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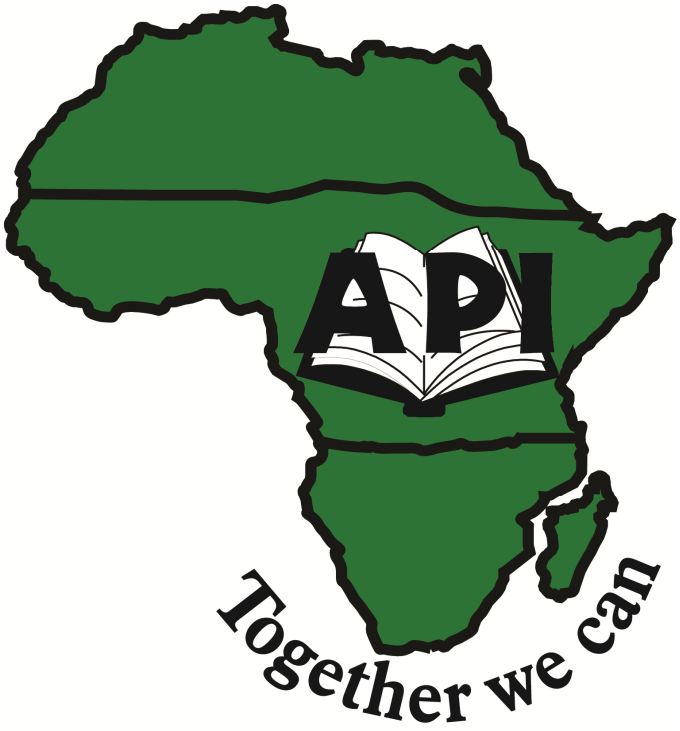

PUBLIC HEALTH
TERM FOUR STUDENT'S MODULES
(PHC)
Contents

APDPH 401	HIV/AIDS Management & Counseling
APDPH 402	Diseases in Public Health
APDPH 403	Nutrition and Childhood Development
APDPH 404	Health today / Policies and Regulations
APDPH 405	Substance Abuse and Addictions Management
APDPH 406	Placement and Laboratory Experiments

Website: www.africapopulation.net
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Course Name: HIV/AIDS Management and Counselling

Course Description

The Course focuses on the transmission & treatment of HIV/AIDs, factors that play in the increase of HIV transmission. It details the qualities of an effective counselor, basic communication skills in HIV counseling, guidelines in pre-test counseling, guidelines for counseling to an HIV positive client, impact of HIV infection on affected significant others, helping the infected person and affected significant others, Bereavement Counseling, Counseling inform of Suicide Intervention, Stress, Anxiety and tension Management, and Counseling Psychology.

Course Objectives

- To introduce students to counseling skills and how to handle people living with HIV.
- To help students acquire a wide knowledge of principles relevant in the field of HIV management and counseling such as acceptance, individualization to mention but a few.
- To enable students appreciate that people living with HIV are not victims of circumstance but they need their psychological, emotional and financial support to view their life as worth living.

Course content

Introduction to HIV/AIDs Background

- Presentation of HIV/AIDs
- HIV/AIDs Transmission
- HIV/AIDS treatment
- Research to improve current treatment
- Prevention and control measures
- Factors that play a role in the increase of HIV transmission

Qualities of an Effective Counselor

- Respect
- Genuineness and congruence
- Empowerment and self responsibility
- Confidentiality

Basic Communication skills in HIV counseling

- Attending
- Listening
- Basic empathy
- Probing or questioning
- Summarizing
- Integrating communication skills

Guidelines in Pre-test Counseling

- Explore reasons for testing
- Assessment of risk
- Beliefs and knowledge about HIV infection and safer sex
- Information about the test

- The implications of an HIV test result
- Anticipate the results
- Confidentiality of test results
- Informed consent
- Information about giving the results and ongoing support
- The waiting period

Guidelines for counseling to an HIV positive Client

- Sharing the news with the client
- Client reaction to a positive HIV test result
- Responding to client needs
- Crisis intervention
- Follow-up visits
- Support systems
- Advice about health and sexuality
- Medical checks-ups

Impact of HIV infection on affected significant others

- **Dos**
- **Don'ts**

Helping the infected person and affected significant others

- Support and empowerment
- Peer support (buddy system)

Bereavement Counseling

- Meaning of Bereavement Counseling
- Kubler-Ross's stages of dying
- The four tasks of mourning
- Useful techniques in bereavement counseling

Counseling inform of Suicide Intervention

- Meaning of Suicide Intervention/suicide intervention
- First Aid for Suicide ideation
- Suicide prevention
- Historical foundation of suicide prevention

Stress, Anxiety and tension Management

- Differentiation between the concepts
- Symptoms of anxiety, stress or tension
- How to cope with stress
- Models of Stress Management
- Techniques of stress Management

Counseling Psychology

- Meaning of Counseling Psychology
- Counseling process and outcome
- Counseling relationship

Psychotherapy

- Meaning of psychotherapy
- Forms of psychotherapy

- Psychotherapy systems
- General concerns
- Specific schools and approaches in psychotherapy

Mode of Delivery

- Face to face lectures
- Personal Studies
- Online dialogue

Assessment

- **Course work** 40%
- **Exams** 60%
- **Total Mark** 100%

HIV/AIDS MANAGEMENT AND COUNSELING FULL TEXT MODULE

HIV/AIDS background

HIV is an infectious human retrovirus, a virus that overtakes the biosynthesis of living cells to duplicate itself. In other words, HIV invades a normal cell and uses the cell's biomechanisms to produce new HIV cells.

Human immunodeficiency virus first was seen in the early 1980's in the United States when young homosexual men especially were found with unusual infections. The virus was identified in 1983 and the Food and Drug Administration (FDA) approved an HIV diagnostic criteria. According to the Centers for Disease Control and Prevention (CDC), in the United States an estimated 650,000 - 900,000 individuals were living with HIV/AIDS in June of year 2000. Prior to that, another 435,000 persons had died from AIDS.

Although these numbers are large, the number of persons affected by the virus globally is much greater. In 1999, the World Health Organisation (WHO) estimated that 33.6 million persons were living with HIV/AIDS worldwide, and that 2.6 million deaths had occurred, many of these in sub-Saharan Africa.

Sub-Saharan Africa accounts for more than 60% of all people living with HIV, yet the region has just over 10% of the worlds population. In 2004, an estimated 139.4 million people were living with HIV globally. In the same year, an estimated 4.9 million people globally became newly infected while 3.1 million people died of AIDS.

AIDS occurs during the later stages of HIV infection. As the virus progressively destroys the immune system, a variety of infections and concerns can develop. Originally, it was believed that all HIV infections would ultimately develop AIDS, but today with a lot of powerful antiretroviral drugs, this may not always be the case. AIDS signs and symptoms are cured through these antiretroviral drugs. In addition, some individuals seem to maintain a healthy immune system, according to the

standards of living despite HIV infection. These individuals are called long-term non-progressor's.

In 1993, CDC revised its classification system for AIDS. All HIV positive persons with a T-cell count below 200/mm3 are now considered to have a diagnosis of AIDS. In addition, persons with HIV and certain opportunistic infections or concerns also meet the case definition for AIDS.

- Presentation and transmission of HIV/AIDS
- HIV/AIDS treatment
- Prevention and control measure
- Factors that play a role in the increase of HIV transmission
- References

Presentation of the disease

AIDS/HIV is a condition that is characterised by many different illnesses.

- A person who is only infected with HIV can look healthy over time. But as the virus destroys his immunity, he or she develops AIDS. The mixture of signs and symptoms of the various diseases which take advantage of the body's weakened defences (immune suppression) to attack is growing.
- A person can live with HIV for a long time (up to 15 years) before developing and showing signs of AIDS.
- A person with early HIV may not be recognized unless he or she undergoes an HIV test.

HIV/AIDS transmission

HIV is transmitted through:

1. Sexual intercourse (vaginal or anal) with an infected partner, especially in the presence of a concurrent ulcerative or non-ulcerative sexually transmitted infection (STI)
2. Transfusion of interested blood or blood products.
3. Contaminated needles (injecting drug use, needle stick injuries and injections)
4. Mother-to-child transmission during pregnancy, labour and delivery or through breast feeding.

HIV/AIDS treatment

HIV/AIDS ***has no cure!*** When AIDS first surfaced in the United States as an epidemic disease, no drugs were available to combat the underlying immune deficiency, and few treatments existed for the opportunistic infections that result.

Although there is currently no treatment available that can cure the people with HIV/AIDS, a number of therapies have been developed to help them stay healthier

and live longer and this has been for the period of 10 years for both HIV infections and its associated infections.

- Some medications target HIV itself, to reduce the virus's assault on the immune system, or even to prevent the virus from attacking the immune system.
- Other treatments are used to treat or prevent specific infections that threaten the health of the people with HIV damaged immune system.

However, the course of antiretroviral drugs (ARVs) treatment administered immediately after exposure, referred to as post-exposure prophylaxis (PEP), is believed to reduce the risk of infection if any, when began as quickly as possible.

Currently treatment for HIV infections consists of highly active antiretroviral therapy (HAART). This has been highly beneficial to many HIV-infected individuals since its introduction in 1996, when the protease inhibitor-based HAART initially become available.

The HAART options are combinations or cocktail consisting of at least 3 drugs belonging to 2 types.

- Nucleoside analogue reverse transcriptase inhibitors (NARTIs) or NRTIs
- Protease inhibitor or non-nucleoside reverse transcriptase inhibitor (NNRTIs)
- Entry inhibitors

These provide treatment options for patients who are infected with viruses already resistant to common therapies. Nonetheless, they are not widely available and not typically accessible in resource limited settings. ARVs are expensive too, and many infected individuals are poor not to afford prices to undergo medications and treatment for HIV/AIDS. They are mostly recommended for children, not adults because AIDS progression in children is more rapid and less predictable than in adults.

NOTE: Thanks to these treatments, many HIV-infected individuals have experienced remarkable improvements in their general health and quality of life, which has led to a large reduction in HIV associated morbidity and mortality in the developed world.

One study suggests the average life expectancy of an HIV-infected individual is 3 years from the time of infection, if treatment is started when the CD4 count is 350/ul.

In the absence of HAART, the life expectancy of an HIV-infected individual is at the median of between 9-10 years and median survival time is only 9.2 months after developing AIDS in the developing world.

The time for starting HIV treatment is still debated, others say that treatment be started before the patients CD4 count for or falls below 200/mm3 and most say treatment start once the CD4 accounts are not available, patients with WHO stages III or 1V should start the treatment .

Research to improve current treatment includes:

- Decreasing side effects of drugs.
- simplifying drug regimes to improve adherence
- determining the best sequence of regimes to manage drug resistance
- Vaccination is also being considered to be able to halt the pandemic. This is because a vaccine would cost less, thus being affordable for low developing countries and it would not require daily treatment. However after 20 years of research it has been shown that HIV-1 remains a difficult target for a vaccine.

Prevention and control measures

A lot of measures can be taken to reduce the different forms of HIV transmission:

- Awareness and life skills education, especially for young people, to ensure that everybody is well informed of what does and does not constitute a mode of transmission, of how to acquire free condoms and medical attention if necessary, and of basic hygiene.
- Promotion of the use of condoms, ensuring that good quality condoms are freely available to those who need them, together with culturally sensitive instructions.
- Sexually transmitted infections (STIs) control. This should be done by health workers, who use syndromic STI management approaches (as laboratory services for confirmation are unlikely to be available in emergencies), with partner notifications and promotion of safer sex.
- Reduction of mother-to-child transmission of HIV by:
    - Avoiding unintended pregnancies among HIV “infected women and promoting family planning methods, particularly in women who are HIV infected.
    - Preventing the transmission of HIV from pregnant women to their infants by using an antroviral prophylaxis regimen.
    - Avoiding unnecessary invasive obstetrical procedures, such as artificial rupture of membranes or episiotomy.
    - Modifying infant feeding. Feeding can be given with a cup when acceptable and safe, otherwise exclusive breast feeding for the first months of life is recommended.
- Blood safety
    - HIV testing of all transfused blood.
    - Avoiding of non essential blood transfusion.
    - Recruitment of a safer blood donor pool.
- Universal precautions. This means building up the personal understanding of the disease and its causes and promoting the following procedures:
    - Washing hands thoroughly with soap and water, especially after contact with blood fluids or wounds.
    - Using protective gloves and clothing when there is a risk of contact with blood or other potentially infected body fluids.
    - Safe handling and disposing of waste materials, needles and other sharp objects, properly cleaning and disinfecting medical instruments between patients.

- Physical protection, i.e. protecting the most vulnerable, especially women and their children from violence and abuse is not the only important principle of human rights but also essential for reducing the risk of HIV infections.
- Protecting health care workers
    - In order to reduce the nosocomial transmissions, health workers should strictly adhere to the universal precautions with all patients and laboratory samples, whether or not known to be infected with HIV.
    - Health workers should access to voluntary counselling, testing and care, often health workers deployed in complex emergencies experience significant occupational stress, and those tested as part of occupational exposures will require additional support.
    - Post-exposure prophylaxis (PEP) kits must be made available to protect workers who have been sexually assaulted. PEP kits are distributed through the United Nations dispensary system.
- Counselling and voluntary testing programmes should be supported by the governments and individual participation should be promoted
    - It is important that the available resources for HIV testing should be devoted to ensure a safe blood supply for transfusions.
    - Establishments of voluntary testing and counselling services to help individuals make informed decisions on HIV testing should be considered when relative stability is restored.
    - As refugees are often tested before resettlement in their countries, it is critical that they receive counselling on the legal and social implications of the test.
    - Post-test counselling is essential for both sero-negative and sero-positive results. Refugees and conflict survivors who are already traumatized will require additional psychological support net works of displaced persons are disrupted, and suicide risk assessment forms an important part of post-testing counselling in a refugee or conflict context.
    - Testing of orphaned minors should be done with the consent of the official guardians, only where there is an immediate health concern or benefit to the child. There should be no mandatory screening before admittance to substitute care.
- Vaccination
    - Asymptomatic HIV-infected children should be immunized with EPI vaccines.
    - Asymptomatic HIV-infected children should not receive BCG or yellow fever vaccines.

Factors that play a role in the increase of HIV transmission

*1.**Population movements***

Population movements often lead to a break down in family and social ties and erodes traditional values and coping strategies. This can result in high risk sexual behavior which increases the risks of the spread of HIV. In high incidence regions, refugees from areas where HIV is rampant are living together in a close area. Moreover, there is usually little prior knowledge of HIV risks and prevention.

*2. **Overcrowding***

Groups with differing levels of HIV awareness and differing rates of infection are

often placed together in temporary locations such as refugee's potential for sexual contact.

3. ***Poor access to health services***
Without medical services for outbreaks of sexual transmitted infections (STIs), the spread of the disease is huge. If left untreated in either partner, the risk of acquiring HIV greatly increases. Important materials for HIV prevention, in particular condoms, are likely to be lacking in emergency situations.

4. ***Sexual violence***
Especially refugees and internally displaced people are often physically, socially powerless. Women and children are at a particular risk of social co-coercion, abuse or rape. Sexual violence carries a higher risk of infections because the person violated can not protect herself from unsafe sex, and if this is the cause the virus can be transmitted more easily if the body tissues are torn during the violent sex.

5. ***Sex workers***
Exchange of sexual favours for basic needs, such as money, shelter, food, clothes, and others, is common in or around camps, towns and inevitably involves both the refugees and the host community. Both sex workers and clients are at the risk of HIV infection if unprotected sex is practised.

6. **Injected drug use**
In the critical conditions of an emergency, it is highly likely that drug injectors will be sharing needles, a practice that carries a high risk of HIV infection if one the people sharing is infected.

7. **Unsafe blood transfusions**
Transfusion with a HIV infected person's blood is highly efficient means of transmitting the virus. In emergency situations, when regular transfusion services have been broken down, it is particularly difficult to ensure blood safety.

Basic HIV counseling principles

The advent of HIV/Aids in the world has forced all of us to accept a paradigm shift from curing towards caring. Because we have no cure for HIV/Aids, we have to focus our interventions on caring for the physical as well as the psychological welfare of the HIV? positive individual and his or her significant others.

The HIV positive individual needs to find ways to live a psychologically healthy life after diagnosis. The need for counsellors to assist HIV positive individuals and their loved ones are so great, that we need to equip everyone in the helping professions with the necessary skills to be effective HIV/Aids counsellors.

"The single most important requirement to be an HIV/Aids counsellor, is to have compassion for another person's struggle to live beyond the confines of a disease, and the willingness and commitment to walk the walk with this person and his or her significant others." (Johnson, in Van Dyk, 2001.)

The aims of counselling or helping a client must always be based on the needs of the client. The purpose of counselling is twofold: (1) to help clients manage their problems more effectively and develop unused or underused opportunities to cope more fully, and (2) to help and empower clients to become more effective self helpers in the future (Egan, 1998). Helping is about constructive change and making a substantive difference to the life of the client. But only the client can make that difference: the counsellor is merely an instrument to facilitate that process of change.

Qualities of an effective HIV counselor

To be an effective HIV/Aids counselor, you need the following qualities or values:

1. Respect
The belief that every person is a worthy being who is competent to decide what he or she really wants, has the potential for growth, and has the abilities to achieve what he or she really wants from life.

A counsellor can show his or her respect to clients in the following ways:

- Accept the client by showing unconditional positive regard. This means that you as counsellor accept the client as he or she is, irrespective of the client's values or behaviour and of whether you as counsellor approve of those values and behaviour or not. A judgemental counsellor who condemns clients or who makes clients feel that their sexual behaviour is offensive to the counsellor, will not be able to facilitate healing, and will only do harm.
- Respect the client's rights. Individuals have a right to be who they are, a right to their own feelings, beliefs, opinions and choices.
- Respect the uniqueness of each client.
- Refrain from judgement. Counsellors are there to help their clients, not to judge or to blame them. Since HIV?infected individuals often already feel that they are “guilty” or “bad” before counselling even starts, only non?judgmental attitudes on the part of the counsellor will facilitate understanding and growth.
- Remain serene and imperturbable and never react with embarrassment, shock or disapproval when people discuss painful situations or their sexual practices with you.

2. Genuineness and congruence
Genuineness refers to being honest and transparent in the counselling relationship. A genuine or congruent counsellor demonstrates the following values or behaviour:

- Be yourself. Be real and sincere.
- Be honest with yourself and your clients.
- Don't be patronising or condescending.
- Keep the client's agenda in focus. Don't pursue your own agenda or inflict yourself on others.
- Don't be defensive. Know your own strengths and weaknesses.
- Strive towards achieving openness and self?acceptance because these qualities will enable you to accept people whose behaviour conflicts with your own personal values. Remember that it is impossible to hide negative feelings from

clients. No matter how hard you try to conceal them, clients will sense your incongruence.
- When clients react negatively to you or criticise you, examine the behaviour that might have caused the clients to think negatively.

3. Empowerment and self responsibility
One of the values underlying counselling should be the desire to empower clients to take responsibility for themselves and to identify, develop and use resources that will make them more effective agents of change in the counselling sessions as well as in their everyday lives. The empowerment of clients should be based on the following values:

- Accept the principle that the client knows himself or herself better than anyone else, and that he or she is therefore in the best position to explore, expose and understand the self.
- Believe in the clients' ability to change if they choose to do so. Trust clients' ability to manage their lives more effectively. It is the task of the counsellor to help clients to identify and use their resources.
- Refrain from "rescuing" the client. This means that you should not take responsibility for another person's feelings, choices or actions. Allow the client to take responsibility for him or herself.
- Help clients to see counselling sessions as work sessions. Only the client can make change happen. The counsellor can merely make suggestions about how the client might change.
- Help clients to become better problem solvers in their daily lives.

4. Confidentiality
Confidentiality in the counselling context is non?negotiable. A counsellor may under no circumstances disclose the HIV status or any other information to anybody without the express permission of the client. Confidentiality is an expression of the counsellor's respect for the client.

Basic communication skills in HIV Counseling

Since counselling is a conversation or dialogue between the counsellor and client, the counsellor needs certain communication skills in order to facilitate change.

The counsellor needs the following basic communication skills to do effective counselling:

1. Attending
Attending refers to the ways in which counsellors can be "with" their clients, both physically and psychologically. Effective attending tells clients that you are with them and that they can share their world with you. Effective attending also puts you in a position to listen carefully to what your clients are saying. The acronym **SOLER** can be used to help you to show your inner attitudes and values of respect and genuineness towards a client (Egan.)

S: Squarely face your client. Adopt a bodily posture that indicates involvement with your client. (A more angled position may be preferable for some clients - as long as you pay attention to the client.) A desk between you and your client may, for instance, create a psychological barrier between you.

O: Open posture. Ask yourself to what degree your posture communicates openness and availability to the client. Crossed legs and crossed arms may be interpreted as diminished involvement with the client or even unavailability or remoteness, while an open posture can be a sign that you are open to the client and to what he or she has to say.

L: Lean toward the client (when appropriate) to show your involvement and interest. To lean back from your client may convey the opposite message.

E: Eye contact with a client conveys the message that you are interested in what the client has to say. If you catch yourself looking away frequently, ask yourself why you are reluctant to get involved with this person or why you feel so uncomfortable in his or her presence. Be aware of the fact that direct eye contact is not regarded as acceptable in all cultures.

R: Try to be relaxed or natural with the client. Don't fidget nervously or engage in distracting facial expressions. The client may begin to wonder what it is in himself or herself that makes you so nervous! Being relaxed means that you are comfortable with using your body as a vehicle of personal contact and expression and for putting the client at ease.

Effective attending puts counsellors in a position to listen carefully to what their clients are saying or not saying.

2. Listening

Listening refers to the ability of counsellors to capture and understand the messages clients communicate as they tell their stories, whether those messages are transmitted verbally or nonverbally.

Active listening involves the following four skills:

- Listening to and understanding the client's verbal messages. When a client tells you his or her story, it usually comprises a mixture of experiences (what happened to him or her), behaviours (what the client did or failed to do), and affect (the feelings or emotions associated with the experiences and behaviour). The counsellor has to listen to the mix of experiences, behaviour and feelings the client uses to describe his or her problem situation. Also “hear” what the client is not saying.
- Listening to and interpreting the client's nonverbal messages. Counsellors should learn how to listen to and read nonverbal messages such as bodily behaviour (posture, body movement and gestures), facial expressions (smiles, frowns, raised eyebrows, twisted lips), voice?related behaviour (tone, pitch, voice level, intensity, inflection, spacing of words, emphases, pauses, silences and fluency), observable physiological responses (quickened breathing, a temporary rash, blushing, paleness, pupil dilation), general appearance (grooming and dress), and physical appearance (fitness, height, weight, complexion). Counsellors need to learn how to “read” these messages without distorting or over?interpreting them.
- Listening to and understanding the client in context. The counsellor should listen to the whole person in the context of his or her social settings.
- Listening with empathy. Empathic listening involves attending, observing and listening (“being with”) in such a way that the counsellor develops an

understanding of the client and his or her world. The counsellor should put his or her own concerns aside to be fully “with” their clients.

Active listening is unfortunately not an easy skill to acquire. Counsellors should be aware of the following hindrances to effective listening (Egan, 1998):

- Inadequate listening: It is easy to be distracted from what other people are saying if one allows oneself to get lost in one's own thoughts or if one begins to think what one intends to say in reply. Counsellors are also often distracted because they have problems of their own, feel ill, or because they become distracted by social and cultural differences between themselves and their clients. All these factors make it difficult to listen to and understand their clients.
- Evaluative listening: Most people listen evaluatively to others. This means that they are judging and labelling what the other person is saying as either right/wrong, good/bad, acceptable/unacceptable, relevant/irrelevant etc. They then tend to respond evaluatively as well.
- Filtered listening: We tend to listen to ourselves, other people and the world around us through biased (often prejudiced) filters. Filtered listening distorts our understanding of our clients.
- Labels as filters: Diagnostic labels can prevent you from really listening to your client. If you see a client as “that women with Aids”, your ability to listen empathetically to her problems will be severely distorted and diminished.
- Fact?centred rather than person?centred listening: Asking only informational or factual questions won't solve the client's problems. Listen to the client's whole context and focus on themes and core messages.
- Rehearsing: If you mentally rehearse your answers, you are also not listening attentively. Counsellors who listen carefully to the themes and core messages in a client's story always know how to respond. The response may not be a fluent, eloquent or “practised” one, but it will at least be sincere and appropriate.
- Sympathetic listening: Although sympathy has it's place in human transactions, the “use” of sympathy is limited in the helping relationship because it can distort the counsellor's listening to the client's story. To sympathise with someone is to become that person's “accomplice”. Sympathy conveys pity and even complicity, and pity for the client can diminish the extent to which you can help the client.

3. Basic empathy

- Basic empathy involves listening to clients, understanding them and their concerns as best as we can, and communicating this understanding to them in such a way that they might understand themselves more fully and act on their understanding (Egan, 1998).
- To listen with empathy means that the counsellor must temporarily forget about his or her own frame of reference and try to see the client's world and the way the client sees him or herself as though he or she were seeing it through the eyes of the client.

- Empathy is thus the ability to recognise and acknowledge the feelings of another person without experiencing those same emotions. It is an attempt to understand the world of the client by temporarily “stepping into his or her shoes”.
- This understanding of the client's world must then be shared with the client in either a verbal or non-verbal way.

Some of the stumbling blocks to effective empathy are the following:

- Avoid distracting questions. Counsellors often ask questions to get more information from the client in order to pursue their own agendas. They do this at the expense of the client, i.e. they ignore the feelings that the client expressed about his or her experiences.
- Avoid using clichés. Clichés are hollow, and they communicate the message to the client that his or her problems are not serious. Avoid saying: “I know how you feel” because you don't.
- Empathy is not interpreting. The counsellor should respond to the client's feelings and should not distort the content of what the client is telling the counsellor.
- Although giving advice has its place in counselling, it should be used sparingly to honour the value of self?responsibility.
- To merely repeat what the client has said is not empathy but parroting. Counsellors who “parrot” what the client said, do not understand the client, are not “with” the client, and show no respect for the client. Empathy should always add something to the conversation.
- Empathy is not the same as sympathy. To sympathise with a client is to show pity, condolence and compassion - all well?intentioned traits but not very helpful in counselling.
- Avoid confrontation and arguments with the client.

4. Probing or questioning

Probing involves statements and questions from the counsellor that enable clients to explore more fully any relevant issue of their lives. Probes can take the form of statements, questions, requests, single word or phrases and non-verbal prompts.

Probes or questions serve the following purposes:

- to encourage non-assertive or reluctant clients to tell their stories
- to help clients to remain focussed on relevant and important issues
- to help clients to identify experiences, behaviours and feelings that give a fuller picture to their story, in other words, to fill in missing pieces of the picture
- to help clients to move forward in the helping process
- to help clients understand themselves and their problem situations more fully

Keep the following in mind when you use probes or questions:

- Use questions with caution.
- Don't ask too many questions. They make clients feel “grilled”, and they often serve as fillers when counsellors don't know what else to do.

- Don't ask a question if you don't really want to know the answer!
- If you ask two questions in a row, it is probably one question too much.
- Although close-ended questions have there place, avoid asking too many close-ended questions that begin with “does”, “did”, or “is”.
- Ask open-ended questions - that is, questions that require more than a simple yes or no answer. Start sentences with: “how”, “tell me about”, or “what”. Open-ended questions are non-threatening and they encourage description.

5. Summarising

It is sometimes useful for the counsellor to summarise what was said in a session so as to provide a focus to what was previously discussed, and so as to challenge the client to move forward. Summaries are particularly helpful under the following circumstances:

- At the beginning of a new session. A summary of this point can give direction to clients who do not know where to start; it can prevent clients from merely repeating what they have already said, and it can pressure a client to move forwards.
- When a session seems to be going nowhere. In such circumstances, a summary may help to focus the client.
- When a client gets stuck. In such a situation, a summary may help to move the client forward so that he or she can investigate other parts of his or her story.

6. Integrating communication skills

Communication skills should be integrated in a natural way in the counselling process. Skilled counsellors continually attend and listen, and use a mix of empathy and probes to help the client to come to grips with their problems. Which communication skills will be used and how they will be used depends on the client, the needs of the client and the problem situation.

The eight commandments of emotional support

Pierre Brouard's eight commandments of emotional support can be applied by HIV/Aids counsellors.

1. Be non-judgemental
2. Be empathetic
3. Don’t give advice
4. Don’t ask why
5. Don’t take responsibility for the other person’s problems
6. Don’t interpret
7. Stick with the here and now
8. Deal with feelings first

Pre- and post- HIV test counseling

The HIV test is different from all other tests. It has phenomenal emotional, psychological, practical and social implications for the client.

