -How to restart a heart that is not beating.

  -How to control bleeding.

  -How to manage a casualty until expert help arrives.

QUALITIES OF THE CARE GIVER

One should always be :

- **Able to Stay calm**:should not panic and alarm patient and bystanders.
- **Observant:** should be able to notice signs and symptoms.
- **Resourceful:** one who is able to make the best use of things at hand.
- **Gentle:** should not cause unnecessary pain.
- **Tactiful:** should not alarm the patient (e.g. "He looks terrible, I'm sure he's going to die!).
- **Sympathetic** should be comforting.
- **Cheerful:** one who is always happy or has an appropriate expression that inspires confidence.

Content of the first aid kit:

The Red Cross recommends that all first aid kits for a family of four include the following:

Dressing:

- 2 absorbent compress dressings (5 x 9 inches)
- 25 adhesive bandages (assorted sizes)
- 1 adhesive cloth tape (10 yards x 1 inch)
- Sterile eye dressing
- Gauze pad

Medications:

- 2 hydrocortisone ointment packets (approximately 1 gram each)
- 5 antibiotic ointment packets (approximately 1 gram)
- 5 antiseptic wipe packets
- 2 packets of aspirin (81 mg each)
- Bandages:
- 1 roller bandage (3 inches wide)
- 1 roller bandage (4 inches wide)
- 5 sterile gauze pads (3 x 3 inches)
- 5 sterile gauze pads (4 x 4 inches)
- 2 triangular bandages

Content of the first aid kit:

Equipment's:

- Tweezers-to pull out stings
- Scissors-to cut dressing/bandage
- Oral thermometer (non-mercury/nonglass)
- 2 pair of nonlatex gloves (size: large)
- Safety pin

Others:

- 1 blanket (space blanket)
- 1 breathing barrier (with one-way valve)
- 1 instant cold compress
- First aid instruction booklet

EMERGENCIES IN FIRST AID

Asphyxia

- Definition : Asphyxia means a deficiency of oxygen in the blood and an increase in carbon dioxide in the body tissues.
- Asphyxia may mean that lungs do not get sufficient supply of air from breathing.

cont.

Breathing is necessary to transfer oxygen from the lungs to the blood and on to the tissues to keep them alive and functioning. If breathing stops, the brain, the control centre of the body, is starved of oxygen and the brain cells will die.

This means that the centres in the brain which control the heart beat and respiration will stop functioning and breathing and heart beat will cease. Those centres that control respiration will cause breathing to stop first, followed by failure of the heart.

CAUSES

Anything that causes disruption in the normal exchange of oxygen and carbon dioxide between the lungs and the outside air.

- Airway obstruction, partial or complete blocking of the airway by blood, vomit or other debris/foreign bodies or plastic papers covering the nostrils.
- Gross chest/lung damage caused by trauma e.g. fracture of the ribs caused by crushing of the chest will puncture the lungs and/or heart.
- Disease of lung tissue e.g. asthma.
-

CAUSES Cont.

- Damage to the respiratory centre of the brain e.g. head injury, stroke.
- Paralysis of the respiratory muscles e.g. polio.
- Drowning
- Electric shock
- Inhalation of smoke and poisonous gases as in wells, cisterns, sewers, mines, explosion hazards, and silos.

Signs and Symtoms

- Irregular laboured respirations or gasping
- Complete or absence of breathing
- Pallor and cyanosis:- Blue discoloration of face, tongue, and lips;
- inability to speak; unconsciousness

MANAGEMENT

- Remove the causality from the affected situation
- First try the Heimlich maneuver, grasping the victim from behind with hands linked in front and compressing the abdomen just below the ribs.
- Encourage victim to cough up foreign objects in throat; as a last resort, rap victim between shoulder blades to dislodge object.
- For asphyxia caused by gas or fumes, remove victim to a clear atmosphere; use artificial respiration.

cont.

- Open the airway and begin to give mouth to mouth ventilation immediately
- Place the patient in a recovery position
- Apply water over the face, make the patient to drink a sip of water
- Sent the causality to hospital

Heimlich Maneuver

1. Lean the person forward slightly and stand behind him or her.

2. Make a fist with one hand.

3. Put your arms arund the person and grasp your fist with your other hand near the top of the stomach, just below the center of the rib cage.

4. Make a quick, hard movement, inward and upward.

Place the infant stomach-down across your forearm and give five thumps on the infant's back with heel of your hand

Place fist above navel while grasping fist with other hand. Leaning over a chair or counter-top, drive your fist towards yourself with an upward thrust


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RESPIRATORY RESUSCITATION

Mouth-to-Mouth Resuscitation:

Check to see if the patient is breathing. If he is not breathing start mouth-to-mouth resuscitation:

- Place victim in supine (recumbent position) on a firm surface.
- Loosen tight clothing from around the neck, chest and waist.
- Lift the jaw of the victim extending his neck to allow the tongue to fall forward. Check the mouth for any obstruction.

RESPIRATORY RESUSCITATION

- Holding the head in position by the jaw with one hand, pinch the nostrils shut with the other hand.
- Take a deep breath, place your mouth over the mouth of the victim ensuring you make a good seal with you lips so that no air escapes around the edges.
- Blow into the victim's mouth. Turn your head to watch the chest rise and fall in response to the inflation and to allow exhalation to occur.
- Take another deep breath and repeat the inflation.
- Inflate the chest 6 times as quickly as possible.

RESPIRATORY RESUSCITATION

- Check for a pulse using the carotid pulse in the neck. If there is a pulse, continue chest inflations at a rate of 10 inflations per minute (approximately every 6 seconds) until the victim starts to breath spontaneously.
- If there is no pulse, start cardiac compressions and alternate with chest inflations

GUIDELINES-MOUTH TO MOUTH

- Speed is essential in order for resuscitation to be effective and brain damage prevented.
- If the lungs fail to inflate, this means that the airway is obstructed at some point. (Make sure that no air is escaping from the sides of your mouth and that the head has not slipped forward. These are two other reasons for failure to inflate the lungs).
-

GUIDELINES:MOUTH TO MOUTH

CHECK

- The head is extended allowing the tongue to fall forward.
- Look for vomit or other obvious obstruction in the mouth. Remove by sweeping your finger through the mouth.
- If no obstruction is seen, attempt to remove the unseen

GUIDELINES:MOUTH TO MOUTH

- Obstruction by rolling the patient onto his side and slapping him smartly between the shoulder blades. A child can be held upside down and the back slapped.
- If, on initial assessment the patient has a pulse, continue to check the pulse at regular intervals during mouth to mouth to ensure that the heart is still beating.

Drowning

- Drowning is the result of complete immersion of the nose and mouth in water (or any other liquid). Water enters the windpipe and lungs, clogging the lungs completely
- Most drownings occur within reach of safety; rescue is therefore possible even if the first aider is unable to swim. A swimming rescue should only be attempted by someone trained in lifesaving.

Management:

- The aim of first aid is to drain out water (or other matter) from lungs and to give artificial respiration.
- Act quickly. Remove seaweeds and mud from the nose and throat. Start artificial ventilation immediately. This is possible even when the casualty is in water.
- Turn the victim face down with head to one side and arms stretched beyond his head. Infants or children could be help upside down for a short period.
- Raise the middle part of the body with your hands round the belly. This is to cause water to drain out of the lungs.

cont.

- Give artificial respiration until breathing comes back to normal. This may have to go on for as long as two hours.
- Remove wet clothing.
- Keep the body warm, cover with blankets.
- When victim becomes conscious, give hot drinks viz coffee or tea.
- Do not allow him to sit up.
- After doing the above, remove quickly to hospital as a stretcher case.

- If you see a victim in water which is out of your depth, attempt to rescue the victim without entering the water yourself.
- Reach out to him with your hand or foot keeping a firm grasp on land. If the victim is further away, use a long pole or stick for him to grasp.
- If you are not qualified in life saving and cannot reach the victim with the above measures, throw him something which floats and he can cling on to e.g. a plank of wood, a rubber ring. In all situations, call for help.

- Once the victim is on land assess the ABC.
- If the victim is unconscious, turn him onto his back and check that his airway is clear.
- Clear any debris from the mouth. Perform mouth to mouth resuscitation and/or cardiac massage as appropriate.
- In this situation keep the mouth to mouth up until a doctor arrives or until the victim breathes spontaneously.
- When the victim begins to breathe spontaneously, place him in the semi-recumbent position and get him to hospital as quickly as possible.

POISONING

- **Definition** - A poison is any substance - solid, liquid or gas that tends to impair health or cause death when introduced into the body or the skin surface.
- Small children are especially likely to become poisoning victims, since they tend to put into their mouth nearly everything that they pick up.

POISONING

TYPES OF POISONING

- Poisoning may occur in the following ways:
- By mouth
- By absorption
- By inhalation
- By injection

POISONING

CAUSES

Ingestion of a poisonous substance:

- Food spoiled or improperly prepared, Chemicals e.g. paraffin, petrol, cleaning fluids, Chemicals stored in containers such as soft drink bottles (even when labeled a child who cannot read will associate the shape and size of the bottle with the drink), Medicines left within children's reach e.g. aspirin, ferrous sulfate etc.

POISONING

The severity of the reaction will depend on:

- - the amount ingested
- - the amount of time between ingestion and the development of symptoms
- - the type of poison ingested.

POISONING

- **TREATMENT**
- **The aims of first aid in poisoning by mouth are:**
- - to dilute the poison as quickly as possible
- - to preserve respiration and circulation
- - to seek medical assistance without delay
- If the victim is conscious, dilute the poison by having the victim drink a glass of water or milk.
- If the poison has been ingested within the last hour, induce vomiting, BUT only if you are certain that the poison is not corrosive such as acid or petroleum. In this case, dilute the poisons above but discontinue if the victim becomes nauseated.

POISONING

- **NB:** Vomiting corrosive substances will damage the oesophagus and with the risk of inhalation could severely damage the lungs. Burns around the lips or a characteristic odour of paraffin will indicate that a strong acid or petroleum product has been swallowed
- Vomiting can be induced by giving the victim a raw egg to swallow.
- If the victim vomits, save a sample of the vomit for analysis. If the poison is drugs, save the whole sample of the vomit. The number of undigested drugs in the vomit will give the medical experts a better idea of how much poison is left in the body.

POISONING

- Save the label or container of the suspected poison. If the poison is food, take a sample with you to the hospital. (e.g. a berry or mushroom).
- If the victim becomes unconscious, maintain his airway and assess his respiratory and circulatory function. Give cardio-pulmonary resuscitation as necessary. DO NOT induce vomiting in the unconscious person.

POISONING

PRECAUTIONS

- Food: make sure that food is not spoiled.
- Berries and mushrooms: if in doubt as to whether they are safe to eat (i.e. not poisonous) , **DO NOT** eat them.
- Medications and chemicals - these should be stored in cupboards which are locked or cannot be reached by children.
- Drugs and chemicals should be stored in their original containers or in clearly labeled containers. **NEVER** store poisonous substances in used, soft drink containers.

POISONING

OVERDOSES

Overdose of Drugs

Barbiturates - drugs which are sedatives and promote relaxation and sleep. They act by depressing the nervous system.

POISONING

SIGNS AND SYMPTOMS

If found in the precomatosed state:

- Severe confusion, excitement and delirium.
- Slurred speech.
- Difficulty in walking.
- Deep sleep, stupor and coma follows.
- Slow pulse - (B.P. decreased).

POISONING

If found in the comatosed state:

- Shallow, quiet respirations - making the victim underventilated
- If distressed this is an indication that the airway is blocked.
- Pinpoint pupils (constricted)
- Comatose.

POISONING

Treatment

- If found in the precomatosed state:
- Give an emetic
- Find out what and how much of the drug was taken.
- If found in the comatose state:
- a) Assess ABC.
- b) Maintain an open airway and resuscitate if necessary.

POISONING

- If possible, find out the amount of drug taken.
- Keep the victim warm.
- Get the victim to hospital immediately. A stomach pump may still be effective depending on the time passed since the drug was taken.
- If possible, take the container that the drugs were in with you.

POISONING

- Keep the victim warm.
- Get the victim to hospital immediately. A stomach pump may still be effective depending on the time passed since the drug was taken.
- If possible, take the container that the drugs were in with you.

POISONING

OVER DOSE OF ALCOHOL

- **Signs and symptoms**
- Recognized by the odour of the breath.
- Flushed face.
- Dilated pupils.
- Abnormal behaviour - talking nonsense.
- Pulse normal (B.P. decreased).

POISONING

- **TREATMENT**
- If the person is unconscious but breathing normally he should be placed in the semi-prone position to avoid the risk of asphyxiation from possible vomiting.
- If the person shows signs of shock, get medical help immediately.
- Keep the airway clear, resuscitate if necessary, keep the victim warm.

POISONING

OVER DOSE WITH ASPIRIN

- **Signs and symptoms**
- Confusion
- Deep respirations.
- Increased pulse rate (B.P. normal).
- Vomiting - may vomit blood from bleeding of the stomach.
- Cold, clammy skin.
- Convulsions, Coma, Death.

POISONING

- **TREATMENT**
- Assess the ABC
- If breathing, maintain an open airway.
- Put into the semi-prone/lateral position.
- Keep the victim warm.
- Note the amount of drug taken.
- Get the victim to hospital as quickly as possible.
- Take the medicine container with you.

POISONING

- **NB.**If you find the victim in a conscious state following an overdose, you may give him an emetic to induce vomiting. You would **NOT** do this if the patient was unconscious.

POISONING

INHALATION OF POISONOUS SUBSTANCE

CAUSES AND EFFECTS

- Inhalation poisoning is often seen when people are working in poorly ventilated situations and where gases can collect and contaminate the atmosphere. e.g. mines, using charcoal burners in confined spaces, running a car in a confined place.

POISONING

- Charcoal and petrol combustion from cars give off a gas called **carbon monoxide**. This gas interferes with the oxygen carrying capacity of the red blood cells (haemoglobin loves carbon monoxide more than it loves oxygen and so it binds with the carbon monoxide in preference to the oxygen).
- Gases like chlorine and ammonia irritate and damage lung tissue. Strong smelling glues can cause reduced consciousness and eventually coma.
- All may cause respiratory arrest.

Suffocation by Poisonous Gases

- Definition: suffocation occurs when no air enters the rooms and to the nose and the room is a confined space where all the oxygen is used up like caves, holes and wells without water.
- 1. Carbon Monoxide (lighter than air): This gas is present in car-exhaust fumes, in household coal gas: during incomplete combustion of charcoal stoves and in coal mines.

Management.

- The first aid treatment consists in removing the person from the area, applying artificial respiration and giving pure oxygen, if available.
- Ensure circulation of fresh air before entering the room by opening the doors and windows.
- Before entering the enclosed space take two or three deep breaths and hold your breath as long as you can.

cont

- Crawl along the floor (as the gas is lighter than air)
- Remove the casualty as quickly as possible to fresh air.
- Loosen his clothes at neck and waist and give artificial respiration, if asphyxiated.

- 2. Carbon-dioxide and other (heavier than air): This gas is found in coal mines, deep unused wells and sewers. Various other gases such as leaking refrigerator gases; compressed gases used for cooking and lighting may also cause suffocation.
- Enter in an upright position (as the gas is heavier than air and collects near the floor)
- Remove the casualty as quickly as possible to fresh air.
- Wherever ventilation is not possible and deadly poisonous gas is suspected, use a gas mask to protect yourself.

cont

3. Suffocation by smoke

- Protect yourself by a towel or a cloth (preferably wet) over your mouth and nose.
- Keep low and remove the casualty as quickly as possible away from the area.

POISONING

TREATMENT

- If the room is closed, take a deep breath before entering the room and go straight to the window and open it. Leave the room.
- Take another deep breath and re-enter the room. Drag the victim out into the fresh air.
- Loosen tight clothing.
- Maintain an open airway and begin artificial respiration or CPR as indicated.
- Get the victim to hospital as quickly as possible.

POISONING

PRECAUTIONS

- Do not run a motor vehicle in a closed garage.
- Keep rooms well ventilated when using charcoal burners or strong smelling glues/chemicals.
- Use protective masks when working with poisonous gases.
- **Smoke Inhalation:** this is the commonest cause of death in house fires and will be discussed in the section on fire and fire prevention.

POISONING

- **POISONING BY INJECTION:** i.e. through the skin - stings, bites.
- **Causes**
- This is usually from dog bite, snakebite, stings from wasps, scorpions and spiders, marine creatures, ticks and mites.
- **Treatment**
- Aim to halt the spread of the poison by keeping patient still.
- Clean the area with water or disinfectant if would is present.

POISONING

- Dress the area after cleaning if there is an open would.
- If possible squeeze out the poison.
- In case of snakebite a tourniquet can be used (however this is dangerous because it can be forgotten in place for a long time and it can cause ischeamia of the distal part that is not receiving blood).
- Quickly rush victim to hospital or health care provider.

POISONING

POISONING BY CONTACT WITH POISONOUS SUBSTANCES

- Poisoning comes when someone comes in contact with poisonous plants and chemicals. Juice or sap from some trees or plants is toxic causing skin irritation. Certain chemicals such as acid, and certain other solvents also cause skin irritation.

Hanging, strangulation, and throttling:

- Hanging, strangulation, and throttling:If pressure is exerted on the outside of the neck, the airway is squeezed and the flow of air to the lungs is cut off.
- The three main reasons or causes why this could happen are:
- Hanging= suspension of the body by a noose around the neck
- Strangling= constriction around the neck
- Throttling = squeezing the throat.

- Hanging and strangulation may occur accidentally for example, by tie or clothing caught in machinery. Ranging (ring) may also cause a broken neck, so the casualty must be handled carefully.

Signs/symptoms:

- There may be a constricting article around the neck.
- Marks around the casualty's neck where a constriction has been removed.
- Uneven breathing, impaired consciousness; grey- blue skin (cyanosis).
- Congestion of the face, with prominent veins and possible; tiny red spots on the face or on the whites of the eyes

Management:

- Immediately remove any constriction from around the casualty's neck, Support the body while you do so if it is still hanging
- Do not move the casualty unnecessarily in case of spinal injury
- Do not destroy or interfere with any material, such as knotted rope, that police may need as evidence.
- Lay the casualty on the floor. Open the airway and check breathing.
- If she is not breathing be prepared to resuscitate
- If she is breathing, place her in the recovery position

Choking (foreign bodies in the airway)

This is most common with children.

A marble, vomitus, weed or a button may get stuck in the air passage.

In adults food, dentures may go down the wrong way and cause choking.

Management in the case of an adult.

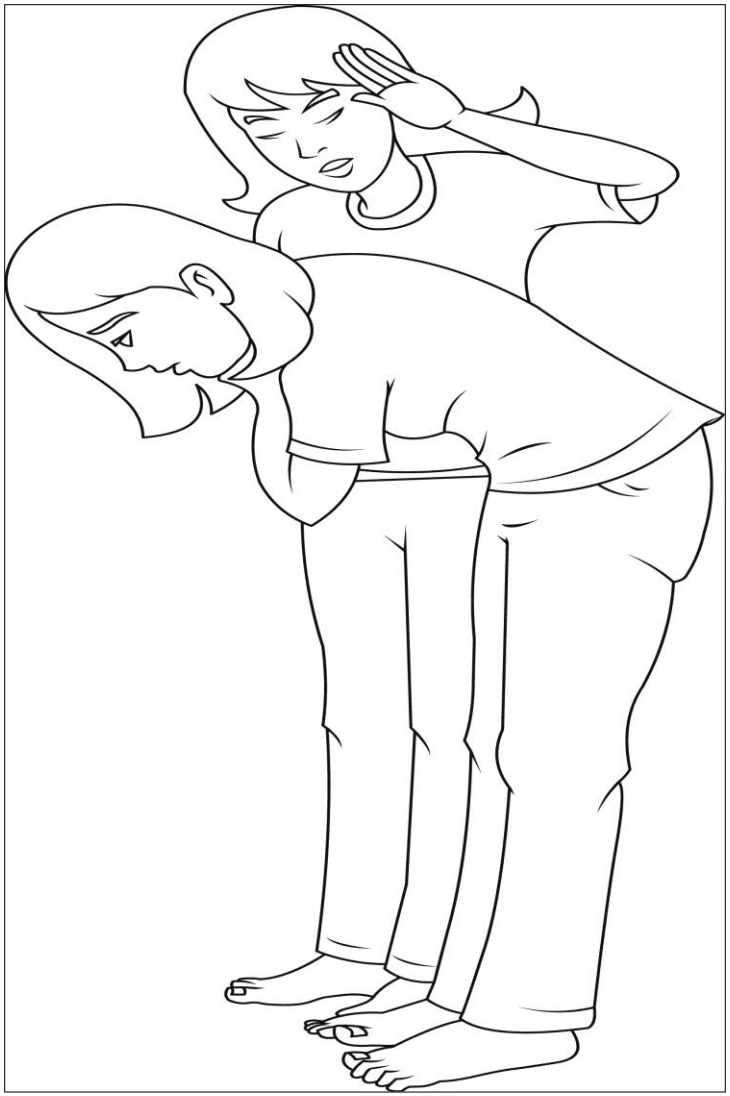
- When victim is standing, the First Aider should stand behind to victim and wrap his arms around the waist.
- Grasp the fist with your other hand and place the thumb of the fist against the abdomen (slightly above the navel and below the rib cage.
- Press your fist into the victim's abdomen with a quick upward thrust.
- Repeat several times if necessary till the foreign body is expelled out of the windpipe.
- When the victim is sitting, the First Aider stands behind the chair and performs the same manoeuvre.

- If the victim is lying, turn him supine (face up).
- Facing the victim, kneel astride the victim's legs.
- With your hands one on top of another, place the heel of your bottom hand over the abdomen between the naval and the ribcage.
- Press into the victim's abdomen with a quick upward thrust repeat several times, if necessary.
- Should the patient vomit, place him on his side and wipe to prevent asphyxia.
- Following the expulsion of food particle/foreign body it may be necessary to give artificial respiration.

Management in case of an infant

- Hold the child upside down by the legs and smack his/her back hard three or four times.
- If not successful, lay the child prone with his head hanging downwards over the knee and give sharp smacks between shoulders.
- It still not successful, induce vomiting by passing two fingers right to the back of the throat.

Choking



Swelling within the throat

- Swelling within the throat may occur as a result of trying to drink very hot liquids or swallowing corrosive poisons or may be due to inflammation causing disease.

Management of swelling in the throat

- Make the patient sit up / prop up patient.
- If breathing continues to be normal or is restored to normal give ice to suck, or cold water to sip.
- Butter, olive oil or medicinal paraffin may also be given.
- Apply cloth wrung out of hot water to the front of the neck.
- If breathing has stopped, give artificial respiration.
- Seek urgent medical help

Asthma

- This is a condition where there is sudden constriction of airways causing difficulty in breathing, especially in breathing out.
- Allergy, infection, anxiety or tension can trigger an attack.

Management

- Reassure the patient
- Make them sit up in bed or chair and allow him to lean forward with a couple of pillows and/or a small table on which to rest his head.
- Ensure fresh air by opening the windows.
- Provide inhaler if available
- Seek medical aid from a nearby health facility

Shock

- Shock is a depression or reduced tissue perfusion due to cessation of the influence of the nervous system, respiratory and circulatory systems.
- Poor circulation to the vital organs leasd to very serious and life threatening situation. The casualty may not know that they are in shock.

CLASIFICATION OF SHOCK

PRIMARY SHOCK: occurs immediately after the accident due to the sudden loss of blood.

SECONDARY SHOCK: occurs several hours later and is usually very serious.

TYPES OF SHOCK

- **SEPTIC SHOCK:** caused by overwhelming infection.
- **HYPOVOLEMIC SHOCK:** caused by reduced circulation / blood volume i.e. as a result of profuse bleeding.
- **ANAPHYLACTIC SHOCK:** a severe allergic reaction to the entry into the body of a foreign protein e.g. from a wasp sting / certain drugs e.g. penicillin.
- **VASOVAGAL:** a sudden drop in blood pressure due to extreme pain.
- Septic and hypovolemic shock are the 2 types of shock most frequently seen.

BODY'S RESPONSE TO SHOCK

- The peripheral blood vessels constrict, deeper blood vessels dilate and the blood flows sluggishly.
- Hypoxia (decreased oxygen supply to the tissue cells) results as blood takes too long to carry the oxygen to the vital centres of the brain.
- Cerebral damage, cardiac, respiratory and renal failure.

CAUSES OF SHOCK

- Pain.
- Severe haemorrhage.
- Exposure to cold.
- Severe injuries of all types.
- Loss of body fluids from vomiting, diarrhea, burns.
- Infection.
- Heart attack or stroke.
- Poisoning by chemicals, gases, alcohol, drugs.
- Lack of oxygen caused by obstruction of the airway or injury to respiratory system.

SIGNS AND SYMPTOMS

Early Stage:

- Weak (thready), rapid pulse.
- Low blood pressure.
- Cool, damp, pale skin.
- Shallow, quiet respirations (tachypnea).
- Restlessness, anxiety - victim thrashes about and complains of a thirst.
- Nausea and/or vomiting.

SIGNS AND SYMPTOMS Cont.

Later Stage:

- Victim apathetic and unresponsive.
- Pupils dilated, eyes sunken, vacant expression.
- Loss of consciousness.
- Death.

TREATMENT

- If conscious, make comfortable in the recumbent position or Trendelenburg position. If unconscious lie in semi-prone position.
- Undo any tight clothing around the neck, chest and waist.
- Keep warm but not too warm - a blanket under the victim will reduce heat loss through the ground.
- Keep the victim quiet and still as motion will aggravate the condition of shock
- Don’t forget to put the patient in an apropriate position

- Assist the person to lie on their side to improve circulation, treat any injuries, help them take any medication for an illness

TREATMENT Cont.

- Reassure the victim - remain calm and self-confident.
- Look for bleeding and treat as above.
- Splint any fractures.
- N.P.O. - an injured person's stomach stops absorbing. If fluids are given, vomiting may result.
- Surgery may be needed depending on the injury. (If there is a delay in finding transport, 150 mls of fluid may be given every 15 minutes for an adult, or 30 mls of fluid for a child. Discontinue if there is nausea or vomiting).

TREATMENT

- Get the victim to hospital as quickly as possible.

ELECTRIC SHOCK

- Respiratory and cardiac arrest can occur as a result of receiving an electric shock. This may be from a faulty electric device, exposed live wires, or from being struck by lightening.

TREATMENT Cont.

- If possible, switch off the electric current. If this is not possible, use a wooden stick to push the victim away from the source of power. It is important to isolate yourself from the current. Do not touch the victim directly. Use an object that is made of a non-conducting material.
- Never use a metal object or anything that is wet/damp. Metal and water are conductors of electricity.

TREATMENT Cont.

- Assess for breathing and circulation.
- Begin cardiac and/ or mouth-to-mouth resuscitation immediately.
- If the victim starts to breathe spontaneously, look for and treat burns sustained by the shock. Do not delay resuscitation in order to do this.
- Get the victim to hospital as quickly as possible.

FAINTING (SYNCOPE

DEFINITION

- Fainting is a sudden partial or complete loss of consciousness due to a momentary decrease in the blood supply to the brain.

CAUSES

- Standing for a long time causing poor venous return.
- Standing or working in hot place for a long time causing exhaustion.
- Running for a long time causing oxygen depletion to the brain.

FAINTING (SYNCOPE)

SIGNS AND SYMPTOMS

- Extreme paleness
- Sweating
- Coldness of the skin
- Dizziness
- Numb or tingling of the hands and feet.
- Nausea.
- Possibly blurred vision.
- Collapse and temporary loss of consciousness.
- Pulse normal (B.P. decreased).

FAINTING (SYNCOPE)

TREATMENT

- Usually this patient recovers after falling or lying down.

PRE-UNCONSCIOUS STATE:

- If the victim complains of feeling faint get him to sit with his head between his knees.

FAINTING (SYNCOPE)

UNCONSCIOUS STATE:

- Place the victim in the semi-prone position.
- Maintain an open airway.
- Loosen tight clothing from the neck, chest and waist.
- Wipe the face with a cool, wet cloth or place the wet cloth on the forehead.
- Check that the victim was not injured in the fall.
- Unless recovery is prompt, seek medical assistance.

CARDIAC ARREST

DEFINITION

- Cardiac arrest is when the heart stops beating (cessation of heart beat).

CAUSES

- Electric shock
- Cardiogenic shock
- Neurogenic shock

CARDIAC ARREST Cont.

SIGNS AND SYMPTOMS

- No carotid pulse
- No respirations.
- Pupils are fixed (they do not react when exposed to bright light) and are dilated.
- Cyanosis.
- Coma (unconsciousness).

CARDIAC RESUSCITATION

Cardiac Massage

Closed Cardiac Massage:

- Ideally, 2 operators should work together if cardiac and respiratory resuscitation must be combined.
- Place the victim in the recumbent position on a firm surface.
- To find where you should apply the compressions, place your index and middle fingers on the xiphoid process. Place the heel of your other hand just above this on the sternum.

Cont.

Place the other hand on top of the first hand interlinking your fingers.

Keeping your elbows straight, rock your body back and forth over your hands.

As the weight of your body moves over the heels of your hands, compress the chest.

As the weight of your body moves back, release the compression. Each compression should make the sternum depress about 5cm.

Keep your fingers off the chest wall as they may cause additional damage.

The chest should be compressed at a rate of about 1 compression per second. The heel of your hand should stay in contact with the chest throughout the compression and release of the chest.

If both cardiac compression and mouth-to-mouth resuscitation is required, the second operator gives mouth-to-mouth resuscitation as follows:

CARDIAC ARREST Cont.

- The first operator inflates the chest 1 time and stops.
- The second operator compresses the chest 5 times and stops. Repeat steps 1 and 2 until breathing and heart rate resume unaided.
- If there is only one operator then she inflates the chest twice, finds the hand position on the sternum and compresses the chest 30 times.

cont.

Guidelines for administration of Cardiac massage:

- Resuscitation should continue until the victim is breathing naturally or until the doctor has stated that the victim is dead.
- If the heart is beating there is hope that the victim will recover if respiratory resuscitation is kept up.
- Success of cardiac resuscitation is noted when there is a palpable pulse, when there is improvement in colour, when there is contraction of the pupils and when there is reappearance of haemorrhage from any wound.

Cont.

Failure or success is usually decided within the first 15 minutes.

Cardio-pulmonary resuscitation or CPR is the combination of mouth-to-mouth resuscitation and cardiac massage.

In some situations it is only necessary to carry out mouth-to-mouth resuscitation because the heart is still beating. However, in this situation it is important to regularly assess the carotid pulse to check that the heart has not stopped. If it has then both mouth to mouth and cardiac massage will be necessary i.e. CPR

- We continue with first aid emmergencies in the next lecture

Wounds, Bleeding and Fractures

By Mrs M. Mwelwa

Wounds

- A wound is a break in the continuity of the skin or mucus membrane or it is injury to soft tissue.
- Wounds can result in bleeding and infection
- First aid is directed towards controlling bleeding and preventing infection

Types of wounds

- **Abrasion** - skin scraped off, bleeding is limited
- **Incision** – cut with sharp object such as knife, scissors, razor blade,
- If cut is deep, bleeding can be heavy, also can have damage to muscles and nerves.
- **Laceration** – tearing of tissues from excessive force from blunt object, it has jagged edges and bleeding may be heavy.
- Deep lacerations may become infected
- **Puncture** –Caused by sharp object (pin, nail, bullet, spear etc.)
- It can be deep or narrow
- It can be dangerous because of damage to internal organs
- External bleeding can be minimal, may lead to infection.

Types of Wounds cont.