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- It has phenomenal emotional, psychological, practical and social implications for the client.
- HIV testing should therefore never be done without thorough pre-test counseling.
- Pre-test counselling that is done in a proper and comprehensive way prepares the client and counsellor for more effective post-test counselling.
- Because clients are often too relieved or shocked to take much information in during post-test counselling, the health care professional should make use of the educational opportunities offered by pre-test counselling.
- Clients: although it may be difficult for you to go for pre-HIV test counselling, the psychological effects of being prepared by a professional for HIV testing far outweigh any possible "benefits" of privacy. Health care professionals are trained to do pre- and post-test counselling in a professional way and to keep all information confidential. It is also your right as client to stay anonymous or to use a pseudo (or false) name when you go for testing.

According to the National Policy on Testing for HIV (published in August, 2000) nobody may be tested for HIV without their informed consent, and without proper pre- HIV test counselling.

Pre-HIV test counseling

The purpose of pre-test counselling is to provide you with information on the technical aspects of testing and the possible personal, medical, social, psychological, legal and ethical implications of being diagnosed as either HIV positive or HIV negative.

The purpose of pre-test counselling is further to find out why you want to be tested, the nature and extent of your previous and present high-risk behaviour, and the steps that need to be taken to prevent you from becoming infected or from transmitting HIV infection.

The counselor will usually follow the following guidelines in pre-test counseling:

1. Reasons for testing
The counselor will explore the reasons why you want to be tested:

Is it for insurance purposes, because of anxiety about lifestyle, or because you have been forced by somebody else to take the test? What particular behavior or symptoms are causing concern to you? Have you been tested before, and, if so, when? For what reason?And with what result?

These questions provide the counselor with an opportunity to ascertain your perceptions of your own high-risk behavior, and with allows you to assess whether you intend to be tested and whether your fears are realistic or if you are unnecessarily concerned. The following are some of the reasons that clients who want to be tested often give:

- Their partner has requested it.
- They want to determine their HIV status before starting a new relationship.
- They want to be tested prior to being married.
- They feel guilty and concerned about having multiple sex partners.
- They have had recent sexual encounters in which they did not use condoms.

- They are manifesting symptoms that are giving them cause for concern.
- They are been referred by a STI or TB clinic because the client has tuberculosis or a sexually transmitted infection.
- They have come to re-confirm a positive HIV test.
- Their current partner is HIV positive, or they were once involved with a partner who was HIV positive.
- They plan to become pregnant and want to check their HIV status before they do so.
- They have been raped or assaulted.
- They need to be tested after an occupational exposure (e.g. a needlestick).
- There are simply curious.

The reason why a client wants to be tested is important because it sets the scene for the rest of the pre-test counselling session.

2. Assessment of risk

The counsellor will assess the likelihood of whether you have been exposed to HIV by considering how much and how frequently you have been exposed to the following risk factors and lifestyle indicators:

- What is your sexual risk history in terms of frequency and type of sexual behaviour? Have you been involved in high-risk sexual practices such as vaginal or anal intercourse with more than one sex partner without the use of condoms? In the case of anal sex, was it anal-receptive or anal-insertive sex? Did you have sex with a sex worker (or prostitute) without a condom? Or is your sex partner HIV positive?
- Are there any other risks involved? Are you an intravenous drug user, a prisoner who is exposed to rape or unprotected sex in prison, a migrant worker, a refugee or a sex worker? Have your been raped or coerced to have sex with another person? Do you have another sexually transmitted infection or tuberculosis?
- Did you receive a blood transfusion or body products in a developing country where testing blood for HIV is not standard practice? Note: All blood supplies in South Africa are tested for HIV, and are very safe.
- Have you been exposed to possibly non-sterile invasive procedures such as tattooing, piercing or traditional invasive procedures such as male or female circumcision and scarification for the application of medicines?
- Have you been exposed to HIV-infected blood in the work situation? (E.g. injuries with large volumes of blood involved, or needlestick injuries.)

3. Beliefs and knowledge about HIV infection and safer sex

- The counsellor will determine exactly what you believe and know about HIV infection and Aids and he or she will correct errors or myths by providing accurate information about transmission and prevention.
- The counsellor may also ask you about your past and present sexual behaviour and provide information about safer sex practices and a healthier lifestyle. He or she should find out if you know how to practise safer sex and how to use a condom correctly. They will also supply you with condoms. Sex is

natural and nothing to be ashamed of. Allow the counsellor to ask these questions, because that is the only way he or she can give you empowering information to enjoy sex safely.

4. Information about the test

The counsellor will ensure that you know exactly what the HIV test entails. The counsellor will explain the following points to you, and if he or she does not, you now know what questions to ask:

- There is a difference between being sero-positive and having Aids. The HIV antibody test is not a "test for Aids". It indicates that a person has HIV antibodies in the blood and that the person is infected with HIV. It does not say when or how the infection occurred, or in what phase of infection the person is.
- The presence of HIV antibodies in the blood does not mean that the person is now immune to HIV. It means that he or she has been infected with HIV and that he or she can pass the virus on to others.
- The meaning of a positive and a negative test results.
- The meaning of the concept of the "window period". The need for further testing will be emphasised if the person practises high-risk sexual behaviour and tests negative.
- The reliability of the testing procedures. A positive HIV antibody test result is always confirmed with a second test and the reliability of test results is usually high. False-positive or false-negative results may, however, occasionally occur despite the general reliability of HIV tests (e.g. a false negative test result because the person is in the window period).
- The testing procedure. Many clinics in South Africa use HIV antibody rapid tests, which means that the finger will be pricked to get a drop of blood. The results are available within 15 to 30 minutes. The counsellor will explain how blood is drawn for the Elisa test (if rapid testing is not available), where it is sent (if a rapid test is not used), when the results will be available and how the person will be informed of the outcome.

5. The implications of an HIV test result

The counsellor will discuss the possible personal, medical, social, psychological, ethical and legal implications of a positive test result with you prior to testing. He/she will inform you about all the advantages and disadvantages of testing. The following advantages can accrue from taking the test:

- Knowing the result may reduce the stress associated with uncertainty.
- One may begin to make rational plans for preparing oneself emotionally and spiritually to live with HIV.
- Symptoms can be confirmed, alleviated or treated.
- Prophylactic (preventative) treatment can be considered, for example for tuberculosis.
- Anti-retroviral treatment can be considered.
- Adjustments to one's lifestyle and sex life can protect oneself and one's sex partners from infection.
- One can make decisions about family planning and new sexual relationships.

- One can plan for future care of one's children.

The disadvantages that might accrue from taking an HIV test (especially if its result is positive) include:

- Possible limitations on life insurance and mortgages.
- Having to endure the social stigma associated with the disease.
- Possible problems in maintaining relationships and in making new friends.
- A possible refusal on the part of uninformed medical and dental personnel to treat an HIV-positive person. (A refusal to treat HIV-infected individuals of course goes against the provisions of the South African Constitution.)
- Possible dismissal from work (although it is illegal to dismiss people because they are HIV-positive).
- Possible rejection and discrimination by friends, family and colleagues.
- Emotional problems and a disintegration of one's life.
- Increased stress levels and uncertainty about the future.
- The stress and negative effects of maintaining a secret if the person decides not to disclose his or her test results.

The counsellor will tell you about medical treatments that are available which can help to keep you healthier for longer.

6. Anticipate the results

It is important to anticipate a positive HIV antibody result and to talk about how the client will deal with a positive test outcome. Anticipating a positive result helps the counsellor to ascertain the client's ability to deal with, and adjust to, a positive result. The counsellor also gains insight into some of the potential problems associated with a positive test outcome.

Preparation for the possibility of a positive test result, paves the way for more effective post-test counselling. In order to prepare you as client for the test result, the counsellor should ask the following questions:

- How would you feel if you tested negative? How would you feel if the test were to be negative but you were advised to be tested again because you may still be in the window period?
- What would your reactions and feelings be to a positive test? Would a positive test change your life? How? What negative changes would you anticipate? What positive changes can you imagine?
- Do you intend to tell others if you test positive? Who would you tell? Why that person? How would you tell them? Why would you tell them? Clients must be warned about people's possible reactions. Often those closest to the client cannot cope with such news. The counsellor must help clients to think not only of themselves but also of those who are to be told. (For example, if the client says to you: "The news will surely kill my old and frail mother", you may ask: "Why do you want your mother to know?"). Clients must also be warned that some people may not keep the information to themselves, and that this might have harmful effects for the client.

- How would you tell your sexual partner? If the test result is positive, the sexual partner also needs to be tested.
- How would a positive test result change the circumstances of your job, your family and your relationships? Would your relationships be improved or hindered by telling people you were HIV positive? What do you believe their reactions would be?
- Where would you seek medical help? How do you feel about a disease that requires a lot of care, lifestyle changes, commitment and discipline? Do you have members of your family or friends who could help you to be disciplined about your health? Could you take medication every four hours if necessary?
- Who could provide (and is currently providing) emotional and social support (family, friends, others)?

The choice to be tested remains the client's prerogative. The advantages of testing can be explained to clients, but clients should not be forced to be tested if they feel that they will not be able to deal with the results. The mere knowledge of people's HIV status will not necessarily protect them, or their loved ones, from infection.

People who prefer not to be tested should, however, live as if they are infected and practise safer sex at all times. People who suspect they are HIV infected should also refrain from donating blood.

7. Confidentiality of test results

The counsellor should stress the confidentiality of test results. The client's right to confidentiality must be respected at all times. If individuals choose to remain anonymous, they must be reassured that no information will be communicated without their prior permission to anyone.

The client's consent must be obtained before anyone can pass on any information about his or her HIV status to any other health care professional who also treats the client. If the counsellor explains why other health care professionals need to know about the client's HIV status, most clients will consent to this information being given out.

8. Informed consent

The decision to be tested can only be made by the client and their informed consent must be obtained prior to testing. Consenting to medical testing or treatment has two elements: information and permission. Before an HIV test can be done, the client must understand the nature of the test, and he/she must also give verbal or written permission to be tested. A client may never be misled or deceived into consenting to an HIV test.

Note to health care professionals: According to the law, health care professionals may not do an HIV test on a person unless he or she clearly understands what the purpose of the test is, what advantages or disadvantages testing may hold for him or her as client, why the health care professional wants this information, what influence the result of such a test will have on his or her treatment, and how his or her medical protocol will be altered by this information.

9. Information about giving the results and ongoing support
The counsellor will explain to you when, how and by whom the results of the test will be given. The counsellor will assure you of personal attention, privacy, confidentiality and ongoing support and advice if needed.

10. The waiting period
Waiting for the results of an HIV antibody test can be an extremely stressful period for the client. This waiting period (in cases where the rapid HIV antibody test is not being used) can last from two to 14 days, depending on where the test was done (whether by a private practice, a governmental health service or a rural clinic).

The results of rapid HIV antibody tests are, of course, available within 30 minutes. However, if the client has to wait for the test results, the counsellor should anticipate this difficult waiting period by discussing the following points with the client:

- Find out the names of people whom the client might contact for moral support while he or she waits for the results.
- Encourage the client to contact you or a colleague if they have any questions.
- Counsel the client on how to protect sex partners (e.g. to use condoms) in the waiting period.
- Encourage the client to do something enjoyable to keep himself or herself occupied while waiting for the results (e.g. hiking, going to the movies or playing soccer with friends).

Note to counsellors: Pre-HIV test counselling is extremely important. It should not only be seen as a preparation for the HIV test, but as a golden opportunity to educate people about HIV/Aids and safer sex. Remember that this may be the one and only time that you will see the client because he or she might decide not to be tested, or not to come back for the test results after all.

Post-HIV test counselling

Not many things in life could be as stressful as going back for HIV test results. For many clients it feels as if the counsellor holds the key to the future in his or her hands.

Although the post-HIV test counselling interview is separate from the pre-test counselling interview, it is inextricably linked to it. The pre-test counselling interview should have given the client a glimpse of what to expect in post-test counselling. Pre- and post-test counselling should preferably be done by the same person because the established relationship between the client and counsellor provides a sense of continuity for the client. The counsellor will also have a better idea of how to approach the post-test counselling because of what he or she experienced in the pre-test counselling.

Counselling after testing will depend on the outcome of the test - which may be a negative result, a positive result or an inconclusive result.

The counsellor should always ask the client if he or she is prepared to receive the results. In the case of the rapid HIV antibody test - where the results are available within minutes - ask the client if he/she is ready to receive the results immediately. Some clients need time to prepare for the results.

Counselling after a negative HIV test result

- For both the client and the counsellor, a negative HIV result is a tremendous relief.
- A negative test result could however give someone, who is frequently involved in high-risk behaviour, a false sense of security. It is therefore extremely important for the counsellor to counsel HIV-negative clients in order to reduce the chances of future infection. Advice about risk reduction and safer sex must therefore be emphasised.
- If you practise high risk sex behaviour and test negative, it does not mean that you are "immune" to HIV and that precautions are therefore unnecessary. Nobody is immune to HIV and everyone risks being infected if they do not change their behaviour.
- The possibility that the client is in the "window period" or that the negative test result may be a false negative should also be pointed out. If there is concern about the HIV status of the person, he or she should return for a repeat test after about three months and ensure that appropriate precautions are taken in the meanwhile.

Note to councellors: Don't underestimate the extreme importance of counselling a client who tested HIV negative. This may be your only chance to talk to this person about his or her sexual practices, potential drug abuse and other risk behaviours, and to educate him or her about safer sex practices. Free condoms can be given out at this session together with advice on how to use them and where to get more when needed. Use this counselling session to prevent a future situation where somebody else has to give the client a positive HIV test result!

Counselling after a positive HIV test result

To communicate a positive test result to a client is a huge responsibility. The way people react to test results depends to a large extent on how thoroughly the counsellor has educated and prepared them both before and after the test.

When a test is positive, the following guidelines for counselling may prove useful for counsellors:

1. Sharing the news with the client

- Positive (as well as negative) test results should be given to the client personally.
- Feedback should take place in a quiet, private environment and enough time should be allowed for discussion.
- The news of a positive result ought to be communicated openly, honestly and without fuss. Simple and straightforward language should be used. Do not give the individual false hopes and (alternatively) do not paint a hopeless scenario.
- Choose neutral words when conveying a positive HIV test result. Don't attach value to the news by saying "I have bad news for you" - because such an attitude reflects a hopelessness in the mind of the counsellor. Rather say: "Mr Peterson, the results of your HIV test came back, and you are HIV positive".

- A positive result is NOT a death sentence and the counsellor's task is to convey optimism and hope.
- There are a few Don'ts that we need to observe when sharing a positive HIV test result with a client.
    - Don't lie or dodge the issue.
    - Don't beat about the bush or use delaying tactics. Come to the point.
    - Don't break the news in a corridor or any other public place.
    - Don't give the impression of being rushed, distracted or distant.
    - Don't interrupt or argue.
    - Don't say that "nothing can be done" because something can always be done to ease suffering.
    - Don't react to anger with anger.
    - Don't say "I know how you feel" because you don't.
    - Don't be afraid to admit ignorance if you don't know something.

2. Client reaction to a positive HIV test result

- Clients' responses to the news usually vary from one person to another, and may include shock, crying, agitation, stress, guilt, withdrawal, anger and outrage - some clients may even respond with relief.
- The counsellor should allow clients to deal with the news in their own way and give them the opportunity to express their feelings.
- The counsellor should show empathy, warmth and caring.
- Maintain neutrality and respond professionally to outbursts. Don't show surprise or make value-laden comments such as "There is no need to be upset with me!" Because the loss of health is a bereavement, it manifests with all the components of denial, anger, bargaining, depression and acceptance. The counsellor must respect the personal nature of an individual's feelings.

3. Responding to client needs

- People's needs, when they receive an HIV positive test result, vary, and the counsellor has to determine what those needs are and deal with them accordingly.
- Fear of pain and death are often the most serious and immediate problems and these can be dealt with in various ways. Talking to clients about their fears for the future is one of the most important therapeutic interventions that the counsellor can make.
- Often it is enough for the counsellor just to be "there" for the client and to listen to him or her.
- One of the major concerns for HIV positive people is whom to tell about their condition and how to break the news. It is often helpful to use role-play situations in which the client can practise communicating the news to others.
- In responding to a client's needs, an attitude of non-judgmental empathic attentiveness is more important than doing or saying specific things. Listening is more important than talking; being with more important than doing.

4. Crisis intervention

- Crisis intervention is often necessary after an HIV positive test result is given
- Make sure that the person has support after he or she leaves your office. A person in crisis should never be left alone: he or she should have somebody with whom to share the burden.
- Ask the client where he or she is going after leaving your office. Let the person think about and verbalise his or her plans for the next few hours. Although it is better for the client not to be alone, personal needs should be taken into consideration: Some people prefer to be alone and work through a crisis all by themselves.
- Be sensitive to the possibility of suicide. If the client shows any suicidal tendencies, emergency hospitalisation should be arranged if a friend or family member cannot be with the client.
- Make sure that your client does not leave your office without support to help him or her through the first few days.
- Don't ever give an HIV-positive result on a Friday, because there are often no support systems available over weekends.

5. Follow-up visits

- When people hear that they are HIV positive, they usually experience so much stress that they absorb very little information.
- Follow-up visits are therefore necessary to give clients the opportunity to ask questions, talk about their fears and the various problems they encounter.
- Significant others, such as a lover, spouse or other members of the family, may be included in the session. During follow-up visits, clients should be offered a choice concerning their treatment.
- If health care professionals are not in a position to do follow-up counselling, information about relevant health services should be given. If there is a concern that the person might not return for follow-up counselling, information about available medical treatments such as anti-retroviral therapy, treatment of opportunistic infections, and social services for financial and ongoing emotional support should be given.
- Give the client a handout with whatever relevant information that he or she may need (such as the telephone numbers and addresses of Aids centres and other social services).

6. Support systems

- Find out what support systems are available to clients.
- Refer clients to support systems where people meet on a regular basis to talk about their difficulties or simply to relax and enjoy each other's company.
- Information about support systems such as the buddy system is usually available at the nearest Aids centre or from the offices of NGOs (non-governmental organisations) who work in the community.

7. Advice about health and sexuality

- Convey information about safer sex, infection control, health care in general and measures to strengthen the immune system.

8. Medical check-ups

- Encourage clients to go for regular medical check-ups to their family doctor or health clinic. Infections and opportunistic diseases can be prevented if treated in time.

Counselling after an indeterminate HIV test result

- In some cases an HIV test result can be “inconclusive”, meaning that the result is ambiguous or indeterminate, and it is not possible at that stage to say if a person is HIV positive or not. (Explanation: A test result may be inconclusive because the test is cross-reacting with a non-HIV protein or because there has been insufficient time for full sero-conversion to occur since the person was exposed to HIV.)
- When a test result is inconclusive, other testing methods may be used to try to achieve a reliable result.
- The test can also be repeated after two weeks. If it is still inconclusive, it should be repeated at three, six and 12 months. If it is still inconclusive after one year, it should be accepted that the person is not infected with HIV.

Impact of HIV infection on affected significant others

The significant others in an HIV positive person's life often need help themselves to come to terms with (1) their own fears and prejudices and (2) the implications and consequences of their loved one's sickness and ultimate death.

The counsellor can play a tremendous role in counselling the lovers, friends and family of the HIV-positive person in the practicalities of physical and emotional care. Affected significant others experience more or less the same psycho-social feelings as do their HIV-positive loved ones – the same feelings of depression, loneliness, fear, uncertainty, anxiety, anger, emotional numbness and, at times, hope.

The impact of HIV infection on affected others can be summarised as follows:

- Affected others often experience fear and anxiety about their own risk of infection.
- They are often angry with the infected person for “bringing this onto them”.
- They anticipate the loss of the HIV-positive person and issues of loss, bereavement and uncertainty are introduced into the relationship.
- They often feel unable to cope with the new demands that the infection place on them. They feel incompetent, unqualified and powerless in their interaction with the HIV-positive significant other.
- Responses to disclosure can range from involvement, caring and support on the one hand, to abandonment, indifference, and antagonism on the other.
- Affected others suffer in many ways as a result of untimely deaths. People who die of Aids are usually young (between 20 and 35 years old), and this leads to the “unnatural” situation where parents outlive their children. Grandparents who are preparing themselves for a quiet and contented old age now often find themselves forced to nurse and care for sick and dying children as well as grandchildren.

- Children suffer tremendously when their parents are infected, and the needs of children with infected parents are often neglected. There is no tradition of talking to children as equals and on an intimate basis in many African societies, and caregivers often report seeing “the suffering of children, who are too often hovering in the shadows of a sick room, seeing and hearing everything but never addressed directly”.
- Significant others often have to fulfil a role for which they are not trained, namely that of caregiver. They have to look after serious ill loved ones.
- Neurological complications and deterioration in mental functioning in the client can be extremely disturbing to significant others. They may feel that they are already losing their loved ones and this can precipitate an early grieving process

Helping the infected person and affected significant others

The main function of the HIV/Aids counsellor is to be supportive of his of her infected and affected clients, to listen to their problems and to empower them to solve their problems and better their lives.

1. Support and empowerment

- Compile, with each client, a list of their problems, and let them reflect on what they want.
- Assist the client to identify possible solutions to these problems. Encourage clients to come up with their own solutions because clients will be more likely to implement solutions that they find feasible and practical.
- Ask the client to make a list of his or her good qualities and possible limitations. He or she should, for instance, list his or her coping skills, describe the level of his or her self-esteem, analyse his or her personality style, communication style, sense of humour - and any other strengths and weaknesses that may be important.
- Examine and discuss possible solutions to whatever problems the client may have identified. Assess each solution in terms of the client's actual capabilities and capacity. Refrain from giving advice and suggesting solutions.
- Ask the client to write down the answers to the following question: “Why must I go on living?” Once this has been done, encourage him or her to work toward those goals and to make new and longer-term goals along the way. Clients should set goals that will give them a sense of purpose and pride (goals such as “I want to see my children growing up”).
- Identify the ways in which clients have dealt successfully with their problems in the past and help them (if necessary) to develop new coping skills.
- Empower clients to make their own decisions and to take control over their lives wherever and whenever possible.
- Make a note of any relationship problems between the client and his or her loved ones, friends and family, as well as between the client and other health providers.
- Encourage the client to call on peer support (buddy systems) or self-help groups. The counsellor may also be able to put clients in touch with each other on an individual basis (with the consent of the individuals involved).

2. Peer support (buddy system)

Clients should be encouraged to become involved in support groups or to form their own groups if none exist in their communities. The following issues are usually dealt with in peer support groups:

- Learning to live with HIV infection. Many of the people involved in the peer support group, may have already gone through the process of living with HIV. They can describe the medical and psychological problems they have experienced and the interventions they found most useful.
- Helping caregivers and loved ones handle the daily pressure of caring for sick people.
- Reducing stress and avoiding conflict. Buddies can exchange practical advice on how to overcome anxiety, depression and other psychological problems that can lead to stress and conflict.
- Deciding how best to talk about HIV/Aids to loved ones, friend and colleagues. Disclosing a diagnosis of HIV can be particularly stressful, and buddies can share ideas on what to say, to whom, when and how.
- Dealing with feelings of loneliness, depression, powerlessness and suicide. The peer support group can provide help and mutual support. Advice from people who have actually experienced those feelings personally and who have coped with them successfully is more valuable than theoretical information.
- Advice about sexual relations and the implications of safer sex behaviour. Peer support groups can discuss all aspects of these problems and opportunities and give each other good advice about safer sex practices. Peer commitment to safer sex also helps to make these practices socially acceptable, attractive and sustainable.

Bereavement counselling

The bereavement experienced by a person who has lost a loved one and the bereavement experienced by a terminally ill or dying person are very similar.

Both people experience a grievous sense of loss: in the first case, one experiences the loss of a loved one, and in the second case, one experiences the loss of one's future, one's hopes, one's loved ones, one's health, self-esteem, well-being and one's dignity as a human being. In either case, people are confronted with their own mortality.

Terminally ill persons are directly confronted by their own imminent death - the imminence of which becomes more pressing as the disease progresses – while persons who have lost a loved one are indirectly confronted with the possibility and spectacle of their own future death through the death of the loved one. It is therefore understandable that the process of bereavement is often very similar for both those who are dying and those who are forced to witness death.

In all cases where HIV-infected people are still leading relatively normal and healthy lives for extended periods, the counsellor needs to facilitate a process of reinvestment in life. This is also an important element in the counselling of a person who has lost or is in the process of losing a loved one.

Bereaved people should actively ***work through*** their grief in their own time. Bereavement is a process that cannot be rushed.

Kübler-Ross's stages of dying

Kübler-Ross identified the following "stages" of dying...

- **Denial and isolation:** *In this stage, the person denies that death is really going to take place.* This reaction is commonly associated with any kind of terminal illness. However, denial is usually only a temporary defence and is eventually replaced with increased awareness when the person is confronted with such matters as financial considerations, unfinished business and worry about surviving family members.
- **Anger:** *The dying person realises that denial can no longer be maintained, and very often, feelings of anger, resentment, rage and envy follow.* In this stage, the dying person wonders **"why"** he has to die. It can be difficult to care for a person in this stage since the anger can be displaced and projected onto the nurses, social worker, doctor, family member, etc. or even God. The realisation of loss becomes great, and those who symbolise life, energy, and competent functioning are especially salient targets of the dying person's resentment and jealousy.
- **Bargaining:** *In this phase, the dying person develops the hope that death can somehow be postponed or delayed.* Some persons enter into a bargaining or negotiation - often with God - as they try to delay their death. Psychologically the person is saying "Yes me, but...". In exchange for a few more days, weeks, or months of life, the person promises to lead a reformed life dedicated to God or to the service of others.
- **Depression:** *Here the dying person comes to accept the certainty of death.* This can be evident in several ways. The dying person may become silent, may refuse visitors, and may spend much of the time crying or grieving. This behaviour should be perceived as normal in these circumstances and is actually an effort to disconnect the self from all love objects. Efforts to cheer up the dying person at this stage should be discouraged, because the dying person has a need to contemplate impending death.
- **Acceptance:** *The dying person develops a sense of peace; an acceptance of one's fate; and, in many cases, a desire to be left alone.* In this stage, feelings and physical pain may be virtually absent. Kübler-Ross sees this stage as the end of the dying struggle, the final resting stage before death.

  Kübler-Ross never intended the stages to be an invariant sequence of steps toward death, and individual variation should be recognised.

The four tasks of mourning

According to Worden (1999) there are four tasks of mourning.

Accepting the reality of the loss: There are two aspects of death bereaved people must accept. The first one involves accepting that the person has died and will not come back. The second one involves facing the changes of the realities of life, brought about by the loss of a loved one.

Experiencing the pain of grief: Everyone who loses someone they love experiences the pain of grief. Sometimes society pressurises people who are in mourning to get on with their lives and not be preoccupied with the loss. This results in the bereaved feeling lonely, with no one to share the experiences - often complicating the grieving process. It is for this reason that the mental health provider must offer the bereaved a space to share their grief and to feel the pain.

Adjusting to an environment in which the deceased is missing: The bereaved can be assisted to living without the deceased person and to make decisions independently.

Emotionally relocating the loved one: The bereaved has to find a new place in his or her life for their lost loved one - a place that will allow him or her to move forward with life and form new relationships.

HIV/AIDS Counselling principles and procedures

Here are some useful counselling principles and procedures from Nefale (2001).

- Help the survivor **actualise** the loss
- Help the survivor to identify and express feelings
- Assist living without the deceased
- Facilitate emotional relocation of the deceased
- Provide time to grieve
- Interpret “normal” behaviour
- Allow for individual and cultural differences
- Provide continuing support
- Examine defences and coping styles
- Identify pathology and refer

Useful techniques in bereavement counselling

Counselling the loved ones of someone that has died from Aids or any terminal illness for that matter is a very difficult thing. Here are some useful techniques in bereavement counseling

Evocative language: The counsellor can use tough words to evoke language, e.g. “your son is dead” versus “you lost your son”. This language will assist the client in perceiving the reality of the loss and can stimulate some of the painful feelings that need to be felt. Also speaking of the deceased in the past tense can be helpful.

The use of symbols: The counsellor can ask clients to bring photo’s of the deceased to counselling sessions. This creates a sense of immediacy of the deceased and a concrete focus for talking **to** the deceased rather than talking **about** him/her. Letters written by the deceased can also be useful as well as audio/videotapes of the deceased. Articles of clothing and jewellery can also be used. The counsellor needs to be sensitive to the client’s culture of doing things and deal with what the client is comfortable with.

Writing: The counsellor can ask the client to write a letter(s) to the deceased expressing thoughts and feelings. This can help take care of unfinished business by expressing things that need to be said to the deceased. Keeping a journal of one’s grief experience or writing

poetry can also facilitate the expression of feelings and lend personal meaning to the experience of loss.

Drawing: The counsellor can also ask the client to draw pictures that reflect his or her feelings as well as experiences held with the deceased. This works well with children, but can also be used with adults.

Role playing: The counsellor can assist the bereaved to role play various situations that they fear or feel awkward about, as one way to build coping skills. The counsellor can enter into the role play, either as a facilitator or to model possible new behaviours for the client.

Cognitive restructuring: The underlying assumption of the cognitive restructuring technique is that our thoughts influence our feelings, particularly covert thoughts and self-talk that constantly go on in our minds. By helping the client to identify these thoughts and reality test them for accuracy or overgeneralisations, the counsellor can help to lessen the dysphoric feelings triggered by certain irrational thoughts such as “no one will ever love me again”.

Memory book: One activity a bereaved family can do together is to make a memory book of the lost family member. This book can include stories about family events and snapshots, poems and drawings made by various family members, including children. This activity can help the family to reminisce and eventually to mourn a more realistic image of the dead person. In addition, children can go back to revisit this memory book in order to reintegrate the loss into their growing and changing lives.

Directed imagery: Helping the person to imagine the deceased, either with their eyes closed or visualising their presence in an empty chair and then encouraging them to say what they need to say to the deceased can be very powerful techniques. The power comes not from the imagery, but from being in the present and again, talking to the person, rather than talking about the person.

The purpose of all these techniques is to encourage the fullest expression of thoughts and feelings regarding the loss, including regrets and disappointment.

Voluntary Counseling and Testing

VCT for HIV usually involves two counseling sessions: one prior to taking the test known as "pre-test counseling" and one following the HIV test when the results are given, often referred to as "post-test counseling". Counseling focuses on the infection (HIV), the disease (AIDS), the test, and positive behavior change. VCT has become popular in many parts of Africa as a way for a person to learn their HIV status. VCT centers and counselors often use rapid HIV tests that require a drop of blood or some cells from the inside of one's cheek; the tests are cheap, require minimal training, and provide accurate results in about 15 minutes.

Circumcision and HIV

Over forty epidemiological studies have been conducted to investigate the **relationship between male circumcision and HIV infection**. Reviews of these studies have reached differing conclusions about whether circumcision could be used as a prevention method against HIV. Experimental evidence was needed to establish a causal relationship between lack of circumcision and HIV, so three randomized controlled trials were commissioned as a means to reduce the effect of any confounding factors. Trials took place in South Africa,

Kenya and Uganda. All three trials were stopped early by their monitoring boards on ethical grounds, because those in the circumcised group had a lower rate of HIV contraction than the control group. The results showed that circumcision reduced vaginal-to-penile transmission of HIV by 60%, 53%, and 51%, respectively. A meta-analysis of the African randomised controlled trials found that the risk in circumcised males was 0.44 times that in uncircumcised males, and reported that 72 circumcisions would need to be performed to prevent one HIV infection. The authors also stated that using circumcision as a means to reduce HIV infection would, on a national level, require consistently safe sexual practices to maintain the protective benefit.

As a result of these findings, the WHO and the Joint United Nations Programme on HIV/AIDS (UNAIDS) stated that male circumcision is an efficacious intervention for HIV prevention but should be carried out by well trained medical professionals and under conditions of informed consent (parents consent for their infant boys Both the WHO and CDC indicate that circumcision may not reduce HIV transmission from men to women, and that data is lacking for the transmission rate of men who engage in anal sex with a female partner. The joint WHO/UNAIDS recommendation also notes that circumcision only provides partial protection from HIV and should never replace known methods of HIV prevention.

Langerhans cells and HIV transmission

Langerhans cells are part of the human immune system. Three studies identified high concentrations of Langerhans and other "HIV target" cells in the foreskin and Szabo and Short suggested that the Langerhans cells in the foreskin may provide an entry point for viral infection. McCoombe, Cameron, and Short also found that the keratin is thinnest on the foreskin and frenulum. Van Howe, Cold and Storms criticised Szabo and Short's suggestion as "pure speculation. Fleiss, Hodges and Van Howe had previously stated a belief that the prepuce has an immunological function. Waskett criticized their specific hypothesis on technical grounds. A study published in 2007 by de Witte and others said that langerin, produced by Langerhans cells, is a natural barrier to HIV-1 transmission by Langerhans cells. Dowsett (2007) questioned why it was just males that were being encouraged to circumcise: "Langerhans cells occur in the clitoris, the labia and in other parts of both male and female genitals, and no one is talking of removing these in the name of HIV prevention.

Module 2: Counseling inform of Suicide Intervention

Suicide intervention or **suicide crisis intervention** is direct effort to stop or prevent persons attempting or contemplating suicide from killing themselves. Current medical advice concerning people who are attempting or seriously considering suicide is that they should immediately go or be taken to the nearest emergency room, or emergency services should be called immediately by them or anyone aware of the problem. Modern medicine treats suicide as a mental health issue. According to medical practice, severe suicidal ideation, that is, serious contemplation or planning of suicide,is a medical emergency and that the condition requires immediate emergency medical treatment.

In the United States, individuals who express the intent to harm themselves are automatically determined to lack the *present mental capacity* to refuse treatment, and can be transported to an emergency department against their will. An emergency physician there will determine whether or not inpatient care at a mental health care facility is warranted. This is sometimes referred to as being "committed." If the doctor determines involuntary commitment is needed, the patient is hospitalized and kept under observation until a court hearing is held to determine the patient's *competence*.

Individuals suffering from depression are considered a high-risk group for suicidal behavior. When depression is a major factor, successful treatment of the depression usually leads to the disappearance of suicidal thoughts. However, medical treatment of depression is not always successful, and lifelong depression can contribute to recurring suicide attempts.

Medical personnel frequently receive special training to look for suicidal signs in patients. Suicide hotlines are widely available for people seeking help. However, the negative and often too clinical reception that many suicidal people receive after relating their feelings to health professionals (e.g. threats of institutionalization, increased dosages of medication, the social stigma) may cause patients to remain more guarded about their mental health history or suicidal urges and ideation.

First Aid for Suicide Ideation

Medical professionals advise that people who have expressed plans to kill themselves be encouraged to seek medical attention immediately. This is especially relevant if the means (weapons, drugs, or other methods) are available, or if the patient has crafted a detailed plan for executing the suicide. Mental health professionals suggest that people who know a person whom they suspect to be suicidal can assist him or her by asking directly if the person has contemplated committing suicide and made specific arrangements, has set a date, etc. Posing such a question *does not* render a previously non-suicidal person suicidal. According to this advice, the person questioning should seek to be understanding and empathetic above all else since a suicidal person will often already feel ashamed or guilty about contemplating suicide so care should be taken not to exacerbate that guilt.

Mental health professionals suggest that an affirmative response to these questions should motivate the immediate seeking of medical attention, either from that person's doctor, or, if unavailable, the emergency room of the nearest hospital.

If the prior interventions fail, mental health professionals suggest involving law enforcement officers. While the police do not always have the authority to stop the suicide attempt itself, in some countries including some jurisdictions in the US, killing oneself is illegal.

In most cases law enforcement does have the authority to have people involuntarily committed to mental health wards. Usually a court order is required, but if an officer feels the person is in immediate danger he/she can order an involuntary commitment without waiting for a court order. Such commitments are for a limited period, such as 72 hours – which is intended to be enough time for a doctor to see the person and make an evaluation. After this initial period, a hearing is held in which a judge can decide to order the person released or can extend the treatment time. Afterwards, the court is kept informed of the person's condition and can release the person when they feel the time is right to do so. Legal punishment for suicide attempts is extremely rare.

Mental Health Treatment

Treatment, often including medication, counseling and psychotherapy, is directed at the underlying causes of suicidal thinking. Clinical depression is the most common treatable cause, with alcohol or drug abuse being the next major categories.

Other psychiatric disorders associated with suicidal thinking include bipolar disorder, schizophrenia, Borderline personality disorder, Gender identity disorder and eating disorders. Suicidal thoughts provoked by crises will generally settle with time and

counseling. Severe depression can continue throughout life even with treatment and repetitive suicide attempts or suicidal ideation can be the result.

Methods for disrupting suicidal thinking include having family members or friends tell the person contemplating suicide about who else would be hurt by the loss, citing valuable and productive aspects of the patient's life, and provoking simple curiosity about the victim's own future.

During the acute phase, the safety of the person is one of the prime factors considered by doctors, and this can lead to admission to a psychiatric ward or even involuntary commitment.

Suicide Prevention

Various suicide prevention strategies are suggested by Mental Health professionals:

- Promoting mental resilience through optimism and connectedness.
- Education about suicide, including risk factors, warning signs, and the availability of help.
- Increasing the proficiency of health and welfare services in responding to people in need. This includes better training for health professionals and employing crisis counseling organizations.
- Reducing domestic violence and substance abuse are long-term strategies to reduce many mental health problems.
- Reducing access to convenient means of suicide (e.g., toxic substances, handguns).
- Reducing the quantity of dosages supplied in packages of non-prescription medicines e.g., aspirin.
- Interventions targeted at high-risk groups.

Research on Suicide Prevention

Research into suicide is published across a wide spectrum of journals dedicated to the biological, economic, psychological, medical and social sciences. In addition to those, a few journals are exclusively devoted to the study of suicide (suicidology), most notably, Crisis, Suicide and Life Threateni Stress Management

Historical Foundations of Suicide prevention

Walter Cannon and Hans Selye used animal studies to establish the earliest scientific basis for the study of stress. They measured the physiological responses of animals to external pressures, such as heat and cold, prolonged restraint, and surgical procedures, then extrapolated from these studies to human beings.

Subsequent studies of stress in humans by Richard Rahe and others established the view that stress is caused by distinct, measurable life stressors, and further, that these life stressors can be ranked by the median degree of stress they produce (leading to the Holmes and Rahe Stress Scale). Thus, stress was traditionally conceptualized to be a result of external insults beyond the control of those experiencing the stress. More recently, however, it has been argued that external circumstances do not have any intrinsic capacity to produce stress, but instead their effect is mediated by the individual's perceptions, capacities, and understanding.

All of us experience anxiety, stress or tension at some or other stage in our lives. If we do not cope with it immediately and deliberately it might overwhelm us and immobilise us for the tasks that we have to perform.

It forms the cornerstone of all forms of dis-ease. Therefore it is necessary to know about the effects of anxiety, stress and tension and how we can cope with it. In this case I am talking about stress as dis-ease and not as a disease. It is a symptom of a disease when the thyroid gland is malfunctioning for instance. Then obviously you should get treatment for the thyroid gland that is malfunctioning and that will relieve the stress.

Anxiety, stress and tension are terms that are often used as synonyms. According to the dictionary, anxiety refers to a state of being anxious about eminent danger; being excessively concerned about the future. Anxiety, however, is usually not linked to a specific person, situation or experience which is feared. It is a vague, undefined, tense feeling of dread that one experiences and which is difficult to control.

Stress refers to an effort or demand upon physical or mental energy. Stress produces the same feelings as anxiety but it is usually linked to a specific significant other person, situation or experience that one fears. Examples would include an examination, assignment or a superior person. Tension on the other hand refers to mental strain or excitement; a strained state or relationship. If the symptoms are experienced acutely, it is referred to as a panic attack.

All these definitions have in common the fact that individuals experience excessive uneasiness and that they worry as a result of perceived (excessive or dangerous) demands that are made on them on an interpersonal level. The anxiety, worry or tenseness could result in the impairment of social, occupational, physical and other important areas of functioning. One could also say that individuals experience an excessive sensitivity for other's opinions, attitudes and demands.

Symptoms
Experiencing anxiety, stress or tension can lead to symptoms such as:

(A) Psychosomatic symptoms

- Getting tired very easily
- Muscle tension
- Palpitations - a pounding heart or an accelerated heart rate
- Sweating (cold sweat) or hot flushes
- Shortness of breath, a feeling of being choked or a smothering sensation with pain in the chest
- Nausea or abdominal distress
- Feeling numb or experiencing tingling sensations in certain parts of the body
- Experiencing a dry mouth and the urge to swallow repeatedly
- Diarrhoea
- Impotence or an excessive need for sex
- Asthma
- Feeling dizzy, unsteady, lightheaded or faint

(B) Emotional symptoms

- Feeling depressed and downhearted at times
- Feeling detached from oneself
- Fear of losing control or going crazy
- Fear of dying
- Intense apprehension, fearfulness, or terror, often associated with feelings of impending doom

(C) Intellectual symptoms

- Difficulty concentrating on a specific task or experiencing the mind going blank (clouding of consciousness)
- Forgetfulness, resulting from preoccupation with the problem

(D) Behavioural symptoms

- Restlessness, feeling keyed up or on edge
- Trembling or shaking
- Short tempered
- Withdrawal from interpersonal interaction
- Excessive smoking, sleeping and/or drinking
- Sleep disturbances (finding it difficult to fall asleep or experiencing nightmares, sleeping excessively or restless sleep - waking up tired)
- Not feeling hungry or eating excessively
- Slow psychomotor co-ordination

Very often a person who experiences stress is inclined to shy away from interpersonal contact and is thus inclined to bottle up feelings instead of sharing them with others. This bottling up of feelings and the corresponding tension could lead to psychosomatic symptoms as well as disturbed sleep, sexual and eating patterns. Your need for sex might be diminished or you could experience an excessive need for it to comfort you. You also might not feel hungry.

In an attempt to overcome anxiety or tension you might resort to excessive smoking, sleeping and drinking. When stress is prevalent, depression is underlying or dormant. Once you give up handling and competing with the problems creating the stress, depression sets in. What can we do about it if we experience stress and anxiety or underlying depression?

How to cope with stress

Peter discovered that he was in debt. This realization made it impossible for him to sleep. He became very anxious and depressed and wanted to commit suicide. He complained about it to a good friend. The friend listened patiently as Peter told him of all his problems, but when he replied, he made no mention of the debts. This surprised Peter very much.

Instead of discussing the debts, the friend talked about what Peter owned, about his money, and about the friends who were ready to help him. Suddenly the disturbed Peter saw his problems in a new light. He stopped wasting his energy on problems and debts and concentrated on the abilities he actually had. He then discovered that he had enough power and resources to solve his problem.

This story teaches us that a healthy person is not one who is free of problems, but one who deals with them. One day's happiness can make a person forget his/her misfortune, and one day's misfortune can make a person forget his/her past happiness.

- Your subjective perception could be different:
  As I have mentioned, anxiety or stress implies an over-sensitivity to other's opinions, attitudes and demands. It is the meaning that you attach to significant other people's opinions, attitudes and demands that brings about the tension.

  This being the case, then surely communication between the concerned parties should alleviate the matter. It sounds easy enough but we all have reservations about communicating about matters of a personal nature. We always think: 'What will he think of me if I told him this problem that I experience', or ' She would think I am stupid to have such a problem,' or 'Why can't I just cope with problems like anybody else?' or 'I am sure I am the only one with such a problem, nobody will understand me.'

  Most emotional problems are related to the perceptions and expectations we have of significant other people. The questions above confirm this view. One could thus also say that in one's (subjective) definition of the problem lies the solution to it as well.

- Keep fit:
  To be able to perceive and handle problems effectively, one must also be as physically fit as possible. Tiredness can negatively influence the perception of, definition of and possible solution of a problem. The problem may then be perceived as overwhelming and insoluble.
- Your definition of the problem could be different:
  The solution to a problem lies in its meaning, perception and definition. If you define a problem as overwhelming, it will appear insoluble. Furthermore, if you think about a problem on your own, you will only have one point of view.

  In the example earlier, Peter's friend introduced a different perspective and by implication a (different) solution to the problem. When a person is gets ill in the West, they say he must have a rest. He is visited by a few people and visits are socially controlled. In the East, when a person gets ill, his bed is placed in the living room.

  The sick person is the centre of attention and he is visited by many family members and friends. If visitors stayed away, it would be seen as uncivil and as a lack of sympathy. In this way relationships are confirmed. In the West relationships very often become severed when a person becomes ill and the sick person is "forgotten" at his/her office until he/she returns. He/she does not experience being missed by colleagues and friends.

- Begin to communicate about the problem: So, if you find it difficult to talk to someone about your problems or negative experiences, find a psychologist or a good friend and start to practise talking to him/her first. Maybe that will give you enough courage to talk to others as well. By sharing a problem and feeling understood, the impact of a problem is alleviated.

There is a saying: "Nature is explained but people are understood." There is no need for you to ever explain your behaviour if you feel you have done the best you can. We only need to understand each other.

- Take a tranquilliser for stress situations: Very often people ask whether or not it may be simpler to take a tranquilliser to alleviate the anxiety or tension. There are times when tranquillisers may come in handy on a short term basis.

  For example when a loved one dies and you find it difficult to cope with the emotional impact of the event or if you are the bridegroom who has to make a speech at your wedding and you suffer from stage fright, tranquillisers could help you cope with a temporary tense situation. (The bridegroom might however pay for it in another way later on that evening - much to his embarrassment! Tranquillisers and sex do not really work together.)

  Feeling tense could be compared to the waves of the sea. You are not equally tense at all times, just as the intensity of the waves differ at different times. The tenseness builds up to a peak and then calms down a bit, similar to high tide when the sea is much more active. The waves come and go.

  The tranquilliser succeeds in cutting out peak emotional experiences so that you do not experience it as so overwhelming. The 'wave' of emotion can thus not develop fully under the influence of a tranquilliser and in this way you are protected for as long as you take the tranquilliser.

- Learn to ride the wave of emotion: But can you carry on taking the medication for ever? Would it not be better to learn how to surf, so that you can ride the waves of emotion when they come? For this reason it is important to talk to as many people as possible about your experiences, especially to experts. If you bottle feelings up, you are 'freezing' the emotional wave and the body is kept in a state of readiness, like a horse that is ready to race. The adrenalin is still pumping and the heart rate is still high to keep you in that state of readiness.

  Also many of the corresponding symptoms that were mentioned earlier, still prevail. Obviously the body cannot be kept in a state of readiness indefinitely and something must give in. Usually it is the heart which works the hardest and is the most vulnerable. So, does it pay to bottle up (and freeze emotions)? Definitely not.

Models of Stress Management
Transactional Model

Richard Lazarus and Susan Folkman suggested in 1984 that stress can be thought of as resulting from an “imbalance between demands and resources” or as occurring when “pressure exceeds one's perceived ability to cope”. Stress management was developed and premised on the idea that stress is not a direct response to a stressor but rather one's resources and ability to cope mediate the stress response and are amenable to change, thus allowing stress to be controllable.

In order to develop an effective stress management programme it is first necessary to identify the factors that are central to a person controlling his/her stress, and to identify the intervention methods which effectively target these factors. Lazarus and Folkman's

interpretation of stress focuses on the transaction between people and their external environment (known as the Transactional Model). The model conceptualizes stress as a result of how a stressor is appraised and how a person appraises his/her resources to cope with the stressor. The model breaks the stressor-stress link by proposing that if stressors are perceived as positive or challenging rather than a threat, and if the stressed person is confident that he/she possesses adequate rather than deficient coping strategies, stress may not necessarily follow the presence of a potential stressor. The model proposes that stress can be reduced by helping stressed people change their perceptions of stressors, providing them with strategies to help them cope and improving their confidence in their ability to do so.

Health Realization/Innate Health Model

The health realization/innate health model of stress is also founded on the idea that stress does not necessarily follow the presence of a potential stressor. Instead of focusing on the individual's appraisal of so-called stressors in relation to his or her own coping skills (as the transactional model does), the health realization model focuses on the nature of thought, stating that it is ultimately a person's thought processes that determine the response to potentially stressful external circumstances. In this model, stress results from appraising oneself and one's circumstances through a mental filter of insecurity and negativity, whereas a feeling of well-being results from approaching the world with a "quiet mind," "inner wisdom," and "common sense".

This model proposes that helping stressed individuals understand the nature of thought--especially providing them with the ability to recognize when they are in the grip of insecure thinking, disengage from it, and access natural positive feelings--will reduce their stress.

Techniques of Stress Management

There are several ways of coping with stress. Some techniques of time management may help a person to control stress. In the face of high demands, effective stress management involves learning to set limits and to say "No" to some demands that others make. The following techniques have been recently dubbed “Destressitizers” by The Journal of the Canadian Medical Association. A destressitizer is any process by which an individual can relieve stress. Techniques of stress management will vary according to the theoretical paradigm adhered to, but may include some of the following:

Measuring Stress

Levels of stress can be measured. One way is through the use of the Holmes and Rahe Stress Scale to rate stressful life events. Changes in blood pressure and galvanic skin response can also be measured to test stress levels, and changes in stress levels. A digital thermometer can be used to evaluate changes in skin temperature, which can indicate activation of the fight or flight response drawing blood away from the extremities.

Stress management has physiological and immune benefit effects.

Effectiveness of Stress Management

Positive outcomes are observed using a combination of non-drug interventions:

- treatment of anger or hostility,

- autogenic training
- talking therapy (around relationship or existential issues)
- biofeedback
- cognitive therapy for anxiety or clinical depression

Module 4: Counseling psychology

Counseling psychology is a psychological specialty that encompasses research and applied work in several broad domains: counseling process and outcome; supervision and training; career development and counseling; diversity and multiculturalism; and prevention and health. Some unifying themes among counseling psychologists include a focus on assets and strengths, person-environment interactions, educational and career development, brief interactions, and a focus on intact personalities.

Two differences in particular may distinguish the field of counseling from the field of counseling psychology: first, counseling is almost entirely an applied field: that is, the occupation of counselors is generally counseling and psychotherapy. In contrast, counseling psychology is both a research and applied field; applied work might include teaching, consultation, and clinical work, which in turn could include supervision, assessment, and forensic evaluation, in addition to counseling or psychotherapy. A second distinction is the breadth of topics encompassed by counseling psychology. In addition to studying and teaching *counseling*, counseling psychologists also engage in research in areas such as career development, culture, ethnicity, gender, identity development, personality, sexual orientation, race, and research methodology.

Employment settings

Counseling psychologists are employed in a variety of settings depending on the services they provide and the client populations they serve. Some are employed in colleges and universities as teachers, supervisors, researchers, and service providers. Others are employed in independent practice providing counseling, psychotherapy, assessment, and consultation services to individuals, couples/families, groups, and organizations. Additional settings in which counseling psychologists practice include community mental health centers, Veterans Administration Medical Centers and other facilities, family services, health maintenance organizations, rehabilitation agencies, business and industrial organizations and consulting within firms.

Counseling Process and Outcome

Counseling psychologists are interested in answering a variety of research questions regarding counseling process and outcome. Counseling process might be thought of as how or why does counseling happen and progress. Counseling outcome addresses whether or not counseling is effective, under what conditions is counseling effective, and what outcomes are considered effective- such as symptom reduction, behavior change, or quality of life improvement. Topics commonly explored in the study of counseling process and outcome include therapist variables, client variables, the

counseling or therapeutic relationship, cultural variables, process and outcome measurement, mechanisms of change, and process and outcome research methods.

Therapist variables: These include characteristics of a counselor or psychotherapist, as well as therapist technique, behavior, theoretical orientation and training. In terms of therapist behavior, technique and theoretical orientation, research on adherence to therapy models has found that adherence to a particular model of therapy can be helpful, detrimental, or neutral in terms of impact on outcome (Imel & Wampold, 2008). Research on the impact of training and experience is still somewhat contradictory and even counter-intuitive. For example, a recent study found that age-related training and experience, but not amount or quality of contact with older people, is related to older clients. However, a recent meta-analysis of research on training and experience suggests that experience level is only slightly related to accuracy in clinical judgment Higher therapist experience has been found to be related to less anxiety, but also less focus. This suggests that there is still work to be done in terms of training clinicians and measuring successful training.

Client variables: Client characteristics such as help-seeking attitudes and attachment style have been found to be related to client use of counseling, as well as expectations and outcome. Stigma against mental illness can keep people from acknowledging problems and seeking help. Public stigma has been found to be related to self-stigma, attitudes towards counseling, and willingness to seek help. In terms of attachment style, clients with avoidant styles have been found to perceive greater risks and fewer benefits to counseling, are less likely to seek professional help, compared with securely attached clients. Those with anxious attachment styles perceive greater benefits as well as risks to counseling. Educating clients about expectations of counseling can improve client satisfaction, treatment duration and outcomes, and is an efficient and cost-effective intervention.

Counseling relationship: The relationship between a counselor and client is the feelings and attitudes that a client and therapist have towards one another, and the manner in which those feelings and attitudes are expressed. It may be thought of in three parts: transference counter transference, working alliance, and the real- or personal- relationship.Another theory about the function of the counseling relationship is known as the secure-base hypothesis, which is related to attachment theory. This hypothesis proposes that the counselor acts as a secure-base from which clients can explore and then check in with. Secure attachment to one's counselor and secure attachment in general have been found to be related to client exploration. Insecure attachment styles have been found to be related to less session depth, compared to sessions of securely attached clients

Cultural variables: Counseling psychologists are interested in how culture relates to help-seeking and counseling process and outcome. Helms' racial identity model can be useful for understanding how the relationship and counseling process might be affected by the client's and counselor's racial identity. Recent research suggests that clients who are Black are at risk for experiencing racial micro-aggressions from counselors who are White.

Efficacy for working with clients who are lesbians, gay men, or bisexual might be related to therapist demographics, gender, sexual identity development, sexual orientation, and professional experience. Clients who have multiple oppressed identities might be especially at-risk for experiencing unhelpful situations with counselors, so counselors might need help with gaining expertise for working with clients who are transgender, lesbian, gay, bisexual, or transgender people of color, and other oppressed populations. .

Gender role socialization can also present issues for clients and counselors. Implications for practice include being aware of stereotypes and biases about male and female identity, roles and behavior such as emotional expression.

Outcome measurement: Counseling outcome measures might look at a general overview of symptoms, symptoms of specific disorders, or positive outcomes, such as subjective well-being or quality of life. The Outcome Questionnaire-45 is a 45 item self-report measure of psychological distress. An example of disorder specific measure would be the Beck Depression Inventory. The Quality of Life Inventory is a 17 item self-report life satisfaction measure.

Process and Outcome Research Methods

Counseling process and outcome research employs a variety of research methodologies to answer questions about if, how, and why counseling works. Quantitative methods include randomly controlled clinical trials, correlation studies over the course of counseling, or laboratory studies about specific counseling process and outcome variables. Qualitative research methods can involve conducting, transcribing and coding interviews; transcribing and/or coding therapy sessions; or fine-grain analysis of single counseling sessions or counseling cases.

Psychotherapy

Psychotherapy is an intentional interpersonal relationship used by trained psychotherapists to aid a client or patient in problems of living. It aims to increase the individual's well-being. Psychotherapists employ a range of techniques based on experiential relationship building, dialogue, communication and behavior change and that are designed to improve the mental health of a client or patient, or to improve group relationships (such as in a family). Psychotherapy may also be performed by practitioners with a number of different qualifications, including psychologists, marriage and family therapists, occupational therapists, licensed clinical social workers, counselors, psychiatric nurses, psychoanalysts, and psychiatrists.

Etymology

The word psychotherapy comes from the Ancient Greek words *psyche*, meaning breath, spirit, or soul and *therapies* or *therapeuein*, to nurse or cure. Its use was first noted around 1890. It is defined as the relief of distress or disability in a one person by another, using an approach based on a particular theory or paradigm, and that the agent performing the therapy has had some form of training in delivering this. It is these latter two points which distinguish psychotherapy from other forms of counseling or care giving.

Forms

Most forms of psychotherapy use spoken conversation. Some also use various other forms of communication such as the written word, artwork, drama, narrative story or music. Psychotherapy occurs within a structured encounter between a trained therapist and client(s). Purposeful, theoretically based psychotherapy began in the 19th century with psychoanalysis; since then, scores of other approaches have been developed and continue to be created.

Therapy is generally employed in response to a variety of specific or non-specific manifestations of clinically diagnosable and/or existential crises. Treatment of everyday problems is more often referred to as counseling (a distinction originally adopted by Carl Rogers). However, the term counseling is sometimes used interchangeably with "psychotherapy".

Whilst some psychotherapeutic interventions are designed to treat the patient employing the medical model, many psychotherapeutic approaches do not adhere to the symptom-based model of "illness/cure". Some practitioners, such as humanistic therapists, see themselves more in a facilitative/helper role. As sensitive and deeply personal topics are often discussed during psychotherapy, therapists are expected, and usually legally bound, to respect client or patient confidentiality. The critical importance of confidentiality is enshrined in the regulatory psychotherapeutic organizations' codes of ethical practice.