- **Avulsion** – Tissue torn or separated from the body, bleeding is heavy, important to preserve the body part because a surgeon may be able to reattach it.
- **Contusion-** this is a bruised, skin is not torn but hematoma is produced (collection of blood under the skin).
- Usually caused by blunt objects

Types of wounds cont’

- **Amputation** – Body part cut off or separated from the body, bleeding can be extensive, important to preserve separated part for reattachment.
- Wrap part in cool, moist dressing (sterile water or saline preferred) and place in plastic bag.
- Keep bag cool or in ice water and transport with the victim.
- (Don’t place the body part in direct contact with the ice)

Management of wounds

- First Priority – Control the bleeding!
- Then reduce risk of infection

Practical Steps

- Stop bleeding
- Sit or lie patient down
- Expose the wound by removing clothing
- Apply temporal dressing and avoid unnecessary exposure to air
- Wash hands with soap and water
- Remove any foreign bodies with bandage
- Clean around the wound with antiseptic except in penetrating wounds of joints and cavities
- Apply a clean sterile fresh dressing and firm bandage
- Transport to health facility

Abdominal wounds

- Relax parts around the wound by rolling a blanket or any clothing and put it under the knees
- Do not attempt to return any protruding organ like intestines through the wound
- Cover with sterile dressing or clean sheet and fix bandage lightly around it
- Transport to health facility immediately

Bleeding (Hemorrhage)

Hemorrhage

- Loss of blood from the circulation or blood vessel i.e. arteries, capillaries or veins
- **Arteries**- High pressure and blood sparks in jets and is bright red in colour
- **Capillaries**- low pressure, blood oozes and it is dark brown since it is a mixture of oxygenated and deoxygenated blood
- **Veins**- Low pressure in which blood flows out continuously and is dark red or purple

Effects of Hemorrhage

Depend on

- Amount of blood lost
- Rate of loss- rapid loss as in arteries and veins result in profound shock
- Existing hemoglobin level

Types of Hemorrhage

- **External hemorrhage**– visible on the body surface
- **Internal hemorrhage** –can be revealed e.g. like mouth or nosebleed from orifice or concealed in a body cavity
- **Signs of internal bleeding** – pain, tenderness, swelling, deformity, cold and clammy skin, rapid and weak pulse, uncontrolled restlessness, excessive thirst, vomiting blood, blood in urine or feces.
- Hemorrhage can also occur as **primary, secondary** or **reactionary** depending on the time of injury

Management of bleeding

Natural arrest of bleeding

- Arterial constriction by contraction of smooth muscles
- Clotting mechanism
- The principle is to assist natural arrest of hemorrhage
- Lay casualty flat for moderate to severe bleeding

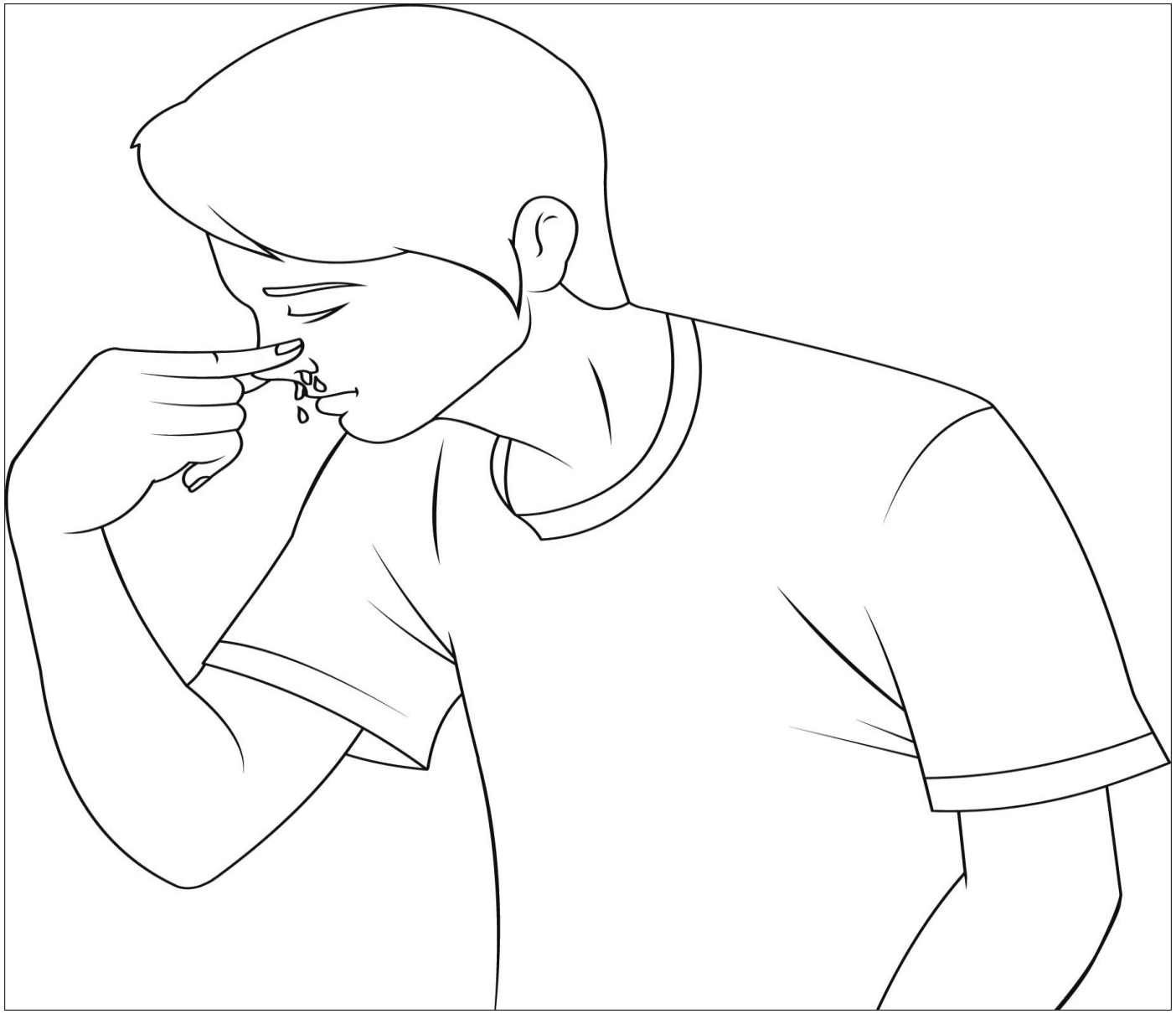
Management of bleeding Cont’

- **Direct digital pressure on pressure points -** a point where a blood vessel passes near a bone can easily be compressed to cut off blood supply to the injured area
- **Direct pressure** with a pad and bandage- Plugging the wound then applying firm dressing and pressure
- **Tourniquet** -is used as a last resort (apply for 15-20 minutes the loosen for 5 minutes to allow circulation
- Use protective barrier to control bleeding (gloves) or thick layers of dressings.
- Avoid direct contact with blood.
- Wash hands after providing first aid.

Nose bleeds (Epistaxis)

- Sit patient upright
- No stooping
- Apply cold compress to the root of the nose and nape of the neck
- Pinch tip of the nose for 15-20 minutes
- Do not allow patient to swallow the blood or blood the nose

Nose bleeds



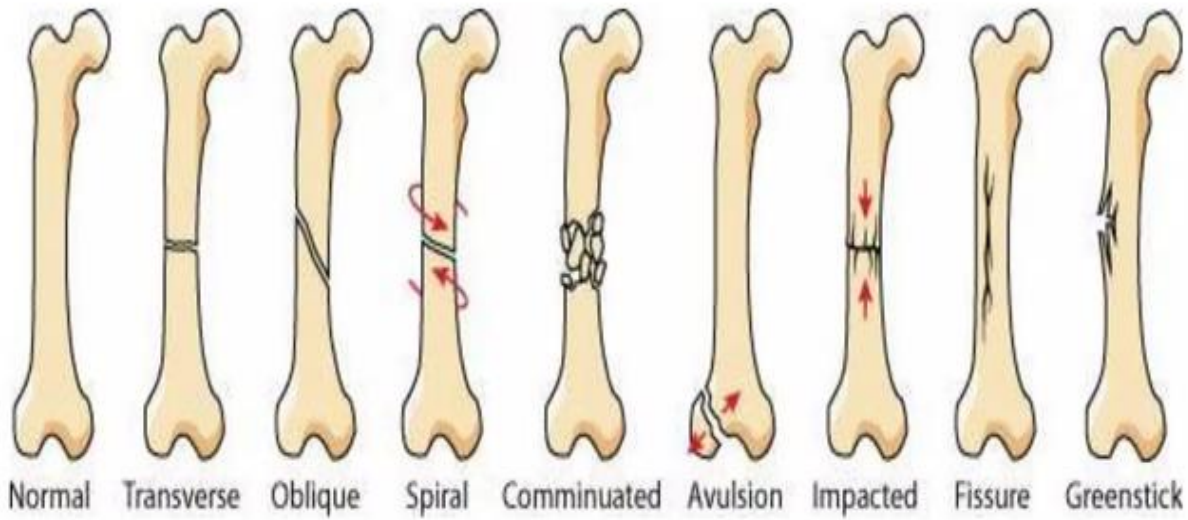

Head tilted
forward
Squeeze firmly
above nostrils
Child sits in
adults lap
© Kids Health Info
RCH, Melbourne

FRACTURES

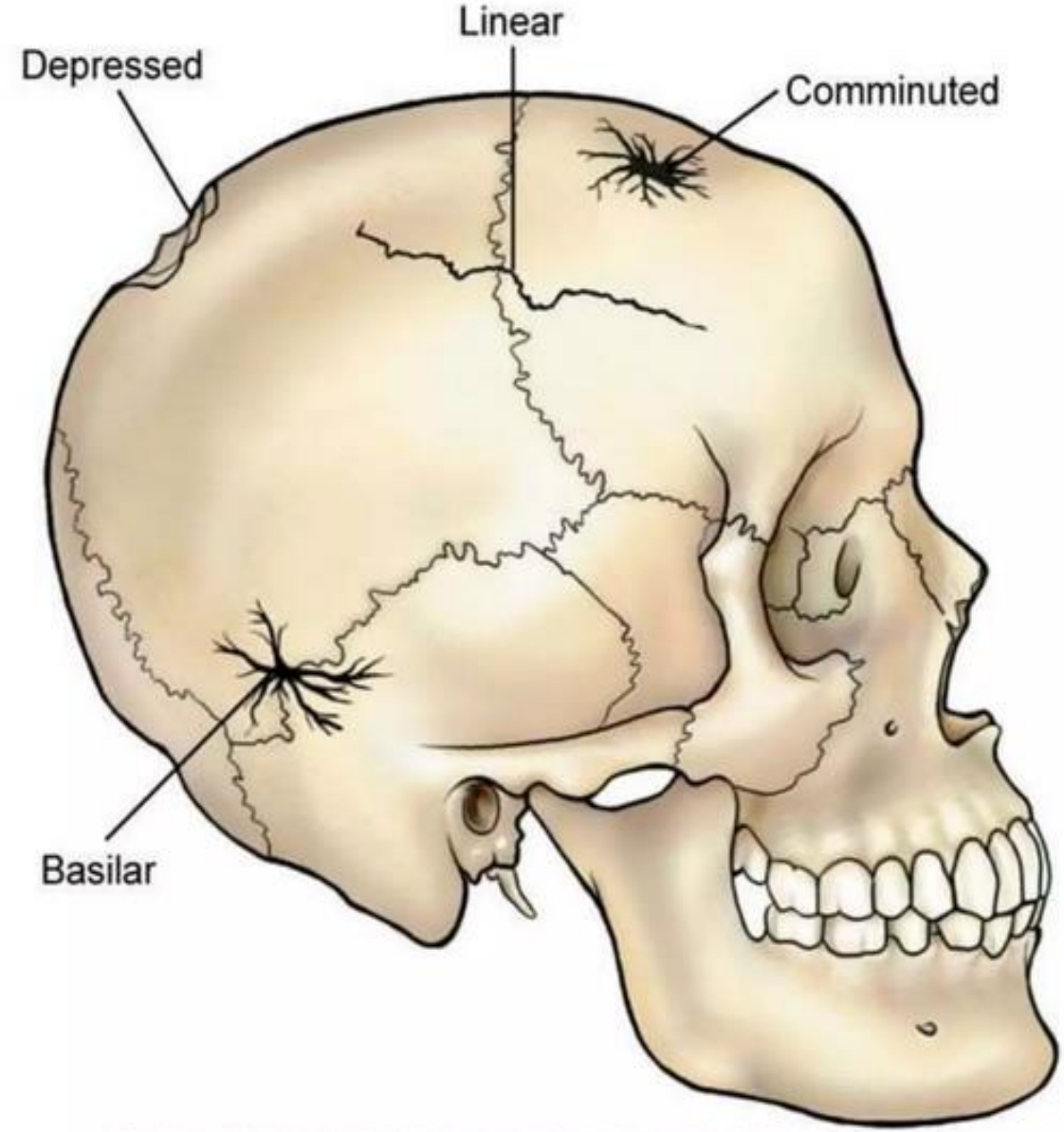
- **DEFINITION**
- It is a break in the continuity of the bone tissue.
- **TYPES OF FRACTURES**
- **Closed (simple)** : no break in the skin over the fracture site
- **Open (compound**): the skin is broken over the site of the fracture. Broken bone may or may not be protruding through the wound. The risk of infection is high.
- **Complicated** **:** another injury directly associated with the fracture e.g. damage to the lungs caused by a fractured rib.

Types of fracture:

- **Green stick fractures**: Closed fracture mostly it occurs in children..
- **Complicated fractures**: They occur when the jagged ends of the bone fragments damage blood vessels, nerves or a joint, broken bones in the chest may penetrate the lung, heart or liver. In fractures of the skull the brain is usually damaged.
- **Depressed fractures**: These occur in the skull when the broken ends of the bones are pressed inwards.
- **Commutated Fractures**: In these cases, the bone is broken into several fragments. This is serious because there will be muscle damage with more bleeding at the fracture site.


Normal
Transverse
Oblique
Spiral
Comminuated
Avulsion
Impacted
Fissure
Greenstick

Types of skull fractures



(From Monahan, F., & Neighbors, M. [1998]. *Medical-surgical nursing: Foundations for clinical practice* [2nd ed.]. Philadelphia: Saunders.)

Fig. 56-26. Skull fractures.

Other types of fractures

Types of fracture:

- **Impacted Fractures**: After a heavy fall, the fracture may be impacted by the force, (eg.) Spinal injury falling from tree.
- **Pathological Fractures**: These occur when the bone is weakened by loss of calcium, infection or cancer. Minimal cause a break in such cases. In old age the bones are more brittle, and may break spontaneously due to calcium loss which is part of the ageing process.
- **Stress Fractures:** Stress caused by repeated minor trauma as in athletic training. Involved in strenuous training, such as jogging or marathon running.

FRACTURES

SIGNS AND SYMPTOMS

- Hear or feel the bone snap.
- Severe pain and inability to move the part.
- Pain over the site of the fracture.
- Deformity - abnormal position of the limb and/or shortening.
- Bruising.
- Swelling.
- Crepitus and movement at the fracture site.

FRACTURES

- **TREATMENT**
- Send for help.
- Avoid moving the part or victim unnecessarily.
- If the fracture is compound, control the bleeding and apply a dressing to reduce the risk of infection.
- Splint the limb to avoid movement of the fracture.
- If possible, elevate the involved limb without moving the fracture e.g. place a fractured arm in a sling.
- Keep the victim still until transport arrives to take the victim to hospital.
- Reassure the victim.
- Arrange for transfer to hospital.

Management:

- If it is an open fracture, cover the wound with a sterile dressing and secure it with a bandage. Apply pressure around the wound to control any bleeding.
- Support the injured body part to stop it from moving. This should ease any pain and prevent any further damage.
- Once you've done this, call medical help. While waiting for help to arrive, don't move them unless they're in immediate danger.
- Protect the injured area by using bandages to secure it to an uninjured part of the body to stop it from moving. For example, fractures on the arm can be secured with a sling, and a leg with a fracture can be tied to the uninjured leg.
- Keep checking the casualty for signs of shock. This does not mean emotional shock, but is a life-threatening condition, often caused by losing blood.
- If they lose responsiveness at any point, open their airway, check their breathing and prepare to treat someone who's become unresponsive.

FIRST AID FOR SPECIFIC TYPES OF FRACTURES

Fracture of the Femur

- Splint the limb from the sole of the foot to just below the groin.
- When splint is secure, bandage the limb to the good limb using the slings as straps tying the legs together at the hips, just above the knees (below if this interferes with the fracture) and at the ankles. Place padding between the legs as you do this.
- Avoid pressure on the site of the break.
- Transport to hospital making sure that the legs are well supported during the lift into the vehicle.

FIRST AID FOR SPECIFIC TYPES OF FRACTURES

Fracture of the Tibia

- Use 2 splints to immobilize the tibia:

-place a long splint on the outside of the leg

- place a short splint on the inside of the leg.

- secure with sling straps at ankles, above and below knee.

- Provide transport to hospital.
- **NB:** Fractures of the tibia are commonly compound. Treat the bleeding first avoiding movement at the fracture site. You may need to use a ring dressing to place over the protruding bone.

FIRST AID FOR SPECIFIC TYPES OF FRACTURES

Fracture of the Humerus

- Apply a splint and tie it in place with strap triangular bandages above and below the fracture site.
- Place a pad in the axilla and strap the elbow to the side of the chest.
- Support the arm at the wrist joint using a collar and cuff. If the victim is wearing a jacket, the sleeve of the jacket can be to the chest in order to support the arm across the chest.
- Provide transport to hospital.

Fracture of the Radius and Ulna

- Splint the forearm from the elbow to the hand.
- Support the arm in a broad sling.
- Provide transport to hospital.

FIRST AID FOR SPECIFIC TYPES OF FRACTURES

Fracture of the clavicle.

- Support the affected arm in a sling or a broad sling.
- Provide transport to hospital.

Fracture of the skull.

- Suspect a fracture of the skull if the person has had a blow to the head. There is a high risk of brain injury caused by a blow to the head.

a) Assess the **ABC**

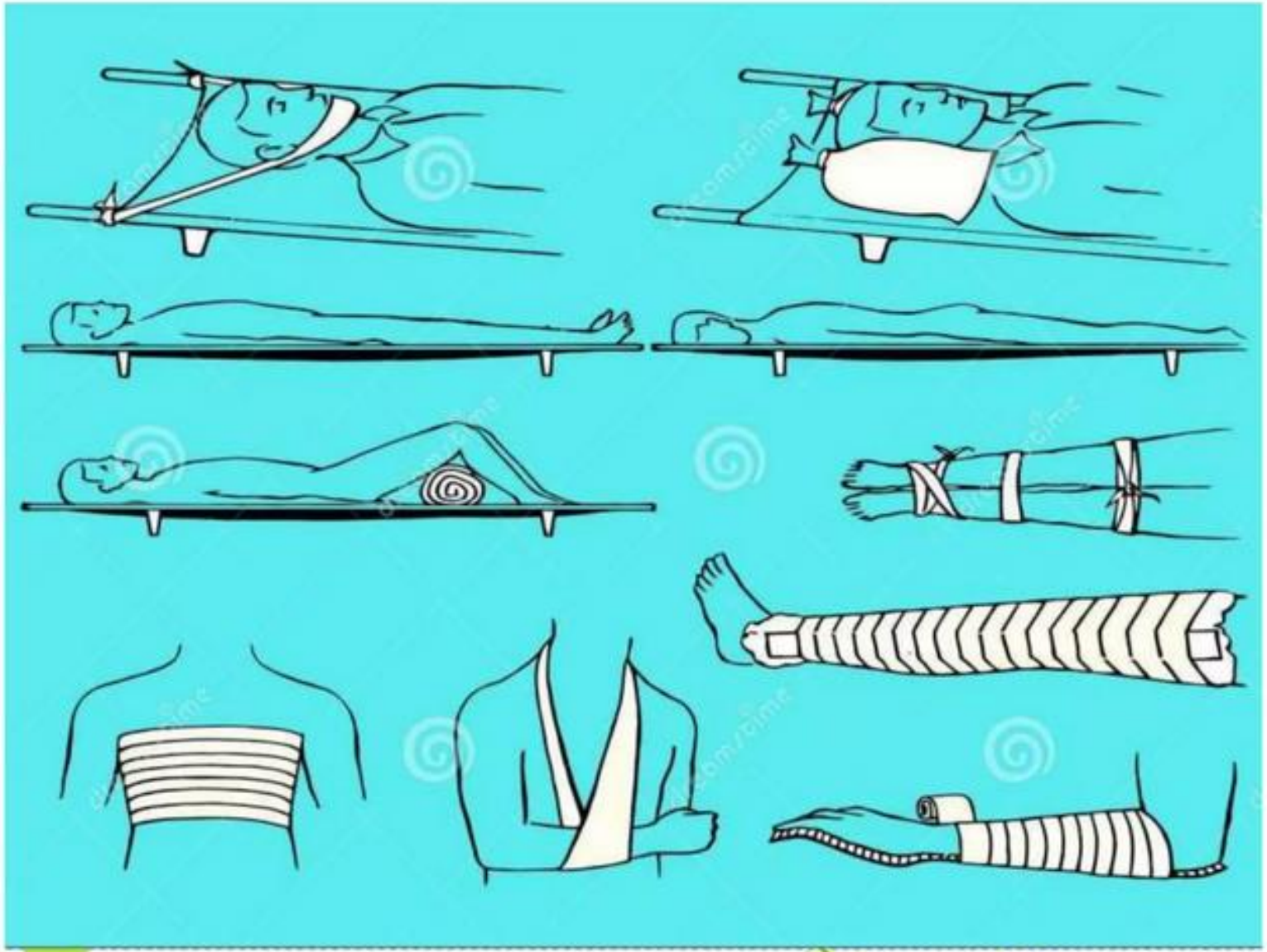
b) Assess the level of consciousness of the patient.

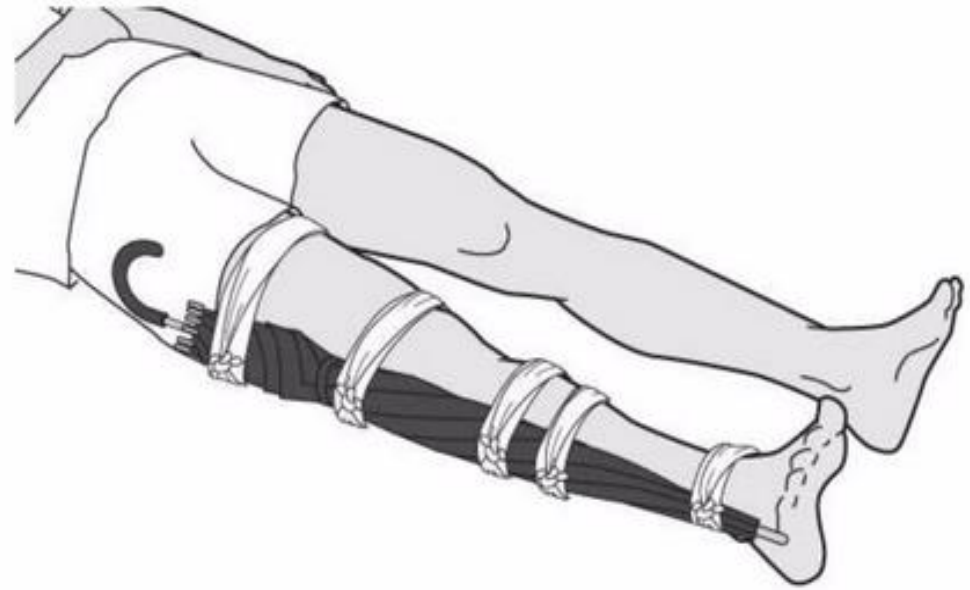
c) If the victim is conscious, be aware of any changes in his alertness or mental clarity.

d) If the victim is unconscious, place him in the semi-prone position.

FIRST AID FOR SPECIFIC TYPES OF FRACTURES

- Check the ears for signs of blood or clear fluid. If found, place a clean pad over the ear to prevent the entry of infection.
- Treat any bleeding from a head wound caused by the blow.
- Avoid moving the victim unnecessarily.
- Provide immediate transport to hospital.



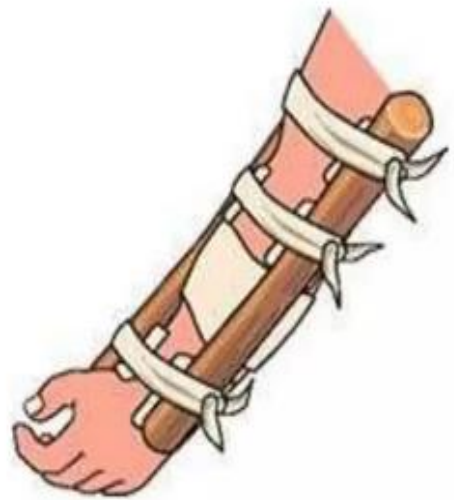


Splints:

- The main purpose of a splint is to keep an injured body part immobilized (e.g. a broken leg).
- It should only be done if paramedics are going to take a long time arriving, or if you have to move the person.
- Never move or try to realign the injured body part. Always splint in the position found.

There are three main types of splints:

- 1. Anatomical: this means using a non-injured body part to immobilize an injured body part. E.g. to splint a broken left lower leg you would tie both legs together so the good leg provides support to the injured leg.
- 2. Soft: this means using something like a thick sweat shirt, a jacket, a towel, or a blanket to wrap around and immobilize. This kind of splint works very well with hand or ankle/foot injuries.
- 3. Rigid: this refers to using a firm object, such as a piece of wood, to immobilize. There are many types of rigid splints you can purchase or you can use whatever you see around you e.g. magazines, newspapers, umbrellas, etc.



Injuries to the soft tissues:

- **Definition**:
  - This is an injury to a bone, a joint, a ligament, or a tendon.
  - Joint injuries usually involve a dislocation.
  - This is where the bone has popped out of its socket.
  - This may be accompanied with a fracture, a strain, or a sprain.
  - It may pop back in it may not.
  - Either way seek medical help.
  - Do not push it back into place.

Injuries to the soft tissues:

- Tendons are strong tissues that connect a muscle onto a bone.
- When a tendon tears it is called a strain.
- When they become torn they take a very long time to heal, many times never as good as before, and sometimes surgery is required to reattach them.
- When a ligament is torn it is called a sprain.
- Ligaments connect a bone to another bone.
- These are found around the joints.
- Ligaments are very strong, but, as with tendons, when they tear they take a long time to heal, never as good as before, and sometimes surgery is required.

Injuries to the soft tissues:

- **Causes**:
  - Any kind of force that is greater than what the tissue can withhold will cause such an injury. Some common activities include falling, twisting, getting hit, etc.
- **Prevention**:
  - Use safety equipment and wear it properly.
  - Use seat belts and car seats.
  - Keep joints and bones strong through weight bearing physical activities.

DISLOCATION

DEFINITION

- A dislocation is when the joint is pulled out of its normal position. There is tearing of the ligament and capsule. Dislocation can occur with or without a fracture. Common sites of dislocation are the shoulder joint, thumb, fingers and lower jaw.

SIGNS AND SYMPTOMS

- Deformity - in most joints there is obvious deformity.
- Severe, nauseating pain.
- Complete loss of function and normal movement of that joint.
- Swelling and bruising.

DISLOCATION

TREATMENT

- The limb/joint should be supported securely to avoid unnecessary movement.
- A cold compress may be applied to reduce the swelling and reduce the pain.
- Take to hospital.
- Never try and reduce the dislocation.
- N.P.O. - as will need manipulation under anaesthetic.

SPRAINS AND STRAINS

SPRAIN

- A sprain is an injury to a ligament or muscle tendon of a joint caused by sudden twisting or wrenching. There is partial stretching or tearing of these structures, injuries of blood vessels without dislocation or fracture. The commonest joints to be sprained are the ankle and wrist.

STRAIN

- A strain is an injury to a muscle that results from overstretching. It may be associated with a sprain or a fracture.

SPRAINS AND STRAINS

SIGNS AND SYMPTOMS

- Pain especially on movement or weight-bearing.
- Swelling.
- Bruising.
- Decreased movement. If the ankle is involved the victim will walk with a limp or not be able to walk at all.

SPRAINS AND STRAINS

TREATMENT

- **R** = Rest
- **I** = Ice - an ice pack or cold compress applied to the part will reduce the swelling and help to relieve the pain.
- **C** = Compression - a figure of 8 crepe bandage should be applied to help to reduce the swelling and support the joint. A pad placed directly over the swelling will help to increase the compression and provide some splinting.
- **E** = Elevation - the part should be elevated above the level of the heart in order to reduce swelling.

There is a risk that bones may have been fractured. If in doubt, treat as for a fracture and get the victim to hospital for X-ray.

R - Rest
I - Ice
C - Compression
E - Elevation
R - Referral

BURNS AND SCALDS

DEFINITION

- Burns and scalds are tissue injuries caused by thermal (heat), electrical or chemical agents.

Burn: injury produced by dry heat e.g. fire, electric shock.

Scald: injury produced by moist heat e.g. boiling water, steam.

Aims of First Aid:

- To prevent further damage by removing/extinguishing the source of injury.
- To prevent further damage by correct management of the burn.

BURNS AND SCALDS

- To prevent infection.
- To minimise the effects of loss of fluid from the tissues.
- To minimise fear and to reassure the victim.
- To ensure swift transport to hospital.

REMOVING THE SOURCE OF INJURY

- **Clothing on fire:** if you are present when someone's clothes catch fire, have him roll on the ground to put out the fire. If a blanket or large cloth is available, covering the victim in the blanket will smother the flames.

BURNS AND SCALDS

- **Electric shock:** if possible turn off the source of the current. This is not always possible and therefore the victim needs to be moved away from the current manually.
- Use a stick or other non-conductor to push the victim away from the source. **DO NOT** touch the victim directly or you will be electrocuted

- **Chemicals:** - Chemicals will continue to burn the skin as long as they are left in contact with it. Flush the burn under running water for at least 10 minutes. Take care to flush the chemical so that it does not contaminate and burn other areas of skin.

- **Correct management of the burns**
- Burns are classified in 2 ways - the depth of the burn
- - the area of skin burn

DEPTH OF BURNS

- **First Degree**: resulting from overexposure to the sun, light contact with hot objects e.g. iron or hot pot, or scalding by hot water or steam. It involves the superficial layers of the epidermis.

Signs and symptoms

- a) Redness or discoloration.
- b) Mild swelling and pain.
- c) No blisters present.
- d) Rapid healing - heals within 1 - 2 weeks.

TREATMENT OF FIRST DEGREE BURNS

- Apply cold water or submerge the burned area in cold water.
- Apply a dry dressing if necessary. Do not apply ointments, as this will retain the heat.

SECOND DEGREE BURNS

resulting from a very deep sunburn, contact with hot liquids and flash burns from gasoline, kerosene and other products. It destroys the epidermis and involves the upper layers of the dermis.

SIGNS AND SYMPTOMS

- Red or mottled appearance.
- Development of blisters because the plasma seeps into the top layers of skin raising it up to form a blister.
- Considerable swelling over a period of several days.
- Wet appearance of the surface of the skin due to the loss of plasma through the damaged layers of skin.
- Severe pain as the nerve endings will have been irritated but not destroyed.
- Heals within 14 - 21 days.

- **Treatment**
- Immerse the burned part in cold water (not iced) until pain subsides or apply cold, wet cloths.
- Apply a dry dressing.
- Do not break blisters or remove damaged tissue or burnt clothing. Both intact skin and burnt clothing act as a sterile dressing. Breaking the blister leads to a point of entry for bacteria.
- Do not use ointments, sprays or antiseptic preparations as these may cause further complications and interfere with later medical aid.
- Keep affected area elevated to reduce swelling.
- Keep the victim lying down and quiet, give reassurance.

THIRD DEGREE BURNS: total skin loss. Usually caused by flame, ignited clothing, immersion in hot water, contact with hot objects or electricity, contact with corrosive chemicals.

Signs and symptoms

- Deep tissue destruction - can involve the whole of the dermis and the underlying structures.
- White, charred appearance (at first the burn may resemble a second-degree burn).
- The burns may be less painful as there is destruction of the nerve endings. Pain may be limited to the edges of the burn where the nerve endings are still intact.

Signs and symptoms cont.

- Loss of plasma into the tissues around the damaged capillaries, leading to oedema (swelling). The oedema increases the local tension applying pressure to the local capillaries and further reducing the blood flow to the area. This leads to further necrosis of the tissues.
- These burns take months of extensive treatment for healing to take place. They require skin grafts.

TREATMENT

- DO NOT immerse an extensive, deeply burned area in water or apply water over it. Cold may intensify the shock reaction.
- A cold pack may be applied to the face, hand or feet.
- DO NOT remove stuck particles or charred clothing.
- Cover burns with a dry dressing. Do not use cotton wool or lint material as these will stick to the burn and interfere with hospital treatment.
- Elevate hands, feet or legs if burnt.
- If medical help will not reach the scene for an hour or more and the victim is conscious and not vomiting, give him water, or a weak solution of salt and soda (1 level teaspoon salt and 1/2 level teaspoon soda to 1 litre water) at home and en route. Allow the victim to sip slowly. Give 120 mls to an adult, 60 mls to a child and 30 mls to a baby over a period of 15 minutes. Stop if vomiting occurs.
- Provide immediate transport to hospital.

Classification of the burn according to the area of skin loss:

- The area of burn is described as a percentage of the total body surface area and is calculated by "the rule of nines". Each area of the body represents a multiple of 9.

CALCULATION OF BURNS

Head and neck-9%

Front of trunk-18%

Each arm-9%

Back of trunk-18%

Each leg-18%

Perineal area-1%

EPILEPSY

- When the convulsion ceases the victim falls into a deep sleep.
- If aroused, he will be confused as to time and place.

TREATMENT

- During the convulsion remove any objects such as furniture against which the victim could hurt himself.
- DO NOT attempt to stop the victim biting his tongue. DO NOT place your fingers anywhere near his mouth.
- Keep the victim on his side and the airway clear after the convulsion.