Psychotherapy systems

There are several main broad systems of psychotherapy:

- Psychoanalytic - it was the first practice to be called a psychotherapy. It encourages the verbalization of all the patient's thoughts, including free associations, fantasies, and dreams, from which the analyst formulates the nature of the unconscious conflicts which are causing the patient's symptoms and character problems.
- Cognitive behavioral - generally seeks by different methods to identify and transcend maladaptive cognition, appraisal, beliefs and reactions with the aim of influencing destructive negative emotions and problematic dysfunctional behaviors.
- Psychodynamic - is a form of depth psychology, the primary focus of which is to reveal the unconscious content of a client's psyche in an effort to alleviate psychic tension. Although its roots are in psychoanalysis, psychodynamic therapy tends to be briefer and less intensive than traditional psychoanalysis.
- Existential - is based on the existential belief that human beings are alone in the world. This isolation leads to feelings of meaninglessness, which can be overcome only by creating one's own values and meanings.
- Humanistic - emerged in reaction to both behaviorism and psychoanalysis and is therefore known as the Third Force in the development of psychology. It is explicitly concerned with the human context of the development of the individual with an emphasis on subjective meaning, a rejection of determinism, and a concern for positive growth rather than pathology. It posits an inherent human capacity to maximize potential, 'the self-actualizing

tendency'. The task of Humanistic therapy is to create a relational environment where this tendency might flourish.
- Brief - "Brief therapy" is an umbrella term for a variety of approaches to psychotherapy. It differs from other schools of therapy in that it emphasizes (1) a focus on a specific problem and (2) direct intervention. It is solution-based rather than problem-oriented. It is less concerned with how a problem arose than with the current factors sustaining it and preventing change.
- Systemic - seeks to address people not at an individual level, as is often the focus of other forms of therapy, but as people in relationship, dealing with the interactions of groups, their patterns and dynamics (includes family therapy&marriage counseling).
- Transpersonal - Addresses the client in the context of a spiritual understanding of consciousness.

There are hundreds of psychotherapeutic approaches or schools of thought. By 1980 there were more than 250. By 1996 there were more than 450,. The development of new and hybrid approaches continues around the wide variety of theoretical backgrounds. Many practitioners use several approaches in their work and alter their approach based on client need.

General concerns

Psychotherapy can be seen as an interpersonal invitation offered by (often trained and regulated) psychotherapists to aid clients in reaching their full potential or to cope better with problems of life. Psychotherapists usually receive remuneration in some form in return for their time and skills. This is one way in which the relationship can be distinguished from an altruistic offer of assistance.

Psychotherapists and counselors often require to create a therapeutic environment referred to as the frame, which is characterized by a free yet secure climate that enables the client to open up. The degree to which client feels related to the therapist may well depend on the methods and approaches used by the therapist or counselor.

Psychotherapy often includes techniques to increase awareness, for example, or to enable other choices of thought, feeling or action; to increase the sense of well-being and to better manage subjective discomfort or distress. Psychotherapy can be provided on a one-to-one basis or in group therapy. It can occur face to face, over the telephone, or, much less commonly, the Internet. Its time frame may be a matter of weeks or many years. Therapy may address specific forms of diagnosable mental illness, or everyday problems in managing or maintaining person relationships or meeting personal goals. Treatment of everyday problems is more often referred to as **counseling** (a distinction originally adopted by Carl Rogers) but the term is sometimes used interchangeably with "psychotherapy".

Psychotherapists employ a range of techniques to influence or persuade the client to adapt or change in the direction the client has chosen. These can be based on clear thinking about their options; experiential relationship building; dialogue, communication and adoption of behavior change strategies. Each is designed to improve the mental health of a client or patient, or to improve group relationships (as in a family). Most forms of psychotherapy use only spoken conversation, though some also use other forms of communication such as the written word, artwork, drama, narrative story, or therapeutic touch. Psychotherapy occurs within a structured encounter between a trained therapist and client(s). Because sensitive

topics are often discussed during psychotherapy, therapists are expected, and usually legally bound, to respect client or patient confidentiality.

Psychotherapists are often trained, certified, and licensed, with a range of different certifications and licensing requirements depending on the jurisdiction. Psychotherapy may be undertaken by psychologists, counseling psychologists, social workers, marriage-family therapists, expressive therapists, trained nurses, psychiatrists, psychoanalysts, mental health counselors, school counselors, or professionals of other mental health disciplines. Psychiatrists have medical qualifications and may also administer prescription medication. The primary training of a psychiatrist focuses on the biological aspects of mental health conditions, with some training in psychotherapy. Psychologists have more training in psychological assessment and research and, in addition, in-depth training in psychotherapy. Social workers have specialized training in linking patients to community and institutional resources, in addition to elements of psychological assessment and psychotherapy. Marriage-Family Therapists have specific training and experience working with relationships and family issues. A Licensed Professional Counselor (LPC) generally has special training in career, mental health, school, or rehabilitation counseling to include evaluation and assessments as well as psychotherapy. Many of the wide variety of training programs are multi-professional, that is, psychiatrists, psychologists, mental health nurses, and social workers may be found in the same training group. Consequently, specialized psychotherapeutic training in most countries requires a program of continuing education after the basic degree, or involves multiple certifications attached to one specific degree.

Specific schools and approaches

In practices of experienced psychotherapists, therapy will not represent pure types, but will draw aspects from a number of perspectives and schools.

Psychoanalysis

Psychoanalysis was developed in the late 1800s by Sigmund Freud. His therapy explores the dynamic workings of a mind understood to consist of three parts: the hedonistic *id* (German: *das Es*, "the it"), the rational *ego* (*das Ich*, "the I"), and the moral *superego* (*das Überich*, "the above-I"). Because the majority of these dynamics are said to occur outside people's awareness, Freudian psychoanalysis seeks to probe the unconscious by way of various techniques, including dream interpretation and free association. Freud maintained that the condition of the unconscious mind is profoundly influenced by childhood experiences. So, in addition to dealing with the defense mechanisms employed by an overburdened ego, his therapy addresses fixations and other issues by probing deeply into clients' youth.

Other psychodynamic theories and techniques have been developed and used by psychotherapists, psychologists, psychiatrists, personal growth facilitators, occupational therapists and social workers. Techniques for group therapy have also been developed. While behavior is often a target of the work, many approaches value working with feelings and thoughts. This is especially true of the psychodynamic schools of psychotherapy, which today include Jungian therapy and Psychodrama as well as the psychoanalytic schools. Other approaches focus on the link between the mind and body and try to access deeper levels of the psyche through manipulation of the physical body which gave rise to various *body movement* based psychotherapeutic approaches such as neo-Reichian Alexander Lowen's Bioenergetic analysis, Peter Levine's Somatic Experiencing, Jack Rosenberg's integrative body psychotherapy, Pat Ogden's sensorimotor psychotherapy etc. They are not to be confused with alternative medicine body-work which seeks primarily to improve physical health because despite the fact that bodywork techniques (for example Alexander

Technique, Rolfing, and the Feldenkrais Method) affect the emotions, they are not overtly designed to work on psychological issues.]

Gestalt Therapy

Gestalt Therapy is a major overhaul of psychoanalysis. In its early development it was called "concentration therapy" by its founders, Frederick and Laura Perls. However, its mix of theoretical influences became most organized around the work of the gestalt psychologists; thus, by the time 'Gestalt Therapy, Excitement and Growth in the Human Personality' (Perls, Hefferline, and Goodman) was written, the approach became known as "Gestalt Therapy."

Gestalt Therapy stands on top of essentially four load bearing theoretical walls: phenomenological method, dialogical relationship, field-theoretical strategies, and experimental freedom. Some have considered it an existential phenomenology while others have described it as a phenomenological behaviorism. Gestalt therapy is a humanistic, holistic, and experiential approach that does not rely on talking alone, but facilitates awareness in the various contexts of life by moving from talking about situations relatively remote to action and direct, current experience.

Group Psychotherapy

The therapeutic use of groups in modern clinical practice can be traced to the early years of the 20th century, when the American chest physician Pratt, working in Boston, described forming 'classes' of fifteen to twenty patients with tuberculosis who had been rejected for sanatorium treatment. The term group therapy, however, was first used around 1920 by Jacob L. Moreno, whose main contribution was the development of psychodrama, in which groups were used as both cast and audience for the exploration of individual problems by reenactment under the direction of the leader. The more analytic and exploratory use of groups in both hospital and out-patient settings was pioneered by a few European psychoanalysts who emigrated to the USA, such as Paul Schilder, who treated severely neurotic and mildly psychotic out-patients in small groups at Bellevue Hospital, New York. The power of groups was most influentially demonstrated in Britain during the Second World War, when several psychoanalysts and psychiatrists proved the value of group methods for officer selection in the War Office Selection Boards. A chance to run an Army psychiatric unit on group lines was then given to several of these pioneers, notably Wilfred Bion and Rickman, followed by S. H. Foulkes, Main, and Bridger. The Northfield Hospital in Birmingham gave its name to what came to be called the two 'Northfield Experiments', which provided the impetus for the development since the war of both social therapy, that is, the therapeutic community movement, and the use of small groups for the treatment of neurotic and personality disorders.

Medical and Non-Medical Models

A distinction can also be made between those psychotherapies that employ a medical model and those that employ a humanistic model. In the medical model the client is seen as unwell and the therapist employs their skill to help the client back to health. The extensive use of the DSM-IV, the diagnostic and statistical manual of mental disorders in the United States, is an example of a medically-exclusive model.

The humanistic model of non medical in contrast strives to depathologise the human condition. The therapist attempts to create a relational environment conducive to

experiential learning and help build the client's confidence in their own natural process resulting in a deeper understanding of themselves. An example would be gestalt therapy.

Some psychodynamic practitioners distinguish between more uncovering and more supportive psychotherapy. Uncovering psychotherapy emphasizes facilitating the client's insight into the roots of their difficulties. The best-known example of an uncovering psychotherapy is classical psychoanalysis. Supportive psychotherapy by contrast stresses strengthening the client's defenses and often providing encouragement and advice. Depending on the client's personality, a more supportive or more uncovering approach may be optimal. Most psychotherapists use a combination of uncovering and supportive approaches.

Cognitive Behavioral Therapy

Cognitive behavioral therapy refers to a range of techniques which focus on the construction and re-construction of people's cognitions, emotions and behaviors. Generally in CBT the therapist, through a wide array of modalities, helps clients assess, recognize and deal with problematic and dysfunctional ways of thinking, emoting and behaving.

Behavior Therapy

Behavior therapy focuses on modifying overt behavior and helping clients to achieve goals. This approach is built on the principles of learning theory including operant and respondent conditioning, which makes up the area of applied behavior analysis or behavior modification. This approach includes acceptance and commitment therapy, functional analytic psychotherapy, and dialectical behavior therapy. Sometimes it is integrated with cognitive therapy to make cognitive behavior therapy. By nature, behavioral therapies are empirical (data-driven), contextual (focused on the environment and context), functional (interested in the effect or consequence a behavior ultimately has), probabilistic (viewing behavior as statistically predictable), monistic (rejecting mind-body dualism and treating the person as a unit), and relational (analyzing bidirectional interactions).[10]

Expressive Therapy

Expressive therapy is a form of therapy that utilizes artistic expression as its core means of treating clients. Expressive therapists use the different disciplines of the creative arts as therapeutic interventions. This includes the modalities dance therapy, drama therapy, art therapy, music therapy, writing therapy, among others. Expressive therapists believe that often the most effective way of treating a client is through the expression of imagination in a creative work and integrating and processing what issues are raised in the act.

Narrative Therapy

Narrative therapy gives attention to each person's "dominant story" by means of therapeutic conversations, which also may involve exploring unhelpful ideas and how they came to prominence. Possible social and cultural influences may be explored if the client deems it helpful.

Integrative Psychotherapy

Integrative Psychotherapy represents an attempt to combine ideas and strategies from more than one theoretical approach. These approaches include mixing core beliefs and combining

proven techniques. Forms of integrative psychotherapy include multimodal therapy, the transtheoretical model, cyclical psychodynamics, systematic treatment selection, cognitive analytic therapy, Internal Family Systems Model, multitheoretical psychotherapy and conceptual interaction. In practice, most experienced psychotherapists develop their own integrative approach over time.

Hypnotherapy

Hypnotherapy is therapy that is undertaken with a subject in hypnosis. Hypnotherapy is often applied in order to modify a subject's behavior, emotional content, and attitudes, as well as a wide range of conditions including dysfunctional habits, anxiety, stress-related illness, pain management, and personal development.

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Course Name: Diseases in Public Health

Introduction to diseases in Public Health
In this module, we will present the diseases with the highest public health importance; explain their causation, the complications, treatments and their public health implications. The chapter is divided into communicable and non-communicable diseases, diseases related to lifestyle and injuries.

Summary

This course gives the learner overviews on the following aspects: background and burden of malaria in Uganda; social and economic impacts of malaria; causative agents and the mode of transmission; current interventions in the prevention and control of malaria in Uganda; recommended treatment regimens for adults, children and pregnant women; drug resistance in malaria (against the aminoquinolines) and finally, malaria interaction with HIV/AIDS.

Course work

The Ministry of Health of your country, together with WHO, are designing a new web page and need good information about non-communicable diseases to include on this page for public awareness and sensitising.

In not more than **1500 words,** give detailed and structured information (including illustrations to aid understanding and conveying the message in the best possible way to a broad public) on **ONE** of these diseases:

- sickle cell disease
- breast cancer
- cervix cancer
- diabetes mellitus

Gonorrhea

Communicable diseases

- Malaria Resource
- Tuberculosis and multi-drug-resistant-TB Resource
- HIV/AIDS Resource
- Syphilis Resource
- Whooping cough Resource
- Avian influenza (ex. of haemorrhagic fever) Resource
- Cholera Resource
- Rabies Resource
- Pneumonia Resource
- Measles Resource
- Chickenpox Resource
- Anthrax Resource

- Gonorrhea Resource
- Typhoid fever Resource
- Bilharzia (or schistosomias) Resource
-

Non communicable diseases

- Hypertension Resource
- Diphtheria Resource
- Coronary/Ischaemic heart disease Resource
- Injuries Resource
- Smoking Resource
- Sedentary living Resource
- Fatty diet Resource
- Alcohol and other drugs

Background

Background In almost all parts of Uganda, temperature and rainfall are sufficient to allow stable year round malaria transmission. Malaria is ranked the number one reported disease, causing high mobility and high economic and social impact. Malaria is highly epidemic in 95% of the country, an area that covers approximately 90% of the population of 29.4 million.

The remaining 5% consists of seasonal epidemic-prone malaria transmission in the highlands of the South-West and Mid-West, along the Eastern borders with Kenya and the North-Eastern border of Sudan. This area covers approximately 10% of the population.

Worldwide malaria causes approximately 500 million clinical cases and one million death each year (3,000 per day), 90% of them in Sub-Sahara-Africa. Because of the low levels of immunity to infection, children under the age of five are the group most heavily affected by malaria.

MALARIA

Burden of malaria in Uganda Some numbers:

- Malaria accounts for 20% of in-patient deaths.
- It has a case fatality rate of 3-5%.
- 23.4% of total discounted life years are lost.
- It accounts for 23% up to 11% of deaths among the under 5 years old in high and medium malaria transmission areas respectively.
- It is a major killer of refugees and internally displaced persons.

Economical and socio-cultural impact of malaria

Economic and socio-cultural impact of malaria First of all, there are the direct costs involved in the treatment seeking, the treatment and in some cases the funeral expenses. Prevention of the disease is expenditure. A poor malaria stricken family may spend up to 25% of its income on malaria treatment and prevention. Household

surveys in Kabarole and Bundibugyo districts showed that the direct cost of treatment for an episode of suspected malaria averages 4,500 USh and 2000 USh in rural settings.

Moreover, by affecting families most during the rainy season when families can least afford to be sick, malaria interferes with their farm activities thus causing more poverty. It is estimated that malaria afflicted families average can only harvest 40% of crops harvested by healthy families.
In other economic fields, it generates a loss of household income through absenteeism from work. It is estimated that workers suffering from a malaria bout can be incapacitated for 5 to 20 days. A study in Apac, Kampala and Rukungiri districts showed that malaria was responsible for 54%, 33% and 50% respectively of absenteeism from work per month.

Malaria has also serious socio-cultural consequences. When it affects school-going children, it causes absenteeism from school thus affecting school performance. It is estimated that in endemic areas like Uganda, malaria may impair as much as 60% of school children learning ability.
Lastly, it is a huge burden on the health services. It is estimated that 40% of health facility expenditures in sub-Saharan African are spent on malaria.

- Epidemiology of malaria in Uganda

Epidemiology of malaria in UgandaParasite species All four common plasmodia species occur in Uganda, but Plasmodium falciparum is by far the most common contributing to 90-98% of the parasite population. The second most common species is Plasmodium malariae with 1-3% as a mono-infection, but it is more commonly found as a mixed infection with Plasmodium falciparum (up to 16% of childhood infections in highly endemic areas). Both Plasmodium vivax and Plasmodium Ovale are rare and do not exceed 1-1.5% of malaria cases.

Vectors. The most common vectors are Anopheles gambiae and Anopheles funestus with Anopheles gambiae being the dominant species in most places. Only during the dry seasons when permanent water bodies often are the most common breeding sites and in higher altitude areas is Anopheles funestus found more frequently.

Intervention strategy for Uganda: the 2005-2010 National Malaria Control Plan

- Malaria prevention through the use of Insecticide Treated Nets (ITNs) with special emphasis on Long Lasting Insecticidal Nets (LLNs).
- Indoor Residual Spraying (IRS) with focus on low and epidemic prone areas
- Universal access to Artemisinin-based Combination Therapy (ACT) and improved diagnosis as well as severe malaria case management
- Emphasis on treatment and prevention of malaria in pregnancy including Intermittent Preventive Treatment of malaria during pregnancy (IPTp)
- Intensive Information, Education and Communication (IEC)

- Integration of malaria control into a balanced health system development with emphasis on human resource development
- Strong M & E

Prevention of malaria
The spread of malaria can be prevented in 4 ways;

1. The first prevention method is vector control. It involves reducing the mosquito population by killing mosquito larvae or adult through the use of insecticides or the destruction of breeding sites. Intensive vector control efforts in late 1940s successfully eradicated malaria in a wide geographic area including the USA, Europe and parts of Asia. However, such efforts were largely unsuccessful in Africa and most parts of Asia.
2. Secondly, you can reduce human mosquito contacts by the use of ITNs, protective clothing, repellents or indoor spraying of insecticides.
3. Thirdly, it is possible to prevent the establishment of infection through the use of Intermittent Preventive Treatment (IPT) or chemoprophylaxis. This use of IPT with prophylaxis anti-malarial drugs is the primary means of preventing malaria among pregnant women and children, who are particularly vulnerable to infection is. Traditionally chloroquine has been used for prophylaxis, but the wide spread emergence of chloroquine resistance dosing have made this approach ineffective. Currently, most IPT consists of 2 or 3 doses of sulfadoxine-pyrimethamine (SP). Ongoing studies are investing the efficacy of IPT regimens containing arteminisinin derivatives in combination with other antimalarial drugs. The recommended IPT regimen for pregnant women and children is: 500mg sulfadoxine + 25mg pyrimethamine (1 tab). 3 tablets are given at each dose. IPT-SP doses should not be given more frequently than once a month.
4. The fourth way of preventing malaria is to rapidly and effectively treat those who are infected in order to reduce the reservoir of infected people. There is currently no vaccine for malaria although several trials are under way. But malaria is treatable and curable if detected early and if treatment is initiated promptly.

Emerging malarial issues

Emerging malarial issues

1. Wide spread drug resistance This drug resistance of the species has resulted from sub-optional dosing and overuse of drugs such as chloroquine. The chloroquine resistance is so widespread that it is no longer recommended for first-line treatment of uncomplicated falciparum malaria in most countries.
Resistance to two other widely used drugs, SP and mefloquine is increasing as well. Because of the increasing resistance the WHO now recommends combination treatment based on artemisinin derivative for the first-line treatment of falciparum malaria in Africa and Asia.
The current recommended antimalarial co-formulation include:
Artemether + lumefantrine
Mefloquine + artesunate

Amodiaquine + artesunate
Sulfadoxine-pyrimethamine SP+ artesunate

2. Malaria and HIV interaction

The interaction between malaria and HIV infection is complex and subtle. There are several potential ways in which malaria and HIV infection could interact, co-infection could affect the progression or clinical manifestation of either conditions, infection with either malarial parasite or HIV could facilitate transmission of the other, co-infection could affect treatment outcomes, and there may be toxicities or interactions between the drugs used to treat the different conditions.

Effects of HIV on malaria

By compromising the acquired immunity of adults or children in endemic areas, HIV infection increases the incidence of malaria and the clinical severity of infection. Studies throughout Sub-Saharan Africa have found out that co-infection with HIV approximately doubles the risks of parasitemia and clinical malaria.

HIV infected patients with severe immuno-suppression experience more severe malaria than their non-infected counterparts and they require more frequent treatment for uncomplicated malaria. The negative interaction between the two is most apparent in pregnant women.

Effect of HIV on malaria treatment

Co-infection with HIV reduces the efficacy of malaria treatment. A study in Kenya found out that co-infected patients with CD4 cells counts of < 200 cells /ÂµL who were treated with SP had significantly lower rates of parasite clearance in 28 days following treatment.

HIV infection also reduces the efficiency of arteminsinin-based malaria treatment. A retrospective study in Uganda found that adults infected with HIV responded worse to malaria treatment that their uninfected counter-parts in the 28 days following treatment.

HIV infection in absence of antiretroviral treatment may interfere with the effectiveness of standard IPT regimens such as SP.

Anti-malarial and antiretroviral drug interactions

At the moment there are no documented clinical or pharmacological interactions between anti-malarial drugs and antiretroviral drugs. However, there are several theoretical interactions of which clinicians should be aware. Protease inhibitors and non-nucleoside reverse transcriptase inhibitors (NNRTIS) are the primary classes of antiretroviral drugs that have the pharmacokinetics potential to interact with anti-malarial drugs.

3. Weak health systems

Even with a good policy in place, health system weaknesses, particularly human resource shortages and commodity procurement and supply, can slow policy implementation and malaria diagnosis, especially in high transmission settings that

already present a challenge. The inadequate or unreliable supply of medication is a major challenge that threatens the health system overall. Also weak referral systems continue to impede care.

TUBERCULOSIS AND MULTI DRUG RESISTANT TB

While tuberculosis is a deadly infection caused by the mycobacteria tuberculosis, multi-drug-resistant tuberculosis (MDR-TB) can be defined as tuberculosis which, as a result of strains emerged through spontaneous mutation of the bacilli, is resistant to isoniazid and streptomycin, the two most powerful existent anti-TB drugs.
The cause of this lies in an ineffective treatment of the original TB, due to patients missing doses or not completing the treatment, or doctors prescribing inappropriate handling of the case.

- Historical background of MDRTB
- Impact of tuberculosis on the community
- Causative agents of MDRTB
- Presentation and complications of MDRTB
- Prevention and control of MDRTB
- Treatment of MDRTB
- Drugs used for treatment of MDRTB

Historical background

Before the discovery of specific antibiotics for the treatment of tuberculosis there was no cure. Mortality of those with pulmonary disease was about 50%

By the end of the 1930s surgeons were providing some means of treatment for tuberculosis by the various surgical procedures attempting to obliterate the cavities which formed in the lungs of seriously ill tuberculosis patients by the lung itself

By the 1950s the introduction of drug therapy was considerably reducing the number of patients and there was 98% chance of the cure. The difficulties of ensuring this, especially in resource poor countries, have resulted in an increasing incidence of the tubercle bacteria resistant to the most effective drugs. This is called multi-drug resistance tuberculosis.

Impact of tuberculosis on the community

Impact on the patient
Patients with tuberculosis are stigmatized because they are isolated by the community. They cease to be productive, as generally they are too weak and too isolated to work. The isolation and stigmatisation leads often to the breaking up of the family.

Impact on the health sector
Drug resistant tuberculosis increases the cost and the duration of treatment. The

new rapid method of detecting drug resistant tuberculosis is helpful, but they are too costly and not seen as a priority in market oriented economics of the pharmaceutical industry. They leave many families very poor after having raised a lot of money to save the life of a family member.

In conclusion drug resistant tuberculosis can be prevented if patients play their part of taking drugs as they should and well trained health workers who know how to administer tuberculosis drugs and are authorized to do so, are the only ones to administer these drugs.

Causative agents

Tuberculosis is caused by a bacteria bacillus called mycobacterium tuberculosis and occasionally by mycobacterium bovis and mycobacterium Africanum. These organisms are also known as tubercle bacilli because they cause lesions called tubercles.

Other causes of resistant tuberculosis:

- previous treatment for tuberculosis especially if prolonged
- contact with another patient known to have drug resistant tuberculosis
- immigration from one area with a high incidence of drug resistance
- HIV seropositivity
- Substance abuse like tobacco
- Homelessness, sleeping in many places
- Incorrect administration of the drug
- Poor drug quality
- Failure of the patient to take the drug consistently

Presentation of multi drug resistant tuberculosis

- Chronic cough is almost always present. The cough stays and does not go away even after treatment.
- Sputum, usually made of pus
- Haemoptysis, sometimes it can be large other times it is small.
- Pain in the chest, usually of the pleuritic type, although this is not common
- Shortness of breath. Sometimes this comes early in the disease. If the disease is severe there is a large pleural effusion, otherwise it only comes after years when most of the lungs are destroyed.
- Fever and sweating, especially at night
- Loss of weight
- Sometimes mild fever
- sometimes anaemia
- Ordinary pneumonia

Complications

- Disease of the organ. The infection by the myco-tuberculosis organisms leads to destruction of the organs and formation of pus

- Pneumonia
- Kidneys may be affected causing urinary tract infection or blood in the urine
- When the disease reaches the vertebrae there will be paralysis or loss of sensation in the legs and patient may not be able to to pass urine because of pressure on the spinal cord
- Chronic arthritis in cases of tuberculosis arthritis
- Tuberculosis osteomyelitis
- Heart infection, generally the pericardium

Prevention and control

Prevention is better than cure. In order to ensure that the patient is taking medication correctly the use of directly observed therapy (DOT) is indicated, where the patient is seen swallowing his or her medication under the eyes of trained supervisor.

To prevent this drug resistance emerging, the medical worker should ensure that immunotherapy is avoided. Another measure is the isolation of the effected patients until they are out of the infectious stage. In case of bad side effects like itching, rash, blister and nausea, the patient should be told to go back to the health centre instead of just giving up, thus causing resistance of the drug.

Only well trained health workers who have good knowledge on tuberculosis and have been authorized should be allowed to administer these drugs because any mistake done by a health worker in administering these drugs can cause resistance.

As said before, proper counselling should be done to patients and family members so that the patient takes drugs the way they should be taken. Furthermore, health workers should sensitize everyone who comes at the health centre if symptoms develop and even give BCG to other children and adults who have a negative tuberculin test.
The health workers also should do all they can to stop HIV infection spreading because this affection of the immune system is the main reason why tuberculosis is becoming more and more common today.

Treatment

- *Do not* start treatment unless sputum is positive for Acid-fast Bacillus (AFB)
- The lymph gland aspirate or biopsy should be positive for tuberculosis
- Also treatment should not be started unless the patient has suspected severe tuberculosis and would die before test results could be obtained or transfer was possible.
- Also treatment should be not be started unless tuberculosis has been diagnosed by a medical officer in another way.

Management of the patient

- Arrange for a place where it is convenient for the patient to get the directly observed treatment (DOTS) by health workers, unless he or she is to be admitted to the health centre to start treatment immediately.
- Start patient and family education about the disease, the treatment, and the possible side effects of the treatment and when to return if worried about possible side effects. Explain that he will be cured if he takes his treatment and will probably die and infect his family and friends if drugs are not taken.
- Arrange for check sputum examination for acid-fast bacillus after 2 months of treatment, after 5 month of treatment and at the end.
- Check the patient's attendances for treatment every month
- Arrange for home visit if the attendance for treatment is not good
- Give a leaflet about tuberculosis and its treatment to those who can read and are interested to know more about their condition.
- Arrange treatment as near as possible to the patient's home or his work. If needed, time his clinics so that the patient does not have to miss work and try not to keep the patient waiting.
- In primary stages treating the patient should be isolated. Carefully tell the patient and give him a card, the date and place of his next attendance. If there is a local calender different from the standard international calender give him the date in the local calender so that he will understand better.
- Check on his/her personal problems for example job problems, marriage, what his neighbours will say, give him or her kind and friendly advice about any problem and if possible get a friendly personality nurse to do the counselling.
- If he is not having direct observed treatment when he comes back for a new supply of drugs, remember to check the number of pills left over. This will tell you whether he has taken all the doses, ask him in a sympathetic way why he has not. This will help you give the right advice.
- If the patient does not get better or does not return for review, the best and quickest way to get the patient is by home visit to persuade him to return. That is why a patient has to leave his contacts and home address.

Treatment is divided into three parts

1. Short term intensive chemotherapy daily for 8 weeks (2months) with four (or at least three) drugs to try to kill most of the Mycobacterium tuberculosis organisms during this time.
2. Maintenance treatment for 4 or 6 or 10 or more months (depending on what drugs are available for short term intensive chemotherapy and maintenance therapy) to kill the rest to the organisms especially the resistors.
3. Surgical treatment, drug therapy for resistant tuberculosis carried a succeed rate considerably lower than for sensitive disease. 60%-70% cure compared with 95% surgery is sometimes useful adjunct. If a disease is confined to one or the most two lobes, lobectomy offers a better chance of than continued drug treatment.

Drugs used for treatment

First line drugs

Essentials

- Isoniazid-kills the bulk of the bacteria
- Rifampicin-Eliminates the resistant bacteria

Other drugs

1. Pyrazinamide
2. Ethambutol
3. Streptomycin

New drugs

- Rifamycins
- Rifabutin
- Rifapentine

Second line drugs

Old drugs

- Ethinonamide
- cycloserine
- capremycin
- amikacyn
- kanamycin
- PAS
- Thiocetazone

New drugs

- Quinolones
- ofloxacin
- ciprofloxacin
- sparfloxacin
- Macrolides
- clarithromycin
- clofazimine
- amoxicillin
- clavulanic acid

Because of the emergence of more drug resistance cases world wide the current recommendation is to give two drugs from first line drugs (others) pyrazinamide and ethamboutol, in addition to isonaizid and rifampcine until culture and sensitivity results are available. Patients should not be started on two drugs alone.

In patients who have had previous treatment, that is to say they are not new to the disease; a more complex regimen may be needed initially. It is important that the

four drug regimens are continued until culture results are available.

In the immigrants streptomycin resistance is so common that this should not be included in the regimen even if the patient has not been exposed to it previously.

If the patient has had previous treatment with isoniazid, refampicin, ethambutol and pyrazinamide he should be given an injectable drug as a mickacin, at least one old drug such as athionamide and one of the new drugs as a ciprofloxacin. Cycloserine could be used as a fourth drug if required. Thus the potentially drug-resistant patient will be started on six drugs. The danger of adding a single drug to a regimen already being given will therefore be avoided.

SYPHILLIS

Background

There is some discussion between historians if syphilis existed in Europe before the travels of Columbus to America. Probably there was a form of tertiary syphilis present before the bacteria that cause non-venereal syphilis and jaws arrived from America in the 1490s, causing a major syphilis epidemic in Naples, Italy in 1494.

The discovery of penicillin had a great impact on syphilis throughout the world in the late 1940s. This led to the decline in the number of cases seen in sexually transmitted infection clinics. Nonetheless, since 1998 infectious syphilis has increased substantially in towns like London, Manchester and Brighton mostly as a result of homosexual transmission. The incidence increased from 122 to 1193 cases between 1996 and 2002, as cited in The ABC of sexually transmitted infections of Michael Adler.

Syphilis presents a major clinical problem and WHO estimates that 12 million new cases of infectious syphilis are diagnosed worldwide each year and most of these cases are in South and South-East Asia and Sub-Saharan Africa.

- Cause and presentation of syphilis
- Prognosis and treatment of the disease
- Syphilis in HIV positive patients
- References

Cause and presentation of the disease

Syphilis is caused by a spirochete bacterium called Triponema pallidum. The manifestation of syphilis varies according to its stages: primary, secondary and latent syphilis.

Primary syphilis

Lesions are at the site of inoculation. These are usually painless and may be genital or extra genital. There are enlarged inguinal lymph nodes.

Secondary syphilis

Appears 4 to 8 weeks after appearance of the primary lesion. Generalised lesions affecting both the skin and mucous membranes. They are usually symmetrical.
May be associated with malaise, fever, anorexia and glomerulonephritis (a disease of the kidneys).
Bacteraemia (increased bacteria circulation in blood), leading to hepatitis (inflammation of liver), meningitis, iritis (inflammation of the iris of the eye) and papilloedema (a swelling of the blood vessels of the retina at the back of the eye).
Generalised lymphadenopathy (enlarged lymph nodes).
Alopecia (loss of body hair).

Latent syphilis

Even without treatment, some of the patients (about 65%) have syphilis in the latent stage and present no symptoms or signs of syphilis. Latent syphilis is divided into early and late stages. The distinction is made after two years of being infected without showing the symptoms and is important for the treatment.
Serological tests will be positive, but normal radiological tests will give no results.

10% of the cases may develop neurosyphilis (nervous system involvement) and 10% cardiovascular syphilis.

Prognosis and treatment of the disease

This depends on the stage of the disease and the degree of tissue damage in cardiovascular and neurosyphilis. Adequate treatment of all the stages halts the progression of the disease.

Treatment

Benzathine 2.4 mega units as a single dose in mild cases and 3 doses in one week interval for severe cases.
Procaine penicillin 600, 000 IU and 900,000 IU.
Doxycycline 100mg orally twice a day for 14 days.

Nowadays modern antibiotics can be used in treating syphilis.

Syphilis in HIV positive patients

Syphilis enhances the acquisition and transmission of HIV. The signs and symptoms of syphilis can be mistaken for the clinical features of HIV infections. The signs shared by syphilis and HIV includes the following:

- Generalised lymphadenopathy
- Skin rashes
- Alopecia
- Oral ulceration
- Cognitive impairment
- Meningitis
- Cranial nerve palsies
- Myelopathies (spinal cord disorders)
- Uveitis

WHOOPING COUGH

Whooping Cough is a highly contagious bacterial infection caused by Bordetella Pertussis. It is one of the most serious childhood diseases. The disease is

transmitted by direct contact or droplet spread and has fastidious growth requirements. The incubation period of pertussis is usually about 7 days, with a range of 5 to 21 days. A non-immune person is susceptible to pertussis at any age, but characteristically it is a disease of children under 7 years old. There is probably no trans-placental immunity, and 40% of all deaths from pertussis occur among infants less than 5 months of age. The period of infectivity begins 7 days after exposure and extends for 3 weeks after the onset of the paroxysm [outburst, spasm,convulsion, fit] of coughing. After 6 weeks patients may be considered non infectious.

The occasional second attacks do not represent true pertussis; they are usually caused by B.parapertussis or B.bronchiseptica, neither of which shares cross-immunity with B.pertussis. They are milder illnesses.

- Clinical manifestations
- Complications and effects on the community
- Treatment and prevention
- References

Clinical manifestations

The clinical course of B. pertussis is usually divided into three stages: catarrhal, paroxysmal and convalescent[recuperative or restorative, recovery].

The *catarrhal stage* lasts about 1-2 weeks. It begins as a typical upper respiratory tract infection, with low grade fever, coryza, sneezing, lacrymation, irritability and a dry, poorly productive cough. The cough worsens and after a week begins to occur paroxysmal.

The *paroxysmal stage* lasts from 4 to 6 weeks. There are explosive bursts of coughing in rapid succession during which the child cannot breathe. The coughing is followed by a sudden, long inspiration that rushes air into the emptied lung and produces the crowing, high-pitched whoop. One paroxysm of coughing may follow another until the child is able to cough up a thick, tenacious mucous plug. During the coughing spell the child appears cyanotic or livid, the tongue protrudes, and the eyes bulge. After the attack the child vomits, perspires profusely and appears lethargic and exhausted. Peri-orbital oedema, conjunctival haemorrhages and epistaxis may also be present. In infants under 6 months of age, the characteristic whoop may not be present.

The uncomplicated *convalescent stage* is marked by cessation of whooping and vomiting and an improvement in appetite and mood. The paroxysms are milder and occur less frequently, but coughing may persist for several weeks. If a secondary respiratory infection has developed, recurrent paroxysms of coughing and whoops may reappear repeatedly for many months.

Complications

The most frequent complication is pneumonia, usually caused by secondary bacterial invaders. A telectasis and pneumonia predispose to the late development of bronchiectasis. Otitis media is commonly seen among infants. A convulsion is a serious complication of whooping cough; predisposing conditions are brain damage due to hypoxia or focal haemorrhage and alkalosis produced by repeated vomiting.

Effects on the Community

Whooping cough is an infectious disease and can increase the mortality rate if it is not picked up and treated. It can also lead to disabilities like brain damage as mentioned above. It can also lead to injuries when the child is having a coughing fit. As a secondary effect, it leads to the parents of the child being distressed since their child is unwell.

Treatment

The treatment of B. pertussis requires both specific and general measures. Erythromycin is effective in modifying the course of uncomplicated whooping cough. Late in the course of the disease it may still decrease the number of bacteria, possibly reducing communicability. The use of sero-therapy in the form of hyper immune gamma globulin is controversial. Apnea and encephalopathy are probably toxin related complications of pertussis. These, as well as atelectasis and pneumonia, necessitate the availability of expert medical and nursing care for the sick patient with the disease.

Prevention

The value of active immunization against B.pertussis is well established. Although untreated patients may be contagious for approximately 4 weeks, antimicrobial therapy (erythromycin) reduces this period, even if coughing persists. Treatment of exposed family contacts with erythromycin estolate is recommended.

AVIAN INFLUENZA (ex. of haemorrhagic fever)

Background

Avian influenza also called ‘bird flu’ is a highly contagious viral infection, caused by a virus belonging to the family Orthomyxoviridae. It’s caused by type A strains of influenza viruses that normally infect only birds, and sometimes pigs.

Avian influenza has two forms; one that causes mild illness in birds, and another, known as "highly pathogenic avian influenza (HPAI)" that is extremely contagious and rapidly fatal for infected birds. The HPAI strain involved in current outbreaks is called H5N1. It was first recognized in 1997 in Hong Kong. At that time millions of chickens were slaughtered after the virus was found to cause disease in people exposed to infected birds. 18 people got infected of which six died. Fortunately, the virus was not able to spread from person to person, and the outbreak was halted in Hong Kong by slaughter of the chickens.

In January 2004, a major new outbreak of H5N1 avian influenza surfaced again in Vietnam and Thailand's poultry industry, and within weeks spread to ten countries and regions in Asia, including Indonesia, South Korea, Japan and China. Intensive efforts were undertaken to slaughter chickens, ducks and geese (over 40 million chickens alone were slaughtered in high-infection areas), and the outbreak was contained by March, but the total human death toll in Vietnam and Thailand was 23 people.

In Africa, the first outbreak of H5N1 highly pathogenic avian influenza (HPAI) was

confirmed at Kaduna, Nigeria, on 8 February 2006. Within three months, seven other countries on the continent, Burkina Faso, Cameroon, Côte d'Ivoire, Djibouti, Egypt, Niger and Sudan, were infected. More recently Ghana and Togo became infected. The origin of the introduction of the disease to Nigeria and the other infected countries is still unknown, owing to lack of adequate tracing of the movements of poultry and poultry products and lack of reliable epidemiological data from the affected countries.

In Uganda, there has not been any outbreak of Avian Influenza reported however, preventive measures have been put in place to contain the virus (H5N1). Two state of the art laboratories, one in Entebbe and the other in the faculty of Veterinary Medicine at Makerere University have been put in place to analyse any samples from the various water bodies for any contamination.

The influenza viruses occur naturally among birds. Wild birds carry the viruses in their intestines, but usually do not get sick from them.

Infected birds shed influenza virus in their saliva, nasal secretions, and faeces. Domesticated birds may become infected with avian influenza virus through direct contact with infected waterfowl or other infected poultry, or through contact with surfaces e.g. cages or materials e.g. feeds, that have been contaminated with the virus.

Infection with avian influenza viruses in domestic poultry causes two main forms of disease that are distinguished by low and high extremes of virulence. The low pathogenic form may go undetected and usually causes only mild symptoms (e.g. ruffled [disheveled, messy, tangled, windswept feathers] while the highly pathogenic form spreads more rapidly through flocks of poultry. This form may cause disease that affects multiple internal organs and has a mortality rate that can reach 90-100% often within 48hours.

- Types and subtypes
- Transmission
- Incubation and disease progression
- Symptoms and Diagnosis
- Treatment
- Effects on Community and Preventive Measures
- Suggestions for further reading

Types and subtypes

There are three types of influenza viruses: A, B, and C. Only influenza A viruses are further classified by subtype on the basis of the two main surface glycoproteins hemagglutinin (HA) and neuraminidase (NA). Type A includes three sub types (H1N1, H2N2 and H3N2) that have been associated with widespread epidemics and pandemics; type B has been associated with regional or widespread epidemics and type C has been associated with sporadic cases and minor localized outbreaks. The virus type is determined by the antigenic properties of the two relatively stable structural proteins, the nucleoprotein and the matrix protein. Influenza A subtypes and B viruses are further classified by strains. Of the 15 subtypes known, only

subtypes H5 and H7 are known to be capable of crossing the species barrier from birds to humans.

Transmission

Human influenza is transmitted by inhalation of infectious droplets and droplet nuclei, by direct contact, and perhaps, by indirect (fomite) contact, with self-inoculation onto the upper respiratory tract or conjunctival mucosa. The relative efficiency of the different routes of transmission has not been defined. For human influenza A (H5N1) infections, evidence is consistent with bird-to-human, possibly environment-to-human, and limited, no sustained human-to-human transmission to date.

Bird to human

By plucking and preparing of diseased birds; handling fighting cocks; playing with poultry, particularly asymptomatic infected ducks; and consumption of duck's blood or possibly undercooked poultry are sure modes of transmission.

The virus can be shed in the droppings of migratory birds since they are natural carriers and is able to survive for three months in cool temperatures. The virus can survive in water at 0Â°C for more than 30 days and at 22Â°C for up to 4 days. If a person working closely with these animals inhales dust particles containing the virus or by other means, they could develop the bird flu

In countries where live birds (e.g. chickens, geese, turkeys) are sold in markets along with pigs or raised near pigs, the possibility of the virus recombining with other subtypes is greater. This is because both human and avian viruses can infect pigs. If a pig is infected with both viruses at the same time, different parts of the avian and human viruses can mix with each other. Later, the avian virus that has picked up some genes from the human form of the influenza virus is able to more easily cause the conditions in humans.

Human to human

Human-to-human transmission of influenza A (H5N1) has been suggested like child-to-mother transmission, intimate contact without the use of precautions also mentioned, but so far no case of human-to-human transmission by small-particle aerosols has been identified. Recently, intensified surveillance of contacts of patients by reverse transcriptase polymerase-chain-reaction (RT-PCR) assay has led to the detection of mild cases, more infections in older adults, in northern Vietnam. Findings suggest that the local virus strains may be adapting to humans.

Environment to human

Given the survival of influenza A (H5N1) in the environment, several other modes of transmission are theoretically possible. Oral ingestion of contaminated water during swimming and direct intranasal or conjunctivae inoculation during exposure to water are other potential modes, as is contamination of hands from infected fomites and subsequent self-inoculation. The widespread use of untreated poultry feaces as fertilizer is another possible risk factor.

Incubation

The incubation period of avian influenza A (H5N1) may be longer than for other

known human influenzas. In most cases it occurs within two to four days after exposure; recent reports indicate similar intervals but with ranges of up to eight days.

Disease progression

The Avian Influenza A virus is the H5N1 virus responsible for the Avian Influenza disease. Highly pathogenic avian influenza A (H5N1) virus is able to cross the species barrier and cause infection and illness in humans. The pathogenesis of the disease is not completely understood. The main clinical feature of the disease is, still, severe pneumonia often complicated by Acute Respiratory Distress Syndrome (ARDS). Although mild cases and sub-clinical illness have been reported, most patients experience severe illness, and overall the case fatality rate among laboratory confirmed cases remains as high as sixty percent.

Symptoms of Asian influenza

In birds

The most common symptoms of avian flu in birds are: ruffled feathers, reduced egg production, respiratory distress. In some cases, domestic birds may die the same day symptoms appear.

In humans

Most patients have initial symptoms of high fever (typically a temperature of more than 38 °C) and an influenza-like illness with lower respiratory tract symptoms. Upper respiratory tract symptoms are present only sometimes. Unlike patients with infections caused by avian influenza A (H7) viruses, patients with avian influenza A (H5N1) rarely have conjunctivitis. Diarrhoea, vomiting, abdominal pain, pleuritic pain, and bleeding from the nose and gums have also been reported early in the course of illness in some patients. Watery diarrhoea without blood or inflammatory changes appears to be more common and may precede respiratory manifestations by up to one week

The most common symptoms of avian influenza in humans are: fever, cough, sore throat, muscle aches, eye infections and pneumonia.

Diagnosis

Early stages of influenza, when transmission first begins, lack distinguishing clinical symptoms and thus require a biochemical test. Current detection technologies are PCR (polymerase chain reaction), viral culture, Immunoassays however these are a little slow (minimum time 2 hours)

Laboratory diagnosis

Samples

Identification of the agent

Live birds tracheal swabs and cloacae swabs or faeces

Dead birds organs and faeces

Serology

Clotted blood samples or

Serum

Procedures

Identification of the Agent
Inoculation of 9-11-day-old embryonated chicken eggs followed by:
1.Haemagglutination immunodiffusion test to confirm the presence of influenza A virus
2.Subtype determination with monospecific antisera
3.Strain virulence evaluation: evaluation of the intravenous pathogenicity index (IVPI) in 4-8-week-old chickens

Serology. Tests available:
ELISA
Detects antibodies to all AI virus, does not distinguish subtypes
Only suitable for testing chicken and turkey serum
Within 1 week of infection, antibodies are detected in more than half the specimens.
AGID(Agar Gel Immunodiffusion test)
As for ELISA does not distinguish AI subtypes
Within one week of infection, antibodies are detected in more than half the specimens.
HI (Haemagglutination Inhibition test)
Serotype specific test
Test available for each H subtype
HI titres are positive a few days later than ELISA or AGID, titres persist long after infection
Standard test for all avian species
IFT (Immunofluoresence test)
1.Able to detect antibodies to specific N-subtype
2.Can be used to detect infection in vaccinated birds if a heterologous vaccine is used.
RT-PCR (Reverse-transcriptase polymerase chain reaction)
Able to detect influenza virus at very low levels
The presence of subtype H5 or H7 can be confirmed by using H5 or H7 specific primers.
Treatment

Early recognition of patients and timely administration of an influenza-specific antiviral agent using standard protocols are essential for further evaluation of the effectiveness of antivirals. Amantadine or rimantadine started within 48 hours of onset of Influenza A illness and given for approximately 3 and 5 days reduces symptoms and virus in the respiratory secretions.

During treatment with either drug, drug-resistant viruses may emerge late in the course of the treatment and may be transmitted to others. Cohorting patients on antiviral therapy should be considered. Patients should be watched for development of bacterial complications and antibiotics administered.
Effects on community

Farmers and other people working with poultry, as well as travellers visiting affected countries, have a higher risk for getting the bird flu. Handling an infected bird can cause infection. People who eat raw or undercooked poultry meat are also at an increased risk for avian influenza. Highly infective avian flu viruses, such as H5N1,

have been shown to survive in the environment for long periods of time, and infection may be spread simply by touching contaminated surfaces. Birds who recover from the flu can continue to shed the virus in their faeces and saliva for as long as 10 days.

Preventive measures

The preventive measures adopted in countries free from H5N1 HPAI include:
Selective or total bans on the importation of poultry and poultry products from infected countries.
Quarantine, stamping-out and active surveillance, while poultry vaccination was carried out in Co´te d'Ivoire and Egypt.
Culling (killing) will prevent the spread of the avian flu to other birds (and farms), and also minimize the risk of human infection.

Public health preventive measures:

Keep poultry in closed poultry houses to prevent contamination of wide areas. This has been problematic in the Avian flu outbreaks in South-east Asia where many affected farms allowed their poultry to range freely.
Keep wild birds and their faeces away from poultry and poultry feed. Wild birds, particularly migratory waterfowl, have been implicated as carriers or reservoirs of the virus. They are more resistant to the disease, thus they can go harbouring and shedding the virus for long periods of time. Many of the avian flu outbreaks suggest that the point source of infection originated from wild birds passing on the virus to domestic birds.
Seal poultry house attics and cover ventilation openings with screens.
Thoroughly and routinely clean all equipment, vehicles, including service vehicles, clothing and footwear before and after coming into contact with poultry. Birds shed large amounts of virus through their faeces and nasal passage (nasal spray, saliva).
Ensure proper hygiene practices for all persons coming into contact with poultry.
Maintain high sanitation standards in and around poultry houses
Isolate or avoid introducing new birds into existing poultry flocks if their health status is unknown.
Limit access to poultry houses, including farm workers, feed suppliers, poultry veterinarians, catching crews, sawdust and shavings suppliers, agricultural service personnel and casual visitors.
Avoid using water in poultry houses contaminated with faeces from wild birds.
Ensure thorough cleaning and disinfection for all cages transporting birds.
Maintain a log of all visitors coming into contact with poultry.

CHOLERA

Background of cholera disease

Populations all over the world are reported to have at one time or the other sporadically been affected by devastating outbreaks of cholera. Records from Hippocrates (460-377 BC) and Galen (129-216 AD) already described an illness that might well have been cholera, and numerous recorded hints indicate that a cholera-like malady[PROBLEM] was also known in the plains of the Ganges River since antiquity[ANTIQUE,ANCIENT TIMES,RELIC]. Other recorded evidence of cholera

refers to cholera in 1563 in a medical report from Indian subcontinent where the disease has probably existed for thousands of years. Modern knowledge about cholera, however, dates only from the beginning of the 19th century when researchers began to make progress towards a better understanding of the causes of the disease and its appropriate treatment. The first pandemic, or global epidemic, started in 1817 from its endemic area in South-East Asia and subsequently spread to other parts of the world. The 1st and subsequent pandemics inflicted a heavy toll, spreading all over the world before receding.

In 1961, the 7th cholera pandemic wave began in Indonesia and spread rapidly to other countries in Asia, Europe, Africa, and finally in 1991 to Latin America, which had been free of cholera for more than one century. The disease spread rapidly in Latin America, causing nearly 400 000 reported cases and over 4000 deaths in 16 countries of the Americas that year.

Cholera has often occurred in outbreaks or epidemics; seven pandemics (worldwide epidemics) of cholera have been recorded between 1817 and 2003. The first of these pandemics was recorded in 1817, and the world is currently experiencing the seventh cholera pandemic, which is reported to started in Indonesia in 1961 and spread rapidly in Asia, Europe, and Africa, and reached South America in 1991. Still the seventh pandemic has not receded; on the contrary, cholera has now become endemic in many parts of the world with particular impact in the developing countries..

However, poor surveillance and fear of international stigmatisation and sanctions have always led to under reporting of official numbers by affected countries. For example, in 2001, 58 countries officially notified World Health Organisation (WHO) of a total of 184 311 cases and 2728 deaths but, due to considerable under-reporting, the true global figures are estimated to have been closer to 1 million cases. Estimates of global cholera-specific mortality are believed to be 100 000 to 130 000 deaths per year, with most of the deaths occurring in Asia and Africa. Case fatality rates (CFRs) vary greatly from country to country depending probably on how efficient the existing health infrastructures are able to cope with the epidemic.

Since 2005, the re-emergence of cholera has been noted in parallel with the ever-increasing size of vulnerable populations living in unsanitary conditions. The number of cholera cases reported to WHO during 2006 rose dramatically, reaching the level of the late 1990s. A total of 236 896 cases were notified from 52 countries, including 6311 deaths, an overall increase of 79% compared with the number of cases reported in 2005. This increased number of cases is the result of several major outbreaks that occurred in countries where cases have not been reported for several years. It is estimated that only a small proportion of cases - less than 10% - are reported to WHO. The true burden of disease is therefore grossly underestimated. These reported increasing spread of cholera in recent years may reflect a lack of effective international quarantine enforcement by some countries which also have inefficient public water supply systems and inadequate sanitary regulations, the international mobility of carriers in the world's population, and the quick transport of contaminated food and water by ships and aircraft.

- Causative agents
- Signs and Symptoms
- Prognosis and effects on community
- Treatment
- Prevention and control
- References

Causative agent

Cholera is an infection caused by the bacteria Vibrio cholera and the principal site affected is the gastrointestinal tract. Cholera is rarely transmitted directly from one person to another. It is the contamination of food or water with faeces of an infected person that is the main source of the disease. Thus, people become infected usually by drinking water or eating food contaminated by the bacteria. Poor sanitation as well as poor personal and domestic hygiene practices have been noted as other sources of contamination and infection. Cholera outbreaks are closely linked to inadequate environmental management. Rapid urbanisation without adequate sanitation and access to clean drinking water has also contributed a lot to the persistence of the epidemic. Thus typical at-risk areas include peri-urban slums, where basic infrastructure is not available. Some agricultural husbandry practices such use of human faeces contaminated fertilizers in fruits and vegetables gardens have also been associated with the disease especially where such plants are eaten raw or insufficiently cooked. Cholera bacteria also live in warm, saline water and can infect persons who eat raw or undercooked seafood obtained from such waters. Although cholera vibrios may persist for only a short time in grossly polluted aquatic environment, faecal contamination from victims of epidemics and the carriers may continue to reinforce their population in water. Anyone is susceptible to cholera infection, but infants, children, and the elderly are more likely to die from the disease because they become dehydrated faster than adults. Though there is no particular season in which cholera is more likely to occur, wet or rainy seasons are of particular concern especially in slum areas of developing countries due to the ease with which contaminated water effluent may flow and meander to wider areas than during dry seasons.

Other very important risk factors for cholera epidemic outbreaks include overcrowded living conditions, unstable political and environmental conditions such as wars, famines and floods that lead to displaced populations and the breakdown of service delivery (such as health and water) infrastructure. However, it is important to stress that the belief that cholera epidemics are caused by dead bodies after disasters, whether natural or man-made, is false. Nonetheless[nevertheless, however, on the other hand, even so], such conditions that cause disruption of water and sanitation systems or massive displacement of population to inadequate and overcrowded camps can increase the risk of transmission, should the pathogen be present or introduced. Hence, the focus of epidemics/pandemics has shifted to developing countries over the last century, where such conditions have become more of a norm.

Healthy carriers of V. Cholera, who though usually rare, may also pose a health risk to others as another potential source of infection. These symptomless carriers excrete vibrios intermittently with the duration of pathogen discharge being relatively

short, averaging 6 to 15 days with a maximum period between 30 to 40 days. Chronic recuperative or convalescent carriers have been observed to shed vibrios intermittently for periods of 4 to 15 months. Survival of vibrios in the aquatic environment relates sharply to various chemical, biological and physical characteristics of a given water source. The viability of V. cholera in surface waters has been observed to vary from 1h to 13 days. Although cholera vibrios may persist for only a short time in grossly polluted aquatic environment, faecal contamination from victims of epidemics and the carriers may continue to reinforce their population in water.

Signs and symptoms

There is usually a 1 to 5 day incubation period, from the ingestion of the bacterium to the appearance of the first signs of the infection, and the disease runs its course in 2 to 7 days depending on the strain of the Vibrio ingested, and the immunity status of the person affected. Most people exposed to cholera don't become ill and never know they've been infected. Yet because they shed the bacteria in their stool for seven to 14 days, they still have the potential to infect others. The great majority of people who become sick experience mild or moderate diarrhoea that's often hard to distinguish from diarrhoea caused by other problems especially those with strong body immunities.

Steps in the pathogenicity of cholera include colonization of the small intestinal mucosa and elaboration of the cholera enterotoxin, which causes hyper-secretion of fluids and electrolytes through stimulation of the cell, thereby leading to the body to lose both water and electrolytes leading to dehydration.

Only about one in 10 infected people develop the typical signs and symptoms of cholera, which include:

Severe, watery diarrhoea. Diarrhoea comes on suddenly. It's often voluminous, composed of mucus and dead cells, and has a pale, milky appearance that resembles water in which rice has been rinsed (rice water stool). What makes cholera diarrhoea so deadly is the loss of large amounts of fluids in a short time.

Nausea and vomiting; Occurring in both the early and later stages of the disease, vomiting may persist for hours at a time.

Muscle cramps. These result from the rapid loss of salts such as sodium, chloride and potassium.

Dehydration. This can develop just hours after the onset of symptoms â€” far more quickly than in other diarrhoeal diseases. Depending on how much body weight has been lost, dehydration can range from mild to severe; a loss of 10 percent or more of total body weight indicates severe dehydration. Signs and symptoms include irritability, sluggishness or lethargy, sunken eyes, a dry mouth, extreme thirst, dry and shrivelled skin that's slow to bounce back when pinched into a fold, little or no urine output, low blood pressure, and an irregular heartbeat (a condition known as arrhythmia).

Shock. Hypovolemic shock is one of the most serious complications of dehydration. It occurs when low blood volume causes a drop in blood pressure and a corresponding reduction in the amount of oxygen reaching the tissues of an affected patient. If untreated, this severe hypovolemic shock can cause death in a matter of minutes.

In general, children with cholera present the same signs and symptoms as adults do, but they may also experience extreme drowsiness or even coma, fever, and convulsions. Death may occur within 24 hours of onset of signs and symptoms unless prompt medical treatment is given to the patient.

Prognosis

According to WHO, among people developing symptoms, 80% of episodes are of mild or moderate severity. Among the remaining cases, 10%-20% develop severe watery diarrhoea with signs of dehydration. If untreated, as many as one in two people may die. Patients with milder cases of cholera usually recover on their own in three to six days without additional complications. They may eliminate the bacteria in their faeces for up to two weeks. With prompt fluid and electrolyte replacement (rehydration) which is simple and inexpensive, the death rate in patients with severe cholera is less than 1%. Untreated, the death rate can be greater than 50%.