EPILEPSY

- Once the victim regains consciousness, reassure him.
- If the victim is not a known epileptic, i.e. this is his first convulsion, he should seek medical help

- **TEACHING**
- Encourage the victim to take the medication prescribed to him by the doctor. The medication is aimed at controlling the epilepsy.

EPILEPSY

- Parents with epileptic children will need to keep a careful watch on their child. It is particularly important that the child is kept away from dangerous situations like fire and hot water.
- Victims should be encouraged to lead a normal and independent life.

BITES AND STINGS

BITES AND STINGS

DOG BITES

- Dog bites and other animal bites carry with them two serious risks. The first is rabies. The virus is transmitted in the saliva. The second is tetanus. All dog bites should therefore be examined by a doctor.

TREATMENT

- Clean the wound well with soap and water. Flush the wound with water.
- Put a clean dressing over the wound.
- Keep the victim quiet and still until seen by a physician.

BITES AND STINGS

- Find the dog and tie it up for 10 days. The dog will die during that time if it is rabid. A bite without provocation is a strong indication that the dog is infected.
- If the dog is rabid the victim must have a rabies vaccine.
- Take the victim to hospital.

HUMAN BITES

- Human bites that break the skin may become seriously infected because the mouth is heavily contaminated with bacteria.
- Flush the wound with water and clean it with soap and water.
- Place a dry dressing over it.
- Take the victim to hospital.

BITES AND STINGS

SCORPION BITES

- **SIGNS AND SYMPTOMS**
- Severe local pain immediately after the bite.
- Red and edematous wheal (raised area on skin).
- Abdominal pain.
- Increased salivation.
- Nausea and vomiting.
- Depression of respirations

TREATMENT

- Place a cold compress over the bite to relieve the pain and slow the absorption of venom.
- Elevate the part if possible.
- Clean the bite well with soap and water.
- Take the victim to hospital immediately.

BEE AND WASP STINGS

Signs and symptoms

- Pain at sting site.
- Swelling.

TREATMENT

- Remove the stinger if possible. The bee sting has a barb with a sac of venom at its base. If the sting is removed by pulling it out the venom sac will be squeezed into the wound. Place your finger nail under the sting and scoop it out. The wasp stings by injection but does not leave the sting in the skin.

- Run cold water over and around the sting to relieve the pain and slow the absorption of the venom.
- If possible, make a paste of sodium bicarbonate and water and apply to the sting.
- Some allergic persons react violently to insect stings. This is an emergency and requires prompt medical aid. The victim may swell, the airway may then become obstructed and the victim will require a tracheostomy. These victims, unless very young may know that they have this reaction and request that you get medical help as soon as they are stung.

SNAKE BITES

- Not all snake bites are poisonous. Fear may cause similar symptoms such as cold, clammy skin, feeble pulse and rapid shallow respirations.

CLASSIFICATION OF SNAKES

- **Colubridae** - These snakes like to hang on and chew to inject the venom. The venom is haemotoxic - causes bleeding by interfering with the blood clotting mechanism.

SIGNS AND SYMPTOMS

- Moderate pain.
- Moderate bleeding at site.
- Dizziness.
- Nausea.
- Severe headache - within 1 hr. of bite.
- Bleeding under the skin and internally (seen in saliva, vomit, urine and faeces).

ELAPIDAE- Spitting cobras and ringhals are capable of ejecting a fine spray for a distance of several meters into the eyes of the aggressor.

SIGNS AND SYMPTOMS

- Less pain if bitten.
- Pain if venom in eyes.
- Little or no swelling at site of bite.
- Restlessness.
- Increase sweating.
- Dizziness.
- Difficulty swallowing.

LATE SIGNS AND SYMPTOMS

- Ptosis - dropping of upper eyelid due to paralysis of the 3rd cranial nerve.
- Drooling and slurred speech. Mental confusion. Dyspnoea leading to respiratory failure.
- The neurotoxins in the venom produce paralysis and death from respiratory paralysis.
- **Treatment for venom in the eyes:**
- Speed is important since the venom is absorbed rapidly into the blood stream.
- Flush the eyes with saline or water or urine

VIPERIDAE-Their venom is absorbed more slowly through the lymphatic system. The haemotoxins in the venom interfere with the blood clotting mechanism causing haemorrhages. The cytotoxins in the venom break down the tissues.

SIGNS AND SYMPTOMS

- Severe pain and swelling at site of bite.
- Nausea and vomiting. May be blistering.
- Loss of tissue in severe cases.
- Blood may appear in saliva and later in urine and **faeces.**

TREATMENT

- The first aider must remain calm but work quickly and improvise with available material.
- If possible, clean wound with soap and water.
- Apply direct pressure over the bite site and maintain it until a pressure bandage is applied.
- Make the victim lie down and keep as quiet as possible.
- Loosen tight clothing and give reassurance +++
- Apply pressure bandage - EXCEPT in cases of swollen viperine bites - it restricts the blood vessels, preventing oxygen from reaching the body tissue causing increased tissue necrosis.

- Immobilize the limb with a splint / sling.
- Transport to hospital moving the victim as little as possible.
- Take the snake or the head of the snake with you for identification.
- Obtain pertinent information from the victim before or on the way to hospital as he may not be able to give it later on. This is especially important for the purpose of identification if you have not been able to catch the snake.

- Continually check for the level of consciousness of the victim and that he is breathing. Commence artificial respiration or CPR as indicated. Place in the semi-recumbent position as necessary.

ANTIVENOM

- It is expensive
- It will keep for years if stored as instructed (it goes cloudy when unsuitable)
- Must be refrigerated but not frozen
- It is almost never too late to give it.

FOREIGN BODY OR LIQUID

- Foreign objects are often blown or rubbed into the eyes. They are harmful not only because of the irritating effect on the eye but because there is a danger that they will scratch or become embedded in the surface of the eye.

SIGNS AND SYMPTOMS

- Redness of the eye.
- Burning sensation or itching.
- Pain. Headache.
- Overproduction of tears.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- **PRECAUTIONS**
- Keep the victim from rubbing his eye.
- Wash your hands well before examining the victim's eye.
- Do not attempt to remove the object by inserting a match, toothpick or any other instrument.
- Obtain medical assistance if there is something, or thought to be something embedded in the eye.
- **Removal** from the surface of the eyeball or from the inner surface of the eyelid:
- Pull down the lower lid to determine whether or not the object lies on the inner surface of the lower lid.

- If the object lies on the inner surface, lift gently with the corner of a clean handkerchief or paper tissue. Never use dry cotton wool around the eye as it can leave pieces in the eye.
- If the object has not been located, it may be lodged beneath the upper lid.

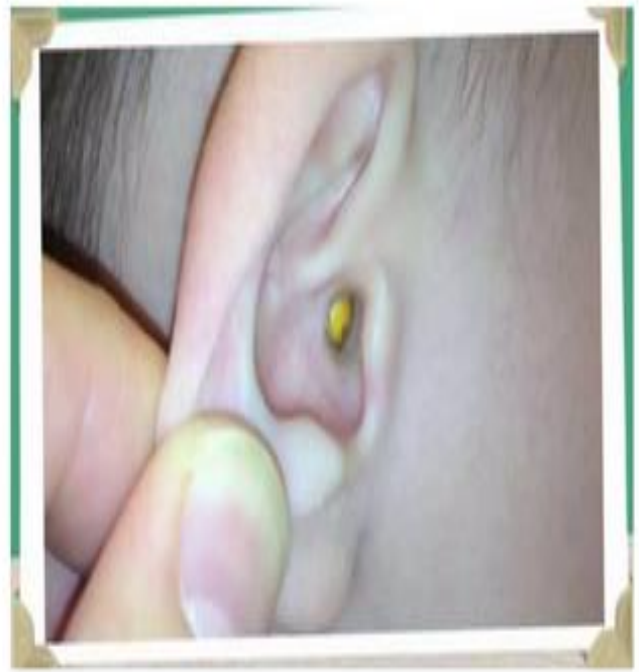
- **REMOVAL FROM THE UPPER EYELID:**
- While the victim looks down, grasp the lashes of the upper lid gently.
- Pull the upper lid forward and down over the lower lid. Tears will dislodge the foreign object.
- If the foreign object has not been dislodged, depress the victim's upper lid with a matchstick or similar object placed horizontally on the top of the cartilage and pull upward on the lashes against the matchstick. Lift off the foreign object with the corner of a clean handkerchief and replace the lid by pulling downward gently on the lashes.

- Flush the eye with water - pouring lukewarm water from the inside corner of the eye across the eye.
- If the object is still not removed and is suspected to be embedded apply a dry protective dressing and take the victim to hospital.
- If the foreign substance in the eye is a liquid such as acid flush the eye as follows:
- Liquid in the **eye** =
- Acid - flush the eye for at least 5 minutes with a solution of sodium bicarbonate - 5ml / 500mls water.

- Alkaline- flush the eye for at least 15 minutes with water.
- **Ear** - treatment of a foreign body in the external canal of the ear.

PRECAUTIONS

- If the object is something that will absorb liquid and swell do not put water or oil in the ear (e.g. bean, corn, berries).
- Do not probe for the object as this may push it further in and cause injury to the eardrum.
- Place a dressing over the ear to prevent the victim poking his fingers into his ear (these victim's are commonly children).
- Take the victim to hospital in order to have the object removed.



AN INSECT IN THE EAR:

- Try shining a torch near the opening of the ear. Often the insect will crawl out.
- Place a few drops of warm oil (it must not be too hot) into the ear and it will float out.

NOSE: TREATMENT OF FOREIGN BODY IN THE NOSE

- Instruct the victim to blow his nose making sure that he inspires through his mouth.
- This is made more effective by blocking the unaffected nostril and blowing out of the affected nostril.
- Instruct the victim to breathe through his mouth.
- Take the victim to hospital if the object has not been dislodged by the above measures.

- If the victim is a child, keep a close eye on him to make sure that he does not put his fingers in his nose. This will push the object further up with the risk of inhalation of the object.

DIGESTIVE TRACT

- In the case of swallowing a foreign body, watch the stool to see if the foreign body is passed in the stool.
- If the object was sharp e.g. safety pin or piece of glass, take the victim to hospital. An x-ray may detect the position of the object in the gut.

RESPIRATORY TRACT

- It is possible for foreign bodies to be inhaled. This may cause choking and therefore requires appropriate first aid. However, the object may succeed in passing right into the bronchus where it will need immediate medical attention.
- Observe the victim for signs of respiratory distress.
- Get him to hospital immediately.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Foreign bodies in the skin:

- Small foreign bodies (wood splinters, shards of glass) usually cause minorpuncture wounds with little or no bleeding. If foreign bodies deeply embedded in a wound is not be removed by a first aided, it may cause further injury.

Splinters: Small splinters of wood, metal or glass in the skin particularly of the hands, feet and knees are common injuries. It should be drawn out by using tweezers.

Management:

- Clean area around the splinter with soap and water
- Sterilize a pair or tweezers by passing them through a flame
- Grasp the splinter as close to the skin as possible
- Squeeze the wound to encourage a little bleeding
- Apply an adhesive dressing "plaster"

FIRE PREVENTION

- **IN THE HOME**
- Never leave fire or water heating on the fire unattended.
- Never allow children to play near fire or hot water.
- Teach children the dangers of fire from an early age.
- Never go to sleep with a candle burning or a brassier burning.
- Never have an open fire in the house unless used in a fireplace.
- Place all flammable liquids in sealed containers and store them in a cool place.
- Never leave flammable liquids in open containers - they give off flammable vapours which will ignite in the presence of heat or fire.


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FIRE PREVENTION

- Hang clothes well away from stoves or fireplaces.
- Store matches in a metal container and out of reach of children.
- If using a stove, turn pot handles away from the edge of the stove so that children cannot grasp them or people knock them as they pass.

FIRE PREVENTION

ON THE WARD

- No smoking on the ward.
- No open fires or charcoal brasiers on the ward.
- Make sure that all electrical cords are properly insulated, with no bare wire showing.
- Report all malfunctioning electrical equipment **IMMEDIATELY.**
- All electrical equipment should be checked by an electrician at regular intervals and the date of the check, displayed on the item.
- Keep all heating elements away from curtains or other flammable material.

- **Reference**:
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- Swapan N.W. Mala,G. "First aid and emergency care" Kumar publishing house.3rd edition. 2013.
- First aid kit "American red cross"
- The Columbia Electronic Encyclopedia, 6th ed. 2012, Columbia University Press.
- Firstaid.cpr.net.

FROM COOKING:

- If the contents of a pan catches fire, FIRST place a lid or damp cloth over the top, keeping your hands shielded by the lid or cloth.
- WHEN the pan is covered, remove the pan from the heat and keep it covered until cool. DO NOT lift the cover to investigate as the influx of oxygen will cause the fire to re-ignite.
- **FROM ELECTRICAL APPLIANCIES:**
- Smother the fire with a blanket. NEVER use water.

FIRE PREVENTION

- Unplug the electrical appliance. If the fire is at the socket, switch the electricity off at the main electrical box (the mains).
- When staying in a building or working environment, make sure you find out where the mains switch or electrical box is. In the case of an emergency, you will save valuable time by knowing where to locate it.
- Keep the electrical appliance covered for several hours to allow all elements to cool down. Appliances like televisions or videos take a long time to cool and will re-ignite if in the presence of oxygen.

FIRE PREVENTION

HOUSE FIRE:

- If the fire is small attempt to put it out by smothering it with a cloth or blanket. Only use water if readily available (by the time you have filled a bucket of water, the fire will have got much bigger). Only use water if you are certain that the cause of the fire is not electrical.
- If the fire is large, close all windows in the room (if you can do so without danger to yourself) and vacate the building closing the doors as you pass through them. A door is an effective barrier to prevent rapid spread of fire.
- At the same time as evacuating the room shout to other members of the household to get out of the house. They should close doors behind them. Always walk NEVER run.

Artificial Respirations (Respiratory Resuscitation)

Definition

- Artificial respiration is the act of providing air to assist or stimulate the metabolic process of exchanging of gases in the body

- **Note:** Even if the casualty is breathing, but the breathing is not normal, it is wise to start artificial respiration.

Golden rules of artificial respiration

- Quick action (Begin to work immediately as every minute counts and do not delay.
- Clear airway
- Persevere
- Thorough performance of movement each taking 4-5 seconds i.e. 12 times per minute
- Maintain breathing by putting client in semi prone position

Method of artificial respiration

1. **Expired air Resuscitation (EAR) method/ Direct method/ Kiss of life**

- Mouth to mouth
- Mouth to nose

2. **Manual method / Indirect method**

- Arm lift back pressure or hip roll back pressure **(Read about this)**

Expired air Resuscitation

- Loosen all clothing at waist, chest and neck.
- Make sure the airway is clear by looking into the mouth nose and throat and removing any obstructing substance, solid or liquid.
- Check for breathing (check for the rising and fall of the chest or feel for expired air with your hand
- Feel for the pulse
- Lay victim in supine position

. Expired air Resuscitation cont’

- Tilt the head backwards, while supporting the back of neck with your palm (This will lift the tongue to its normal position thus the air passage will be cleared and the casualty may begin to breathe after a gasp).
- If breathing does not begin after the above treatment, help movements of chest and lungs four or five times.
- This will be usually enough to start breathing.
- If breathing does not start even now, mouth-mouth (to-nose) breathing should be started.

Mouth-to-Mouth

- Place the casualty on his back.
- Hold his head tilted back.
- Take a deep breath with mouth open widely.
- Keep nostrils of casualty pinched.
- In adults, Cover the mouth of the casualty with your mouth snugly while in a child, your open mouth should cover both the mouth and nose.
- Watching the chest, blow into his lungs, until the chest expands.
- Withdraw your mouth; note that the chest falls back (It is hygienic to cover the mouth of casualty with your handkerchief or some clean cloth).

Mouth-to-Mouth cont’

- Repeat the above 15 to 20 times a minute (For adults blow one vigorous breathe every 5 seconds and children blow one shallow breath every 3 seconds)
- If the chest does not rise look for an obstruction again
- Turn the casualty to a side and thump his back.
- This will make the obstructing material come to the front of throat.
- Open the mouth and remove it with your finger covered with a piece of cloth.
- If a child, hold it upside down by the feet and thump the back.

Mouth-to-nose

- Use mouth-to-nose respiration if mouth-to-mouth is not possible, but now the casualty's mouth should be closed by the First Aider's thumb.
- If the heart is working, continue artificial respiration until normal breathing occurs.
- Send for an ambulance.

Cardiac Massage

- If the heart is not working, you will notice the following
  - The face is blue or pale.
  - Pupils are dilated.
  - Heart beats and carotid pulse are not felt
- Then treat as follows:

Cardiac Massage cont’

- Give a smart hit with the edge of your hand on the lower and left angle of the sternum to stimulate the heart
- In case the heart does not work, persist the striking for 10-15 seconds, at the rate of one stroke a second, feel for the pulse and it should become regular and continuous before you can stop
- All the while artificial respiration has to go on.
- Do not begin thumping the heart or compression until you are sure that the heart has stopped beating.

External Heart Compression

- This should go on along with artificial respiration therefore ask the First Aider giving mouth-to-mouth breathing to sit to the right of the casualty and place yourself on the left side.
- Feel and mark the lower part of the sternum.
- Place the heel of your hand on the body, making sure that the palm and fingers are not in contact with the Chest.
- Place the heel of the other hand over it.
- With your right arm, press the sternum backward towards the spine.

External Heart Compression cont’

- Adults should be given about 60 pressures a minute.
- For children from two to ten years 3 pressures with one hand (heel) will be enough; but pressure should be 80-90 times a minute.
- For babies up to two years, 2 pressures with two fingers are good enough applied 100 times per minute.
- Press firmly but carefully; carelessness may cause injury to ribs and deeper tissues.
- If the treatment is effective,
  - Colour will become normal
  - Pupil will contract as improvement begins and
  - Carotid pulse begins with each pressure.

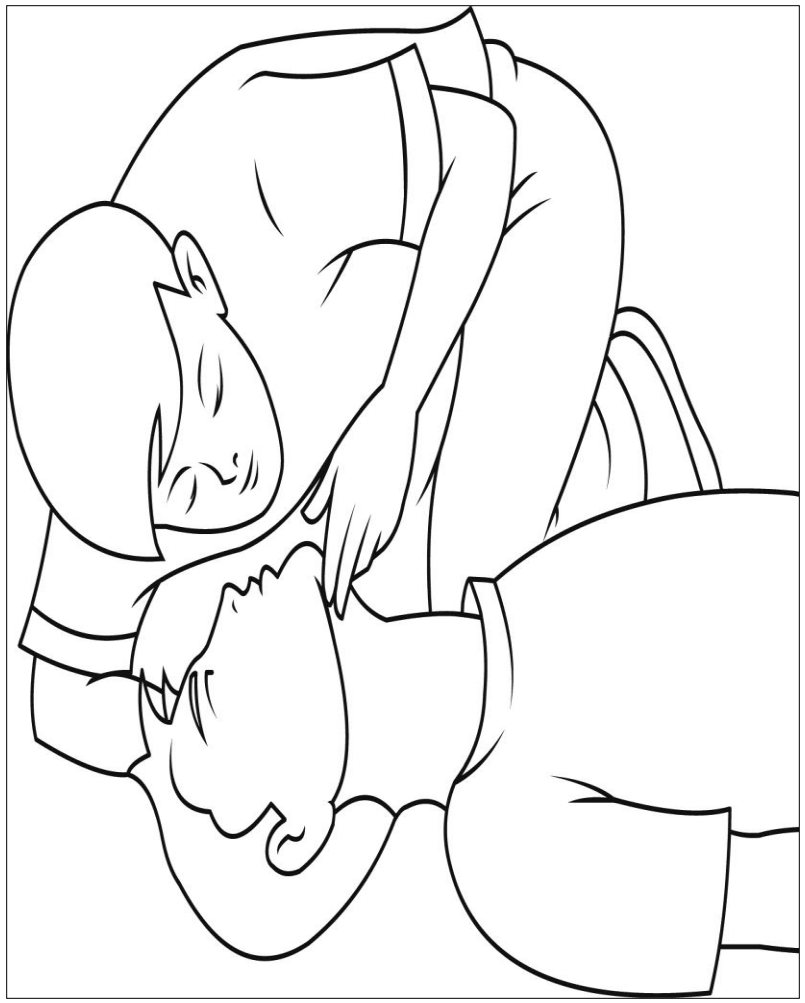
External Heart Compression cont’

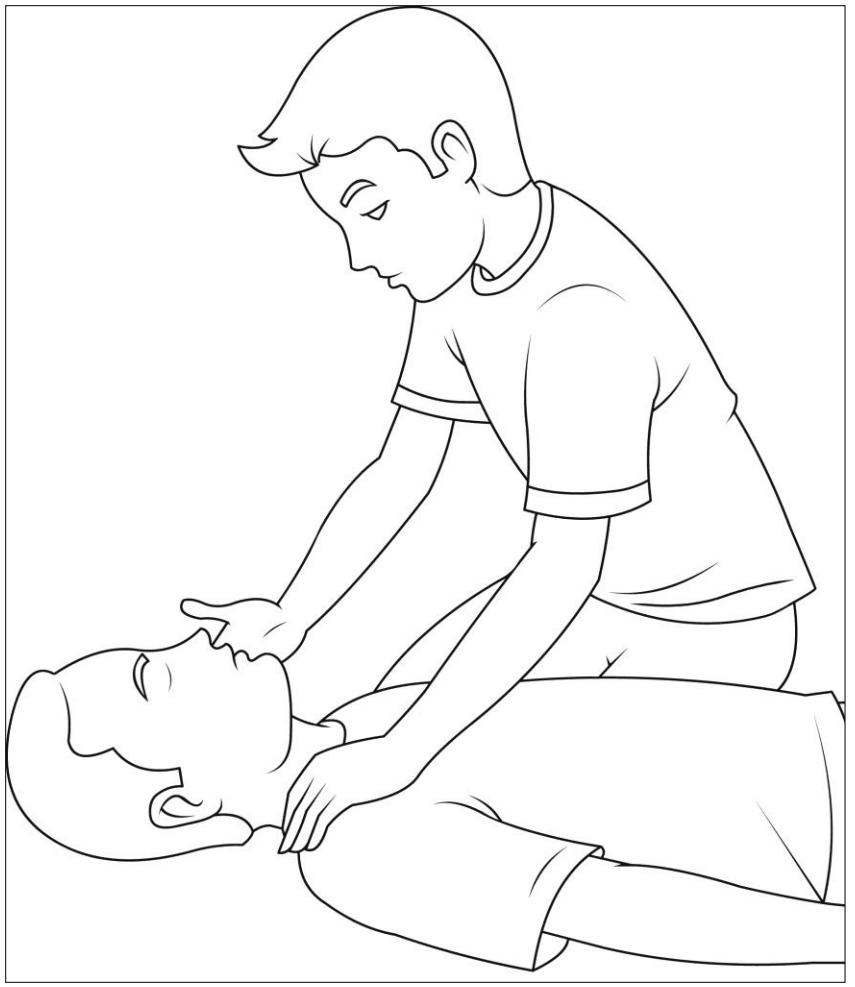
- When pulse is not restored, continue compression till the patient reaches hospital.
- Inflation's of lungs to heart pressure should be as 2:30.
- If there is only one First Aider, he has to be very smart and active.
- Finish 30 heart compressions, rush to head-side, give two inflation's to the lungs, and get back to the heart and give 30 compressions.
- Repeat these
- If there are two First Aiders, No.1 makes 5 heart compressions and then No.2 gives one lung inflation.
- These are repeated, at the same time No.1 can watch the pupils and No.2 can feel the carotid pulse.

Signs of recovery

- Cyanosis fades,
- Pulse gets stronger
- Sobbing catch is heard during inspiration
- Groans and a series of gasps or irregular breathing

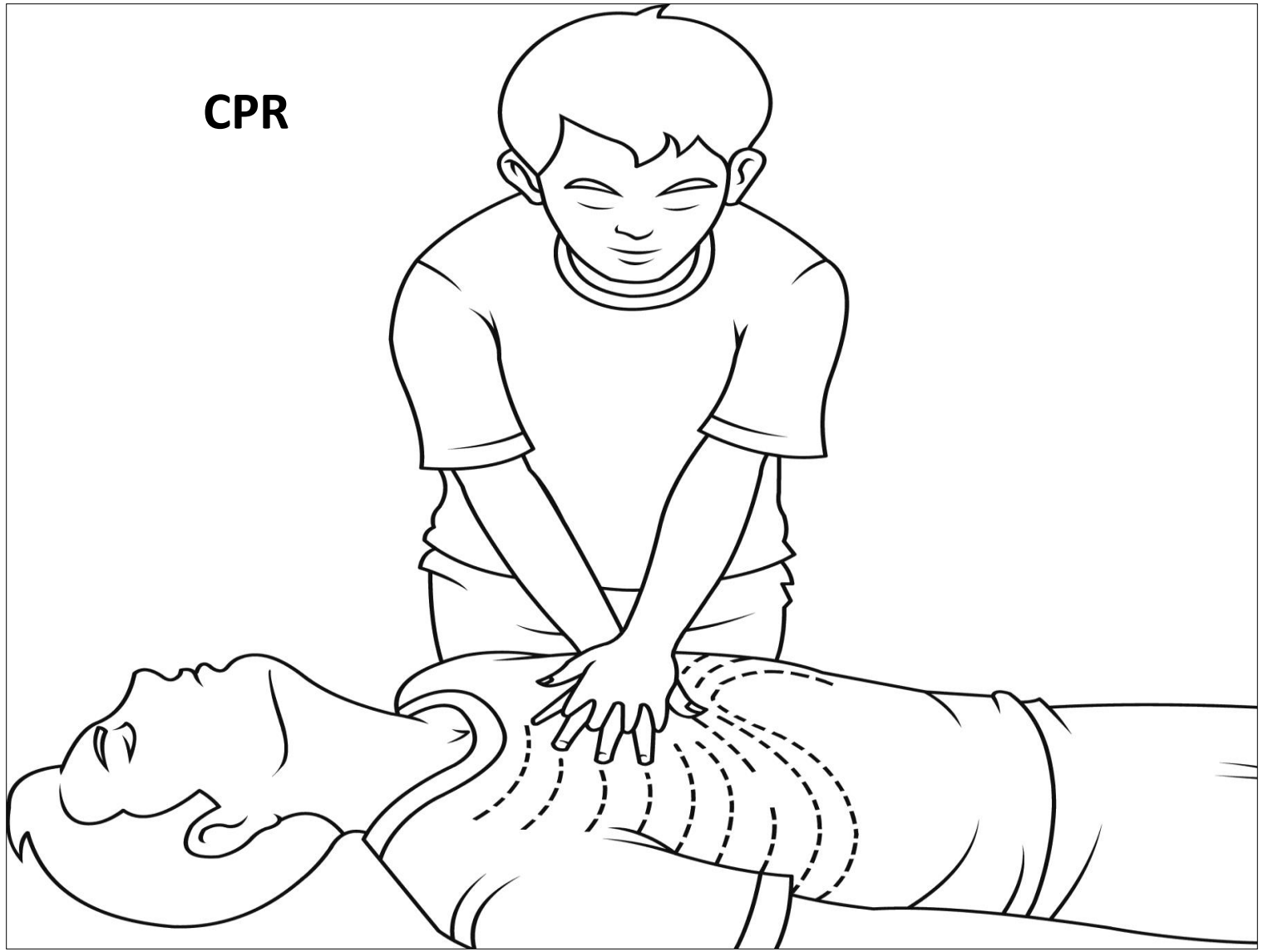
Checking for breathing





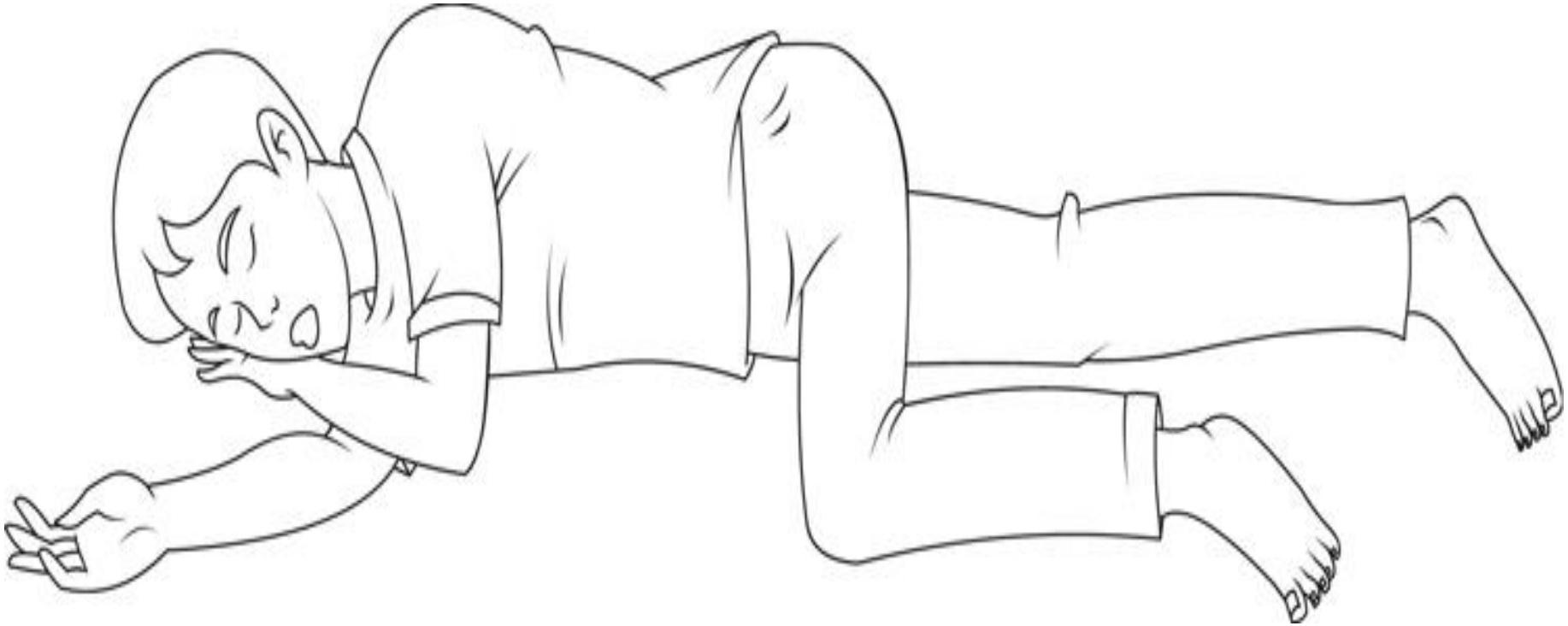
Mouth to mouth

CPR



Open the airway.

Recovery position



INTRODUCTION TO RESEARCH

Module 4 – Dr Bornwell Sikateyo

Issues...

- Why are we interested in research?
- What is research?
- Key concepts and issues
- Introduction to validity

Why must we understand research?

- Help make informed decisions
- Need to produce research in career
- Evaluating research in the media
- Assist in classes

Why is research a valued source of knowledge?

- Common ways of knowing…
  - personal experience/intuition
  - experts/traditions/authority
  - scientific method

What is Science, the Scientific Method, and Research?

- Science…
  - a body of established knowledge
  - the observation, identification, investigation, and theoretical explanation of natural phenomenon

usually the ultimate goal is theory generation and verification

What is Science, the Scientific Method, and Research?

- Theory…
  - a set of inter-related constructs and propositions that specify relations among variables to explain and predict phenomena
  - should be simple, consistent with observed relationships, tentative and verifiable

What is Science, the Scientific Method, and Research?

- Scientific Method…
  - involves the principles and processes regarded as characteristic of or necessary for scientific investigation
  - process or approach to generating valid and trustworthy knowledge

What is Science, the Scientific Method, and Research?

- Research…
  - the application of the scientific method
  - a systematic process of collecting and logically analyzing information (data)
- Research Methods (Methodology)…
  - the ways one collects and analyzes data
  - methods developed for acquiring trustworthy knowledge via reliable and valid procedures

Characteristics of Research

- objective
- precise
- verifiable
- parsimonious
- empirical
- logical
- probabilistic

Types of Research

- Trochim's Classifications…
  - **Descriptive**
    - e.g., percentage of regular exercisers
  - **Relational**
    - e.g., link between age and exercise
  - **Causal**
    - e.g., effect of behavior change intervention on exercise participation

Types of Research

- Other Common Classifications…
  - basic vs. applied vs. evaluation
  - experimental vs. non-experimental
  - analytical vs. descriptive vs. experimental vs. qualitative

Key Concepts and Issues

- time in research
- variables
- types of relationships
- hypotheses
- types of data
- fallacies
- structure of research
- deduction and induction
- ethics
- validity

Variables

- variable…
  - any observation that can take on different values
- attribute…
  - a specific value on a variable

Examples

Variable	Attribute
age	

Examples

Variable	Attribute
age	18, 19, 20, etc...