However, though this situation may present itself in developed countries, in developing countries where infrastructure for medical service delivery is poor, the outcome may be quite different; and usually an outbreak is followed by a state of panic and apprehension. Thus the difficulty in treating severe cholera does not lie in not knowing how to treat it but rather in getting medical care to the sick in underdeveloped and sometimes inaccessible areas of the world where medical resources are limited. Cholera however is a very treatable disease if timely and correct diagnosis is made.

Effect of cholera outbreak on community

Cholera remains a global threat to public health and one of the key indicators of social development. Cholera outbreaks can have far reaching consequences on the community directly or indirectly by disrupting social and economic structure, and impeding development in affected communities, especially in developing countries where the disruption is usually greater:

Cholera can cost governments billions of money to eradicate. This would mean that resources have to be diverted from other sectors for which they were budgeted to counter the outbreak.

Absenteeism by the workforce caused by cholera adversely affects industrial and economic output. Peoples income will thus be negatively affected.

Cholera outbreaks can adversely affect tourism and thus affect tax revenues (productivity losses for business and individuals due to the illness will decrease tax revenues).

Cholera outbreaks may lead to loss of trade. Outbreaks set into motion unjustified panic-induced reactions by other countries that include curtailing or restricting travel from countries where a cholera outbreak is occurring, or imposition of import restrictions on certain foods. For example, a cholera outbreak in Peru in 1991 cost the country US$ 770 million due to food trade embargoes and adverse effects on tourism.

Cholera outbreaks are usually followed by restrictions on movement (quarantine), isolation of the sick, and stigmatisation of the sick.

The worst effect on community especially in developing counties where families are closely associated is the loss of a loved one especially the breadwinner.

Burying of cholera victims may not allow cultural rituals as it has to be done by medical personnel, and this may leave the communities indisposed.

Treatment of Cholera

The first and crucial measure in the treatment of cholera is a correct and rapid diagnosis of cholera. This can be made by examining a fresh stool sample under the microscope for the presence of V. cholera bacteria. Cholera can also be diagnosed by culturing a stool sample in the laboratory to isolate the cholera-causing bacteria. In addition, a blood test may reveal the presence of antibodies against the cholera bacteria. In areas where cholera occurs often, however, patients are usually treated for diarrhoea and vomiting symptoms as if they had cholera without laboratory confirmation.

The key to treating cholera lies in preventing dehydration by replacing the fluids and electrolytes lost through diarrhoea and vomiting. No matter which method is used, immediate treatment is critical because death from cholera can occur within hours. Without rehydration, approximately half of people with cholera die; with treatment, the number of fatalities drops to less than one percent. The discovery that rehydration can be accomplished orally revolutionized the treatment of cholera and other, similar diseases by making this simple, cost-effective treatment widely available throughout the world.

The World Health Organisation (WHO) thus has established guidelines for treating cholera that can be used in the most severe cases and circumstances. WHO in conjunction with UNICEF has thus developed an inexpensive oral replacement fluid containing appropriate amounts of water, sugar, and salts that is used worldwide.The solution, called WHO/UNICEF ORS, is available as a powder that can easily be reconstituted in boiled or bottled water. Early rehydration can save the lives of nearly all cholera patients. The majority of patients - up to 80% - can be treated adequately through the administration of oral rehydration salts (using the WHO/UNICEF ORS standard sachet). In cases of severe dehydration, replacement fluids must be given intravenously. Patients should be encouraged to drink plenty of fluids when they can keep liquids down and eat when their appetite returns. Recovery generally takes three to six days.

Rehydration usually occurs in two stages. The initial phase treats existing dehydration; in the maintenance phase, fluids are continually replenished until diarrhoea stops. The amount of solution needed to maintain hydration varies greatly, depending on the severity of dehydration and the degree of diarrhoea. But most people require large amounts of fluids, especially at the start of treatment. People who have trouble drinking ORS, either because of frequent vomiting or the sheer volume of fluids may need infusion through their veins (intravenous treatment) using preferably Ringer lactate.

In addition to rehydration, people who are very sick may benefit from antibiotics, which can cut the length of the illness in half. Adults may be given the antibiotic tetracycline to shorten the duration of the illness and reduce fluid loss. The World Health Organization however recommends this antibiotic treatment only in cases of severe dehydration. If antibiotics are overused, the cholera bacteria organism may become resistant to the drug, making the antibiotic ineffective in treating even severe

cases of cholera. Tetracycline is not to be given to children whose permanent teeth have not come in because it can cause the teeth to become permanently discoloured. Other antibiotics such as ciprofloxacin and erythromycin may be given to speed up the clearance of V. cholera from the body.

Oral rehydration therapy however remains the most important means of treatment for cholera patients.

CHOLERA PREVENTION AND CONTROL

Measures for the prevention and control of cholera have not changed much in recent decades, and mostly consist of:

Provision of clean and safe water ; The need for safe drinking water is a need that binds all of humanity into a single, global community.

Safe disposal of human excreta; This is of the utmost importance in control of infectious and other communicable disease including cholera. Because of the importance of the safe disposal of human excreta, the building of appropriate sanitation systems often is considered synonymous with improving sanitation and controlling cholera.

Effective primary health care education programme; This should include personal hygiene, food preparation and health education (especially in developing countries where resources may be inadequate, particularly in rural communities). In particular, systematic hand washing should be taught. Once an outbreak is detected, the usual intervention strategy is to reduce mortality by ensuring prompt access to treatment and controlling the spread of the disease. Experience has shown that unless there is an effective primary health care education programme that addresses issues such as domestic activities related to the storage and use of water, and sewage and excreta disposal, and personal hygienic practices, the installation of improved sanitation facilities alone may not result in improved health. The mere material improvement of water supplies would doubtless prove to be less effective than if people were advised by means of health education of the sources of their disease problems and how to avoid them. Primary health care education is thus a vital component in prevention of cholera.

Surveillance and prompt reporting; these contributes to the rapid containment of cholera epidemics. In many endemic countries, cholera is a seasonal disease, occurring every year usually during the rainy season. Surveillance systems can provide an early alert to outbreaks, which should lead to a coordinated response, and assist in the preparation of preparedness plans. As part of an integrated surveillance system, an efficient cholera surveillance system can also improve the risk assessment for potential cholera outbreaks. Comprehensive surveillance and data generation are of paramount importance to guide the preventive rather than reactive planning of interventions so as to adapt them to each specific situation. Understanding the seasonality and location of outbreaks will provide guidance for improving cholera control activities for the most vulnerable. This will also contribute to developing indicators for appropriate use of oral cholera vaccines.

Adaptation of recommended control methods; WHO has developed and published such recommended measures, including standardised case management, has proven

effective in reducing the case-fatality rate.

Adoption of a multi-sectoral coordination approach; since cholera prevention and control is not an issue to be dealt by the health sector alone, a comprehensive multidisciplinary approach should be adopted for dealing with a potential cholera outbreak. Water, sanitation, education and communication are among the other sectors usually involved. A better understanding of the socio-economic, environmental and public health consequences of water supply and sanitation related diseases obtainable through better monitoring surveillance systems may help the public and policy makers understand the value of microbiologically safe water as well as improved sanitation facilities.
Harness political commitment and community involvement; Policy makers and leaders must make appropriate policies that ease such control measures above to be implemented. They must also allocate a substantial amount of resources to emergency preparedness and infrastructure development. The community leaders must be actively involved in appropriate health and proper hygiene education.

Burying rather than cremating those that have died of cholera; Because cholera is one of the few infectious diseases that can be spread by human remains (through faecal matter leaking from corpses into the water supply), emergency workers who handle human remains are at increased risk of infection. It is considered preferable to bury corpses rather than to cremate them, however, and to allow survivors time to conduct appropriate burial ceremonies or rituals. The remains should be disinfected prior to burial, and buried at least 90 feet (30 m) away from sources of drinking water.

Use of cholera vaccines; Two types of vaccines do exist, i.e. parenteral (administered by injection) and enteral (administered orally). However, the use of the parenteral whole cell cholera vaccine has never been recommended by WHO due to its low protective efficacy (of about 60 days) and the high occurrence of severe adverse reactions or reactogenicity, though it has been used in some countries.

Currently available oral cholera vaccines (OCV) are safe and offer good protection (over 70%) for an acceptable period of time (at least one year). The OCV is usually suitable for travellers especially when travelling to highly cholera prone areas. This vaccine has proven safe and effective (85-“90% after six months in all age groups, declining to 62% at one year among adults) and is available for individuals aged two years and above. It is administered in two doses 10-15 days apart and given in 150 ml of safe water. Its public health use in mass vaccination campaigns is relatively recent. Within the past few years several immunization campaigns were for example carried out with WHO support just like other public health intervention tools; and in 2006, WHO published official recommendations for OCV use in complex emergencies. WHO recommends OCV use for populations to limit the risk of occurrence of cholera outbreaks in displaced populations in endemic areas, and spread and incidence of cholera during an outbreak?

Though OCV have been recommended by WHO as a public health intervention measure in emergencies, and many vaccines are under development, it is important to note that vaccines are cholera strain specific, and therefore a given vaccine has a

limited scope of application. Correct diagnosis of the target V. cholera strain before administration of a particular vaccine is thus important.

RABIES

Rabies is a zoonotic viral disease, fatal to the central Nervous System; and its caused by a Neurotropic virus consisting of non segmented, negative stranded Ribonucleic acid (RNA) contained within a bullet shaped envelope. It belongs to genus Lyssa virus and the family Rhabdoviridae. Rabies common sites of entry into humans are through the skin, or mucus membranes where the virus is delivered into the muscle and subcutaneous tissue through biting, licking or scratching by a rabies virus infected animal.

It presents into two forms thus the classic form or encephalitic (furious form) in the central nervous system causing a cute encephalomyelitis. Here the symptoms include: pharyngeal spasms, hydrophobia, and hyperactivity leading to paralysis, coma and death. Rabies is distinguishable by neurotropism, neuroinvasiveness and impaired functions, malaise, fever headache.

Paralytic rabies is characterised by development of prominent and flaccid muscle weakness, excitability, convulsions, delirium. Death results from both neural dysfunctions due to dramatically inhibited synthesis of proteins required for maintaining neuronal functions.

- Stages and epidemiology
- Diagnosis and Treatment
- References

Clinical stages of rabies disease progression

These depend on the extent of the bites, amount of secretion, and proximity to the central nervous system. Disease transmitted through bites close to the brain progress more rapidly than disease transmitted through bites on the lower extremities.

Stages of the disease

a) Its incubation stages ranges from 10 days to 1 year.
b) Prodrome stage, this occurs 2 to days after the exposure and can last for 1 to 2 weeks and itâ€™s characterized by non specific flu like symptoms such as fever, malaise, headache and nausea.
c) Acute neurologic syndrome occurs 7 or 10 days after the onset of prodrome and includes dysarthia, dysphasia, excessive salivation, vertigo, agitation, visual and auditory hallucinations, hydrophobia secondary to painful contractions of pharyngeal muscles and polyneuritis.
d) Coma occurs 7 or 10 days after the onset of acute neurologic syndrome and its characterized by hydrophobia, prolonged apnea, generalized flaccid paralysis, seizures and coma with acute respiratory collapse.
e) Death may follow 2 or 3 days after the onset of paralysis.

Epidemiology of rabies disease
The primary route of rabies virus transmission to humans is through animal bite; hence the animal is a reservoir for rabies virus and the opportunity for human

animal interaction.

Canid species are the main vector in the transmission of rabies to humans' e.g. Rabid bats especially silver- haired bats.

Other rare routes may include; handling of infected carcasses, consumption of raw infected meat and inhalation of aerosolized rabies in caves inhabited by millions of bats.
Few cases of human to human transmission of rabies have resulted from the transportation of infected corneas.

Diagnosis / Treatment of rabies disease

In humans and before death, observe the virus specific fluorescent material in skin biopsy specimens, isolating the virus from the patients saliva, or detecting the presence of anti-rabies antibodies in the serum or cerebral spinal fluid (CSF) of patients who have not been immunised.

The basic principles behind rabies prophylaxis are the removal of free virus from the body both by washing and neutralisation.

Performing induction of a rabies virus specific immune response in the exposed individual before rabies virus can replicate in the central nervous system by administering of both passive and active vaccination.

In passive vaccination, Rabies immune Globins (RIG) from adults who have been immunized with rabies vaccine is administered to previously unimmunized people so as to passively impart antibodies.

Active rabies vaccines currently administered include; nerve tissue derived vaccines (NTV), high quality cell culture vaccines produced under stringent quality control and lower â€“ quality cell culture vaccines that do not adhere to FDA regulations.

Nerve tissue derived vaccines (NTV) are produced from brain tissue of animals infected with a fixed strain of rabies virus. Brain tissue is harvested; the virus is inactivated and then diluted to a concentration of 25 % of brain tissue.

Nerve tissue derived vaccines are extremely painful and can cause severe neurologic adverse reactions due to presence of myelinated tissue in the vaccine; unfortunately nerve tissue vaccines are the most widely used prophylaxis for rabies.

Optimal rabies vaccine today is human diploid cell vaccine (HDCV) which is a type of cell culture vaccine produced in human fibroblasts. Treatment is generally unsuccessful when administered after the patient becomes sick.

PNWUMONIA

What is pneumonia?

Pneumonia is an inflammatory illness of the lungs. Frequently it is described as lung

parenchyma/alveolar inflammation and abnormal alveolar filling with fluid. Pneumonia is an infection of one or both lungs.

Prior to the discovery of antibiotics, one third of all people who developed pneumonia subsequently died from infection. In the United States pneumonia is the sixth leading cause of death.

- Causative agents
- Signs and symptoms
- Diagnosis, prognosis and mortality
- Treatment and prevention
- References

Causative agent

Pneumonia is usually caused by bacteria, viruses, or fungi. The most common cause of pneumonia is the bacterium â€œStreptococcus pneumoniaeâ€ or â€œpneumococcus bacteriumâ€ . Another bacterium is Klebsiella pneumoniae and Hemophilus influenzae bacteria that cause pneumonia in people suffering from chronic obstructive pulmonary, disease or alcoholism.

The other causative agent of pneumonia is the virus as already stated. Viral infections can be caused by adenoviruses, rhinovirus, influenza virus (flu), respiratory syncytial virus, and para influenza virus. Fungal infections that can lead to pneumonia include histoplamosis, coceidiomycosis, blastomyxosis, aspergillosis and cryptococeosis

Pneumonia can also result from chemical or physical injury to the lungs. its cause may also be officially described as idiopathic -that is, unknownâ€“ when infectious causes have been excluded.
How do people â€œcatch pneumoniaâ€
Breathing in small droplets that contain the organism that can cause pneumonia contracts some cases of pneumonia. These droplets get into the air when a person infected with these germs coughs or sneezes.

In other cases, pneumonia is caused when mouth, throat, or nose secretions inadvertently enter the lung. During sleep, it is quite common for people to aspirate secretions, from the mouth, throat, or nose. Normally the bodyâ€™s reflex response (coughing back up the secretion) and immune system will prevent the aspirated organisms from causing pneumonia. However, if a person is in a weakened condition from another illness, a severe pneumonia can develop.

Once organisms enter the lungs, they usually settle in the air sacks of the lung where they rapidly grow in number. This area of the lung then becomes filled with fluid and pus as the body attempts to fight off the infection
Signs and symptoms

In most people who develop pneumonia there is:
Symptom of a cold

Followed by a high fever (sometimes as high as 104degrees F.)
Shaking chills
A cough with sputum production (usually discolored or phlegm and sometimes bloody).
May become short of breath.
Chest pain may develop if outer pleural aspects of the lung are involved. This pain is usually sharp and worsens when taking a deep breath, known as pleuritic pain.

In other cases, there can be a slow onset of symptoms. A worsening cough, headaches, and muscle aches may be the only symptoms. At times, the individuals skin color may change and become dusky or purplish (a condition known as â€œcyanosisâ€) due to their blood being poorly oxygenated.

Other possible symptoms are loss of appetite,fatigue,blueness of skin, nausea, vomiting,mood swings and joint pains or muscle aches. Less common forms of pneumonia can cause other symptoms; for instance, pneumonia caused by legionella may cause abdominal pain and diarrhoea while pneumonia caused by tuberculosis or pneumocystis may cause weight loss and night sweats.

Children and babies who develop pneumonia often do not have any specific signs of a chest infection but develop a fever, appear quite ill, and can become lethargic.
Certain groups of people are considered to be at particularly high risk for the development of pneumonia and the U.S center for disease control and prevention recommended vaccination for the following groups:
People aged 65 or older and those over two years of age who have problems with their lungs, heart, liver, kidneys.
People age 65 or older and those over two years of age with health problems like diabetes, sickle cell diseases, alcoholism or HIV/AIDS.
Persons over two years of age who are taking any treatments that weaken the bodys immune system.

How pneumonia is diagnosed?

Pneumonia may be suspected when the doctor examines the patient and hears coarse breathing or crackling sounds when listening to a portion of the chest with a stethoscope. There may be wheezing, or the sounds of breathing may be faint in a particular area of the chest. A chest x-ray is usually ordered to confirm the diagnosis of pneumonia.

Sputum samples can be collected and examined under the microscope. If bacteria or fungi that cause pneumonia are present, they can often be detected by this examination.

A blood test that measures white blood cell count (WBC) may be performed either. An individuals WBC count can often give a limit as to the severity of the pneumonia and whether it is caused by bacteria or a virus. An increased number of neutrophils (one type of WBC), is seen in bacterial infection, whereas an increase in lymphocytes, is seen in vi+ral infections.

Bronchoscopy; thin, flexible lighted viewing tube is invested into the nose mouth.

Prognosis and mortality

With treatment, most types of bacterial pneumonia can be cleared within two to four weeks. Viral pneumonia may last longer and in cases where the pneumonia progresses to blood poisoning (bacteremia), just over 20% of sufferers will die. The death rate or mortality also depends on the underlying cause of the pneumonia and also in regions of the world without advanced health care systems, pneumonia is even deadlier. Limited access to clinics and hospitals, limited access to x-rays, limited antibiotic choices, and inability to treat underlying conditions inevitably leads to higher rates of death from pneumonia.

Treatment and prevention

For streptococcus pneumoniae, antibiotics are often used in the treatment. They include penicillin, amoxicillin and clavulanic acid also macrolide antibiotics including erythromycin, azithromycin, (zmax) and clarithromycin (Biaxin).

Two vaccines, pneumococcal conjugate vaccine (pcv7) and the pneumococcal poly-saccharide vaccine (pp23) pneumovax are available to prevent pneumococcal disease. Pcv7 is usually used in immunisation of infants while pneumorax is recommended for adults at increased risk for developing the diseases.

Klebsiella pneumonial and hemophilus influenzae bacteria that cause pneumonia in people suffering from chronic obstructive pulmonary, disease or alcoholism use of the second and third generation antibiotics like cephalosporins amoxicillin, and clavulanic acid, fluoroquinolones and sulfamethozaxole.

Viral infections can be caused by adenoviruses rhinovirus, influenza virus (flu), respiratory syncytial virus, and para influenza virus. These pneumorial usually resolve overtime with the bodyâ€™s immune system fighting off the infection.

Fungal infections that can lead to pneumonia include histoplamosis, coceidiomycosis, blastomyxosis, aspergillosis and cryptococeosis. Each fingus has specific antibiotic treatment, among which are amphoterianB, fluconazde (diflucan), penicillin and sulfonamides.

Since it is airborne, in many hospitals, patients with this infection are placed in contact isolation. Their visitors are often asked to wear gloves, masks and gowns. It is therefore very important to wash your hands thoroughly and frequently to limit **further spread.**

Other public health preventative measures

Appropriately treating underlying illnesses (such as AIDS) can decrease a persons risk of acquiring pneumonia.
Smoking cessation is important not only because it helps to limit lung damage, but also because cigarette smoke interferes with many of the body's natural defences against pneumonia.
Testing pregnant women for group B Streptococcus and chlamydia trachomantis, and then giving antibiotic treatment if needed reduces pneumonia in infants.

Vaccination as earlier mentioned, is important in preventing pneumonia in both children and adults.

MEASLES

What is measles?

It is a contagious disease caused by the paramyxo virus of the genus morbilli. According to the World Health Organization (WHO) measles is an acute illness. It grows in the cells that line in the lungs and the cells that line the back of the throat. It's a human disease not known to occur in animals.

"German measles" is an unrelated condition caused by the Rubella virus.

- Transmission, signs and risk group
- Treatment and prevention

How it spreads (transmissions)

Measles is spread through respiration (contact with fluid from an infected persons nose and mouth either directly or through aerosol transmission) and is highly contagious 90% of people without immunity sharing the same house with an infected person can catch the disease.

The incubation period is usually 4-12 days (during which that are no symptoms). The infected persons or people remain contagious from the appearance of the first symptoms until 3-5 days after the rash appears.

Signs (symptoms)

The first sign is usually high fever that begins approximately 10 to 12 days after exposure and lasts 1-7 days. The patient develops a runny nose, cough, red and watery eyes and small white spots inside the cheeks. After seven days, the rush develops usually on the face and upper neck and then after three days, the rush spreads all over the body.

People at risk

Un-immunised young children are at highest risk for measles and it is complications include death, deafness or blindness. However any person who has not been immunized with vaccine or through experiencing the disease can become infected. It is a big killer children disease.

Treatment

It has no specific drug for treatment;
All children diagnosed with measles should receive two doses of Vitamin A supplements given 24 hours apart
Antibiotics for treatment of eye and ear infections and phenomenon
Nutritional fluid support and treatment of dehydration with oral rehydration solution.
Maintain bed rest and provide quite activities for the child. If there is sensitivity to

light, keep room daily lit.
Remove eye secretions with saline or water and encourage the child not to rub the eyes
Administer anti pruritic medication and
A cool mist vaporizer can be used to relief cough
Isolate the patient until the fifth day

Prevention
Generally two doses of live measles vaccine are recommended
Immunisation at nine months is recommended one time for all persons born and who lack immunity to measles.
Using measles mumps rubella (MMR) vaccine is necessary.

CHICKEN POX

Definition and aetiology
Chickenpox, also known as varicella, is a highly contagious acute viral disease that causes an itchy rash that appears in crops. It is caused by Varicella-zoster virus (VZV) which is a herpes virus. Over 90% of non immune individuals will develop chickenpox following exposure

Herpes virus infections were known as early as ancient Greek times. Hippocrates described the cutaneous spreading of herpes simplex lesions and scholars of Greek civilization coined the word herpes in reference the creeping or crawling nature of the herpetic skin lesions. In Shakespeare's famous play 'Romeo and Juliet', there ia an allusion to recurrent herpes simplex lesions and transmission of the disease. However it was not until 1893 when Vidal recognized that human transmission of Herpes Simplex infection from one individual to another was possible.

Historical accounts were not clear on the difference between small pox lesions and those of VZV and it was not until the late eighteenth century that Heberden proposed a clinical method to differentiate the two diseases. Later in 1888, Von Bokay intimated that chickenpox and herpes zoster were due to the same causal agent an idea which was confirmed by Weller and Stoddard.

- Epidemiology, clinical presentation and prognosis
- Effects on community, treatment and preventions

Epidemiology
The disease which has a world wide distribution affects mostly children between 5-10 years of age. Outbreaks are common in schools and emergency settings. In the tropics a higher proportion of those suffering from the disease are adults. The source of infection is an infected person and transmission is through direct skin-to-skin contact and droplet nuclei produced during maneuvers like coughing and sneezing. Nosocomial transmission is also well recognized. Mother to child transmission is possible in utero.

Clinical presentation
The disease begins with a prodromal phase occurring approximately 2 weeks from exposure and lasting for 1-2 days. This phase is characterised by fever (up to 38.8 degrees Celsius), abdominal pain, sore throat, and malaise. Within 24 hours of the prodromal phase, a characteristic itchy rash develops starting on the trunk and spreading towards the head, arms and legs in the next 10 days. The rash may also spread to other sites like the mouth and genitalia. Each lesion begins as a red papule and progresses to a blister, then pustule and finally to a scab. The lesions, which may be up to 300 in number, are at different stages of development. In congenital varicella syndrome, the new born presents with dermatomal scars, microcephaly, muscle and bone defects, visual problems and mental retardation.

Prognosis
The disease is usually self-limiting and lifelong immunity generally follows the primary disease. In some cases the immune system does not totally clear the virus from the body (the virus is shielded by hiding in the skin sensory nerve cell bodies) and subsequent compromise in immunity leads to release of the virus from the reservoirs causing herpes zoster (shingles) with a life time risk of 10-20%. In congenital disease, babies born to mothers who are infected shortly before delivery may develop potentially life threatening infections.
Complications may occur secondary to the primary disease. They include: secondary bacterial infections caused by either Staphylococcus or Streptococcus bacteria; pneumonia especially in adults; neurological complications and Reyeâ€™s syndrome which is associated with associated with the administration of aspirin to children. Other complications include: hepatitis, kidney disease, ulcers of the intestinal tract, and inflammation of the testes (orchitis). Severe viral pneumonia may occur in adults. Congenital disease may occur if the mother develops chicken pox during pregnancy
Effects on the community
The disease has a number of community effects ranging from stigma to restriction on movements. Congenital disease may lead to mental retardation hence affecting academic and social function. Loss of loved ones and bread winners affects the social, psychological and economic function of the community

Treatment
Treatment involves the administration of acyclovir within 24 hours of the rash, antihistamines like diphenhydramine, loratadine or cetirizine to relieve itching and paracetamol or ibuprofen for fever. Secondary bacterial infection should be treated using appropriate antibiotics. Neonatal infection may be treated with varicella zoster immune globulin.

Prevention
Prevention is through: active vaccination with the chickenpox vaccine at 12 to 18 months old and a booster shot at 4 to 6 years. Vaccine efficacy is 70% to 85% at preventing mild infection and over 95% at preventing moderate to severe forms of the disease; administration of VZ immunoglobulin within 96 hours of exposure to an infected person. Avoiding contact with active cases is also important.

ANTHRAX

Background

What is Anthrax

Anthrax is a life threatening infectious disease that normally affects animals especially ruminants such as goats, cattle, sheep, horses. Other animals like cats, dogs, swine and rats are resistant to the infection. Anthrax is common in areas where people raise livestock and where public health programs are lax. Animals get anthrax by grazing on soils contaminated with anthrax spores. It can be transmitted to humans by contact with infected animals and their products or by biological warfare. Anthrax does not spread from person to person.

What causes anthrax?

Anthrax is caused by bacterium called Bacillus anthraces. This germ was discovered in 1850 by a German physician known as Robert Koch. Unlike most bacteria, these exist in a dormant form as spores in the soil, animal carcasses, feces and animal products. However, under the microscope, these germs look like large rods. These spores have a long life span, as long as 48years and are very difficult to destroy. The spores themselves have no significant damage to tissue, they can however lead to disease by entering broken skin, being inhaled and being eaten. Once in the body the spores germinate to form disease-causing bacteria.

- Signs and symptoms
- Diagnosis, treatment and prevention
- Glossary and references

Signs and Symptoms

In the body, anthrax bacteria produce a powerful toxin which is responsible for the illness. Signs and symptoms vary depending on how a person was infected. Anthrax can infect humans in 3 ways:

1.Through broken skin. This is called cutenous anthrax. This is the most common form of infection. It starts as a red brown raised itchy swelling on the skin that looks like an insect bite. With in 1-2days it develops into a boil-like sore and then a painless ulcer with a hard and dark part at the centre called a malignant pustule. The infection can also cause swelling of the lymph glands near the site. There may be headache, fever, nusea and vomiting. Death is rare with proper treatment as 80% of the treated patients survive. The 20% die because infection spreads to other parts of the body. The illness usually resolves in about 6 weeks.

2.By ingestion. This is called gastro intestinal anthrax. It is as a result of eating undercooked, contaminated meat. The bacteria infect the wall of the intestinal tract causing severe inflammation. The infection then spreads throughout the body via the bloodstream (septicemia). The first signs are nausea, loss of appetite, vomiting and fever. These are later followed by abdominal pain, vomiting blood and severe diarrhea. Gastrointestinal anthrax results in death in 25%-60% cases.

3.By inhalation of the spores. This is called inhalation anthrax. It is the most dangerous and the greatest bioterrorism threat. It is an occupational hazard for people who sort wool (wool sorters disease). Spores are inhaled, transported through the air passages into the tinny sacs (alveoli) in the lungs. The spores are then picked

up by scavenger cells (macrophages) in the lungs and are transported through small vessels (lymphatic) to the glands or lymph nodes in the central chest cavity (Mediastinum). Here, they germinate into active, reproducing bacteria. The bacteria produce toxins which cause severe bleeding and tissue death (necrosis). From there, the toxin spreads to the adjacent lungs and to the rest of the body by way of the blood stream. Damage to the central chest cavity and lungs can cause chest pain and difficulty in breathing. The toxins are the primary causes of destruction of tissue, haemorrhage and death. The first symptoms are difficult to perceive but are more like flue or common cold. In a few days the illness worsens, there may be severe respiratory distress, shock, coma and eventually death. This type of anthrax usually results in death in1-2 days after the start of severe symptoms.

Symptoms usually appear with in 7 days after exposure to the infection.

Diagnosis

The history including the occupation of the person infected is important. Anthrax is diagnosed by cultures and smears from the infected tissues. Material is collected from presumed sites of infection i.e.:

-Skin sores for cutaneous anthrax
-Sputum from patients with inhalation anthrax
-Stool samples for gastrointestinal anthrax
-Chest X rays may show characteristic changes in and between lungs.
-If the organism has spread to the nervous system, spinal fluid may demonstrate the organism. If they have spread throughout the body they can be demonstrated in a blood sample.
-Nasal swabs can be used to determine if some one has been exposed to anthrax by inhalation but can not confirm infection.

Treatment

In most cases, early treatment can cure anthrax. Anthrax of the skin can be treated with common antibiotics such as penicillin, tetracycline, erythromycin and ciprofloxin. Once it has spread to all parts of the body, it calls for a medical emergency. It can however be treated with a combination of penicillin and streptomycin as an early intervention.

Prevention

When travelling to areas where anthrax is common and vaccination levels of animal herds is low, avoid contact with livestock and animal products. Avoid eating meat that has not been properly slaughtered and cooked. Do not buy items made of animal fur or wool.

A vaccine is available for people at high risk for work-related exposures such as the veterinarians, laboratory technicians, and employees of textile mills processing wool or fur.

Put in place measures for preventing bioterrorism attacks and prepare to deal with it if it occurs.

Glossary

Alveoli are tinny air sacks in the lungs where the exchange of oxygen and carbon dioxide takes place.

Bio-terrorism/biological war fare- terrorism using biological agents

Lymph nodes/glands are small rounded/bean shaped masses of the lymphatic tissue, surrounded by a capsule of connective tissue. They filter the lymphatic fluids and store special cells that can trap cancer cells or bacteria that could be travelling through the body in the lymphatic fluid.
Lymphatic tissue - A part of the body's immune system that helps protect it from bacteria and other foreign entities.
Lymphatics are small thin channels similar to blood vessels that do not carry blood but collect and carry tissue fluid called lymph from the body to ultimately drain back into the blood stream.
Malignant- tending to be severe and being able to invade and destroy nearby tissue.
Pus is a mixture of inflammatory cells and liquid
Pustule is a small collection of pus in the upper layer of the skin (epidermis) or beneath it in the dermis. It frequently forms in sweat glands or hair follicles.
Sputum- the mucus and other matter brought up from the lungs, bronchi and trachea that one may cough up and spit out or swallow.
Tissue refers to any group of cells that perform specific functions.

TYPHOID FEVER

Typhoid fever is caused by Salmonella typhi, a Gram-negative bacterium. A very similar but often less severe disease is caused by Salmonella serotype paratyphi. Both Typhoid and paratyphoid A and B fever are referred to as enteric Fevers. Typhoid fever is a life-threatening illness which needs early identification and appropriate treatment to avoid serious complications.

Cause

Typhoid and paratyphoid fever are caused by Bacilli Salmonella typhi and salmonella paratypi respectively

Epidemiology

Typhoid fever is more common in areas of the world where hand washing is less frequent and water is likely to be contaminated with sewage .In the United States about 400 cases occur each year, and 75% of these are acquired while travelling internationally. Typhoid fever is still common in the developing world, where it affects about 21.5 million persons each year.

In Uganda, more than 80 percent of the districts continue to report cases of typhoid fever to the Ministry of Health. With improved reporting from the districts to the MoH, more cases and deaths due to typhoid fever are reported on a weekly basis. In the period January to December 2001, a total number of 2,101 cases and 7 deaths due to typhoid fever were reported to the Epidemiological Surveillance Division. The corresponding number of cases and deaths reported during 2002 were 7,397 and 21 respectively. These reports were regularly received from 48 out of the 56 districts (86%).

The trend over 24 months seems to suggest a general increase in morbidity due to typhoid fever in the country. The geographical distribution indicates that 12 districts located in central and western parts of the country are most affected. The mortality due to typhoid fever in Uganda is very low (CFR=0.3%). However, available research indicates that even where there is ample treatment, the case-fatality rate for typhoid is high (10-20%). This indicates that typhoid fever is a silent epidemic in the country.

- Transmission, disease process and incubation period
- Clinical presentation and diagnosis
- Management
- Effects on Government and community
- Prevention and control
- Recommendations and conclusion
- References

Transmission
Salmonella Typhi lives only in humans. Persons with typhoid fever carry the bacteria in their bloodstream and intestinal tract. In addition, a small number of persons, called carriers, recover from typhoid fever but continue to carry the bacteria. Both ill persons and carriers shed S. Typhi in their feces (stool).

Typhoid fever is spread by eating food or drinking beverages that have been handled by a person who is shedding Salmonella typhi or if sewage contaminated with Salmonella typhi gets into the water used for drinking or washing food.

Disease process
After ingestion in food or water, typhoid organisms pass through the pylorus and reach the small intestine. They rapidly penetrate the mucosal epithelium, where they rapidly educe an influx of macrophages that ingest the bacilli but do not generally kill them. Some bacilli remain within macrophages of the small intestinal lymphoid tissue. During an acute infection, S. typhi multiplies in phagocytic cells before being released into the bloodstream. Other typhoid bacilli are drained into mesenteric lymph nodes where there is further multiplication and ingestion macrophages. It is believed that typhoid bacilli reach the bloodstream principally by lymph drainage from mesenteric nodes, after which they enter the thoracic duct and then the general circulation. As a result of this silent primary bacteraemia the pathogen reaches an intracellular haven within 24 hours after ingestion throughout the organs of the reticulo-endothelial system that is spleen, liver, bone marrow.

Incubation Period
Usually the incubation period ranges from 8 to 14 days however it can be as short as 3 days to as long as 60 days depending on quantity of inoculums, and on host factors such as immunity.

Clinical presentation
Many factors influence the severity and overall clinical outcome of the infection. They include the duration of illness before the initiation of appropriate therapy, the choice of antimicrobial treatment, age, the previous exposure or vaccination history, the virulence of the bacterial strain, the quantity of inoculums ingested, host factors (e.g. AIDS or other immunosuppressant) and whether the individual was taking other medications such as Histamine blockers or antacids to diminish gastric acid. Patients who are infected with HIV are at significantly increased risk of clinical infection with S. typhi and S. paratyphi .Evidence of Helicobacter pylori infection also represents an increased risk of acquiring typhoid fever.

Due to the above stated factors the clinical presentation of typhoid fever depends on

an individual. It varies from a mild illness with low-grade fever, malaise, and slight dry cough to a severe clinical picture with abdominal discomfort and multiple complications.

There are three forms of clinical presentation:
Acute non-complicated disease:
Complicated disease:
Carrier state

Acute non-complicated disease
Acute typhoid fever is characterized by prolonged fever and up to 25% of patients show exanthema (rose spots), on the chest, abdomen and back. The temperature rise in a step like pattern. There are also disturbances of bowel function such as constipation in adults and diarrhoea in children. Adults especially in the second week of infection may also develop diarrhoea characteristic of pea soup colour. Other symptoms include headache, malaise and anorexia. Bronchitic cough is also common in the early stage of the illness.

Complicated disease
Acute typhoid fever may be severe. Depending on the clinical setting and the quality of available medical care, up to 10% of typhoid patients may develop serious complications. Since the gut-associated lymphoid tissue exhibits prominent pathology, the presence of occult blood is a common finding in the stool of 10-20% of patients, and up to 3% may have melena.

Intestinal perforation has also been reported in up to 3% of hospitalized cases. Abdominal
discomfort develops and increases. It is often restricted to the right lower quadrant but may be diffuse. This may be followed by symptoms and signs of intestinal perforation and peritonitis accompanied by a sudden rise in pulse rate, hypotension, marked abdominal tenderness, rebound tenderness and guarding, and subsequent abdominal rigidity.

Altered mental status in typhoid patients has been associated with a high case-fatality rate. Such patients generally have delirium, rarely with coma. Typhoid meningitis, encephalomyelitis, Guillain-BarrÃ syndrome, cranial or peripheral neuritis,
and psychotic symptoms, although rare may occur.

Other serious complications due to typhoid fever include haemorrhages (causing rapid
death in some patients), hepatitis, myocarditis, pneumonia, disseminated intravascular coagulation, thrombocytopenia and hemolytic uraemic syndrome.

Carrier state
About 1-5% of patients, depending on age, may harbour S.typhi in the gallbladder hence becoming chronic carriers. Carriers do not show any sign but continue shedding the salmonella typhi in the stool and can transmit the infection.

Case definition

Confirmed case of typhoid fever; A patient with fever (38Â°C and above) that has lasted for at least three days, with a laboratory-confirmed positive culture (blood, bone marrow, bowel fluid) of S. typhi.

Probable case of typhoid fever; A patient with fever (38Â°C and above) that has lasted for at least three days, with a positive serodiagnosis or antigen detection test but without S. typhi isolation.

Chronic carrier; This is a person who excretes S. typhi in stools or urine (or has repeated positive bile or duodenal string cultures) for longer than one year after the onset of acute typhoid fever. Short-term carriers also exist but their epidemiological role is not as important as that of chronic carriers. Some patients excreting S. typhi have no history of typhoid fever.
The rate of carriage is slightly higher among female patients, older than 50 years, and patients with cholelithiasis or schistosomiasis

Diagnosis
The definitive diagnosis of typhoid fever depends on the isolation of S. typhi from blood, bone marrow or a specific anatomical lesion. The presence of clinical symptoms characteristic of typhoid fever or the detection of a specific antibody response by widal test is suggestive of typhoid fever but not definitive.

A culture can be done to confirm the diagnosis. A sample of blood, Stool or rectal swab can be taken off for this purpose.

Management of typhoid fever

General management
Supportive measures are important in the management of typhoid fever, such as oral or intravenous hydration, the use of antipyretics, and appropriate nutrition and blood transfusions if indicated. More than 90% of patients can be managed at home with oral antibiotics, reliable care and close medical follow-up for complications or failure to respond to therapy. However, patients with persistent vomiting, severe diarrhea and abdominal distension may require hospitalization and parenteral antibiotic therapy.

Management of uncomplicated typhoid fever

Antimicrobial therapy
There is a wide range of antibiotics used in treatment of typhoid,Due to this fact together with the emergence of multidrug resistance knowledge of the antibiotic sensitivity of the infecting strain is crucial in determining drug choice. If no culture is available a knowledge of likely sensitivity as indicated by the available global data may be useful

Efficacy, availability and cost are important criteria for the selection of first-line antibiotics to be used in developing countries. The therapeutic strategies for children, e.g. the choice of antibiotics, the dosage regimen and the duration of therapy, differ from those for adults.

Chloramphenicol, despite the risk of agranulocytosis in 1 per 10 000 patients,is still widely prescribed in developing countries for the treatment of typhoid fever. S.Typhi remains sensitive to this drug and it is widely available in most primary care settings .The disadvantages of using chloramphenicol include a relatively high rate of relapse (5- 7%), long treatment courses (14 days) and the frequent development of a carrier state in adults.

Dose:

The recommended dosage is 50-75 mg per kg per day for 14 days in four divided doses. The usual adult dose is 500 mg given four times a day for 14 days.

Ampicillin and amoxicillin may also be used at 50 to 100 mg per kg per day orally, intramuscularly or intravenously divided into three or four doses. No benefit has been reported to result from the addition of clavulanic acid to amoxicillin.

Trimethoprim-sulfamethoxazole, (TMP-SMZ) can be used orally or i.v. in adults at a dose of 160 mg TMP plus 800 mg SMZ twice daily or in children at 4 mg TMP per kg and 20 mg SMZ per kg for 14 days (55).

Fluoroquinolones are also used in the treatment of typhoid. They are widely regarded as optimal for the treatment of typhoid fever in adults. They include drugs like ofloxacin, ciprofloxacin, fleroxacin, perfloxacin. They are relatively inexpensive, well tolerated and more rapidly and reliably effective than the former first-line drugs, viz. chloramphenicol, ampicillin,amoxicillin and trimethoprim-sulfamethoxazole. The majority of isolates are still sensitive. This so because the optimum treatment for quinolone-resistant typhoid fever has not been determined. Azithromycin,the third-generation cephalosporins, or a 10-14 day course of high-dose fluoroquinolones, is effective.

Management of complicated typhoid fever

Both outpatients and inpatients with typhoid fever should be closely monitored for the development of complications.

In severe typhoid the fluoroquinolones are given for a minimum of 10 days.

High-dose of intravenous dexamethasone in addition to antimicrobials can be given if the findings are normal and typhoid meningitis is suspected.

Dose:
Initial dose of dexamethasone is 3 mg/kg by slow i.v. infusion over 30 minutes and after six hours, 1 mg/kg is administered and subsequently repeated at six-hourly intervals to lower the mortality rate.

Patients with mental disturbance should check for meningitis.

Patients with intestinal haemorrhage need intensive care, monitoring and blood transfusion.

In case of intestinal perforation, surgical repair should not be delayed longer than six hours. Metronidazole and gentamicin or ceftriazone should be administered before and after surgery (if a fluoroquinolone is not used) to treat leakage of intestinal bacteria into the abdominal cavity.

Management of carriers

Relapses involving acute illness occur in 5-20% of typhoid fever cases that have apparently been treated successfully. A relapse is characterized by the return of fever soon after the completion of antibiotic treatment the clinical manifestation is frequently
milder than the initial illness. At this stage culture is a must and schistosomiasis should be ruled out.

If cholelithiasis or schistosomiasis is present cholecystectomy is done, antiparasitic medication in addition to antibiotics are given in order to eradicate S. typhi carriage

Amoxicillin or ampicillin (100 mg per kg per day) plus probenecid (BenemidÂ®) (1g orally or 23 mg per kg forchildren)or TMP-SMZ (160 to 800 mg twice daily) is administered for six weeks; about 60% of persons treated with either regimen can be expected to have negative cultures on follow-up.

Clearance of up to 80% of chronic carriers can be achieved with the administration of 750 mg of ciprofloxacin twice daily for 28 days or 400 mg of norfloxacin. Other quinolone drugs may yield similar results.

Effects of typhoid on the government and community:

Increased expenditure on treating the infected people.
Reduction on trade as business men may fear to go to affected area
Increased Morbidity leading to absentism from work thus reduced production
Increased Mortality leading to psychological trauma, increased orphan hood and other related effects
Poverty due to increased morbidity and medical expenses
Stigmatization as typhoid is attached to poor sanitation.

Prevention and control

Typhoid fever can be prevented by the following measures:

Avoiding the risky foods and drinks

Being conscious of what one eats and drinks may be as important as being

vaccinated. This is because the vaccines are not completely effective. Avoiding risky foods is a good practice because it also protects an individual from other illnesses, including diarrhea, cholera, dysentery, and hepatitis A.
Drinking water should be boiled cooled and kept covered in clean containers. Only carbonated bottled water as opposed to uncarbonated should be taken because it is safer. If one wants to take chew Ice it should be made from either boiled or bottled water
Foods should be thoroughly cooked and served hot and steaming. Food handlers should be screened for typhoid
Raw vegetables and fruits should be washed thoroughly and peeled before eating. It is advised that someone should peel his/her own fruit to reduce the risk of contamination. Hand washing with soap and water must be done prior to peeling the fruits and the peelings should not be eaten.
Foods and beverages from street vendors should be avoided as it is difficult for food to be kept clean on the street, and many people get sick from food bought from street vendors.
Mothers not living with HIV should breastfeed for two years to protect their children from risky foods and also to provide immunity
The public should be encouraged to always to remember a slogan "Boil it, cook it, peel it, or forget it" if they are to avoid risky food that can predispose them to typhoid.

Immunisation

Immunisation has little value however it is usually recommended to people travelling to countries where typhoid is common. Typhoid vaccines lose effectiveness after several years therefore booster doses are recommended after a given period
below is a table showing the basic information on typhoid vaccines.

Vaccine Name	How given	Number of doses necessary	Time between doses	Total time needed to set aside for vaccination	Minimum age for vaccination	Booster needed every...
Ty21a (Vivotif Berna, Swiss Serum and Vaccine Institute)	1 capsule by mouth	4	2 days	2 weeks	6 years	5 years
ViCPS (Typhim Vi, Pasteur Merieux)	Injection	1	None	2 weeks	2 years	2 years

Use of multi-sectoral approach

Typhoid cannot be prevented and controlled by only the health sector therefore a comprehensive multidisciplinary approach should be adopted. The sectors of importance in typhoid control include those providing safe water and maintaining

good sanitation for example the national water and sewerage co-operation of Uganda, those involved in Education and communication such as the ministry of Education.

The sector responsible for providing water should put in place the following control measures.

In urban areas, control and treatment of the water supply systems must be strengthened from catchments to consumer. Safe drinking water should be made available to the population through a piped system or from tanker trucks.
In rural areas, wells must be checked for pathogens and treated if necessary.
At home, a particular attention must be paid to the disinfection and the storage of the water however safe its source. Drinking-water can be made safe by boiling it for one minute or by adding a chlorine-releasing chemical. Narrow-mouthed pots with covers for storing water are helpful in reducing secondary transmission of typhoid fever. Chlorine is ineffective when water is stored in metallic containers.
In some situations, such as poor rural areas in developing countries or refugee camps, fuel for boiling water and storage containers may have to be supplied

The sector responsible for sanitation should ensure the following:
Availing the appropriate facilities for human waste disposal to all community.
Building pit latrines in an emergency.
Collecting and treating sewage, especially during the rainy season.
Discouraging the use human excreta as fertilizers

Political and community Involvement

The policy makers and leaders should make appropriate policies to implement the suggested measures for example screening and issuing licenses to all the food handlers.
Substantial resources must be allocated to institution supporting the preventive measures.
The community leaders must be involved in educating their people about the importance of good sanitation and preventive measures of typhoid

Recommendations

Since typhoid appears to be silent epidemic in most of the developing recommendations are made;

1.Every person should be responsible enough to take precautions to prevent the spread and the acquisition of typhoid.
2.The convalescent patients and carrier should be reviewed by health workers before they resume on duty more especially food handlers.
3.All government ministries should work together to prevent typhoid since the ministry of health it is not the only player in the control of Typhoid fever.
4.The government should put in place policies supporting the prevention of typhoid such as screening all food handlers.
5.The government should allocate reasonable resources to support the public health intervention focusing on preventing communicable diseases.

6.Health facilities should be well stocked with drugs and other utilities to effectively treat the sick.

Conclusion

Typhoid fever is common in developing countries especially where handwashing is rarely practised. Poor sanitation contributes a lot to the high typhoid prevalence rate in the such countries. Though it is easily spread it can be prevented and completely treated. It is therefore a responsibility of both the public and government to be vigilant to prevent its spread and also to treat the infected in order to reduce both the high mortality and morbidity rate due to Typhoid fever.

BILHARZIA (or schistosomias)

Introduction

Bilharzia or schistosomiasis (also called ‘snail fever') is a parasitic disease caused by several species of flukes, schistosoma. Schistosomiasis remains one of the most prevalent helminthic infections in the world. It is commonly found in tropical and subtropical areas of Africa, South America, Middle East, and East Asia; especially in areas with water contaminated with freshwater snails, which may carry the parasite. The disease affects many people by wading or swimming in lakes, ponds and other bodies of water. Although it has a low mortality rate, ‘bilharzia or bilharziosis’ is a chronic illness associated with renal and bladder dysfunction.

- Types and life cycle
- Clinical features and diagnosis
- Treatment and prevention
- **Types**

  There are five species of flatworms that cause Schistosomiasis namely; S. mansoni, S. haematobium, S. intercalatum, S. japonicum, S. mekongi. Each causes a different clinical presentation of the disease (see table 1). Schistosomiasis may localize in different parts of the body, and its localization determines its particular clinical profile.
  The geographical distribution of the different Schistosoma depends on:
  distribution of the distinct snail species that serve as intermediate hosts,
  climate and ecological factors that regulate the snail population,
  patterns of water supply, quality, distribution and human use.

Table:1 Geographical distribution and epidemiology

Species	Geographical distribution	Vector snails	Disease
S. mansoni	South America,Caribbean, Africa and Middle East	Biomphalaria	intestinal schistosomiasis
S. haematobium	Africa,Middle & Far East	Bulinus	urinary schistosomiasis
S. intercalatum	Central and West Africa		intestinal schistosomiasis
S. japonicum	Far East	Oncomelania	intestinal schistosomiasis
S. mekongi	Mekong river of Southeast Asia		intestinal schistosomiasis

Life cycle

Schistosoma have a typical trematode vertebrate-invertebrate lifecycle, with humans being the definitive host. Parasite eggs are released into the environment from infected individuals, hatching on contact with fresh water to release the free-swimming miracidium. Miracidia infect fresh-water snails by penetrating the snail's foot.

After infection, close to the site of penetration, the miracidia transforms into germs and new parasites, known as cercariae (larvae), which can infect human beings. The newly transformed schistosomulum may remain in the skin for 1-2 days before locating a post-capillary venule. Eight to ten days after penetration of the skin, the parasite migrates to the liver sinusoids.

Parasites reach maturity in 6-8 weeks, at which time they begin to produce eggs. Many of the eggs pass through the walls of the blood vessels, and through the intestinal wall, to be passed out of the body in faeces.

Trapped eggs mature normally, secreting antigens (a substance that prompts the generation of antibodies; proteins that are found in blood or other bodily fluids, and are used by the immune system to identify and neutralize foreign bodies). The eggs themselves do not damage the body. Rather it is the cellular infiltration resultant from the immune response that causes the pathology classically associated with schistosomiasis.

Clinical features

Schistosomiasis is a chronic disease. Acute schistosomiasis may occur weeks after initial infection by S. mansoni and or S. japonicum. Manifestations develop between 4 and 8 weeks after exposure. They include: fever, sweat chills, cough and headaches.

A patient with intestinal Schistosomiasis may complain of abdominal pain, fatigue, weakness in leg, bowel, stomach muscles, bloody or diarrhoea, eosinophilia (extremely high eosinophil granulocyte count). Ulceration and chronic bleeding may

lead to moderate or severe iron deficiency (anaemia). Chronic schistosomiasis is a less dramatic and progressive illness resulting from prolonged tissue injury and severe organ damage of hepatosplenomegaly (enlargement of both the liver and the spleen).
Urinary Schistosomiasis usually creates bladder and compromised kidney function, haematuria, bladder cancer, and uretitis.
Pulmonary Schistosomiasis results from parasite egg deposition in walls of blood vessels obstructing blood circulation resulting into pulmonary hypertension.

Occasionally central nervous system (CNS) lesions, embolic egg granulomas in brain or spinal cord (CNS Schistosomiasis) occur with S. mansoni, S. japonicum infection in chronically infected persons but may happen during the acute phase.

Diagnosis of disease

The gold standard for Schistosoma infection is identification of parasite eggs in patient stool (S. mansoni, S. japonicum, S. mekongi and S. intercalatum) or urine (S. haematobium).
Tissue biopsy (rectal biopsy for all species and biopsy of the bladder for S. haematobium) may demonstrate parasite infection when stool or urine examinations are negative.
Serology or antibody detection can be used to detect presence of specific antischistosome antibodies.

Treatment

Bilharzia, if diagnosed early can be treated using a single oral dose of the drug Praziquantel annually. Cure rates have typically been equal to or greater than 85%. Worm pairs can live in the body for an average of four and a half years, but may persist up to 20 years.
In younger patients, completion of therapy is associated with reduction, regression or reversal of complaints. Older people with more advanced tissue injury may not be able to experience reversal of their schistosome-associated lesions.

Prevention and Control

There are a number of different ways to prevent transmission of infection or reduce the likelihood of heavy infection. Community treatment of Schistosomiasis may be based on the impact of the disease.

For example, in endemic villages:
When >50% of children have blood in their urine, everyone in the village receives treatment.
When 20% to 50% of children have bloody urine, only school-age children are treated.
When less than 20% of children have symptoms, mass treatment is not implemented.

Prevention is best accomplished by:

1)Reduction or elimination of water-dwelling snails which are the natural reservoir of the disease.
2) Elimination or guard against snail habitats or likely to harbour the carrier snails.

3)Sanitation and hygiene measures to prevent human excreta from contaminating local
water sources
4)Use of protective footwear or clothing
5)Treatment of exposed populations

HYPERTENTION

Definition of hypertension

Hypertension is the persistent high blood pressure, in which the systolic is more than 140mm of Hg, and diastolic is more then 90mm of Hg (140/90mm Hg) which are measured in two or more consecutive days in a week. It can also described as high blood pressure (tension) in the arteries (vessels that carry blood from the pumping heart to all the tissues and organs of the body).

The top number, the systolic blood pressure, corresponds to the pressure in the arteries as the heart contracts and pumps blood forward into the arteries. The bottom number, the diastolic pressure, represents the pressure in the arteries as the heart relaxes after the contraction. The diastolic pressure reflects the lowest pressure to which the arteries are exposed.

- Epidemiology of hypertension
- Types of hypertension
- Risk factors
- Causes of essential hypertension
- Causes of secondary hypertension
- Signs, symptoms and complications of hypertension
- Diagnosis of hypertension
- Control and treatment of hypertension
- Challenges in prevention, control and treatment
- Conclusion
- References

Epidemiology of hypertension

The prevalence of hypertension appears to vary depending on geographical area, socio-economic status, age of persons, gender, heredity, and ethnicity.

Epidemiological studies show that there are significant geographical differences in the occurrence of hypertension and its complications both between and within countries; this is considered to be influenced by the interaction of nutritional and environmental factors with the subject's genetic predisposition/susceptibility to develop hypertension. The American Heart Association estimates high blood pressure affects approximately one in three adults in the United States - 73 million people. High blood pressure is also estimated to affect about two million American teens and children, and the Journal of the American Medical Association reports that many are under-diagnosed.

In developed countries with affluent economies, higher levels of blood pressure and higher prevalence of hypertension in lower socio-economic groups have been noted; this inverse relation has been also noted with levels of education, income and occupation. In societies that are in the transitional stage of economic and epidemiological change, higher levels of blood pressure and a higher prevalence of hypertension have been noted in upper socio-economic groups.

Mean blood pressure and prevalence of hypertension increase with age throughout childhood, adolescence and adulthood in most populations of developed and developing countries. However, in some isolated populations, this age-related rise of blood pressure (BP) is not evident.

With regard to gender, men tend to display higher blood pressure than women, more evident in youth and middle-age. Later in life (over 50 years old), the difference narrows and the pattern may be reversed.
Although the precise mode of heredity/inheritance has not yet been demonstrated, a high occurrence of hypertension is observed among subjects with a family history of hypertension and it is higher and more severe when both parents are concerned.

Studies have also revealed higher blood pressure levels in the black community than in other ethnic groups, mainly in black Afro-Americans with early onset, severity and appearance of complications.

Mortality in African adults is unknown and probably varies considerably between regions from 1% to 2.5% per year. Community and hospital studies suggest that 5% to 15% of people die from cardiovascular diseases mainly stroke and congestive heart failure resulting from hypertension. Calculation of the population attributable risk confirms that about 5% of deaths can be attributed to hypertension. Given that half of all deaths occur in adults, the overall contribution of hypertension would therefore be around 2.5%. One study of global disease burden has attributed 5.8% of deaths at all ages to hypertension.

Types of hypertension

There are two major type of hypertension, namely:
1. Essential hypertension (primary hypertension)
This accounts for 95% of all hypertension cases. The cause of essential hypertension is multifactorial, that is, there are several factors whose combined effects cause this (e.g. genetic factors, lifestyle). Approximately 30 % of cases of essential hypertension are said to be attributable to genetic factors. People who suffer from essential hypertension have an increased resistance (i.e. stiffness or lack of elasticity) in the tiny arteries that are most distant from heart.

2. Non essential hypertension (secondary hypertension)
This accounts for 5% of all hypertension cases. This type of hypertension is secondary to (caused by) a specific abnormality in one of the organs or systems of the body.
These two major types can further be classified as below:

- Accelerated hypertension, which is the progressive hypertension with the funduscopic vascular changes.
- Adrenal hypertension, which is associated with an adrenal tumor that secretes excess mineral corticoids (hormones produced by the adrenal glands)
- Borderline hypertension. in which the arterial blood pressure is sometimes within the normal range and sometimes within the hypertensive range, thus fluctuating between the normal and the abnormal.
- Gestational hypertension, developed by pregnant mothers.
- Malignant hypertension. This is a severe hypertensive state with papilledema of the ocular fundus and vascular hemorrhagic lesions, thickening of the small arteries and arterioles, left ventricular hypertrophy, and poor prognosis.
- Ocular hypertension. This develops in the intra ocular region, without signs of glaucoma (increased pressure in the eye)
- Portal hypertension, which is abnormally increased pressure in the portal veins which brings blood to the liver. This is a common complication with liver cirrhosis
- Renal hypertension, which is associated with or due to renal disease
- Pulmonary hypertension, which is the pressure exerted in the pulmonary arteries. It is associated with chronic obstructive respiratory diseases (e.g. asthma, bronchitis)
- Systemic venous hypertension. This is characterised by the elevation of systemic venous pressure, usually detected by inspection of the jugular veins.