Examples

Variable	Attribute
Gender or sex	

Examples

Variable	Attribute
Gender or sex	Male, female

Examples

Variable	Attribute
satisfaction	

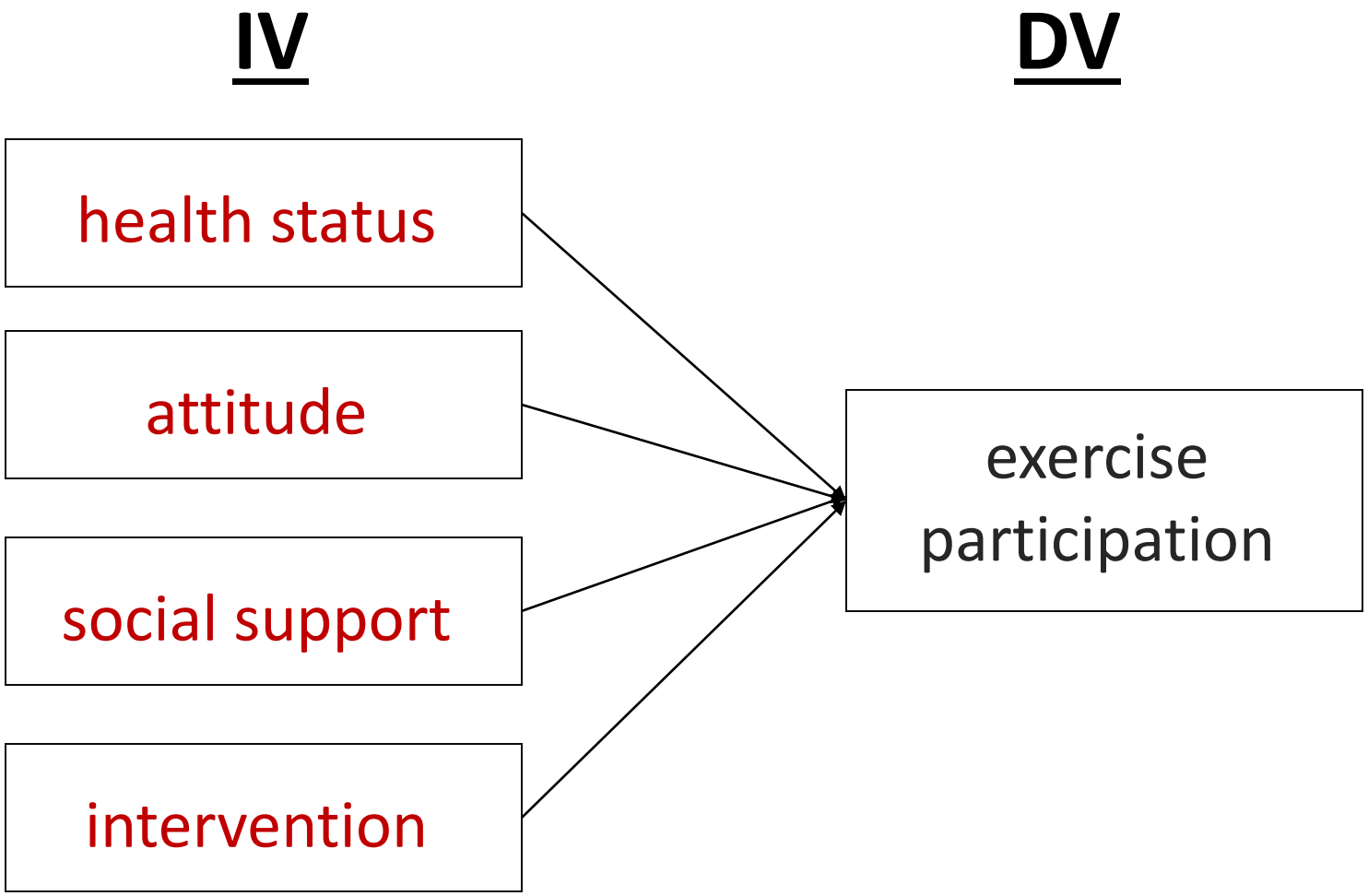
Examples

Variable	Attribute
satisfaction	1 = very satisfied
	2 = satisfied
	3= somewhat satisfied
	4 = not satisfied
	5 = not satisfied at all

Types of Variables

- Independent variable (IV)…
  - what you (or nature) manipulates in some way
- Dependent variable (DV)…
  - what you presume to be influenced by the IV

Examples


IV
DV
health status
attitude
social support
intervention
exercise participation

The purpose of the study was to…

- Test whether the "Fair Play for Sport" curriculum is effective in promoting moral development in youth
- Examine the relationship between age and VO2max.
- Test whether there are gender differences on the value placed on sport participation
- Determine whether students' perceptions of the amount of positive, negative, and informational feedback provided by their teachers is predictive of their self-esteem and level of achievement

IV, DV?

Types of Relationships

- correlational vs. causal relationships

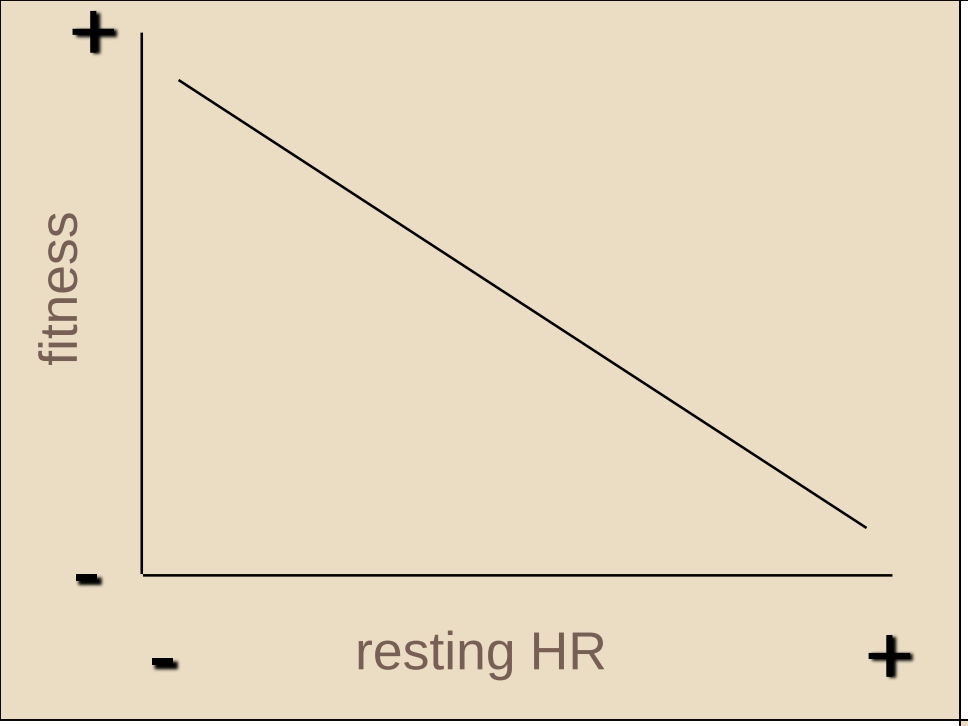
variables perform in a synchronized manner

one variable causes the other variable

correlation does not imply causation!
(it's necessary but not sufficient)

Types of Relationships

- Patterns of relationships…
  - no relationship
  - positive relationship
  - negative relationship
  - curvilinear relationship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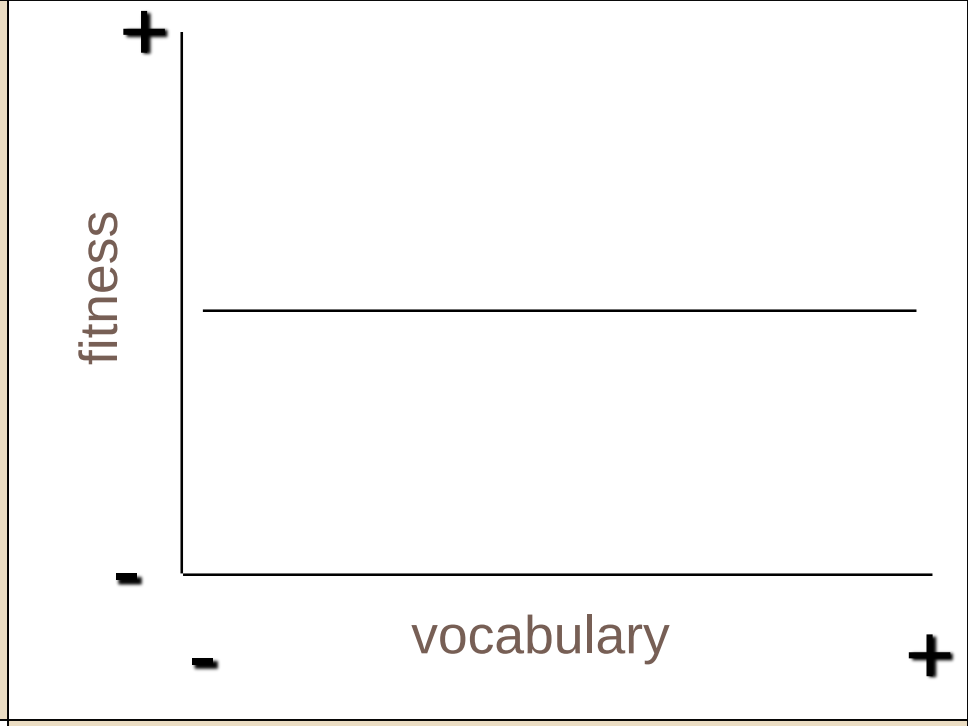
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vocabulary
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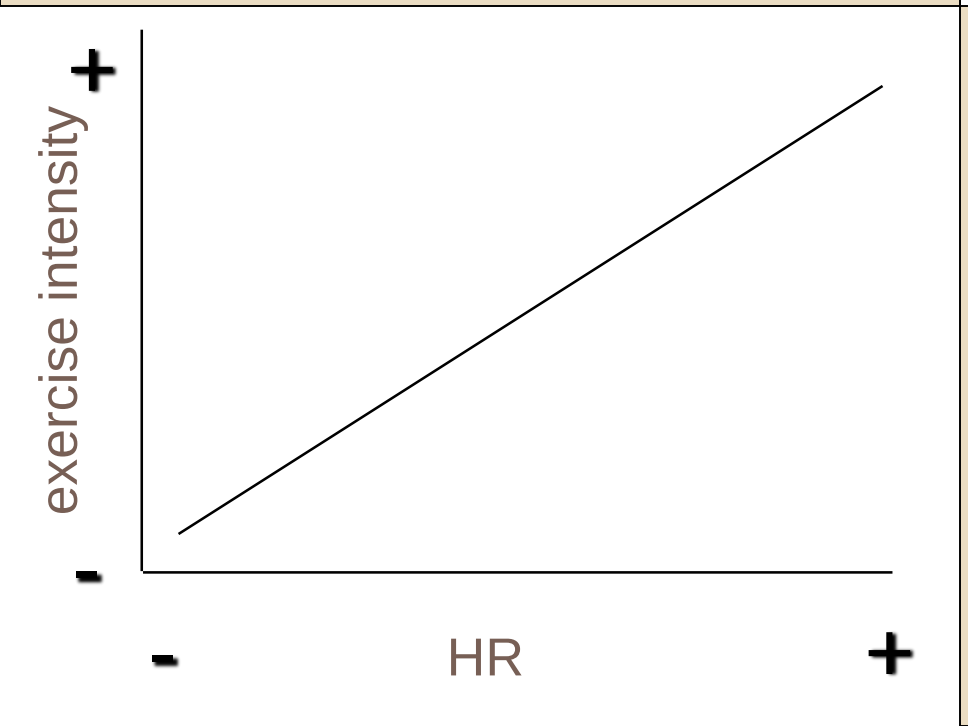
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exercise intensity
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HR
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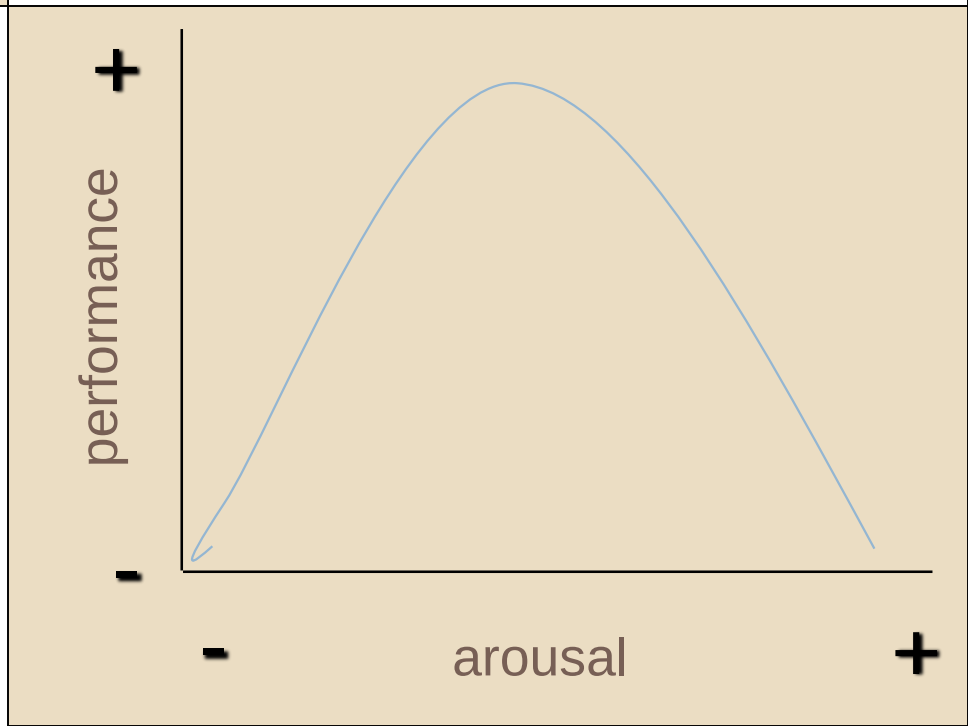
+
performance
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arousal
+

Hypotheses

- Hypothesis…
  - a specific statement of prediction
- Types of hypotheses
  - alternative vs. null
  - one-tailed vs. two-tailed

Hypotheses

- Alternative hypothesis (HA)…
  - An effect (that you predict)
- Null hypothesis (HO) …
  - Null effect

Hypotheses

Hypothesis	there is a relationship between age and exercise participation
H_A	there is a relationship
H_O	there is not a relationship

this is a two-tailed hypothesis as no direction is predicted

Hypotheses

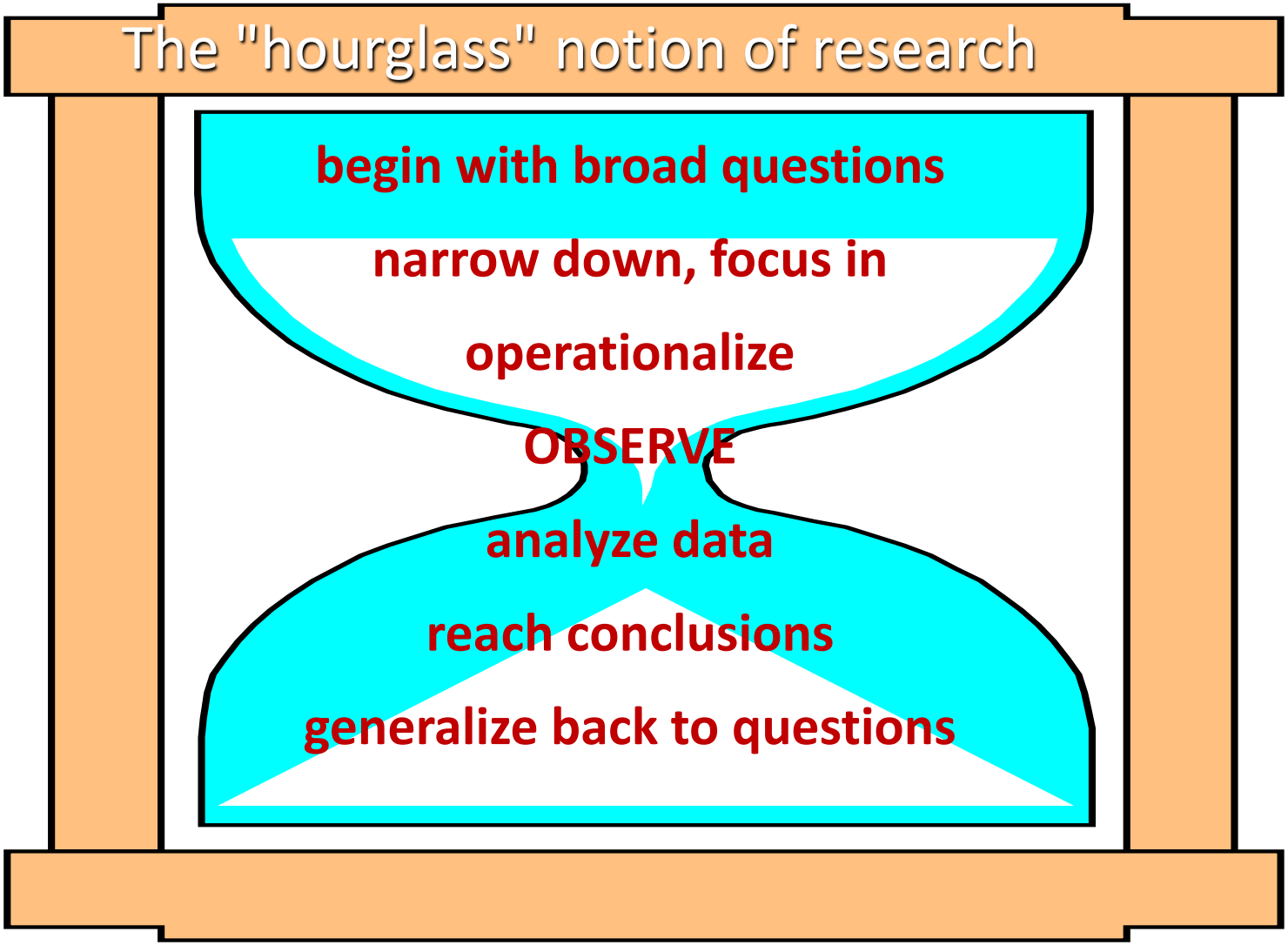
Hypothesis	an incentive program will increase exercise participation
H_A	participation will increase
H_O	participation will not increase or will decrease

this is a one-tailed hypothesis as a specific direction is predicted

Types of Data

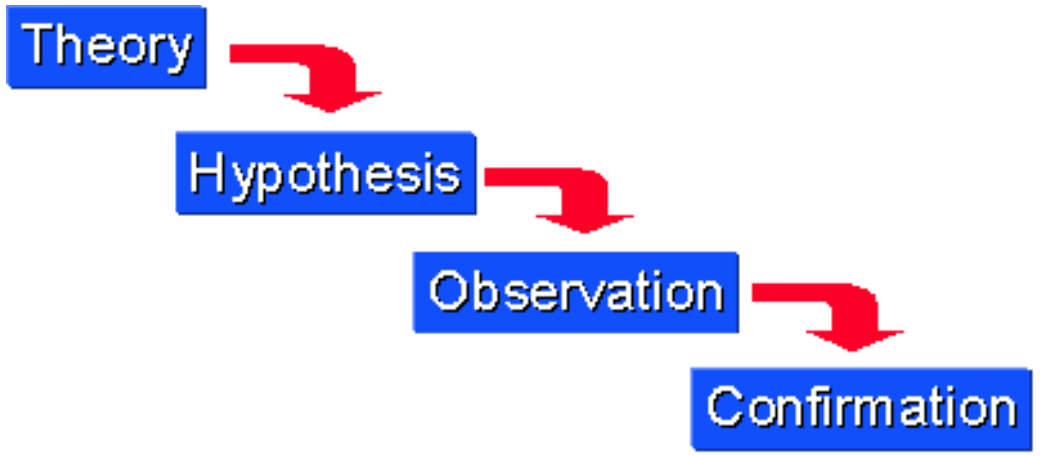
- quantitative vs. qualitative

Structure of Research

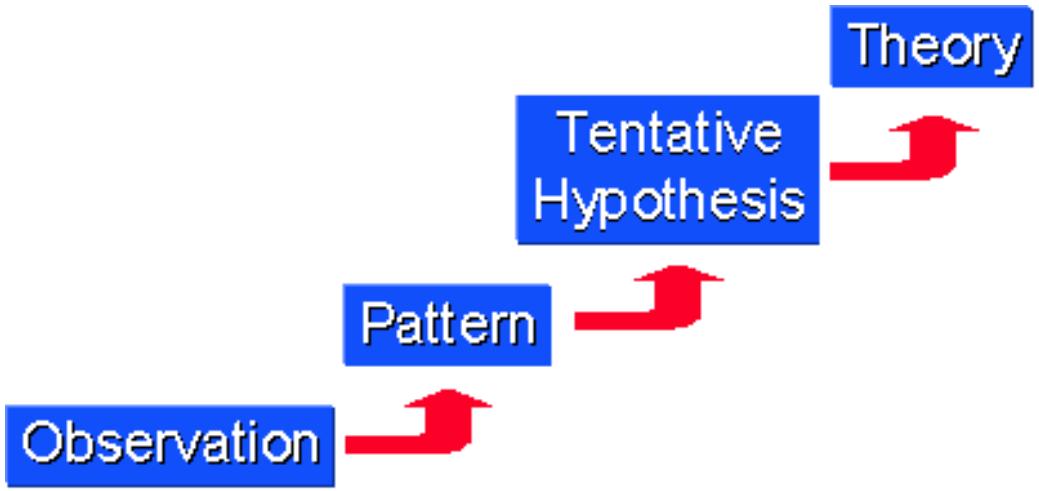


Deduction and Induction

Deduction



Induction



Ethics in Research

- Balance between protecting participants vs. quest for knowledge
- REC provides one mechanism
  - informed consent/assent
  - confidentiality and anonymity
  - justification of procedures
  - right to services

Ethics - A Brief History

- World War II – Nuremberg Code and other international codes
- Stanley Milgram Experiment – authority figures
- Tuskegee Syphilis Study – USG 40 year experiment
- Willowbrook State Hospital Study – Hepatitis
- Laud Humphreys – “Tearoom sex”

Practice Questions

1. Is the study descriptive, relational, or causal?
2. Is the study cross-sectional or longitudinal?
3. What is (are) the IV (IVs)?
4. What is (are) the DV (DVs)?
5. What are the alternative and null hypotheses?

Practice Questions

A. The purpose of the study was to examine the link between age and physical fitness levels in terms of muscular strength and endurance. It was hypothesized that older and younger adults would demonstrate significantly different fitness levels.

Practice Questions

B. The purpose of the study was to determine whether track athletes trained to use mental imagery performed superior to athletes who did not receive the mental imagery training. We expected those athletes receiving the training would perform significantly better than the untrained athletes.

Practice Questions

C. The study examined the effects of an acute bout of resistance training on participants' mood and cognitive functioning at 1, 6 and 12 hours post exercise. It was expected that the positive effects on mood and cognitive function would decline over time.

Practice Questions

D. Participants at the 2009 Lusaka Marathon were polled to determine their satisfaction with the course. The race officials hoped for positive reactions on the part of the runners.

Practice Questions

E. A researcher was interested in the role of caffeine in sports performance. In cooperation with her University's baseball team, she randomly assigned players to one of two conditions: (1) no caffeine or (2) low dose (100mg). She then used performance on a batting machine as a test. She speculated that caffeine would positively affect performance.

Introduction to Validity

- validity…
  - the best available approximation to the truth of a given proposition, inference, or conclusion

Introduction to Validity

- Types of validity…
  - conclusion
  - internal
  - construct
  - external

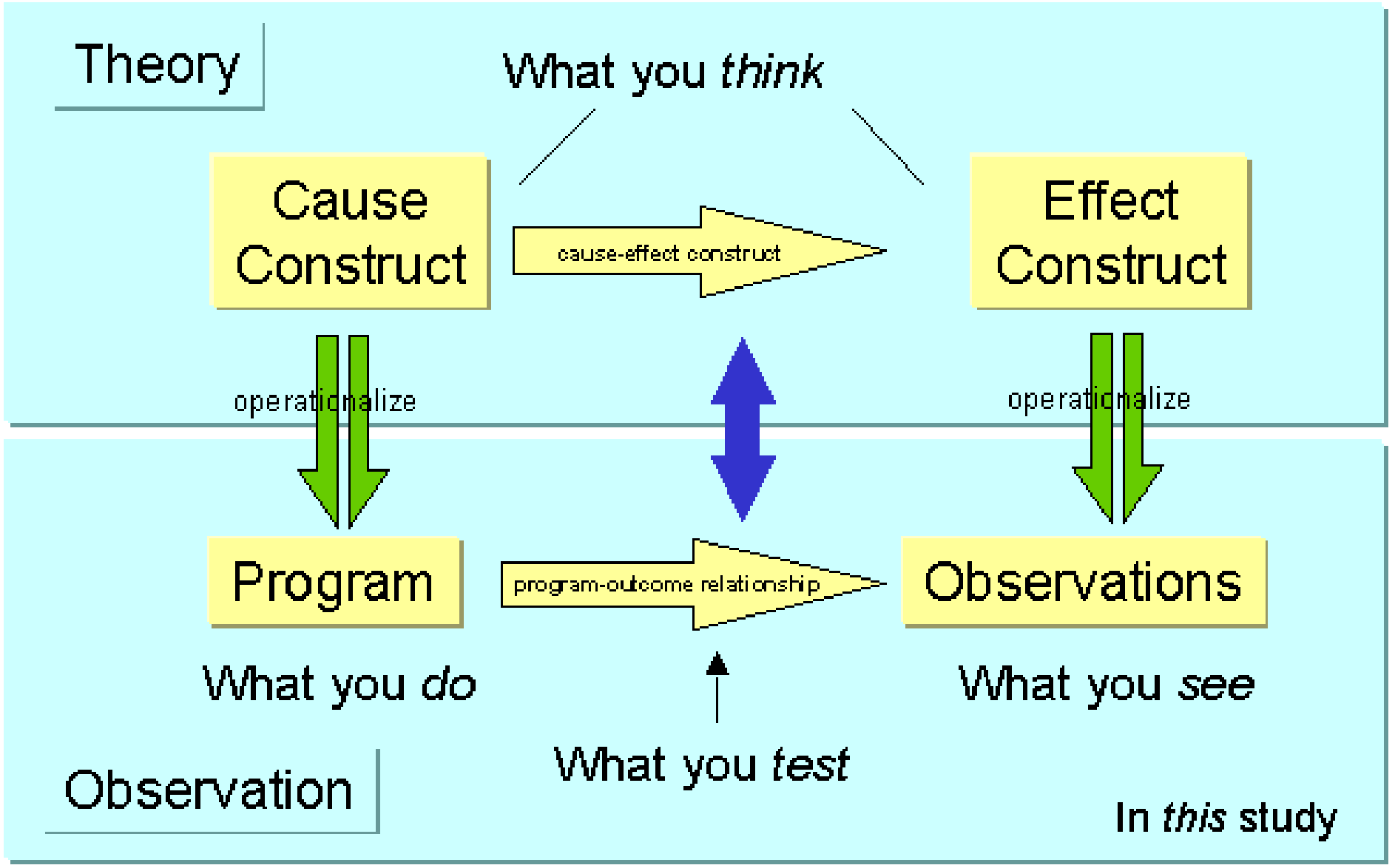
types of validity are cumulative

Introduction to Validity

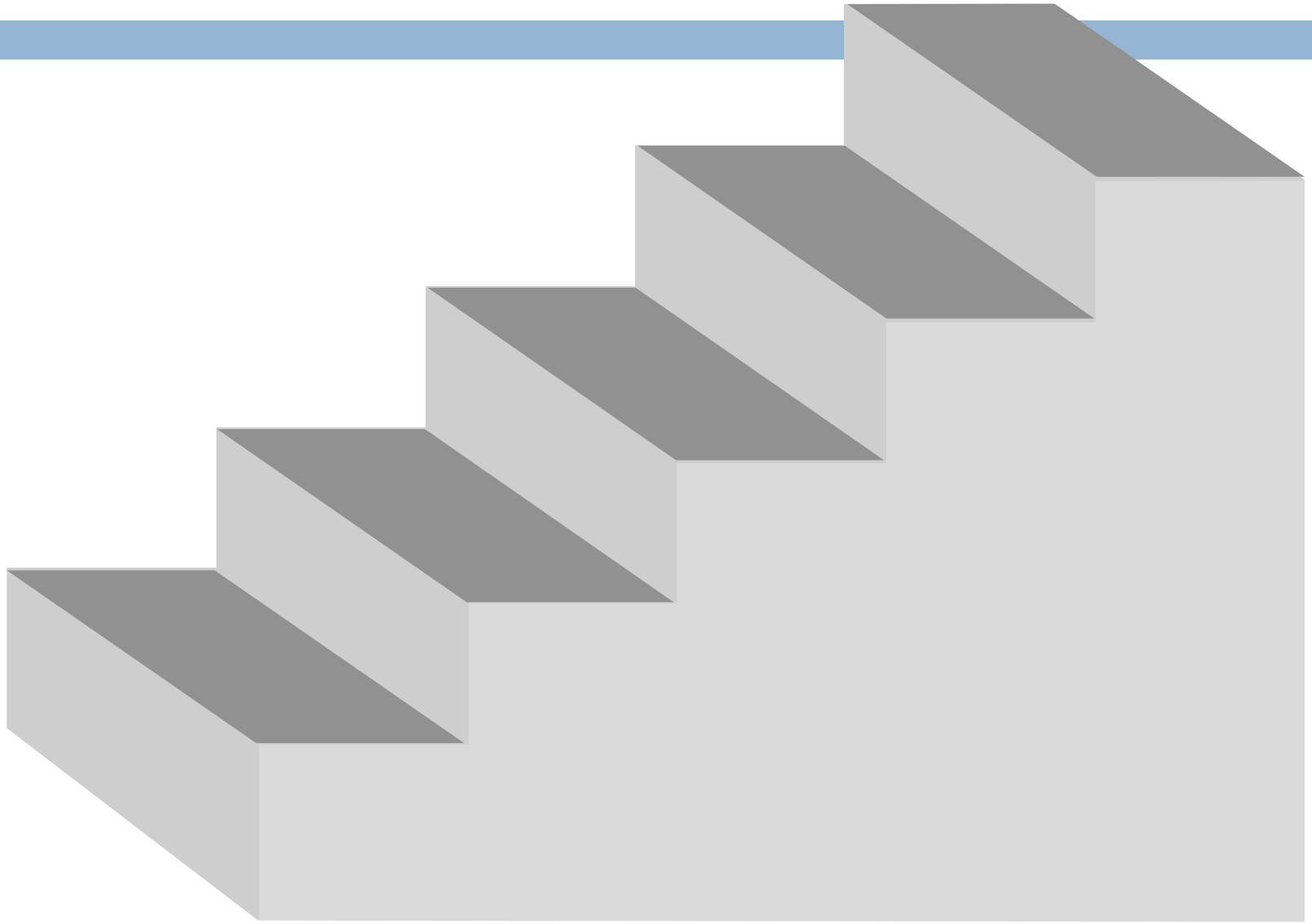
- for each type of validity there are typical threats, and ways to reduce them
- this provides our framework for critiquing the overall validity (= worth) of studies

Additional Information

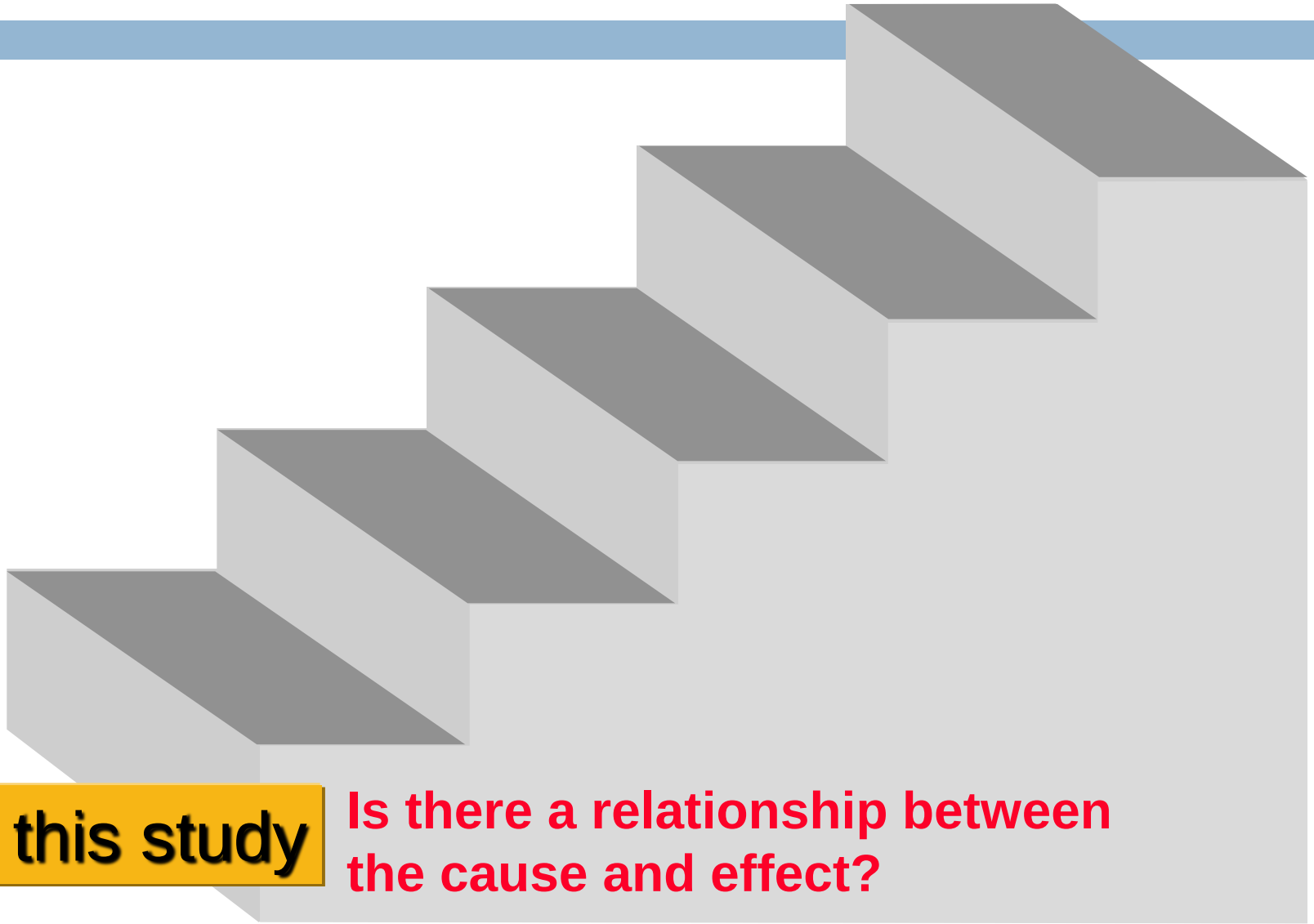
- Describing Refereed Articles
- Sharing Research Findings with Clients


Theory
What you *think*
Cause Construct
cause-effect construct
Effect Construct
operationalize
operationalize
Program
program-outcome relationship
Observations
What you *do*
What you *see*
What you *test*
Observation
In *this* study

The Validity Questions Are *Cumulative*...



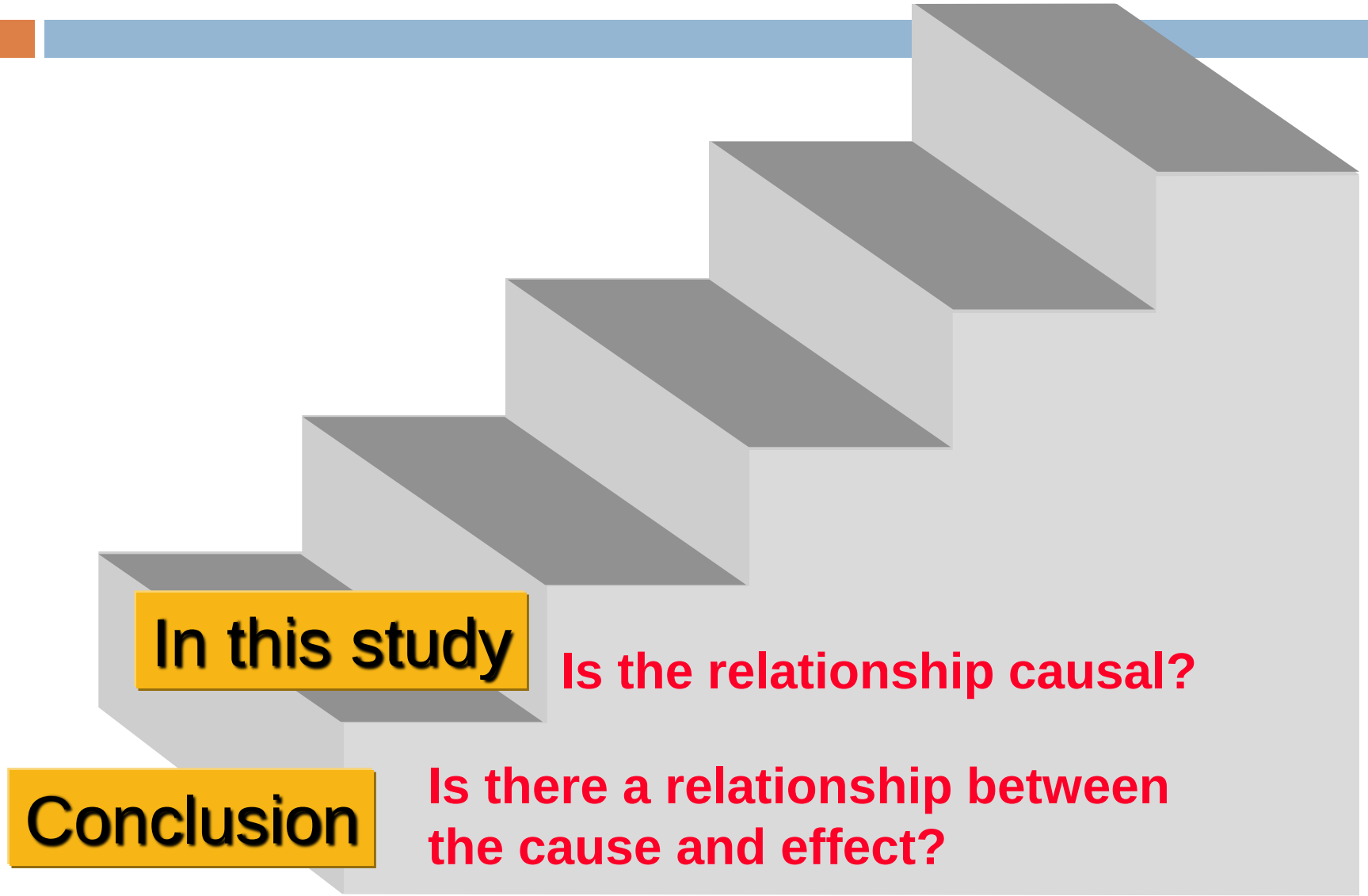
The Validity Questions Are *Cumulative*...



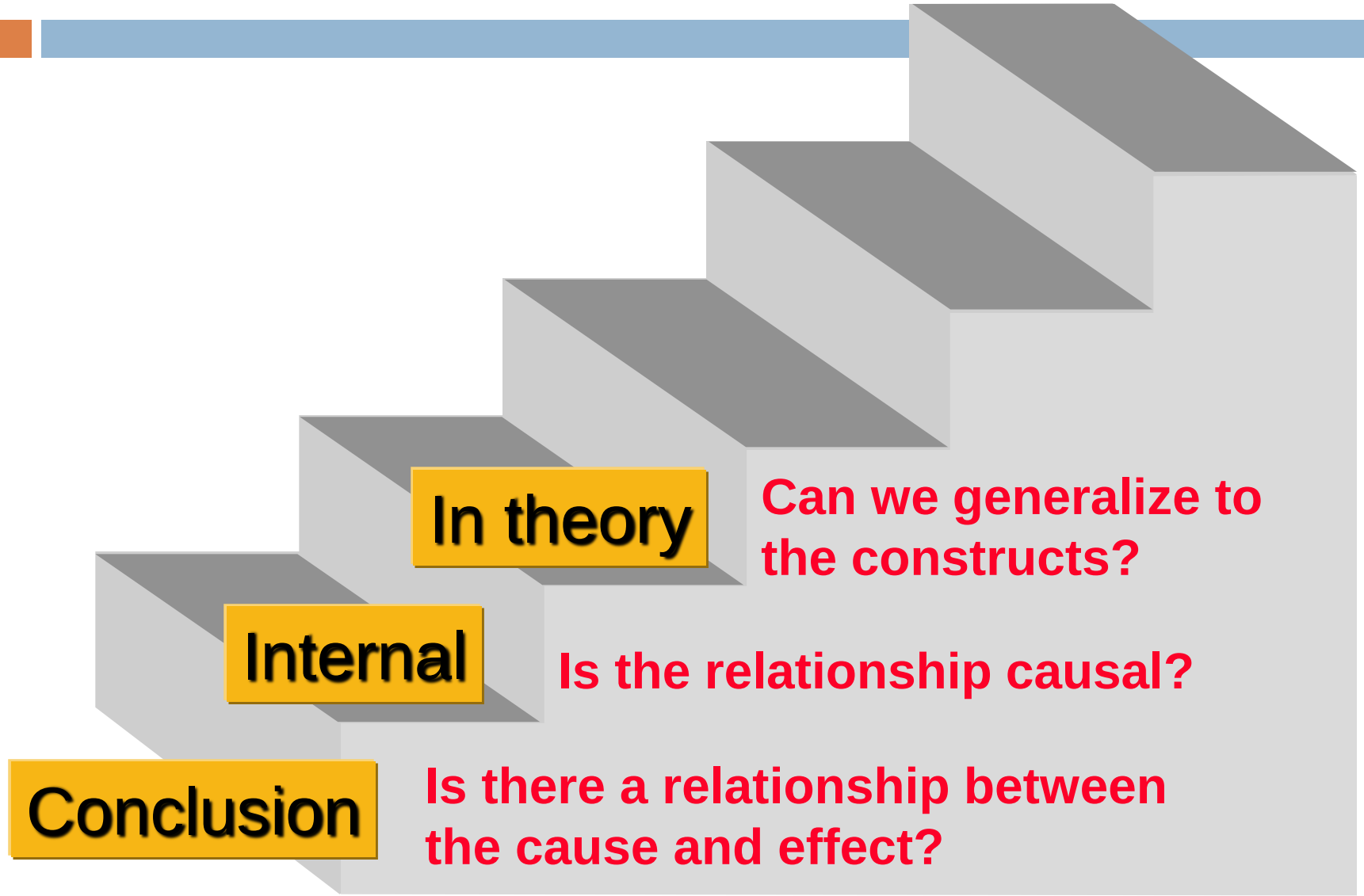
In this study

Is there a relationship between the cause and effect?

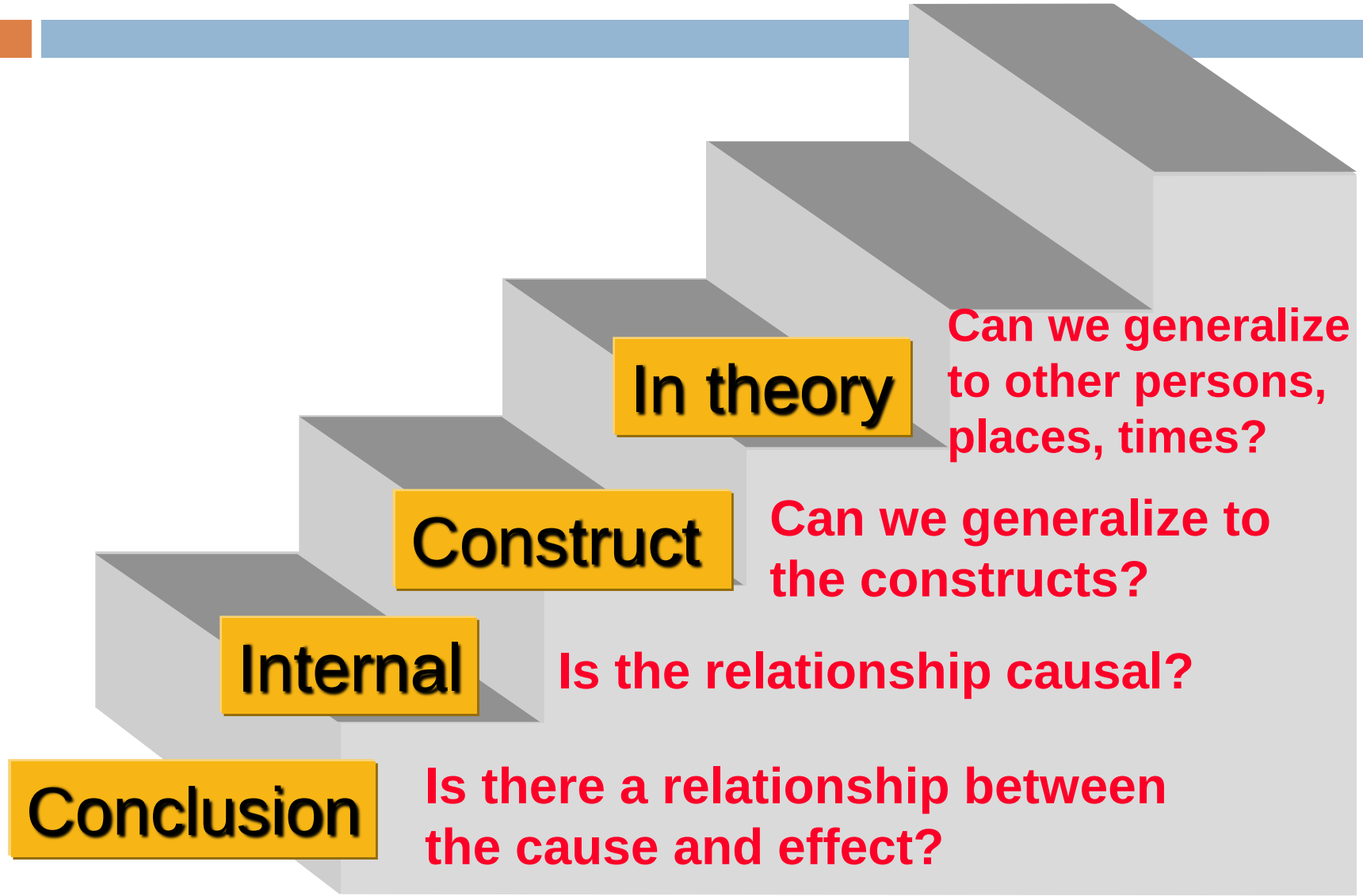
The Validity Questions Are *Cumulative*...



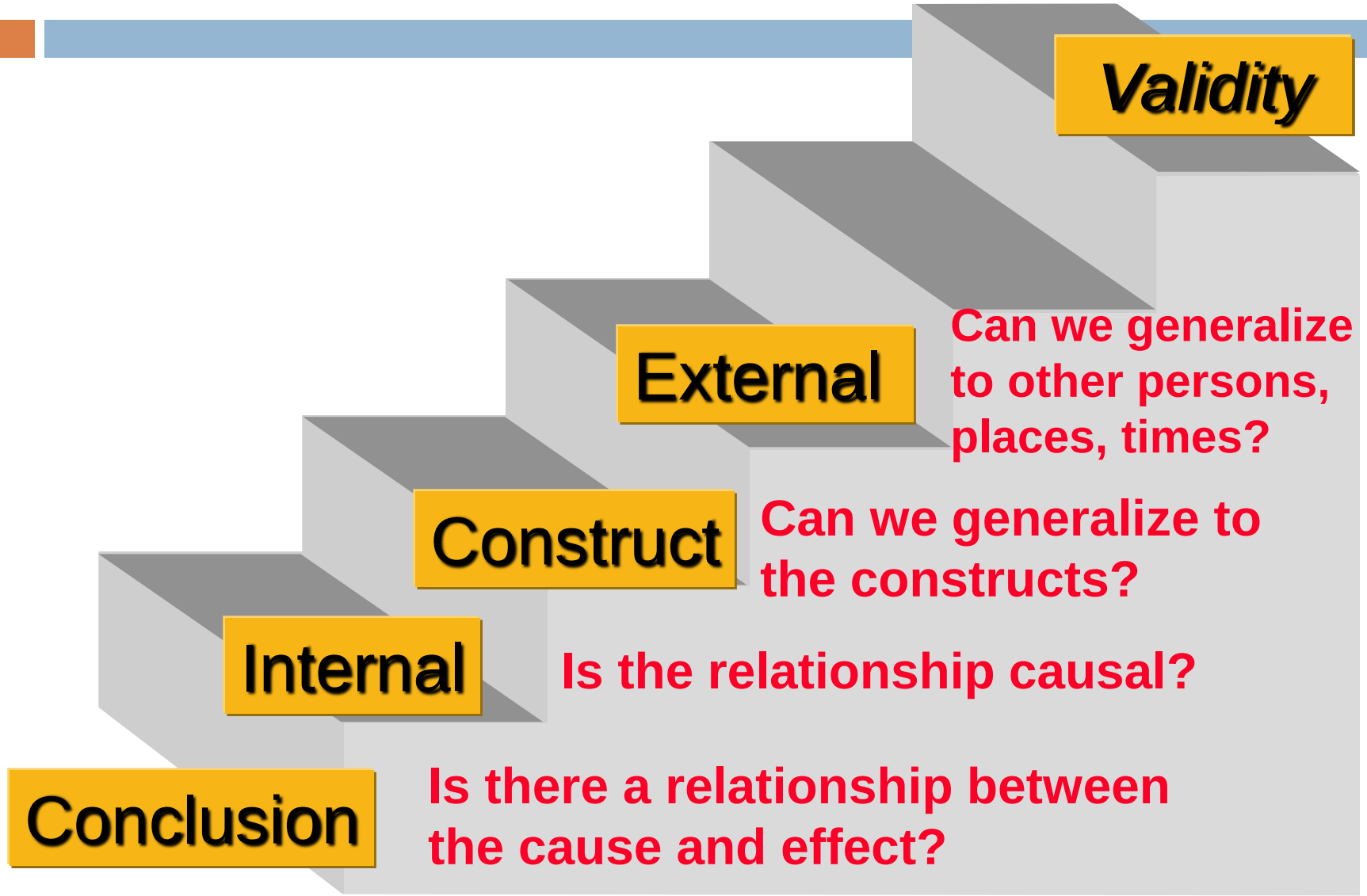
The Validity Questions Are *Cumulative*...



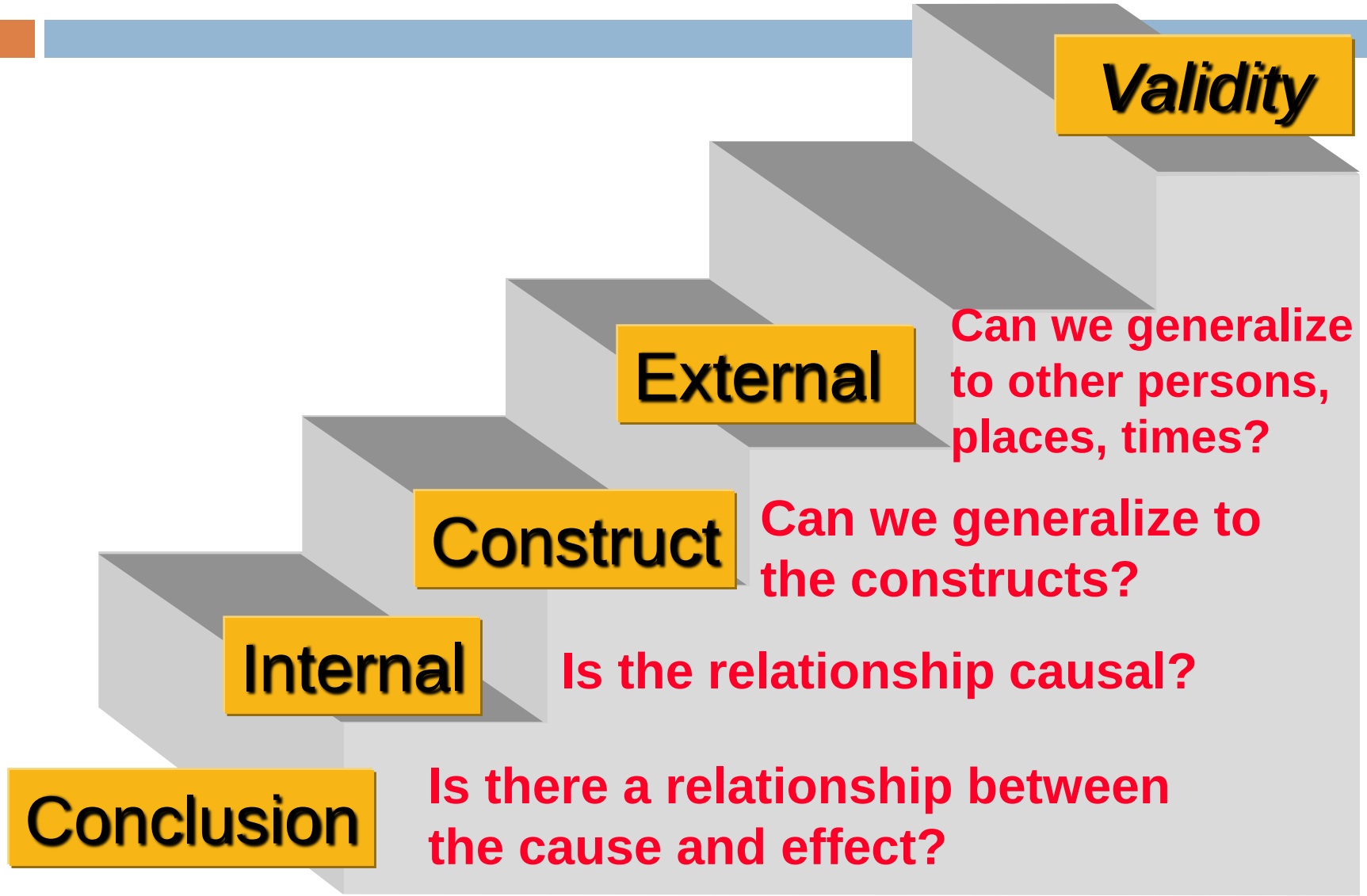
The Validity Questions Are *Cumulative*...



The Validity Questions are *cumulative*...



Validity Questions are *Cumulative*



Thank you very much for your attention

PBL Overview

What is PBL?

Problem-based learning is an **instructional strategy** (a curricular framework) that, through student and community interests and motivation, provides an appropriate way to “teach” sophisticated content and high-level process… all while building self-efficacy, confidence, and autonomous learner behaviors.

PBL is

an instructional method that challenges students to "learn to learn," working cooperatively in groups to seek solutions to real world problems.

PBL

- engages students' curiosity and initiates learning the subject matter.
- provides excellent opportunities for students to think critically and analytically, and to find and use appropriate learning resources
- promotes autonomous learning

Research on PBL

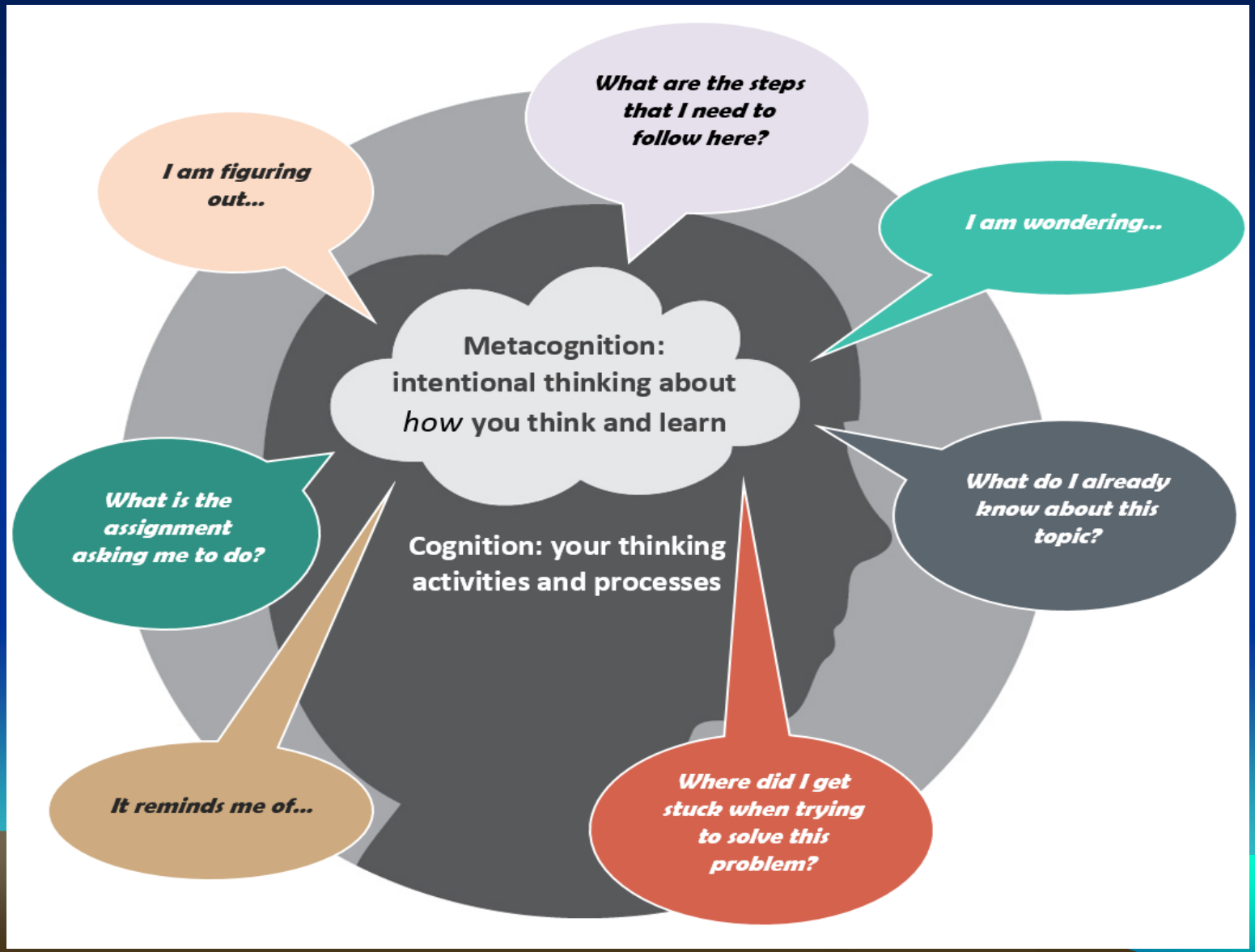
- Students show significant learning gains in experimental design through a PBL approach (VanTassel-Baska, et al. 2000)
- Students show enhanced ‘real world’ skills with no loss in content knowledge as a result of using PBL (Gallagher & Stepein, 1996; Gallagher & Gallagher, 2003)
- Students & teachers are motivated to learn using the PBL approach (VanTassel-Baska, 2000)
- Students show enhanced higher order skill development using PBL over other approaches to teaching science (Dods,1997)

Students should be given problems – at levels appropriate to their maturity – that require them to decide what evidence is relevant and to offer their own interpretations of what the evidence means. This puts a premium, just as science does, on careful observations and thoughtful analysis. Students need guidance, encouragement, and practice in collecting, sorting, and analyzing evidence, and in building arguments based on it. However, if such activities are not to be destructively boring, they must lead to some intellectually satisfying payoff that students care about.

-- from *Science for All Americans, Project 2061*

Characteristics of PBL

- Learner-centered
- Real world problem
- Teacher as tutor or coach
- Emphasis on collaborative teams
- Employs metacognition
- Uses alternative assessment
- Embodies scientific process


What are the steps that I need to follow here?
I am figuring out...
I am wondering...
Metacognition: intentional thinking about *how* you think and learn
What is the assignment asking me to do?
What do I already know about this topic?
Cognition: your thinking activities and processes
It reminds me of...
Where did I get stuck when trying to solve this problem?

Characteristics of PBL

- Students are in charge of learning
- Requires problem finding
- Requires students to make connections & create ‘new’ knowledge
- Requires deep thinking
- There is no single right answer

Characteristics of PBL

Have we considered all possibilities?

What assumptions are we making?

Why is this strategy not working?

PBL Roles

Teacher:

- Present an ill-structured problem
- Act as a metacognitive coach

Student:

- Create a precise problem statement
- Find information to solve the problem
- Evaluate possible solutions
- Create a final product

Scientific Habits of Mind

Cognitive skills, affective skills, and attitudes:

- Curiosity
- Creativity
- Objectivity
- Openness to new ideas
- Skepticism
- Tolerance for ambiguity

Self-Directed Learning… Grasping Metacognition

- Self-monitoring performance with an intent to self-assess
- Recognizing gap in knowledge and set up learning agenda
- Identifying learning resources:
  - print
  - human
  - technology-based
- Identifying skills needed to use resources wisely and well
- Sorting through information to determine needed information
- Questioning appropriateness of personal biases
- Applying information appropriately

Problem Based Learning

- State the problem
- Decide what information you need
- Conduct information quest
- Complete scientific investigations
- Review data & summarize findings
- Communicate problem resolution

What's an "Ill-Structured" Problem?

- More information than initially is presented will be necessary to…
  - understand what's going on.
  - know what caused it to be a problem.
  - know how to fix it.
- There's always more than one right way to figure it out.
  - Fixed formulas won't work.
  - Each problem has unique components.
  - Each problem solver has unique *characteristics, background, experience.*

What's an "Ill-Structured" Problem?

- The definition of the problem shifts or changes as new information is gathered.
- Ambiguity is a part of the environment throughout the process.
  - Data are often incomplete
  - …or in conflict
  - …or unavailable
  - but choices must be made, anyway.

Ill-Structured Problems

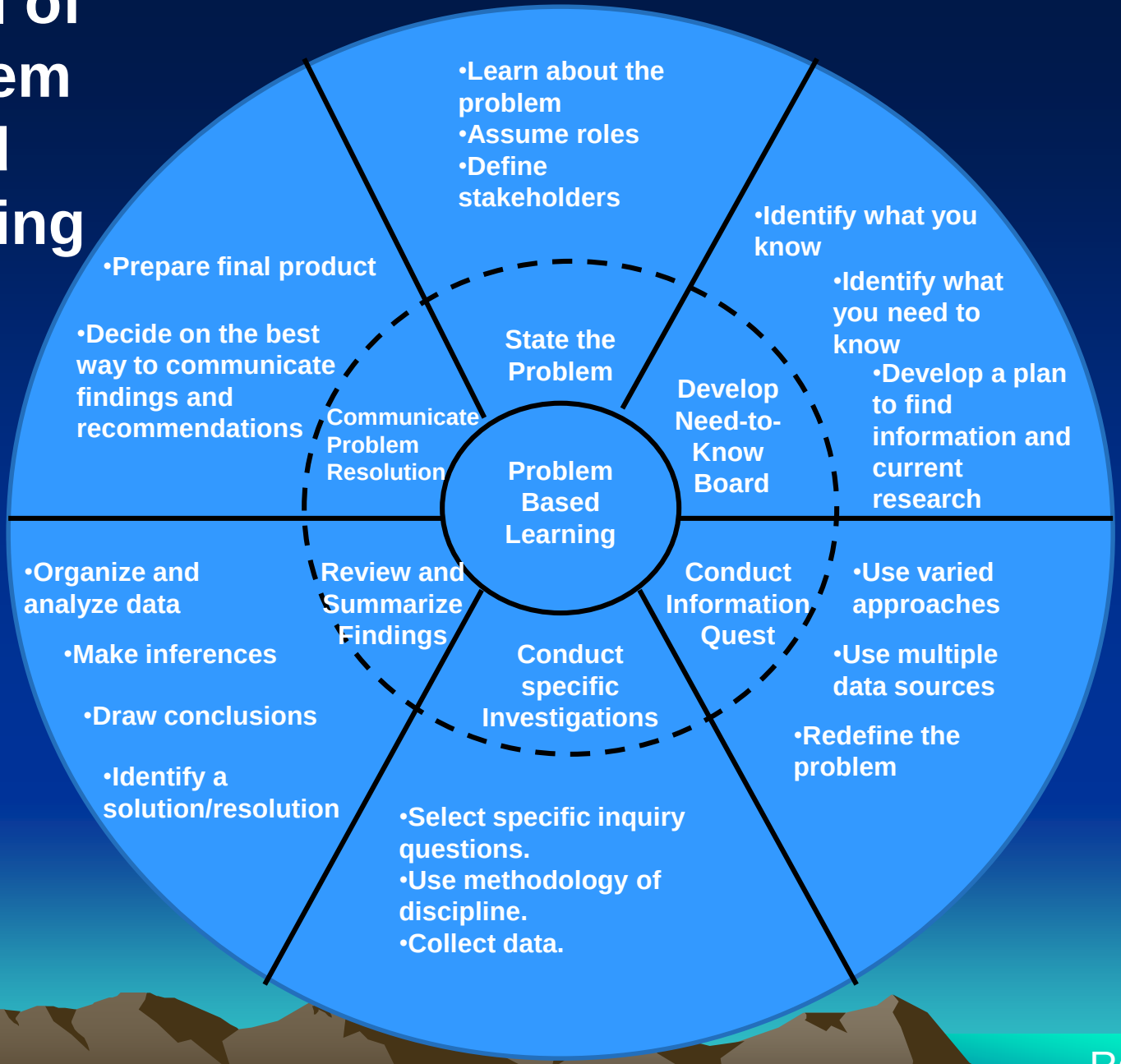
- Ambiguous
- No single “right” answer
- Data is often incomplete
- Definition of problem changes
- Information needs change or grow
- Stakeholders
- Deadline for resolution

Problem Diagnosis and Solution Building

- Ill-structured problem is presented
  - What is going on?
  - What do we know?
  - How can we find out?
  - Where does the information lead us?
  - Do we have enough information?
  - Is the information reliable?
  - What's the problem?
- Problem is represented

Dealing with real-world problems

Wheel of Problem Based Learning



Robbins, 2008

Need to Know Board

What do we know?	*What do we need to know?*	*How can we find out?*

Introduction to Epidemiology

Background

- We can study health and disease by

-Observing effects on individuals

- Laboratory investigation of experimental animals
- Measuring the distribution of health problems in the population

Origin

“Epidemiology” from Greek :

Epi = upon; Demos = people

‘epidemic’ = “upon the people” , Logos = study

Epidemiologists first concern was to investigate, control and prevent epidemics

Two basic assumptions about disease:

- Disease does not occur at random
- Disease has causal and preventive factors

What is epidemiology?

- Epidemiology is a fundamental science of public health.
- Epidemiology has made major contributions to improving population health.
- Epidemiology is essential to the process of identifying and mapping emerging diseases.

What is epidemiology?

- Epidemiology is “the study of the distribution and determinants of health-related states or events in specified populations, and the application of this study to the prevention and control of health problems”

Epidemiology and public health

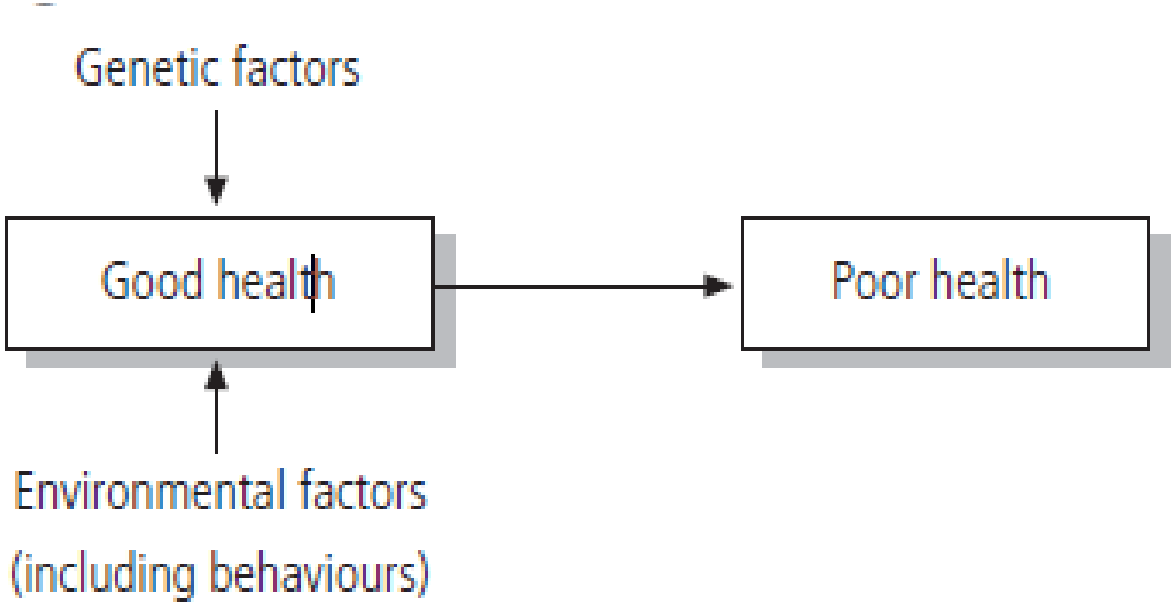
- Public health, broadly speaking, refers to collective actions to improve population health.
- Epidemiology, one of the tools for improving public health, is used in several ways.
- Early studies in epidemiology were concerned with the causes (etiology) of communicable diseases, and such work continues to be essential since it can lead to the identification of preventive methods.

Causation of disease

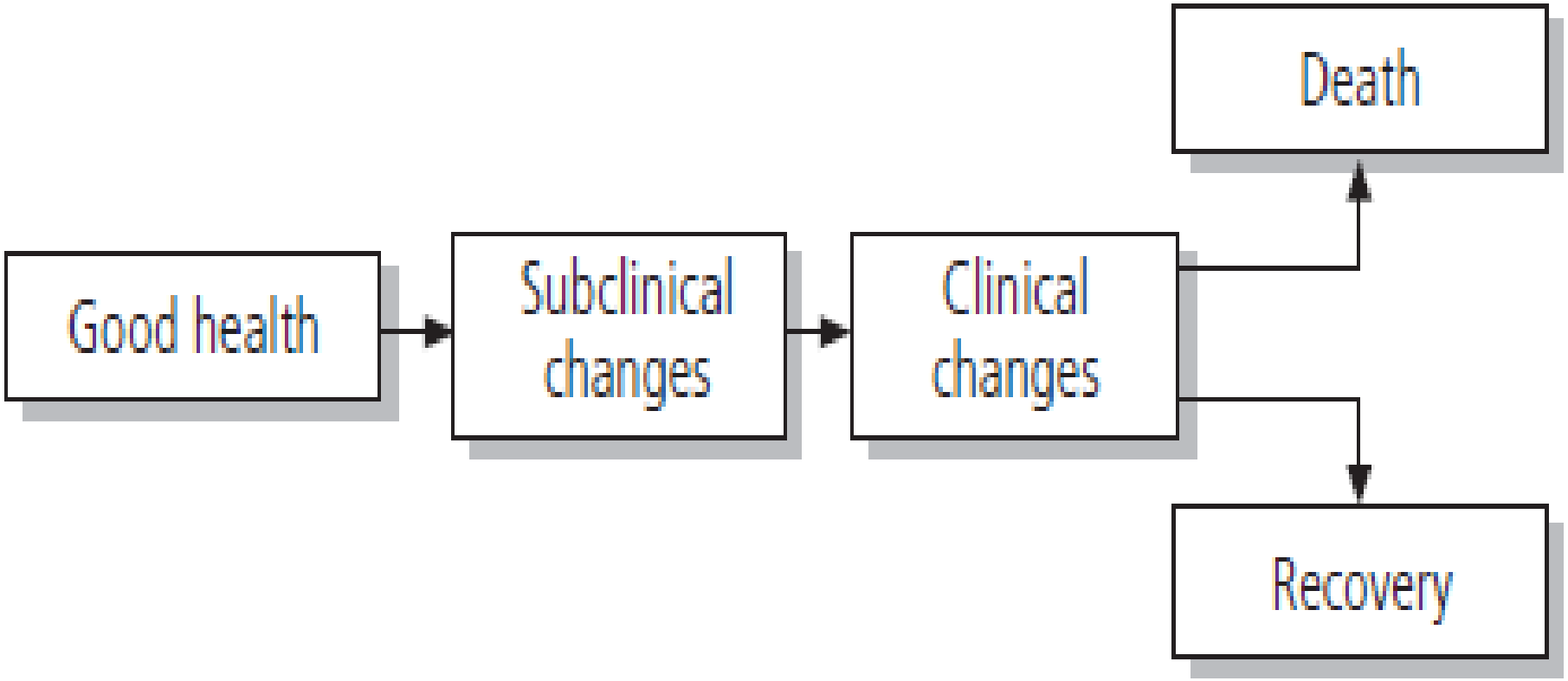
- Although some diseases are caused solely by genetic factors, most result from an interaction between genetic and environmental factors.
- Diabetes, for example, has both genetic and environmental components.
- Environment broadly includes any biological, chemical, physical, psychological, economic or cultural factors affecting this interplay, and epidemiology is used to study their influence and the effects of preventive interventions

Natural history of disease

- Epidemiology is also concerned with the course and outcome (natural history) of diseases in individuals and groups



Natural history of disease



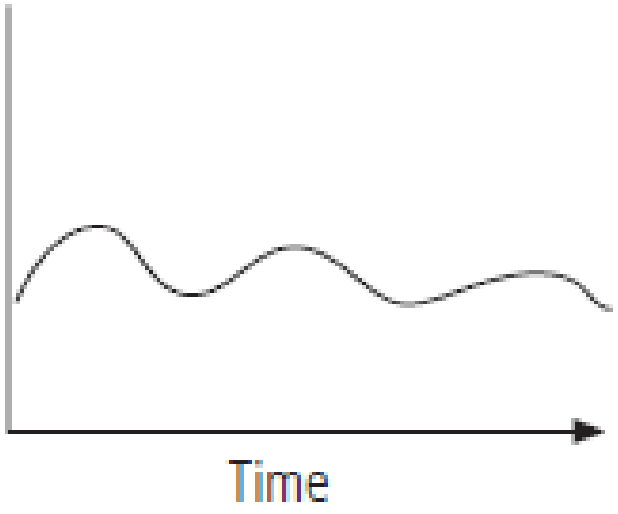
Health status of populations

- Epidemiology is often used to describe the health status of population groups.
- Knowledge of the disease burden in populations is essential for health authorities, who seek to use limited resources to the best possible effect by identifying priority health programmes for prevention and care.
- In some specialist areas, such as environmental and occupational epidemiology, the emphasis is on studies of populations with particular types of environmental exposure.

Health status of populations

- **Describing the health status of populations**

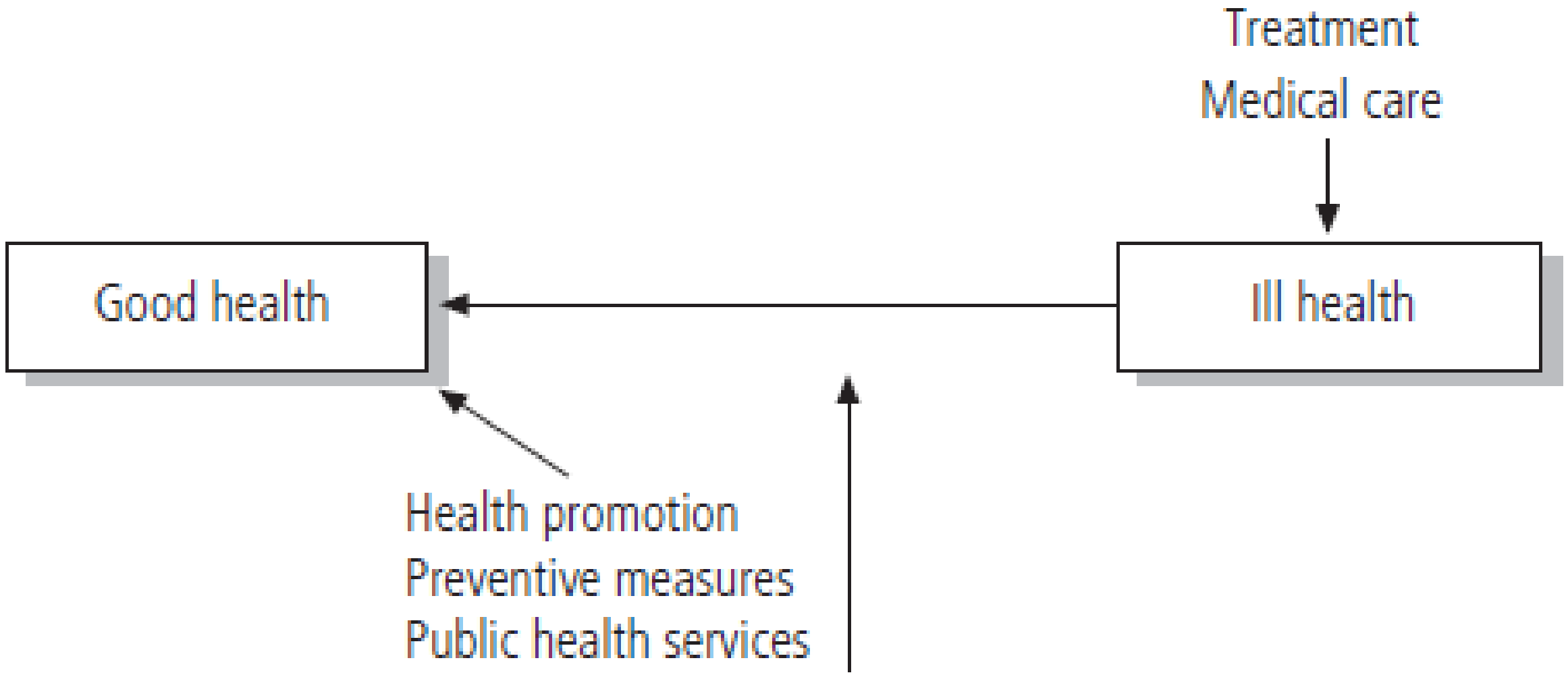
Proportion with ill health, change over time, and with age



Evaluating interventions

- Epidemiologists can evaluate the effectiveness and efficiency of health services
- This means determining things such as the appropriate length of stay in hospital for specific conditions, the value of treating high blood pressure, the efficiency of sanitation measures to control diarrhoeal diseases

Evaluating interventions



- Applying epidemiological principles and methods to problems encountered in the practice of medicine has led to the development of clinical epidemiology pharmacoepidemiology, molecular epidemiology, and genetic epidemiology

Molecular and genetic epidemiology

Molecular epidemiology measures exposure to specific substances and early biological response, by:

- evaluating host characteristics mediating response to external agents, and
- using biochemical markers of a specific effect to refine disease categories.

Genetic epidemiology deals with the etiology, distribution, and control of disease in groups of relatives, and with inherited causes of disease in populations.

Molecular and genetic epidemiology

Genetic epidemiological research in family or population studies aims to establish:

- a genetic component to the disorder,
- the relative size of that genetic effect in relation to other sources of variation in disease risk, and
- the responsible gene(s).

Molecular and genetic epidemiology

Public health genetics include:

- population screening programs,
- organizing and evaluating services for patients with genetic disorders, and
- the impact of genetics on medical practice.

Classification

Two broad categories:

a) Descriptive epidemiology: the study of the frequency (amount) and distribution of health related states within a population by person, place and time
b) Analytic epidemiology: more focused study of health related problems or reasons for relatively high or low frequency in specific groups.

Epidemiological questions

To describe the occurrence of disease fully, some broad questions must be asked:

a) Who is affected?
b) When do the cases occur?
c) Where do the cases occur?
d) What health events are occurring
e) Why is it occurring
f) How can it be influenced

Epidemiology Definition (cont'd)

- Distribution
  - characterizing the distribution of health status in terms of age, gender, race etc.
- Determinants
  - any factor that brings about a change in a health condition or other defined outcomes.

Epidemiology Definition (cont'd)

- **Disease**
  - deviation from physical, mental or emotional health expands to include conditions such as injuries, birth defects, health outcome etc.
- **Population**
  - group of people often geographically defined

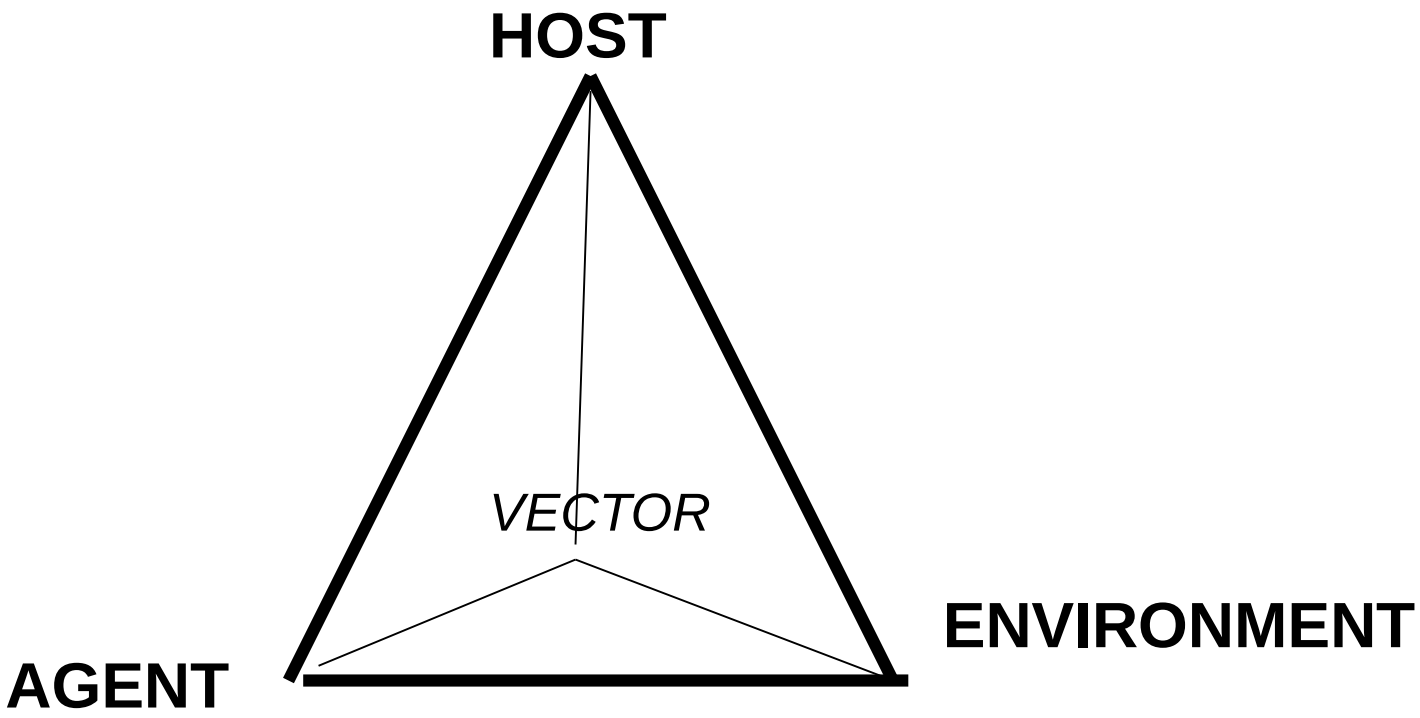
Determinants of disease occurrence: includes both causes and factors that influence the risk of disease

Determinants of disease

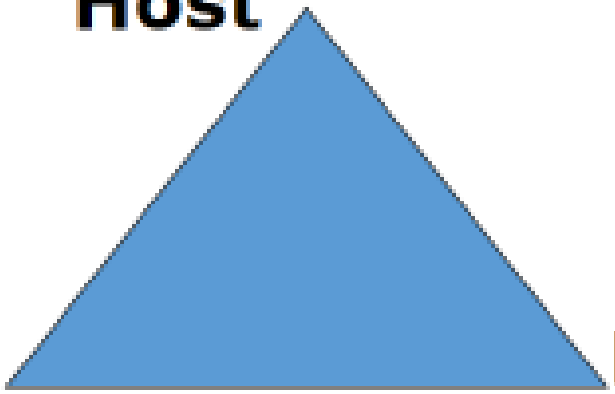
- Disease is as a result of the epidemiologic triad (Agent, Host and Environment)
- Infection occurs only when the AGENT is encountered by a susceptible Host in an ENVIRONMENT that is favourable

DYNAMICS OF DISEASE TRANSMISSION

- Human disease does not arise in a vacuum.
- It results from an interaction of the host (e.g. a person), the agent (e.g. a bacterium) and the environment (e.g. contaminated water supply)


HOST
VECTOR
AGENT
ENVIRONMENT

Epidemiologic triad



Host

- Demographic characteristics
- Biological characteristics
- Socioeconomic characteristics

Agent

- Biological agents
- Physical agents
- Chemical agents
- Nutrient agents
- Mechanical agents
- Social agents

Environment

- Physical environment
- Biological environment
- Social environment

Distribution of disease

- Frequencies of values or categories of measurement with respect to time, place and persons
- Involves measuring disease distribution
- Requires information
  - count (quantification)
  - size of population
  - time period

Frequency

- Involves measuring disease distribution
- Requires mathematical calculation
  - ratio
  - proportion
  - rate

Uses of Epidemiology:

- Historical study - is community health getting better or worse? We can only decide by comparing experiences over time.

Uses of Epidemiology:

- Community diagnosis
- Working of health services

  - availability, accessibility, utilization, effectiveness, efficacy, efficiency
- Individual risks and chances of getting disease
- Completing the clinical picture

  - constructing a model
- Identification of syndromes “lumping and splitting”

Uses of Epidemiology:

- Search for causes
- Evaluation of presenting s/s of disease
  - by analysing data in hospital charts
- Clinical decision making - involves use of decision trees

Achievements in epidemiology

Smallpox

- An understanding of the epidemiology of smallpox was central to its eradication, in particular, by:
- providing information about the distribution of cases and the model, mechanisms and levels of transmission;
- mapping outbreaks of the disease;
- evaluating control measures

Achievements in epidemiology

- Rheumatic fever and rheumatic heart disease
- Iodine deficiency diseases
- Tobacco use, asbestos and lung cancer
- Hip fractures
- HIV/AIDS
- Sudden acute respiratory syndrome (SARS)

THANK YOU

What is Interprofessional Education ?

"Interprofessional education occurs when students from two or more professions learn about, from, and with each other to enable effective collaboration and improve health outcomes" (WHO, 2010, p. 7)

- World Health Organization. (2010). *Framework for action on interprofessional education and collaborative practice*.

What is Collaborative Practice?

- "Collaborative practice happens when multiple health workers from different professional backgrounds work together with patients, families, carers and communities to deliver the highest quality of care. It allows health workers to engage any individual whose skills can help achieve local health goals." (WHO, 2010, p. 7)

Workplace : Our extended family

In simple words.....

Its NOT IPE


GOALS
OBJECTIVES

To develop knowledge, skills and attitudes that result in inter-professional team behaviors and competence.

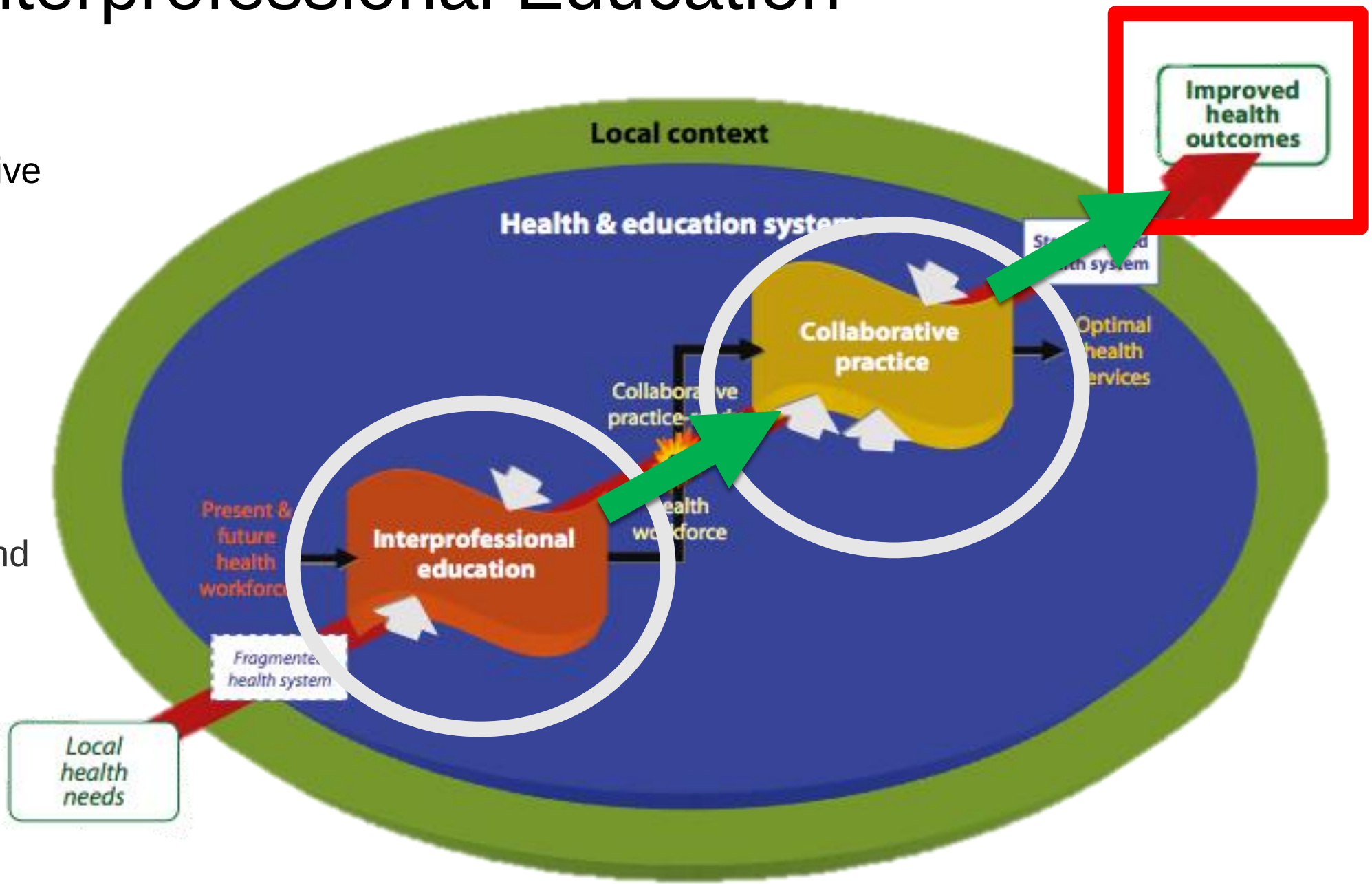
To learn how to function in an inter-professional team and carry this knowledge, skill, and value into their future practice

To provide patient-centered care in a collaborative manner to improve quality of care

Interprofessional Education

enables effective collaboration

leads to improved patient care and health outcomes



(WHO,2010)

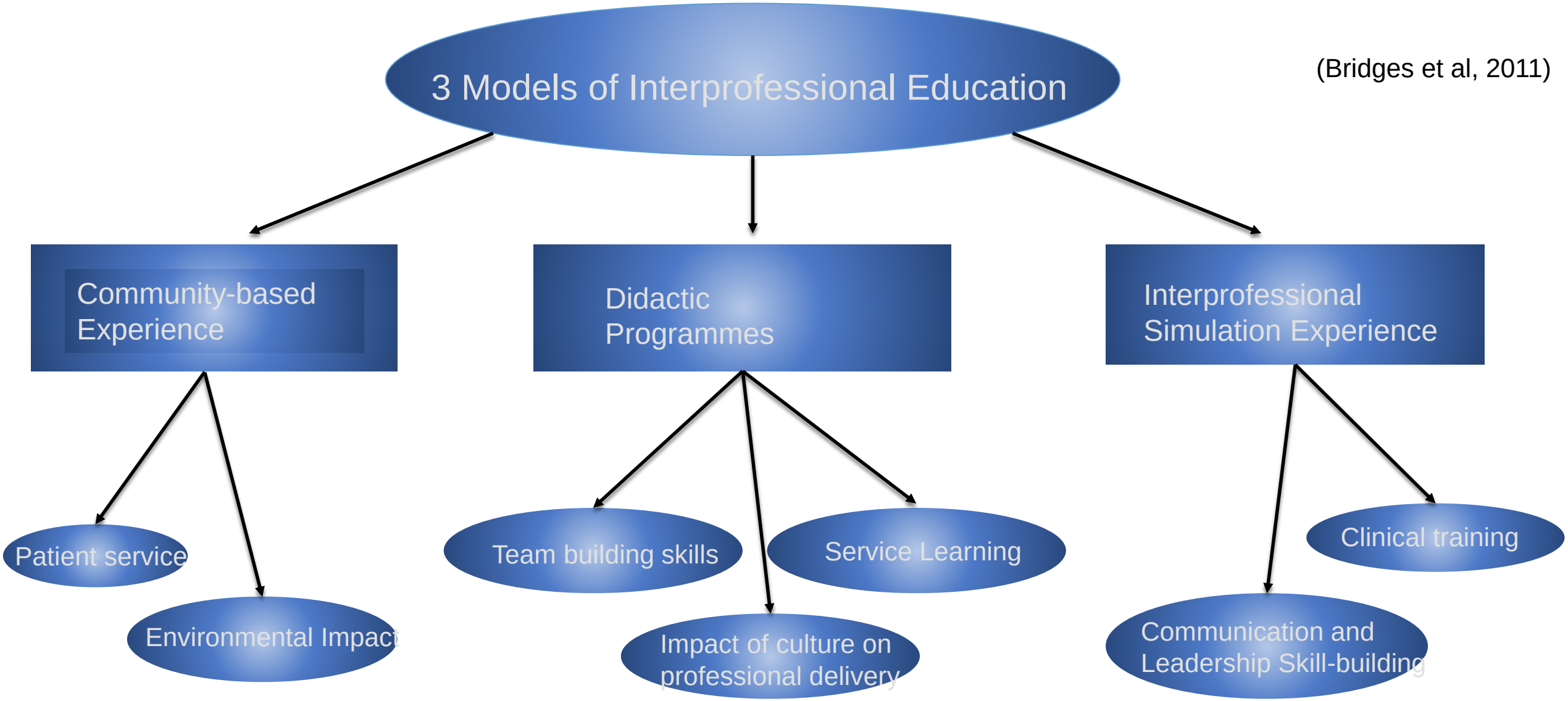
Inter-professional Education
IPE

- when two or more professions learn about, from and with each other to enable effective collaboration and improve health outcomes.
- Professional - knowledge and/or skills for the physical, mental and social well-being of a community.

Interprofessional Collaborative Practice
IPCP

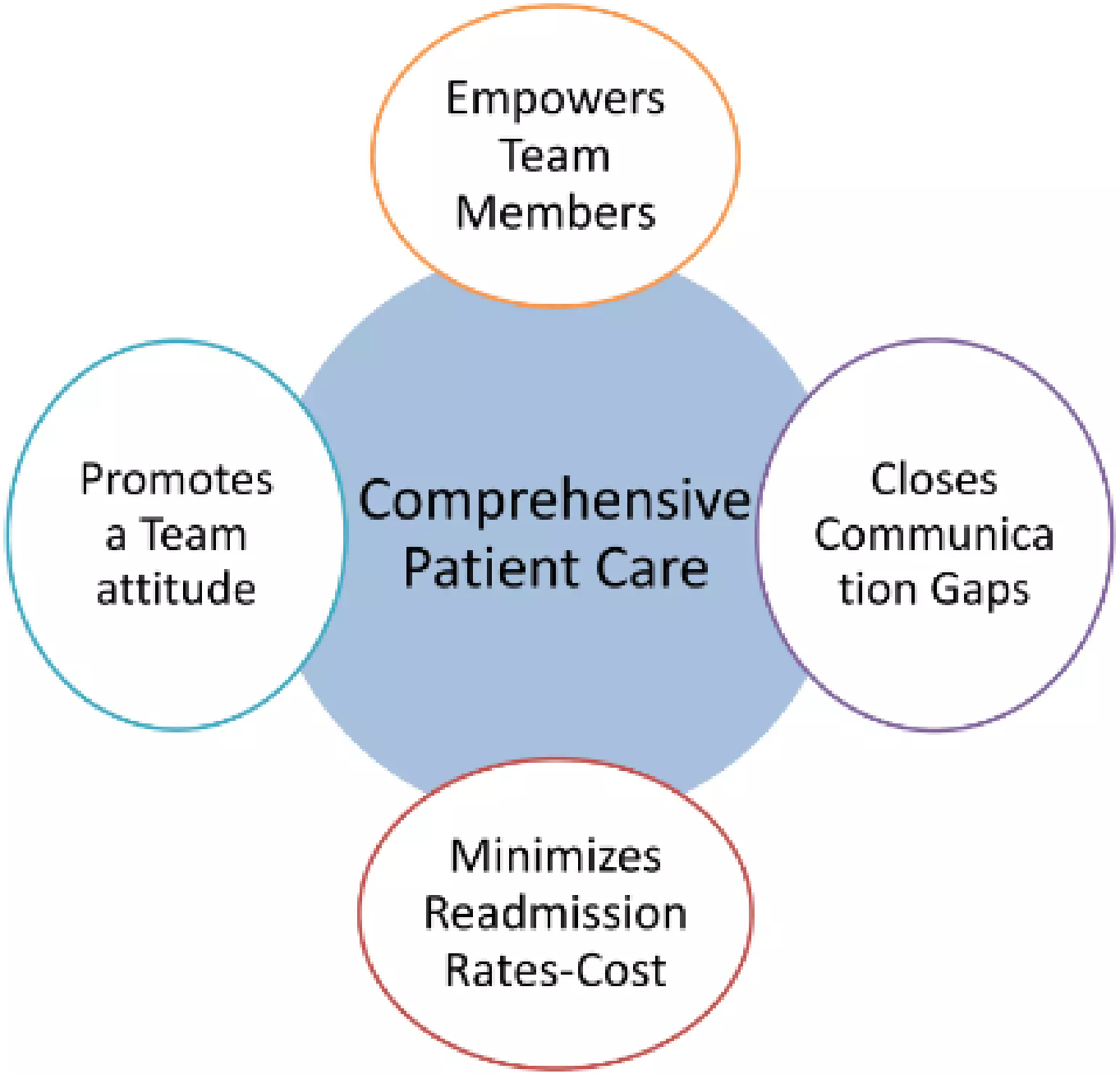
- Collaborative practice -multiple health workers from different professional backgrounds provide comprehensive services by working with patients, their families, care givers and communities to deliver the highest quality of care across settings.
- Practice includes both clinical and non-clinical health-related work

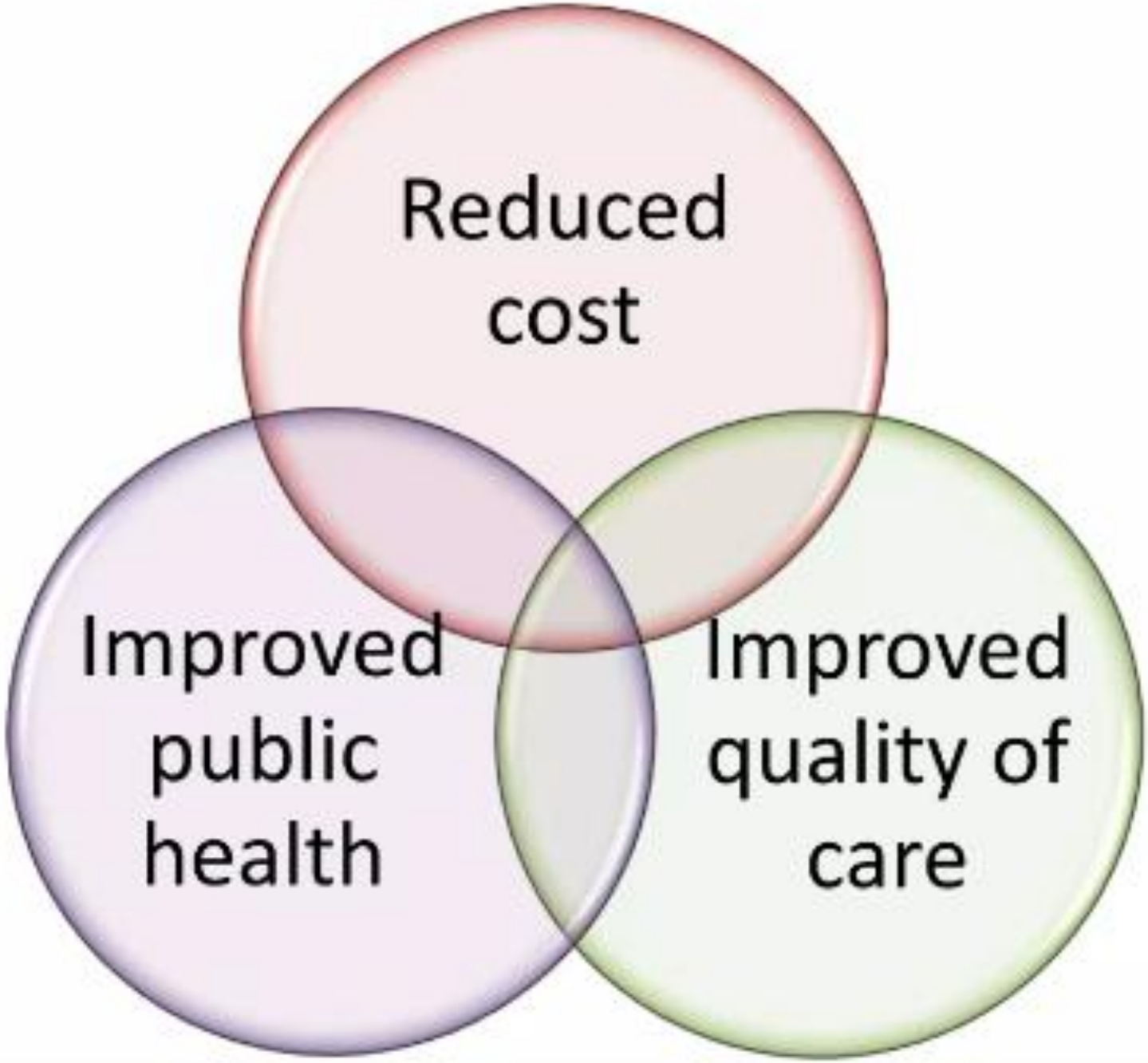
Interprofessional Education



(Bridges et al, 2011)


BENEFITS


Empowers Team Members
Promotes a Team attitude
Comprehensive Patient Care
Closes Communication Gaps
Minimizes Readmission Rates-Cost


Reduced cost
Improved public health
Improved quality of care

Evidence from research

Interprofessional faculty development: integration of oral health into the geriatric diabetes curriculum, from theory to practice

Dounis et al, Department of Clinical Sciences, Department of Biomedical Sciences, Department of Physiological Nursing, Department of Physical Therapy, University of Nevada Las Vegas School of Dental Medicine USA

- A statewide comprehensive type 2 diabetes training program was developed and offered to multidisciplinary health care faculty using innovative educational methods on type 2 diabetes and comorbidities.

As a result...

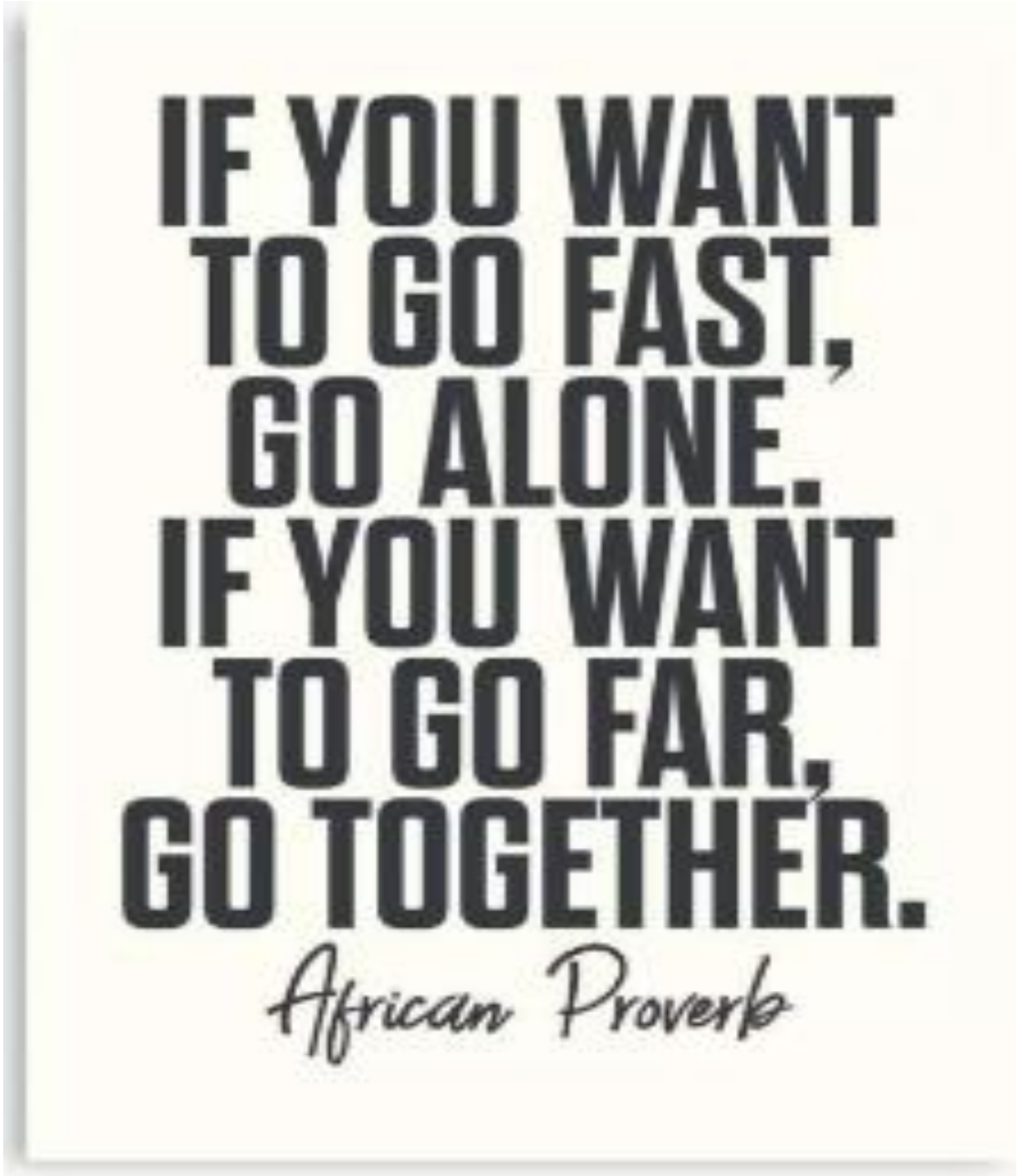
- Attitude, knowledge, and perceptions of health care faculty regarding Interprofessional team building and the team approach to management of the oral–systemic manifestations of chronic disease in older adults was **improved.**

- **Uniform language to promote communication** across health professionals, care settings, and caregivers/patients, was noted.

HOW WE DO IT

- Two levels
- CBE
  - Junior students from SOM, SONS and SOHS go together for CBE
  - Senior students from SOM, SONS and SOHS go together for CBE
- Clinical care Patient Management
  - Senior students from SOM, SONS and SOHS attend a workshop to look at chronic care conditions together

QUOTE


IF YOU WANT
TO GO FAST,
GO ALONE.
IF YOU WANT
TO GO FAR,
GO TOGETHER.
African Proverb

Indicate your answer in this section by circling the letter representing the correct answer.

1. **What is secondary data?**

   A. Data which are collected afresh and for the first time and thus happen to be original in character.
   B. Data which are collected for the second time and but happen to be original in character.
   C. Data which have already been collected by someone else and which have already passed through some statistical analysis.
   D. Data which have already been collected by someone else but which have not passed through some statistical analysis.
   E. Data which have already been collected by someone else and which cannot pass through some statistical analysis.

2. **Which of the following is true about the observation method?**

   A. It is a method under which data from the field is collected by personally going to the field.
   B. It is a method that may be defined as systematic viewing, coupled with consideration of seen phenomenon
   C. It becomes a scientific tool and the method of data collection, when it serves a formulated research purpose, is systematically planned and recorded and is subject to checks and controls on validity and reliability
   D. All of the above.
   E. None of the above.

3. **Which of the following is not true about structured observation?**

   A. It is done by characterizing the style of recording the observed information.
   B. It is characterized by standardized conditions of observation.
   C. It is characterized by clear definitions of units to be observed.
   D. It involves selection of pertinent data of observation.
   E. It is done by simply recording all behaviour that occurs.

4. **Which of the following is true about the personal interview method of data collection?**

   A. It has the disadvantage that supervisors of the research have a complex work of selecting, training and supervising the field staff.
   B. It has the advantage that supervisors of the research do not have complex work of selecting, training and supervising the field staff.
   C. Interviewers cannot collect supplementary information about the respondent's personal characteristics and environment which has value in interpreting results.
   D. Non responses are generally high, but systematic errors do not occur

E. It is a cheap method whereby interviewers can collect a lot of information in a short time.

5. Which of the following types of interview is concerned with the given experience of the respondent and its possible effects?

A. Clinical interview.
B. Focused interview.
C. Structured interview.
D. Unstructured interview
E. Individual interview

6. Which of the following is not true about questionnaires?

A. They should be short and simple wherever possible.
B. Questions should be arranged in logical sequence (from easy to difficult ones).
C. Physical appearance such as quality of paper, colour, etc., does not matter
D. Questions affecting the sentiments of the respondents should be avoided wherever possible
E. Depending upon the problem for which the survey is being carried out, both close ended and open ended questions may be asked in a questionnaire.

7. Which of the following relates to one of the principles that makes research ethical?

A. Addressing a socially useful research question that will generate useful new knowledge about human health.
B. Addressing a clinically useful research question that will generate useful new knowledge about human health.
C. Addressing a scientifically useful research question that will generate useful new knowledge about human health.
D. All of the above.
E. None of the above.

8. Which of the following is not true about informed consent?

A. The principal investigator has responsibility to obtain only written voluntary informed consent from prospective participants.
B. The principal investigator has responsibility to obtain either verbal or written voluntary informed consent from prospective participants.
C. It is a voluntary decision taken by an individual to participate in research based on understanding the objectives, risks, benefits, and alternatives of the research.
D. In the case of individuals who are not capable of giving informed consent, the permission of their legally authorized guardians may be obtained.
E. It is a process whereby human participants in a research project are provided with all the information needed so that they can decide whether to participate.

9. Which of the following is not true about participants' right to withdraw from research?

A. Participants should be clearly informed of their right to withdraw at any time.
B. Participants have a right to withdraw only when data is being collected.
C. Participants have a right to withdraw data even after it has already been collected.
D. Difficulties withdrawing data should be recognized in certain circumstances.
E. None of the above.

10. Which of the following is true about confidentiality?

A. Information gathered about individuals in research is confidential unless agreed otherwise beforehand.
B. Information gathered about individuals in research is only confidential when agreed beforehand.
C. Information gathered about individuals in research is only confidential as far as the law allows.
D. Information gathered about individuals in research is confidential even when agreed otherwise beforehand.
E. Information gathered about individuals in research is not confidential if the participant agreed to participate.

Please indicate whether the following statements are true or false by writing T or F against each of the statements (Total 30 Marks**).**

1..... Primary data are those which have already been collected by someone else and which have already passed through some statistical analysis.
2..... Observations can include experiments.
3..... Information that is usually difficult to collect through other methods can be collected using participant observation.
4..... The time required for a non-structured interview is often less than that of a structured interview.
5..... Flexibility in asking questions is a feature of a structured interview.
6...... Clinical interviews are concerned with broad underlying feelings or motivations or with the course of an individual's life experience.
7..... An advantage of using questionnaires is that large samples can be used so the results are more reliable.
8..... A structured questionnaire may not be very useful for a survey which is aimed at probing for attitudes and reasons for certain actions.
9..... Irrespective of the problem for which the survey is being carried out, it is not advisable to use both close ended and open ended questions in a questionnaire.
10..... Questions that give stress on memory of a personal character and health should be presented as opening questions on a questionnaire.
11..... Data collection through schedules is very different from the questionnaire method.
12..... In a case study, the researcher can take a single unit (which can be an individual) or more of such units for her/his study purpose.
13..... According to the Nuremburg Code of Medical Ethics (1949) the risks to human participants must not outweigh the expected benefits of participating in a study.
14..... The Declaration of Helsinki (1964) is a set of 12 principles adopted by the World Health Organization (WHO) to guide physicians.
15..... Research is of value whether or not the results are likely to be disseminated.
16..... The competence of principal investigators and other research personnel is not considered to contribute to the principles that make clinical research ethical.
17..... Ethical considerations do not include reasons for selecting subjects/participants for research.
18..... One of the principles for ethical clinical research is that the research would have been reviewed, amended, approved or terminated by unaffiliated individuals.
19..... Informed consent is a process whereby human participants in a research project inform the researcher that they are willing to participate prior to receiving information about the study.
20..... Obligations under the law should always take precedence over the interests and welfare of those participating in research.
21..... Members of the target population should be considered as best judges of the possible effects of participating in research.
22..... Where informed consent has been provided initially, it is not necessary to obtain further consent at different stages, especially in longitudinal studies.
23..... Debriefing of participants cannot justify unethical aspects of an investigation.
24..... After the experience of participation, the participant should be able to withdraw retrospectively (withdraw data, recordings, etc.) even when they had initially provided informed consent.

25..... There is need for care in discussing results involving children with others except parents, teachers, or those in *loco parentis*.

26 …….A hypothesis is based on deductive reasoning, while a theory is based on inductive reasoning.

27 .....A single study cannot involve both exploratory and explanatory research.

28 ……..Quasi-experiments gather information about the behaviour of people who experience some manipulation of their environment by the experimenter.

29 ……..Time series designs involve pre-testing and post-testing of one group of subjects at different intervals.

30 ……..The true experiment is often thought of as the only research that can adequately measure the cause and effect relationship.

FIRST AID TRAINING

MEDICAL FIRST RESPONDER
EXAMINATION

FIRST EDITION 2007

St. John Ambulance

SAVING LIVES
at work, home and play

General information

This exam has two parts:

- **Exam Section 1 – Compulsory Sessions 1 to 13**
- **Exam Section 2 – Elective Sessions 14 to 40**

Answer only the questions for the elective sessions that your instructor tells you to check off on the answer sheet. The sessions in the exam booklet are identified with the same numbers and titles as on the exam answer sheet.

Scoring of exam results

Each question is worth 1 mark.

To pass, you must obtain a minimum mark of 80% on each section of the exam.

Core Section – 50 questions. At least 40 questions must be answered correctly.

Pass mark: 40/50

Elective Section – The number of questions may vary depending on the elective lessons. taken.

For the combination of elective lessons, the pass mark of 80% should be calculated as follows:

[Pass mark of 80%] = [Number of questions] X 0.8
(round up to the nearest whole number), e.g.:

- 6 questions x 0.8 = pass mark 5/6
- 30 questions x 0.7 = pass mark 24/30

When the exam has been corrected, please write the final marks in the spaces provided on the front of the answer sheet.

March 2007

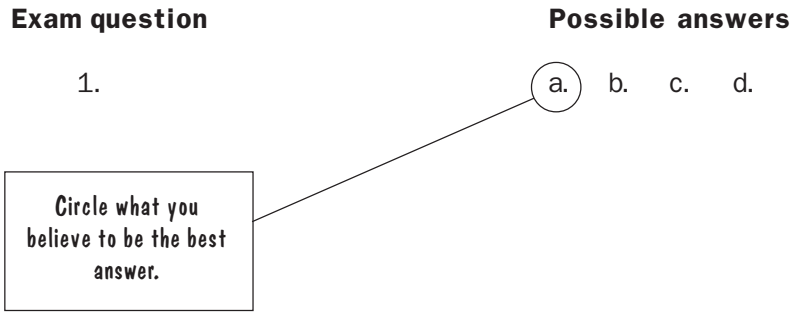
How to answer the exam questions

Use the exam answer sheet to fill in the answers.

Please do not write in the exam booklet

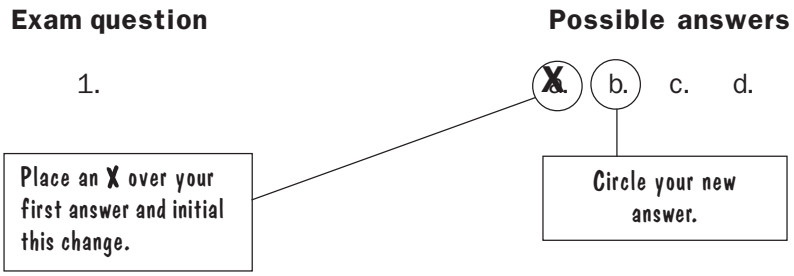
All questions in this exam are multiple choice. Each question has four possible answers. Select the **best answer**. Circle the letters (a, b, c, or d) on the answer sheet next to the question number.

For example:



If you wish to change your answer, place an "**X**" over your first choice and initial this change. Circle your new choice.

For example:



Good luck!

March 2007

CORE SESSIONS

Instructions

Complete questions 1 through 50 for each of the following multiple choice questions (1 mark each). Circle the letter (a, b, c, d) indicating your answer. If you change your answer before handing in your paper, circle your new choice, place an "X" over your previous choice and initial the change.

Select the single BEST answer to each of the following questions.

1. The acronym SAMPLE stand for signs and symptoms, allergies, medications, past history, _____ and events.

a. Location of pain.

b. Last bowel movement.

c. Last meal.

d. Latest related injury.

2. Which one of the following is not a system of the body:

a. Respiratory.

b. Musculoskeletal.

c. Endocrine.

d. Follicular.

3. Increased respiratory difficulty accompanied by a weak ineffective cough, wheezing, high-pitched crowing noises and cyanosis are signs of:

a. Mild airway obstruction

b. C.O.P.D.

c. Severe airway obstruction.

d. Complete airway obstruction.

4. The most important step in managing shock is to:

a. Keep the patient warm.

b. Give CPR as soon as possible.

c. Give first aid for the illness or injury.

d. Elevate the lower extremities.

5. A small percentage of casualties with chronic obstructive pulmonary disease have hypoxic drive. These patients breathe because of a:

a. High oxygen level.

b. Low oxygen level.

c. High carbon dioxide level.

d. Low carbon dioxide level.

6. The emergency responder is one link in the chain of services known as the:

a. Emergency Patient Care (EPC) system.

b. Emergency Medical Services (EMS) system.

c. Professional Emergency Care (PEC) system.

d. Community Medical Care (CMC) system.

7. The acronym used to assist the emergency responder assessing the patient's level of responsiveness is:

a. SAMPLE.

b. EMCA.

c. OPQRST.

d. AVPU.

8. An industrial worker sustains a severe laceration to his forearm. Direct pressure to the wound fails to control the bleeding. The correct arterial pressure point to control the bleeding is the:

a. Carotid.

b. Radial.

c. Femoral.

d. Brachial.

9. Pressing on a fingernail-bed to observe the return of normal colour is done to check for:

a. Normal blood circulation to that part.

b. The presence of fractured fingers.

c. Pain in the area.

d. A lack of oxygen in the blood.

10. Your primary survey of a casualty involved in a serious car collision shows only that he is confused. Later you find his pulse rate at 140 and weak, his skin cold and clammy and his breathing irregular and gasping. These signs, along with the mechanism of injury, indicate:

a. An oncoming faint.

b. Emotional stress.

c. Internal bleeding.

d. Onset of diabetic coma.

11. For which one of the following infectious diseases is a vaccine presently available:

a. Herpes.

b. AIDS.

c. Mononucleosis.

d. Hepatitis B.

12. Based on current research, which of the following statements about the AIDS virus is correct?

a. It can be found in blood and semen.

b. It can be transmitted by sharing eating utensils.

c. It can be transmitted by shaking hands.

d. It can be found in perspiration.

13. In a hazmat situation airway management and immobilzation are carried out in the:

a. hot zone

b. warm zone

c. cold zone

d. neutral zone

14. During the primary assessment of a responsive adult patient, you detect a breathing rate of 28 breaths per minute. You would categorize this as:

a. Above normal.

b. Below normal.

c. Normal.

d. Indeterminate.

15. A blood-soaked dressing on the arm indicates that bleeding has not yet been controlled. You should now:

a. Remove the dressing and check the wound.

b. Apply pressure to the femoral artery.

c. Place a clean dressing on top and apply more pressure.

d. Apply a tourniquet.

16. The type of shock that is caused by a severe infection is called:

a. Septic.

b. Psychogenic.

c. Cardiogenic.

d. Hemorrhagic.

17. Which one of the following is considered a breach of duty:

a. failure to obtain consent.

b. failure to wear your name tag.

c. inappropriate use of lights and siren.

d. insubordination.

18. Immediately before a seizure, the patient experiences an unpleasant odour. This phase is referred to as:

a. Clonic.

b. Aura.

c. Tonic.

d. Postical.

19. The emergency responder should assume a head/spinal injury in any unwitnessed situation where the patient is:

a. Alert.

b. Responsive to pain.

c. Not breathing.

d. Unresponsive.

20. The secondary assessment of the patient consists of a head to toe examination and a check of the:

a. Pressure points.

b. Procedures for administering CPR.

c. Manual stabilization of the head.

d. Vital signs.

21. You are taking blood pressure by palpation. A radial pulse indicates a blood pressure of at least:

a. 110 mmHg

b. 100 mmHg

c. 90 mmHg

d. 80 mmHg

22. You are called for an asthma attack, treatments may include all except:

a. Metered dose inhaler

b. Bronchodilators

c. Nitroglycerin

d. Inhaled steroids

23. In topographic anatomy, the term "lateral" means:

a. Nearer the midline of the body.

b. Away from the midline of the body.

c. Nearer the head.

d. Away from the head.

24. Which one of the following conditions may mimic the signs of acute alcohol intoxication?

a. Hypoglycemia

b. Congestive heart failure.

c. Absence seizures.

d. Anaphylactic shock.

25. Which one of the following breathing diseases is included in C.O.P.D.:

a. Croup.

b. Hyperventilation

c. Emphysema.

d. Dyspnea

26. A condition where air builds up in the pleural space, collapses the lung and puts pressure on the heart is called:

a. Closed pneumothorax

b. Tension pneumothorax

c. Hemothorax

d. Open pneumothorax

27. Oxygen humidification is recommended if you are administering oxygen for longer than:

a. 15 minutes.

b. 30 minutes.

c. 60 minutes.

d. 90 minutes.

28. You find a male patient with obvious difficulty breathing. He is using his neck muscles, and is cyanotic. There are red blotches on his chest, and his neck is swelling. You suspect :

a. Anaphylaxis.

b. Bronchitis.

c. Emphysema.

d. Asthma.

29. When you are giving mouth-to-nose AR, you should:

a. Hold the casualty's mouth closed.

b. Pinch the nostrils closed before blowing air into the casualty.

c. Tilt the head back less than for the mouth-to-mouth method of AR.

d. Keep the mouth and nose closed between breaths.

30. During one-rescuer CPR for adults, the ratio of compressions to ventilations should be:

a. 5:1

b. 15:2

c. 30:2

d. 35:2

31. A guideline for normal systolic blood pressure in an adult male would be:

a. 50 plus the man's age up to 150 mm. Hg.

b. 65 plus the man's age up to 120 mm. Hg.

c. 80 plus the man's age up to 130 mm. Hg.

d. 100 plus the man's age up to 150 mm. Hg.

32. A rapid body survey should take no longer than:

a. 30 seconds

b. 45 seconds

c. 60 seconds

d. 90 seconds

33. To correctly size an oropharyngeal airway place the flange at the corner of the mouth with the tip reaching:

a. The angle of the patient's jaw

b. The top of the patient's ear

c. The patient's earlobe

d. Two fingerswidth from the flange.

34. ASA should be offered to the patient with chest pain who is taking nitroglycerin:

a. Before the first dose of nitro

b. After the first dose of nitro

c. After the second dose of nitro

d. After the third dose of nitro

35. When suctioning a non-breathing adult casualty, a first aider should:

a. Apply suction as soon as the suction tip touches the mouth.

b. Insert the suction tip deep into the larynx.

c. Suction for no more than 15 seconds.

d. Insert the tip with the curved side towards the tongue.

36. Which of the following devices provides the highest percentage of O^2 delivery?

a. Nasal cannula.

b. Plastic face mask.

c. Partial rebreathing mask.

d. Non-rebreathing mask.

37. You suspect a patient's pain is due to a myocardial infarction rather than angina because the pain:

a. Is under the sternum.

b. Radiates to the neck, jaw and arms.

c. Is not relieved by rest or medication.

d. Lasts for about 3 minutes.

38. A flail chest results when :

a. Three ribs are broken on each side of the chest.

b. Part of the spine becomes separated from the ribs.

c. The breastbone is broken in three places.

d. Several ribs are broken in more than one place.

39. Status epilepticus refers to:

a. Normal seizure pattern in epilepsy.

b. Seizures caused by a high fever.

c. Continuous seizure activity.

d. Seizures lasting longer than 2 minutes.

40. OPQRST is used to assess:

a. Pain

b. Level of consciousness

c. Vision

d. Hearing

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41. The recommended oxygen flow rate for nasal cannulae (nasal prongs) is:

a. 1-6 litres/min.

b. 6-8 litres/min.

c. 8-12 litres/min.

d. 10-15 litres/min.

42. When aligning the head in the eyes-front neutral position, watch for:

a. Pulse, movement, sensation.

b. Crepitus, pain, resistance.

c. Pain, circulation, retention.

d. Tingling, numbness, paralysis.

43. Manual support of the head and neck of the patient with suspected spinal injury can be released:

a. Once the breathing has been checked.

b. When a hard collar has been applied.

c. If the patient is unconscious.

d. When the patient is fully immobilized to a backboard.

44. To prepare a completely amputated part of the body for transportation to hospital with the casualty, you should:

a. Place it in a clean plastic bag filled with cold water.

b. Wrap it in clean, moist dressings and keep it cool.

c. Wash it off and place it into a bag of crushed ice.

d. Wrap it in clean, moist dressings and keep it at body temperature.

45. Hypovolemic shock results from:

a. The body's reaction to a foreign protein.

b. An overdose of insulin.

c. Toxins produced by a severe infection.

d. Decreased volume of the blood.

46. A conscious casualty who has suffered a stroke becomes unconscious. To keep his airway open and help him breathe, you should:

a. Turn him into the recovery position with his unaffected side down.

b. Place him in a semisitting position.

c. Turn him into the recovery position with his unaffected side up.

d. Place him on his back.

47. A worker has fallen from a six-foot ladder onto a concrete floor. You first action should be.

a. Take a SAMPLE history.

b. Perform a secondary survey.

c. Take charge and perform a scene survey.

d. Asess the rate and quality of breathing.

48. To determine whether a c-spine injury has occurred, you should think about the Mechanism of Injury. This can best be described as:

a. The force that causes the injury and the way it acts on the body.

b. The circumstances after the injury.

c. The weather conditions at the time of the incident.

d. The area of the body that is injured

49. The correct ratio of compressions to ventilations for two -rescuer CPR on a child is:

a. 5:1

b. 15:2

c. 5:2

d. 15:1

50. Shock is best defined as:

a. Inadequate circulation to the body's tissues

b. Inadequate delivery of oxygen to the lungs

c. Inadequate elimination of waste products from the body.

d. Inadequate amount of insulin.

ELECTIVE SESSIONS

Instructions

Complete **only** the multiple choice questions that correspond to the electives of your program. (1 mark each). Circle the letter (a, b, c, d) indicating your answer. If you change your answer before handing in your paper, circle your new choice, place an "X" over your previous choice and initial the change.

Select the single BEST answer to each of the following questions.

14 AED

51. The most critical factor in defibrillation is:

a. The time from collapse to defibrillation.

b. The skill of the AED responder.

c. The patient's previous cardiac history.

d. The type of defibrillator used.

52. The AED will shock a patient:

a. With a sinus rhythm.

b. In asystole.

c. In ventricular fibrillation.

d. With pulseless electrical activity (PEA).

53. In the hypothermic patient you should limit the number of shocks to a maximum of:

a. 1.

b. 2.

c. 3.

d. 4.

54. When transporting a patient, a shock should be administered:

a. Only in a vehicle that is properly grounded.

b. Whenever the machine indicates shock necessary.

c. When the vehicle is stopped.

d. When the vehicle is travelling at less than 20 km per hour.

55. When using an AED on a patient who is wearing a pacemaker, place the electrode pads:

a. Directly on pacemaker.

b. Two inches away from pacemaker.

c. Within one inch of the pacemaker.

d. At least one inch away from pacemaker.

56. You have shocked a casualty and there are signs of circulation. You should:

a. Remove the AED from the scene.

b. Leave the AED attached to the casualty.

c. Disconnect the cables from the AED.

d. Remove the pads from the chest.

15 Burns

57. Burns that involve all layers of the skin are:

a. Superficial.

b. Partial thickness.

c. Full thickness.

d. First degree.

58. In determining the amount of body surface burned, the area of the palm of the hand represents _____ % of the body surface.

a. One

b. Two

c. Five

d. Nine

59. The most immediate serious complication associated with burns is:

a. Shock

b. Infection

c. Scarring

d. Hypothermia

60. A man is filling a gas tank on a generator when it bursts into flames. The caualty has a hoarse voice, he is blistered around the mouth and nose and both arms are reddened. You should classify this burn as:

a. Critical

b. Superficial

c. Moderate

d. Minor

16 Wound Management

61. An abrasion is:

a. A deep break in the skin involving significant bleeding.

b. Partial or complete loss of a body part.

c. The result of a sharp object driven through soft tissue.

d. A scrape or rubbing away of the epidermis.

62. A soft tissue injury resulting from the impact of a blunt object is called:

a. A laceration.

b. An avulsion.

c. A contusion.

d. A concussion.

63. The acronym SHARP refers to:

a. The assessment of the severity of a wound injury.

b. Signs and symptoms used to determine the need to transport.

c. The depth of a penetrating wound and potential damage.

d. Signs of infection as assessed in wound injuries.

64. Responders involved in wound management should consider:

a. Wounds should be thoroughly flushed to prevent infection.

b. All open wounds are contaminated to some degree.

c. The risk of infection continues until the wound is dressed and bandaged.

d. Gloves should be worn if you suspect the patient may be ill.

65. Tetanus is a condition:

a. That involves specific infection in the lower jaw.

b. That only occurs in the third world.

c. That is caused by a virus

d. That can be prevented by immunization.

66. Which one of the following factors increases the risk of life -threatening injury:

a. High velocity.

b. Low velocity.

c. High density.

d. Low energy.

67. Which action is part of first aid for a nosebleed?

a. Place an ice-pack on the back of the neck.

b. Plug the nose with gauze.

c. Lean forward and firmly pinch the soft parts of the nose.

d. Lean the casualty backwards in a sitting postion.

68. To prevent further contamination and infection of a wound, you should cleanse the surrounding skin by:

a. Swabbing in circular motions around the wound.

b. Wiping lightly over the edges of the wound.

c. Swabbing from one side of the wound to the other.

d. Wiping away from the edges of the wound.

17 Heat and Cold Illness and Injury

69. The body loses heat in a variety of ways including:

a. radiation, conduction, evaporation and respiration.

b. radiation, refrigeration, evaporation and conduction.

c. conduction, convection, evaporation and refrigeration.

d. submersion, convection, radiation and respiration.

70. If it becomes necessary to thaw a hand with deep frostbite you should ensure that:

a. The patient sees a doctor no later than 48 hrs after thawing

b. There is no danger of refreezing

c. Adequate pain relief medication is available

d. Capillary refill takes no longer than 15 seconds

71. You have been called for an 81 year old unconscious male patient. He is in his living room. Despite the hot day, he is overly dressed. He is flushed and dry, extremely hot to touch. You suspect:

a. Heat exhaustion.

b. Stroke.

c. Hyperglycemia.

d. Heatstroke.

18 Lifting and Carrying

72. Body mechanics refers to:

a. Positioning and movement of the body

b. Number of rescuers needed to move a patient

c. A type of rescue carry

d. A special device to lift heavy loads

73. You are alone and must remove a casualty with a suspected spinal injury from a very hazardous situation. You should

a. Grab his wrists and drag him lengthwise.

b. Keep his body rigid, support his head and neck and roll him away from the scene.

c. Tie his legs together and drag him feet first.

d. Grasp his clothing under his shoulders, support his head and neck, and drag him lengthwise.

74. To safely perform a chair carry you need

a. 2 rescuers

b. 3 rescuers

c. 4 rescuers

d. 5 rescuers

19 Musculoskeletal - Upper Limbs

75. Crepitus is:

a.. Poor distal circulation

b. A grating sound caused by bone ends rubbing together

c. A type of splint

d. A type of fracture

76. After discovering a possible fracture you should assess which of the following before and after splinting:

a. Sensation, morbidity, protrusion.

b. Capillary refill, pulse, sensation.

c. Pulse, motor function, sensation.

d. Crepitus, resistance, pain.

77. A worker has had his hand caught in a car door. You suspect several fractured bones in the hand. The hand should be splinted:

a. Flat against the splint.

b. In a tight fist position.

c. With the fingers taped together.

d. In the position of function.

78. In the case of suspected fracture of the clavicle, emergency responders should use:

a. An arm sling supported with broad bandages.

b. A St. John tubular sling tied on the injured side.

c. A St. John tubular sling tied on the uninjured side.

d. Rigid splints to support the arm and support the shoulder.

79. Force on a joint may cause bone ends to come out of their proper position. This type of injury is called a:

a. Sprain

b. Fracture

c. Dislocation

d. Strain

80. After an extremity fracture has been immobilized, the responder should check for circulation:

a. In the injured limb only.

b. Distal to the injury.

c. Proximal to the injury.

d. At the site of the fracture.

20 Musculoskeletal - Lower Limbs

81. The longest, strongest bone in the body is the:

a. Humerus.

b. Fibula.

c. Tibia.

d. Femur.

82. Effective immobilization of the tibia includes immobilization of the:

a. Knee, tibia, fibula and ankle.

b. Femur, knee, tibia and ankle.

c. Femur and ankle.

d. Hip, femur, knee, tibia and ankle.

83. You can best control the swelling and pain of an ankle sprain by:

a. Tight bandages and a heating pad.

b. Rest, immbolization, application of cold, and elevation.

c. Rigid splints and bandages

d. Compression, elevation and application of heat.

84. If the patient has an open fracture responders should :

a. Attempt to push bones back into the wound.

b. Use bulky dressings to pad around the protruding bones ends.

c. Apply pressure directly over the fracture to control bleeding.

d. Apply a tourniquet above the fracture site.

85. A traction splint could be used for which of the following injuries:

a. A fractured pelvis.

b. An injured knee joint.

c. A dislocated hip.

d. A mid-shaft femur fracture.

21 Head/spinal/pelvic Injury

86. A concussion is best described as:

a. Bruising or swelling of the spinal cord.

b. Tearing of brain tissue.

c. Pooling of blood in the brain.

d. Temporary loss of brain function

87. You are examining the head of an infant who has been involved in a car crash. You need to be aware of:

a. Soft spots in the infant's skull.

b. Infant's pupils react differently than adults.

c. Whether or not the infant can cry forcefully.

d. The startle reflex.

88. When immobilizing a patient on a spine board, which part of the body is the first to be strapped?

a. Chest

b. Pelvis

c. Legs

d. Head

89. Contusions are:

a. Usually controlled with direct pressure

b. Very serious for the patient due to increased pressure in the brain.

c. Usually associated with scalp lacerations

d. Almost always seen in children.

90. The Glasgow Coma Scale measures three basic functions. They are:

a. Eye, verbal and motor responses.

b. Pulse rate, speech, involuntary movement.

c. Pulse rate, respiration rate, eye response.

d. Respiration rate, eye response, voluntary movement.

91. Which one of the following changes in vital signs is characteristic of brain injury:

a. Increase in pulse rate.

b. Constant respiratory rate.

c. increase in blood pressure.

d. Decrease in blood pressure.

92. "Raccoon eyes" indicates:

a. Possible eye injury

b. Possible fracture of the jaw

c. Possible scalp laceration

d. Possible head injury

93. You are called to the scene of a motorcycle crash. The rider is dazed and walking around. You should:

a. Suspect spinal injury and manage accordingly.

b. Not worry about spinal injury because the person is mobile.

c. Advise the person to lie down in case of fainting.

d. Determine the chief complaint and provide first aid for it.

94. When managing a possible spinal injury:

a. The cervical immobilization device is applied by the police.

b. Transport the patient in the position of greatest comfort.

c. Apply a cervical immobilization device before assessing the patient.

d. Responders must provide initial stabilization by supporting the head and ensuring neutral alignment

95. A helmet must be removed from a patient:

a. If there are no airway or breathing problems.

b. If the patient will be immobilized to a long spinal immobilizaton device.

c. When the helmet has a face mask that interferes with the responder's ability to assist with ventilations

d. It is a full- face helmet.

96. When dealing with pelvic injuries you must always consider the possibility of:

a. Ruptured bladder.

b. Ruptured spleen.

c. Spinal injuries.

d. Rib fractures.

97. To properly measure a cervical collar, you:

a. Measure the distance from the ear lobe to the shoulder.

b. Measure the distance from the corner of the mouth to the ear lobe.

c. Measure the distance from the cheekbone to the shoulder blade.

d. Measure the distance from the trapezius muscle to the angle of the jaw

22 Poisons, Bites and Stings

98. Contact dermatitis occurs when:

a. The skin comes in contact with a poisonous substance.

b. A poison enters the eye of a contact lens wearer.

c. Hot gases are inhaled.

d. A poison is injected under the skin.

99. Carbon monoxide:

a. May result from fires or automobile exhaust.

b. Has a very distinct odour

c. Is not life-threatening.

d. Requires the administration of low concentration O^2.

100. A child has swallowed an unknown poisonous substance. You should:

a. Dilute the poison with several glasses of cool water.

b. Call your local Poison Control Centre and follow directions.

c. Give a solution of mild liquid dish detergent and water.

d. Use activated charcoal.

23 Anatomy and Physiology

101. The external layer of the skin is called::

a. Cutaneous tissue.

b. Dermis.

c. Adipose tissue.

d. Epidermis.

102. Muscles are attached to the bones by:

a. Ligaments.

b. Meninges.

c. Cartilage.

d. Tendons.

103. The appendix is located in which quadrant of the abdomen:

a. Lower right.

b. Upper right.

c. Upper left.

d. Lower left.

104. The white exterior portion of the eye is called the:

a. Pupil.

b. Sclera.

c. Cornea.

d. Iris.

105. A skeletal injury to the lower back could result from direct trauma to the:

a. Cervical vertebrae.

b. Thoracic vertebrae.

c. Lumbar vertebrae.

d. Coccygeal vertebrae.

106. The pulse point located in the upper portion of the thigh is called the:

a. Popliteal.

b. Femoral.

c. Brachial.

d. Temporal.

107. Which one of the following is a function of the skin?

a. Regulation of oxygen levels.

b. Production of proteins.

c. Regulation of body temperature.

d. Removal of carbon dioxide.

108. Urine is expelled from the body through the:

a. Kidneys.

b. Bladder.

c. Ureters.

d. Urethra.

109. Insulin is produced in the:

a. Spleen.

b. Liver.

c. Pancreas.

d. Gall bladder.

24 Behavioural Emergencies

110. When communicating with patients:

a. Stay at eye level & maintain eye contact.

b. Stay as close to the patient as possible.

c. Use medical terminology to enhance credibility.

d. Hide facts if the situation is serious.

111. In cases of behavioural disorders, the responder should:

a. Always use restraints.

b. Give the patient a choice in the treatment

c. Play along with auditory or visual hallucinations.

d. Force the patient to make decisions.

112. The best way to prevent a Critical Incident Stress situation from becoming worse is:

a. Ignore it.

b. Be familiar with the signs and symptoms.

c. Ensure early use of proper medication.

d. Force the responder to talk about the situation.

25 Eye Injuries

113. Remove a contact lense only if:

a. There is a chemical burn to the eye.

b. The eyeball is injured.

c. Transport time is short.

d. The casualty is wearing hard lenses.

114. You discover a particle embedded in the casualty's cornea. You should:

a. Remove the particle with a moist corner of a facial tissue or clean cloth.

b. Flush the eye with water for 10 minutes.

c. Use a splinter forcep to remove the particle.

d. Cover the eye and transport the casualty to medical help.

115. Signs and symptoms of intense light burns to the eyes include:

a. Bleeding from the conjunctiva.

b. Gritty feeling in the eyes.

c. Lacerations to the globe.

d. Discolouration of the orbits.

116. Eye injuries that include lacerations:

a. Should be covered with clean, moist dressings.

b. Iindicate possible skull fracture.

c. Usually involve a great deal of bleeding.

d. Require moderate pressure on the eye to control bleeding.

117. Irrigate eyes with:

a. Diluted vinegar.

b. Saline solution.

c. An appropriate chemical antidote.

d. Sodium bicarbonate.

26 Gastrointestinal and Genitourinary

118. Signs and symptoms of acute abdomen include:

a. Excessive hunger or thirst.

b. Hypertension and brachycardia.

c. Distension with rebound tenderness.

d. Fever with deep, shallow breathing.

119. Signs that a hernia is serious include:

a. Pain and tenderness at site.

b. Pale, ashen skin colour at site.

c. Hernia can be pushed back into body.

d. Hernia is above the diaphragm.

120. Which one of the following is not crucial in cases of abdominal distress:

a. Establish the cause of the pain.

b. Give oxygen by non-rebreather mask.

c. Be prepared to deal with vomiting.

d. Monitor the patient for signs of hypovolemic shock.

121. In the case of abdominal evisceration, the emergency responder should:

a. Irrigate the wound before dressing it.

b. Give oxygen by nasal canula.

c. Dress the wound with a moist, sterile dressing

d. Gently reposition the organs in the abdominal cavity.

122. "Referred pain":

a. Occurs when the sensation of pain is delayed.

b. Results when the two nervous systems come into contact.

c. Is the symptomatic description of pain by the patient.

d. Is the description of pain as recorded on the patient care report.

123. Trauma to male and female genitalia:

a. Often involves significant bleeding.

b. Is not usually painful because of protected nerve endings.

c. Usually results in sterility.

d. Often results in post-traumatic infection.

27 Multiple Casualty Incident (MCI)

124 The priorities of MCIs include *all but one* of the following.

a. Overestimating the resources that may be required.

b. Comprehensive care of all patients.

c. Planning for the positioning of all vehicles.

d. Arranging for advanced level care providers at the scene.

125. At the scene of a MCI:

a. All patients are assessed quickly and triaged.

b. Only conscious patients are assessed.

c. Patients without a detectable pulse are given the highest priority.

d. All patients are transported immediately.

126. Typically in a triage system:

a. Those whose survival requires immediate care are classified level 3.

b. Those with minor injuries but suffering extreme pain are classified level 1.

c. Those in cardiac arrest or not breathing are classified level 2.

d. Those who will survive if care is somewhat delayed are classified level 2.

127. The most knowledgable responder in the first ambulance is generally assigned to role of:

a. Incident manager.

b. Triage officer.

c. Staging officer.

d. Communications officer.

128. Of the following casualties, which would you care for first? The casualty who is:

a. In shock without apparent injuries, but conscious.

b. Unconscious and lying on his back.

c. Bleeding from the forehead, but conscious.

d. Unconscious and lying on his stomach.

28 Substance Abuse

129. The factor which indicates a drug related emergency is life-threatening is:

a. Altered mental status.

b. Dilated pupils slow to respond to light.

c. Lack of coordination and slurred speech.

d. High, low or irregular pulse.

130. Constant monitoring of the patient in a drug- related emergency is important because:

a. The patient will likely try to take more of the drug.

b. These patients are more likely to sue.

c. The patient's condition may change quickly.

d. The patient is more likely to become violent.

29 Communications

131. The most accurate source of time for reporting purposes is:

a. The responder's watch.

b. The dispatch unit.

c. The local radio station.

d. The patient's watch.

132 An essential element of a responder's verbal report includes:

a. The name of the patient.

b. The patient's telephone number.

c. The time of the incident.

d. The patient's response to the care given

30 Geriatric Emergencies

133. Which one of the following is the best way to assess dehydration in the elderly:

a. Check the mucous membranes in the eyes and mouth.

b. Check skin condition.

c. Take an oral temperature.

d. Assess the pulse rate.

134. An eighty-five year old lady has fallen down a flight of stairs. You suspect spinal injury and decide to put the patient on a spineboard. You should be aware that:

a. It may be difficult to fit a cervical collar.

b. Spinal curvature may make it difficult and uncomfortable to put the patient on the board.

c. A K.E.D. is better for this patient.

d. Because of her age, she may be more prone to vomitting.

135. Which of the following is NOT a special consideration when assessing elderly patients:

a. Geriatric patients often have a reduced gag reflex.

b. Radial pulses may be weakened by peripheral vascular disease.

c. Patients may not show signs of fever even in cases of serious infection.

d. Mental status often reflects a fear of emergency responders.

31 Emergency Childbirth

136. Crowning occurs:

a. In the first stage of labour.

b. In the second stage of labour.

c. In the third stage of labour.

d. In the fourth stage of pregnancy.

137. When suctioning a newborn you should use:

a. a bulb syringe.

b. A V-Vac suction device.

c. A straw.

d. A battery powererd suction device.

138. To help control bleeding after the baby is born:

a. Pack the vagina with pads.

b. Massage the mother's uterus.

c. Elevate the mother's legs above heart level.

d. Place the mother on her right side.

32 Pediatric Emergencies

139. One of the most difficult things to assess in infants and young children is:

a. Blood pressure.

b. Pain.

c. Adequate perfusion.

d. Level of consciousness.

140. The onset of shock in infants and children:

a. May be sudden and severe.

b. Is no different than adults.

c. Usually progresses slowly.

d Usually results from cardiac problems.

141. Assessments of children should take into consideration:

a. No splints should be used since all are designed for adult patients.

b. Abdominal injuries are less serious since muscles are less developed.

c. The skull has not completely fused, so head injuries are uncommon.

d. Chest injury is likely to involve organs without damage to ribs.

142. The responder who suspects a child to be the victim of abuse should:

a. Question parents immediately.

b. Focus on management of injuries to the child.

c. Gather evidence and question bystanders.

d. Immediately remove the child from parents or caregivers.

143 . A child with history of a sore throat, fever and painful swallowing, has breathing difficulties. You should:

a. Arrange for immediate transport to a medical facility.

b. Start mouth-to-mouth artificial respiration.

c. Stand by and encourage coughing.

d. Begin abdominal thrusts.

33 Aquatic Emergencies

144. The mammalian reflex refers to:

a. An increase in heart rate and respiration.

b. A decrease in heart rate and dilation of blood vessels.

c. An increase in heart rate and constriction of pupils.

d. A decrease in heart rate and constriction of blood vessels.

145. Three common scuba related emergencies are:

a. Air embolism, decompression sickness and mammalian reflex.

b. Air embolism, decompression sickness and barotrauma.

c. Decompression sickness, the bends and barotrauma.

d. Air embolism, barotrauma and the squeeze.

146. In cases of near drowning:

a. The lungs are often filled with water and require deep suctioning.

b. Laryngospasm prevents water from entering the lungs.

c. Abdominal thrusts should always be performed before ventilating the patient.

d. Manual suction devices are not powerful enough to remove water and fluids from the airway.

147. You have been helping at a water rescue when one of the divers begins to have problems. You suspect air embolism. This patient should receive:

a. Oxygen at 15 lpm.

b. Oxygen at 6 lpm.

c. Epinepherine.

d. Inhaled steroids.

34 Extended Care

148. To reduce the risk of respiratory infection and pneumonia where medical care is delayed, responders should:

a. Have the patient breathe deeply and cough.

b. Provide the patient with adequate hydration.

c. Position the patient in the position of comfort.

d. Ensure the patient is kept warm and at rest.

149. When positioning a patient, responders should consider that:

a. Raising arms and legs will produce swelling.

b. Semi-sitting will improve blood flow to the heart.

c. Knees raised will reduce pressure on the abdomen.

d. Recovery position will often improve breathing.

150. When caring for wounds over extended periods, always:

a. Remove dressings and bandages regularly to check the wound.

b. Clean wounds with antiseptic before applying dressings.

c. Apply a tourniquet to prevent excessive bleeding.

d. Check regularly for signs of infection or reduced circulation.

151. The maintenance of fluids and nutrition is key to extended patient care and can be provided by:

a. Giving fluids and food to all patients regardless of MOI.

b. Use small amounts of liquids and foods to determine whether the patient can tolerate the intake.

c. Allow the patient to consume any foods they would like to make them feel more comfortable.

d. Even if the patient is not thirsty or hungry the responder must insist on intake.

152. When administering medication, responders should consider that:

a Right medication, right amount, right person, right time, right method.

b Right nutrition, , right method, right time, right person, right amount

c Right medication, right action, right person, right time, right responsibility

d Right medication, right amount, right person, right responsibility, right action

153. To give ear drops to an adult, the ear should be pulled:

a. Downward and backward.

b. Downward and forward.

c. Upward and backward.

d. Upward and forward.

35 First Aid Stations/Rooms

154. Provincial first aid legislation prescribes the contents of:

a. First aid boxes, first aid rooms and first aid manuals.

b. First aid stations, training programs and equipment manufacturers.

c. First aid boxes, first aid reports and record keeping.

d. First aid boxes, first aid rooms and training.

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155. First aid stations must:

a. Be easily accessible to workers

b. Have a shower

c. Be at least 6 square meters in size

d. Have oxygen available

36 Ambulance Operation/Maintenance

156. Footprints can best be described as:

a. The area of contact between the road surface and the tires.

b. The type of tread on the tire.

c. Footsteps used to get into the back of the ambulance.

d. Skid patterns on dry pavement.

157. Ground guides or spotters should be situated:

a. Behind the vehicle on the driver side.

b. On the front left side of the vehicle.

c. Front and centre of the vehicle.

d. On the front right side of the vehicle.

37 Record Keeping

158. When completing the patient narrative:

a. Try to establish an accurate diagnosis.

b. Record the signs and symptoms as accurately as possible.

c. Do not include negative data.

d. Always use medical terminology.

159. A patient refuses your care. You should:

a. Fill out and personally sign a "Refusal of Care" form.

b. Proceed with patient assessment and management and ignore the refusal.

c. Find a relative or family member to give you consent.

d. Have the patient and a witness sign the "Refusal of Care" form.

38 General Pharmacology

160. Sublingual medication is given:

a. By injection using an auto-injector.

b. Under the patient's tongue.

c. By inhalation using a metered dose inhaler.

d. As a tablet to be swallowed.

161. Contraindications of a medication tell responders:

a. When a medication should not be given to the patient.

b. When the medication is commonly used for patients.

c. The expected results of the medication.

d. Actions that might not be desirable yet occur along with desired effects.

162. The ACTION of the drug refers to:

a. The harmful effects.

b. The side effects.

c. The expected effects.

d. The method of administration.

39 Dental Emergencies

163. To manage severe toothaches, responders should:

a. Advise the patient to chew on the other side of the mouth.

b. Advise the patient to drink hot liquids to sooth discomfort.

c. Advise the patient to suck on ice cubes to dull the pain.

d. Extract the tooth with the assistance of a second responder.

164. When handling a knocked-out tooth you should:

a. Place the tooth back in the patient's mouth.

b. Place the tooth in a cup of milk.

c. Wrap the tooth in dry gauze.

d. Place the tooth in a mild acidic solution using vinegar.

40 Death at Sea/Remote Areas

165. Lividity refers to:

a. Stiffening of the joints post mortem.

b. Cooling of the body post mortem.

c. Settling of blood in the body due to gravity.

d. The beginning signs of decomposition.

166. Later signs of death include:

a. Staining, milky corneas and flushed skin.

b. Staining, lividity and decomposition.

c. Rigor mortis, lividity and milky corneas.

d. Rigor mortis, flushed skin and decomposition.

St. John Ambulance

ADVANCED MEDICAL FIRST RESPONDER 2 EXAM ANSWER KEY
Core and Elective Sessions

1–13 Core Sessions

1.	a	b	**c**	d
2.	a	b	c	**d**
3.	a	b	**c**	d
4.	a	b	**c**	d
5.	a	**b**	c	d
6.	a	**b**	c	d
7.	a	b	c	**d**
8.	a	b	c	**d**
9.	**a**	b	c	d
10.	a	b	**c**	d
11.	a	b	c	**d**
12.	**a**	b	c	d
13.	a	**b**	c	d
14.	**a**	b	c	d
15.	a	b	**c**	d
16.	**a**	b	c	d
17.	**a**	b	c	d
18.	a	**b**	c	d
19.	a	b	c	**d**
20.	a	b	c	**d**
21.	a	b	c	**d**
22.	a	b	**c**	d
23.	a	**b**	c	d
24.	**a**	b	c	d
25.	a	b	**c**	d
26.	a	**b**	c	d
27.	a	**b**	c	d
28.	**a**	b	c	d
29.	**a**	b	c	d
30.	a	b	**c**	d
31.	a	b	c	**d**
32.	**a**	b	c	d
33.	a	b	**c**	d
34.	a	**b**	c	d
35.	a	b	**c**	d
36.	a	b	c	**d**
37.	a	b	**c**	d
38.	a	b	c	**d**
39.	a	b	**c**	d
40.	**a**	b	c	d
41.	**a**	b	c	d
42.	a	**b**	c	d
43.	a	b	c	**d**
44.	a	**b**	c	d
45.	a	b	c	**d**
46.	**a**	b	c	d
47.	a	b	**c**	d
48.	**a**	b	c	d
49.	a	**b**	c	d
50.	**a**	b	c	d

Elective Sessions

14 AED

51.	**a**	b	c	d
52.	a	b	**c**	d
53.	**a**	b	c	d
54.	a	b	**c**	d
55.	a	b	c	**d**
56.	a	**b**	c	d

15 Burns

57.	a	b	**c**	d
58.	**a**	b	c	d
59.	**a**	b	c	d
60.	**a**	b	c	d

16 Wound Management

61.	a	b	c	**d**
62.	a	b	**c**	d
63.	a	b	c	**d**
64.	a	**b**	c	d
65.	a	b	c	**d**
66.	**a**	b	c	d
67.	a	b	**c**	d
68.	a	b	c	**d**

17 Environmental Illness & Injury

69.	**a**	b	c	d
70.	a	**b**	c	d
71.	a	b	c	**d**

18 Lifting and Carrying

72.	**a**	b	c	d
73.	a	b	c	**d**
74.	a	**b**	c	d

19 Musculoskeletal - Upper Ext.

75.	a	**b**	c	d
76.	a	b	**c**	d
77.	a	b	c	**d**
78.	a	b	**c**	d
79.	a	b	**c**	d
80.	a	**b**	c	d

20 Musculoskeletal - Lower Limbs

81.	a	b	c	**d**
82.	**a**	b	c	d
83.	a	**b**	c	d
84.	a	**b**	c	d
85.	a	b	c	**d**

21 Head/Spinal/Pelvic Injury

86.	a	b	c	**d**
87.	**a**	b	c	d
88.	**a**	b	c	d
89.	a	**b**	c	d
90.	**a**	b	c	d
91.	a	b	**c**	d
92.	a	b	c	**d**
93.	**a**	b	c	d
94.	a	b	c	**d**
95.	a	b	**c**	d
96.	a	b	**c**	d
97.	a	b	c	**d**

(cont'd)

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ADVANCED MEDICAL FIRST RESPONDER 2 EXAM ANSWER KEY
Core and Elective Sessions

22 Poisons, Bites and Stings

98. (a) b c d
99. (a) b c d
100. a (b) c d
122. a (b) c d
123. (a) b c d

23 Anatomy and Physiology

101. a b c (d)
102. a b c (d)
103. (a) b c d
104. a (b) c d
105. a b (c) d
106. a (b) c d
107 a b (c) d
108. a b c (d)
109. a b (c) d

24 Behavioural Emergencies

110. (a) b c d
111. a (b) c d
112. a (b) c d

25 Eye Injuries

113. (a) b c d
114. a b c (d)
115. a (b) c d
116. a b (c) d
117. a (b) c d

26 Gastrointestinal & Geritourinary

118. a b (c) d
119 (a) b c d
120. (a) b c d
121. a b (c) d

27 Multiple Casualty Incident (MCI)

124. a (b) c d
125. (a) b c d
126. a b c (d)
127. (a) b c d
128. a (b) c d

28 Substance Abuse

129. a b c (d)
130. a b (c) d

29 Communications

131. a (b) c d
132 a b c (d)

30 Geriatric Emergencies

133. (a) b c d
134. a (b) c d
135. a b c (d)

31 Emergency Childbirth

136. a (b) c d
137. (a) b c d
138. a (b) c d

32 Pediatric Emergencies

139. a (b) c d
140. (a) b c d
141. a b c (d)
142. a (b) c d
143. (a) b c d

33 Aquatic Emergencies

144. a b c (d)
145. a (b) c d
146 a (b) c d
147. (a) b c d

34 Extended Care

148. (a) b c d
149. a b (c) d
150. a b c (d)
151. a (b) c d
152. (a) b c d
153. a b (c) d

35 First Aid Stations / Rooms

154. a b c (d)
155. (a) b c d

36 Ambulance Operation / Maintenance

156. (a) b c d
157. (a) b c d

37 Record Keeping

158. a (b) c d
159. a b c (d)

38 General Pharmacology

160. a (b) c d
161. (a) b c d
162 a b (c) d

39 Dental Emergencies

163. (a) b c d
164. a (b) c d

40 Death at Sea / Remote Areas

165. a b (c) d
166. a b (c) d

St. John Ambulance

ADVANCED MEDICAL FIRST RESPONDER 2 EXAM ANSWER SHEET
Core and Elective Sessions

1–13 Core Sessions

1.	a	b	c	d
2.	a	b	c	d
3.	a	b	c	d
4.	a	b	c	d
5.	a	b	c	d
6.	a	b	c	d
7.	a	b	c	d
8.	a	b	c	d
9.	a	b	c	d
10.	a	b	c	d
11.	a	b	c	d
12.	a	b	c	d
13.	a	b	c	d
14.	a	b	c	d
15.	a	b	c	d
16.	a	b	c	d
17.	a	b	c	d
18.	a	b	c	d
19.	a	b	c	d
20.	a	b	c	d
21.	a	b	c	d
22.	a	b	c	d
23.	a	b	c	d
24.	a	b	c	d
25.	a	b	c	d
26.	a	b	c	d
27.	a	b	c	d
28.	a	b	c	d
29.	a	b	c	d
30.	a	b	c	d
31.	a	b	c	d
32.	a	b	c	d
33.	a	b	c	d
34.	a	b	c	d
35.	a	b	c	d
36.	a	b	c	d
37.	a	b	c	d
38.	a	b	c	d
39.	a	b	c	d
40.	a	b	c	d
41.	a	b	c	d
42.	a	b	c	d
43.	a	b	c	d
44.	a	b	c	d
45.	a	b	c	d
46.	a	b	c	d
47.	a	b	c	d
48.	a	b	c	d
49.	a	b	c	d
50.	a	b	c	d

Elective Sessions

14 AED

51.	a	b	c	d
52.	a	b	c	d
53.	a	b	c	d
54.	a	b	c	d
55.	a	b	c	d
56.	a	b	c	d

15 Burns

57.	a	b	c	d
58.	a	b	c	d
59.	a	b	c	d
60.	a	b	c	d

16 Wound Management

61.	a	b	c	d
62.	a	b	c	d
63.	a	b	c	d
64.	a	b	c	d
65.	a	b	c	d
66.	a	b	c	d
67.	a	b	c	d
68.	a	b	c	d

17 Environmental Illness & Injury

69.	a	b	c	d
70.	a	b	c	d
71.	a	b	c	d

18 Lifting and Carrying

72.	a	b	c	d
73.	a	b	c	d
74.	a	b	c	d

19 Musculoskeletal - Upper Ext.

75.	a	b	c	d
76.	a	b	c	d
77.	a	b	c	d
78.	a	b	c	d
79.	a	b	c	d
80.	a	b	c	d

20 Musculoskeletal - Lower Limbs

81.	a	b	c	d
82.	a	b	c	d
83.	a	b	c	d
84.	a	b	c	d
85.	a	b	c	d

21 Head/Spinal/Pelvic Injury

86.	a	b	c	d
87.	a	b	c	d
88.	a	b	c	d
89.	a	b	c	d
90.	a	b	c	d
91.	a	b	c	d
92.	a	b	c	d
93.	a	b	c	d
94.	a	b	c	d
95.	a	b	c	d
96.	a	b	c	d
97.	a	b	c	d

(cont'd)

March 2007

ADVANCED MEDICAL FIRST RESPONDER 2 EXAM ANSWER SHEET
Core and Elective Sessions

22 Poisons, Bites and Stings

98.	a	b	c	d
99.	a	b	c	d
100.	a	b	c	d

23 Anatomy and Physiology

101.	a	b	c	d
102.	a	b	c	d
103.	a	b	c	d
104.	a	b	c	d
105.	a	b	c	d
106.	a	b	c	d
107	a	b	c	d
108.	a	b	c	d
109.	a	b	c	d

24 Behavioural Emergencies

110.	a	b	c	d
111.	a	b	c	d
112.	a	b	c	d

25 Eye Injuries

113.	a	b	c	d
114.	a	b	c	d
115.	a	b	c	d
116.	a	b	c	d
117.	a	b	c	d

26 Gastrointestinal & Geritourinary

118.	a	b	c	d
119	a	b	c	d
120.	a	b	c	d
121.	a	b	c	d
122.	a	b	c	d
123.	a	b	c	d

27 Multiple Casualty Incident (MCI)

124.	a	b	c	d
125.	a	b	c	d
126.	a	b	c	d
127.	a	b	c	d
128.	a	b	c	d

28 Substance Abuse

129.	a	b	c	d
130.	a	b	c	d

29 Communications

131.	a	b	c	d
132	a	b	c	d

30 Geriatric Emergencies

133.	a	b	c	d
134.	a	b	c	d
135.	a	b	c	d

31 Emergency Childbirth

136.	a	b	c	d
137.	a	b	c	d
138.	a	b	c	d

32 Pediatric Emergencies

139.	a	b	c	d
140.	a	b	c	d
141.	a	b	c	d
142.	a	b	c	d
143.	a	b	c	d

33 Aquatic Emergencies

144.	a	b	c	d
145.	a	b	c	d
146	a	b	c	d
147.	a	b	c	d

34 Extended Care

148.	a	b	c	d
149.	a	b	c	d
150.	a	b	c	d
151.	a	b	c	d
152.	a	b	c	d
153.	a	b	c	d

35 First Aid Stations / Rooms

154.	a	b	c	d
155.	a	b	c	d

36 Ambulance Operation / Maintenance

156.	a	b	c	d
157.	a	b	c	d

37 Record Keeping

158.	a	b	c	d
159.	a	b	c	d

38 General Pharmacology

160.	a	b	c	d
161.	a	b	c	d
162	a	b	c	d

39 Dental Emergencies

163.	a	b	c	d
164.	a	b	c	d

40 Death at Sea / Remote Areas

165.	a	b	c	d
166.	a	b	c	d