Risk factors for hypertension

In Africa, as elsewhere, obesity and sodium intake are risk factors for hypertension. In industrialised societies such as the United States, obesity accounts for 25% of cases of hypertension. However, the relative leanness of Africans means that the contribution of obesity to high blood pressure is only around 10%, though this figure may be going up given the westernisation and urbanization of living styles in vogue.

Causes of essential hypertension

The actual causes of essential hypertension, its basic causes or underlying defects are not always known. Nevertheless, certain associations have been recognized in people with essential hypertension.

- Essential hypertension develops only in groups or societies that have a fairly high intake of salt, exceeding 5.8 grams daily, especially in the hypertension that is associated with advancing age, African American background, obesity, hereditary (genetic) susceptibility, and kidney failure (renal insufficiency). Excess salt intake causes an increase in retention of fluids in the body, thereby putting excessive workload on the heart and the kidney systems to remove the excess fluids. The result is high blood pressure.
- Genetic factors are also thought to play a prominent role in the development of essential hypertension. Approximately 30% of cases of essential hypertension are attributable to genetic factors. However, the genes for hypertension have not yet been identified. The responsible genes are believed to regulate blood pressure by controlling salt balance and the tone (state of elasticity) of the arteries. Genetic factors are said to contribute about 30% of cases of essential hypertension. Also, in individuals who have one or two parents with

hypertension, high blood pressure is twice as common as in the general population.
- Vascular diseases, such as arteriosclerosis (occlusion of the blood vessels). This condition causes an increased resistance (stiffness or lack of elasticity) in the tiny arteries that are most distant from the heart (peripheral arteries or arterioles). This condition is also present in those individuals whose essential hypertension is associated with genetic factors, obesity, lack of exercise, overuse of salt, and ageing.

Causes of secondary hypertension

- *Diseases of the kidneys* can cause secondary hypertension. This can be due to narrowing (stenosis) of the artery that supplies blood to the kidneys (renal artery). In younger individuals, usually women, the narrowing is caused by a thickening of the muscular wall of the arteries, while in older individuals, it is due to hard, fat-containing (atherosclerotic) plaques that are blocking the renal artery. Any of the other types of chronic kidney disease that reduces the function of the kidneys can also cause hypertension due to hormonal disturbances and/or retention of salt.
- *Adrenal gland tumours*. The adrenal glands sit right on top of the kidneys. When the glands develop tumours, the latter produce excessive amounts of adrenal hormones that cause high blood pressure.
- *Coarctation of the aorta*, a rare hereditary disorder, is one of the most common causes of hypertension in children. This condition is characterized by a narrowing of a segment of the aorta, the main large artery coming from the heart. The narrowed segment (coarctation) of the aorta generally occurs above the renal arteries, which causes a reduced blood flow to the kidneys thereby stimulating the kidneys to produce renin-angiotensin-aldosterone hormone which elevates the blood pressure.
- *Obesity*. This is a genetic or acquired body morphological condition whereby ones BMI (body mass index) index â‰¥ 25. It is characterised by excessive fat deposits that may occlude the blood vessels thereby increasing resistance to blood flow through the vessels. The result is high blood pressure or hypertension.
- *Sedentary lifestyle* is one the leading causes of obesity, which eventually leads to hypertension as illustrated above.

Signs, symptoms and complications of hypertension

Uncomplicated high blood pressure usually occurs without any symptoms for years (silently) until when one develops fatal complications, hence labelled "the silent killer. This happens when there are no symptoms, and those affected fail to undergo periodic blood pressure screening. However, the common symptoms are:

- dizziness
- headache
- night sweating
- nausea
- hearing own heart sound (palpitation)
- blurred vision

- shortness of breath
- blood pressure above 140/90mm of Hg

In severe high blood pressure (accelerated or malignant hypertension) all the above symptoms are present, but more severe with the diastolic blood pressure (the minimum pressure) exceeding 140 mm Hg. Malignant hypertension is a medical emergency and requires urgent treatment to prevent a stroke (brain damage).

While elevated blood pressure alone is not an illness, it often requires treatment due to its short- and long-term effects on many organs. The common complications include:

- hypertensive cardiomyopathy leading to heart failure
- renal damage (kidney failure)
- cerebrovascular accident (stroke)
- retinal damage (retinopathy)
- myocardial infraction (heart attack)

Diagnosis of hypertension

Diagnosis of hypertension is generally on the basis of a persistently high blood pressure. Usually this requires three separate measurements at least one week apart. Exceptionally, if the elevation is extreme, or end-organ damage is present then the diagnosis may be applied and treatment commenced immediately.

Obtaining reliable blood pressure measurements relies on following strict guidelines and procedures, validating diagnosis methods, and understanding the many factors that influence blood pressure reading. For instance, measurements in control of hypertension should be at least 1 hour after caffeine, 30 minutes after smoking or strenuous exercise and without any stress. Cuff size is also important. The bladder should encircle and cover two-thirds of the length of the (upper) arm. The patient should be sitting upright in a chair with both feet flat on the floor for a minimum of five minutes prior to taking a reading. The patient should not be on any adrenergic stimulants, such as those found in many cold medications.

Some investigations done in diagnosed or suspected hypertensive clients to identify any underlying cause or detect any damage already done include:

- blood tests (creatinine, electrolytes, cholesterol, glucose)
- urine analysis for proteinuria (for kidney or renal damage especially among the diabetics)
- electrocardiogram (for evidence of the heart being under strain from working under a high blood pressure)
- chest x-ray (to check for any signs of cardiac enlargement or disorder)

Control and treatment of hypertension

The presence of symptoms can be a good thing in that they can prompt people to consult a doctor for treatment and make them more compliant in taking their medications. Often, however, a person's first contact with a physician may be after significant damage to the end-organs has occurred. In many cases, a person visits or

is brought to the doctor or an emergency room with a heart attack, stroke, kidney failure, or impaired vision (due to damage to the back part of the retina).

In order to prevent and control the occurrence of hypertension and its complications, the following measures should be taken:

- Public awareness on the causes and effects of hypertension
- Frequent blood pressure screening should be done to identify patients with undiagnosed high blood pressure before significant complications have developed.
- Self regulation of salt intake should be practised. Adults above 19 years of age should consume less than 5 grams of salt per day (to replace the average amount lost daily through perspiration and to achieve a diet that provides sufficient amounts of other essential nutrients).
- Life style modification. Smoking, excessive alcohol intake should be avoided. Lifestyles that lead to obesity such as eating fast foods, and lack of exercises should be also be avoided. A DASH diet (dietary approaches to stop hypertension), which is rich in fruits and vegetables and low fat or fat-free dairy foods has been found by the US National Institutes of Health beneficial in avoidance and control of hypertension.
- Stressful situations such as high sound levels or high illuminations should not be entertained. People should always seek personal services of counsellors or use other stress relieving interventions like meditation and prayer.
- People already diagnosed with hypertension should adhere to the prescribed anti hypertensive drugs to avoid developing complications. Commonly used drugs are:
    - angiotensin converting enzyme inhibitors : such as captopril, enalpril
    - angiotensin receptor antagonist : such as irbesartan,
    - alpa blockers, e.g. prazosin
    - beta blockers, e.g. metoprolol, atenolol, labetalolol.
    - calcium channel blockers, e.g. amlodipine verapamil
    - diuretics: hydrochlorothiazide
    - direct rennin inhibiter: teckturna
- Surgery can be done to correct an associated abnormality. For example, a narrowing of the renal artery may be treated by balloon angioplasty (widening of the renal artery or dilating of the coarctation of aorta) Tumours in the adrenal gland can also be removed in the treatment of malignant hypertension.

Challenges in prevention, control and treatment

- In sub-Saharan Africa it is difficult to formulate and justify policy on treating chronic conditions such as hypertension as there are no health statistics from which to judge likely costs and benefits
- The majority of Africans live in rural areas and are marginally integrated into the cash economy, while some of those who live cities are in extreme poverty In this case, the challenge lies in developing effective strategies for these sections of society.

- Hypertension is the most common cardiovascular condition in the world and the problem of defining a strategy for control confronts all societies. Hypertension is fully treatable, but social conditions in Africa make the implementation of blood pressure control programmes difficult. Lack of a clear strategy based on evidence has undermined further these efforts.
- High blood pressure is a silent killer in that initially it may cause no symptoms but can still cause serious long-term complications. Many people have high blood pressure and don't even know it.
- Psychosocial factors in hypertension have been studied little. In Africa Instruments for measuring these factors in African societies have not been much developed. No trials of preventive measures that have reduced risk factors for hypertension have been reported from most of Africa. Drug treatment is therefore at the moment the only proved option at present.

Emerging issues regarding hypertension

1. It is important to remember that not only can kidney disease cause hypertension, but hypertension can also cause kidney disease. Therefore, all patients with high blood pressure should be evaluated for the presence of kidney disease so they can be treated appropriately.
2. Control of iodine deficiency disorders using salt versus salt intake being one of the risk factors for the development of hypertension

Conclusion

High Blood Pressure (Hypertension) at a glance:

- Essential hypertension may run in some families and occurs more often in the African American population, although the genes for essential hypertension have not yet been identified.
- Though hypertension may run in some families (genetic), high salt intake, obesity, lack of regular exercise, excessive alcohol or coffee intake, and smoking may all adversely affect the outlook for the health of an individual with hypertension. Lifestyle adjustments in diet and exercise and compliance with medication regimes are important factors in determining the outcome for people with hypertension.
- High blood pressure is called "the silent killer" because it often causes no symptoms for many years, even decades, until it finally damages certain critical organs.
- Poorly controlled hypertension ultimately can cause damage to blood vessels in the eye, thickening of the heart muscle and heart attacks, hardening of the arteries (arteriosclerosis), kidney failure, and strokes.
- Heightened public awareness and screening of the population are necessary to detect hypertension early enough so it can be treated before critical organs are damaged.

DIPTHERIA

Definition of diphtheria

Diphtheria is a disorder caused by a highly contagious bacterial infection called

bacterium Corynebacterium diphtheriae. Diphtheria spreads easily and occurs quickly. It mainly affects the nose and throat. Children under 5 and adults over 60 years old are particularly at risk for contracting the infection. People living in crowded or unclean conditions, those who aren't well nourished, and children and adults who don't have up-to-date immunizations are also at risk.

- Description of diphtheria
- Signs and symptoms of diphtheria
- Prevention and treatment of diphtheria
- References

Description of diphtheria

Diphtheria bacteria live in an infected person's nose, throat, skin, or eye discharges. It is especially dangerous when it affects the throat, where it can produce a thick grey membrane that may grow large enough to obstruct breathing. The most serious complications are caused by a toxin produced by the diphtheria bacterium that can damage the heart, nervous system and, less often, the kidneys.

Diphtheria is highly contagious. It's easily passed from the infected person to others through sneezing, coughing, or even laughing. It can also be spread to others who pick up tissues or drinking glasses that have been used by the infected person. You can also catch diphtheria from touching the open sores on someone with skin diphtheria.

People who have been infected by the diphtheria bacteria can infect others for up to 4 weeks, even if they don't have any symptoms. The incubation period (the time it takes for a person to become infected after being exposed) for diphtheria is 2 to 4 days, although it can range from 1 to 6 days.

Signs and symptoms

In its early stages, diphtheria can be mistaken for a bad sore throat. A low-grade fever and swollen neck glands are the other early symptoms.

The toxin, or poison, caused by the bacteria can lead to a thick coating in the nose, throat, or airway. This coating is usually fuzzy gray or black and can cause breathing problems and difficulty in swallowing. The formation of this coating (or membrane) in the nose, throat, or airway makes a diphtheria infection different from other more common infections (such as strep throat) that cause sore throat.

As the infection progresses, the person may have difficulty breathing or swallowing, complain of double vision, have slurred speech, even show signs of going into shock (skin that's pale and cold, rapid heartbeat, sweating, and an anxious appearance).

In cases that progress beyond a throat infection, diphtheria toxin spreads through the bloodstream and can lead to potentially life-threatening complications that affect other organs of the body, such as the heart and kidneys. The toxin can cause damage to the heart that affects its ability to pump blood or the kidneys' ability to clear wastes. It can also cause nerve damage, eventually leading to paralysis. Up to 40% to 50% of those who don't get treated can die.

Prevention and treatment

Preventing diphtheria depends almost completely on immunising children with the diphtheria/tetanus/pertussis (DTP or DTaP) vaccine and non-immunized adults with the diphtheria/tetanus vaccine (DT). Most cases of diphtheria occur in people who haven't received the vaccine at all or haven't received the entire course.

The immunisation schedule calls for:

- DTaP vaccines at 2, 4, and 6 months of age
- Booster dose given at 12 to 18 months
- Booster dose given again at 4 to 6 years
- Booster shots given every 10 years after that to maintain protection

Although most children tolerate it well, the vaccine sometimes causes mild side effects such as redness or tenderness at the injection site, a low-grade fever, or general fussiness or crankiness. Severe complications, such as an allergic reaction, are rare. If the infection is advanced, people with diphtheria may need a ventilator to help them breathe. In cases in which the toxins may have spread to the heart, kidneys, or central nervous system, patients may need intravenous fluids, oxygen, or heart medications. A person with diphtheria must also be isolated. Family members (as well as others who spend a lot of time with the person with diphtheria) who haven't been immunized, or who are very young or elderly, must be protected from contact with the patient. When someone is diagnosed with diphtheria, it is necessary to treat everyone in the household who may have been exposed to the bacteria. This will include assessment of immune status, throat cultures, and booster doses of the diphtheria vaccine. They will also receive antibiotics as a precaution.

Immediate hospitalisation and early intervention allow most patients to recover from diphtheria. After the antibiotics and anti-toxin have taken effect, someone with diphtheria will need bed rest for a while (4 to 6 weeks, or until full recovery). Bed rest is particularly important if the disease has affected the person heart.

In conclusion, there is need to encourage immunisation in early childhood days as well as ensuring proper sanitation of our surroundings. Immediate treatment and hospitalization is required for those who have caught the disease and those who have recovered should still receive a full course of the diphtheria vaccine to prevent a recurrence because contracting the disease doesn't guarantee lifetime immunity.

CORONARY/ ISCHAEMIC HEART DISEASE

This chapter brings a brief background of the Ischemic Heart Disease covering the history and epidemiology of the disease, its presentation, methods of treatment or control and the public health implications of the disease.

Introduction

Common Name: Coronary Artery Disease, Medical Term: Ischaemic Heart Disease. Ischemic or ischemic heart disease (IHD), or myocardial ischemia, is a disease characterised by reduced blood supply to the heart muscle, usually due to coronary artery disease (atherosclerosis of the coronary arteries). Its risk increases with age, smoking,

hypercholesterolemia (high cholesterol levels), diabetes, hypertension (high blood pressure) and is more common in men and those who have close relatives with Ischemic heart disease.

Symptoms of stable Ischemic heart disease include angina (characteristic chest pain on exertion) and decreased exercise tolerance. Unstable IHD presents itself as chest pain or other symptoms at rest, or rapidly worsening angina. Diagnosis of IHD is with an electrocardiogram, blood tests (cardiac markers), cardiac stress testing or a coronary angiogram. Depending on the symptoms and risk, treatment may be with medication, percutaneous coronary intervention (angioplasty) or coronary artery bypass surgery (CABG).

It is the most common cause of death in most Western countries, and a major cause of hospital admissions. There is limited evidence for population screening, but prevention (with a healthy diet and sometimes medication for diabetes, cholesterol and high blood pressure) is used both to prevent IHD and to decrease the risk of complications.

Description

Coronary artery disease is a condition in which fatty deposits (atheroma) accumulate in the cells lining the wall of the coronary arteries. These fatty deposits build up gradually and irregularly in the large branches of the two main coronary arteries which encircle the heart and are the main source of its blood supply. This process is called atherosclerosis which leads to narrowing or hardening of the blood vessels supplying blood to the heart muscle (the coronary arteries). This results in ischaemia (inability to provide adequate oxygen) to heart muscle and this can cause damage to the heart muscle . Complete occlusion of the blood vessel leads to a heart attack (myocardial infarction).

In the United States, cardiovascular disease is the leading cause of death among both sexes, and coronary artery disease is the commonest cause of cardiovascular disease.

Myocardial infarction causes 35% of deaths in men between 35 and 50.The death rate is higher for men than for women between the ages of 35 and 55.However, after the age 55, the death rate for men declines but the rate for women continues to climb.

- Causes, signs and symptoms
- Risk factors
- Diagnosis and treatment
- Complications and prognosis
- References

Causes

Exact cause is unknown. However there are a number of risk factors. Control of these risk factors has been shown to reduce the severity and complications of the disease.

Prevention

It is now clear that reducing certain risk factors, we can both prevent coronary artery disease and delay its progression and complications after it it has become manifest. Treatment of lipid abnormalities has now been shown to delay the progression of atherosclerosis and in some cases has even produced regression of the atherosclerotic plaques.

Signs and symptoms
Early stages: No symptoms. Later stages: Angina pectoris (burning, squeezing, heaviness, or tightness in the chest that may extend to the left arm, neck, jaw, or shoulder blade). See Angina Pectoris. Typically, angina is precipitated by physical activity, lasting no more than a few minutes, and is relieved by rest. Usually angina is worse when exertion follows a meal. It is also worse in cold weather and can be triggered by walking from a warm room into the cold air. Emotional stress can also cause or worsen angina. Not all people with ischemia will present with angina. Ischemia without angina is called silent ischemia. It is not yet understood why ischemia is sometimes silent.

Risk Factors
The aetiology of IHD is multi-factorial. It is the result of interaction between genetic, lifestyle and environmental factors.

Age
IHD increases with age. This is a non-modifiable risk factor.

Gender
Traditionally, IHD has been considered a disease of men. However, IHD is the leading cause of death in both men and women. It is responsible for a third of all deaths in women worldwide and half of all deaths in women over the age of 50 in developing countries.

Social deprivation
In England and Wales there is a positive correlation between deaths from circulatory diseases and levels of deprivation. There is a marked difference in prevalence of IHD between and within communities. Men and women living in the West of Scotland are nearly six times more likely to die prematurely from coronary heart disease than men and women living in the South West of England. Within London, people living in Tower Hamlets have a three times increased risk of dying prematurely from IHD than those in Kensington and Chelsea. The difference in IHD rates in different socio-economic groups is related to many factors including diet, smoking, exercise, alcohol.

Smoking
Mortality from IHD is 60% higher in smokers. Regular exposure to passive smoking increases IHD risk by 25%. About 1 in 8 deaths from cardiovascular disease (CVD) were attributable to smoking in 2000 in the UK. WHO research estimates that over 20% of CVD is due to smoking.

Poor nutrition
A World Health Organisation report in 2003 stated that a diet high in fat (particularly saturated fat), sodium and sugar and low in complex carbohydrates, fruit and vegetables increases the risk of cardiovascular disease. COMA recommended in 1994 that the percentage food energy derived from fat should be 35%, with 11% from saturated fat. The Scientific Advisory Committee on Nutrition suggests that salt intake should be no more than 6g per day. The National Diet and

Nutrition Survey in 2000/01 found that the total energy intake from fat was 36% in men and 35% in women with 13% from saturated fat. It also found that the average intake of fruit and vegetables was less than 3 portions per day compared to the recommended 5 portions. In the same survey salt intake was 11g per day for men and 8.1g for women. There are national, regional, socio-economic and ethnic differences in nutrition. Tran's fatty acids reduce HDL and increase LDL-cholesterol and can increase coronary heart disease risk. A meta-analysis showed that a 2% increase in the energy intake from trans-fatty acids increased IHD incidence by 23%. Eating oily fish rich in omega-3 fatty acids has been shown to reduce IHD mortality. Increased intake in dietary fibre also appears to reduce risk.

Physical activity infrequent exercise

Physical activity reduces the risk of IHD. The 2002 World Health Report estimated that over 20% of IHD in developed countries was due to physical inactivity. Recommended physical activity levels are 30 minutes of moderate physical activity on 5 or more days per week. In 2003, over one third of UK adults were inactive (exercised for less than one occasion of 30 minutes per week).

Alcohol

1 to 2 units of alcohol per day reduces the risk of IHD. Alcohol increases HDL cholesterol and reduces thrombotic risk. Higher levels of consumption increase risks from other causes. The World Health Report in 2002 estimated that 2% of IHD in men in developed countries is due to excessive alcohol consumption. Men should drink no more than 3 to 4 units on any one day and women no more than 2 to 3 units.

Psychosocial well being

Work stress, lack of social support, depression, anxiety and personality (particularly hostility) can all increase IHD risk.

Blood pressure

For adults aged 40 to 69 years, each 20 mmHg rise in usual systolic blood pressure or 10 mmHg rise in diastolic blood pressure doubles the risk of death from IHD. The INTERHEART study showed that 22% of heart attacks in Western Europe were due to a history of high blood pressure and those with hypertension had almost twice the risk of a heart attack.

Cholesterol

IHD risk is related to cholesterol levels. The INTERHEART study suggested that 45% of heart attacks in Western Europe are due to abnormal blood lipids. People with low levels of HDL-cholesterol have an increased risk of IHD and a worse prognosis after a myocardial infarction. In the UK, it is suggested that the target cholesterol is < 4 mol/l for people with diabetes or established CVD or for people at high risk of developing CVD. People with HDL-cholesterol < 1 mol/l should also be considered for treatment.

Overweight and obesity

Obesity is an independent risk factor for IHD. It is also a risk factor for hypertension, hyper-lipidaemia, diabetes and impaired glucose tolerance. Central or abdominal obesity is most significant. Those with central obesity have over twice the risk of

heart attack.

Diabetes
Men with Type 2 diabetes have a 2 to 4 times greater annual risk of IHD; women have a 3 to 5 time greater risk. Over 4% of men and 3% of women in England have diagnosed diabetes. The prevalence is increasing.

Ethnicity
South Asians living in the UK (people from India, Pakistan, Bangladesh and Sri Lanka) have a higher premature death rate from IHD (46% higher for men; 51% higher for women). Hypotheses for this include migration, disadvantaged socioeconomic status, 'proatherogenic diet', lack of exercise, high levels of homocysteine and LP(a) lipoprotein, endothelial dysfunction and enhanced plaque and systemic inflammation. The premature death rate from IHD in West Africans and people from the Caribbean is much lower (half the rate compared to the general population for men and two-thirds of the rate for women).

Family history
First degree relatives of patients with premature myocardial infarction have doubled the risk themselves. Premature coronary heart disease is that before 55 years in men and 60 years in women. More than one third of admissions for premature myocardial infarction could be prevented by screening and treating first degree relatives. Genetic predisposition and shared lifestyle are likely to contribute. Several regions of the human genome have been shown to be associated with either IHD or hypertension.

Serum homocysteine
It was previously thought that elevated levels of homocysteine is an independent risk factor for IHD, likely to due oxidative damage to endothelium, platelet activation and thrombus formation. The theory was that dietary supplementation with folic acid could reduce homocysteine levels and therefore IHD incidence. A meta-analysis in 2005 disputed this.

Diagnosis and treatment
Diagnosis of angina is a clinical diagnosis based on a characteristic complaint of chest discomfort or chest pain brought on by exertion and relieved by rest. Confirmation may be obtained by observing reversible ischemic changes on ECG during an attack or by giving a test dose of sublingual nitro-glycerine that characteristically relieves the pain in 1 to 3 minutes.
Certain tests may help determine the severity of ischemia and the presence and extent of the coronary artery disease. Diagnostic tests may include electrocardiogram (measures electrical activity of the heart), echocardiogram (measures sound waves), exercise-tolerance test, thallium stress test, blood studies to measure total fat, cholesterol and lipoproteins, X-rays of the chest and coronary angiogram (cardiac catheterization).

General measures

-Stop smoking

-Treat elevated cholesterol levels with low fat, low cholesterol diet, exercise and cholesterol lowering medications
-Treat elevated blood pressure
-Reduce stress
-Maintain ideal body weight
-Balloon angioplasty (treatment for obstructed arteries, especially those supplying blood to the heart and brain. A small uninflated balloon is passed up the artery to the obstruction, and then expanded to release the obstruction
Although these procedures may decrease or eliminate symptoms for a while, they do not control the underlying disease. Surgery to bypass coronary arteries (severe cases).
End-stage coronary artery disease, even when no simple procedures will help, can still be cured with a heart transplant in rare cases.

Medications
Four types of medications are available: beta-blockers, nitrates, calcium channel antagonists and anti-platelet drugs.

Beta-blockers reduce the resting heart rate and so reduce the demand for oxygen. Beta-blockers and nitrates have been proven to reduce the incidence of heart attacks and sudden deaths in people with coronary artery disease.

Nitrates -such as nitro-glycerine, cause dilatation of the blood vessels. There are short-acting and long-acting nitrates. Nitro-glycerine is available as a tablet (sublingual) or an oral spray. A tablet of nitro-glycerine placed under the tongue or inhalation of the oral spray usually relieves an episode of angina in 1 to 3 minutes-the effect of these short-acting nitrates lasts 30 minutes. Anyone with chronic stable angina must keep nitro-glycerine tablets or spray with them at all times.

Long-acting nitrates are available as tablets, skin patches or paste. Tablets are taken 1 to 4 times daily. Nitro paste and skin patches, in which the drug is absorbed through the skin over many hours, are also effective. Long-acting nitrates do tend to lose their effectiveness when taken regularly and therefore it is recommended to have 8 to 12 hour interval without taking the drug to maintain its effectiveness.

Calcium channel antagonists prevent the blood vessels from constricting and thus prevent coronary artery spasm. Certain calcium antagonists, such as vera-pamil and diltiazem, also slow the heart rate and in some patients these drugs are used in conjunction with beta-blockers to prevent episodes of tachycardia (fast heart rate).

Anti-platelet drugs such as aspirin are recommended for patients with coronary artery disease. Aspirin binds irreversibly to platelets and prevents them from clumping on blood vessel walls-thus preventing platelets from forming a clot on the fatty plaques which could block an artery and result in heart attack. Recommended dose is one baby aspirin or half an adult aspirin daily. For people with allergy to aspirin can be treated with .alternative medications such as ticlopidine or clopidogrel bisulphate

Activity

Engage in a program of moderate, daily physical exercise. Resume sexual activity once medical permission is given.

Diet
Low-fat and low cholesterol diet. If you are overweight, begin a moderate reducing diet and stick to it.

Possible complications
Angina pectoris
Life-threatening myocardial infarction (death of heart muscle cells from inadequate blood supply).
Sudden death

Prognosis

Treatment can prolong life and improve its quality. Tremendous amount of research in this field, and new advances are being made and increasing evidence that aggressive treatment can reverse or arrest course of this disease. It is very important to follow your doctor's instructions, especially with respect to lifestyle changes and cholesterol reduction.

Long term prognosis depends on a number of key factors such as the age, the extent of coronary artery disease, the severity of symptoms and most of all , the pumping ability of the heart.
Epidemiology of IHD
Incidence and Prevalence

Mortality rates

Coronary heart disease (IHD) is the most common cause of death (and premature death) in the UK.
1 in 5 men and 1 in 6 women die from IHD.
There are 101,000 deaths from IHD in the UK each year.
Death rates from IHD have fallen by 46% for people under 65 years in the last 10 years. This fall is fastest in those aged 55 and over. It is largely due to a reduction in major risk factors (mostly smoking) and improvement in treatment and secondary prevention. The fall is not as high as that in some other countries such as Australia (48%) and Norway (54%).
Death from IHD is more likely during winter.

Morbidity rates

The average incidence of myocardial infarction is 600 per 100,000 in men aged 3069 and 200 per 100,000 in women. The incidence increases with age.
There are about 52,000 new cases of angina per year in all men living in the UK and about 43,000 new cases in women.
About 4% of men and 2% of women in the UK have had a heart attack. Prevalence increases with age and is higher in men.
About 8% of men and 5% of women aged 55 to 64 and 17% of men and 8% of women

aged 65 to 74 have or have had angina.
The prevalence of IHD is about 7.4% in men and 4.5% in women.
The prevalence is higher in Scotland (4.6%) than in Wales (4.3%) or England (3.6%).
The prevalence is higher in the North of England and Wales than in the South of England.
The prevalence is higher in lower socio-economic groups.
Of note, mortality from IHD is falling but morbidity appears to be rising.

Economic cost

IHD is estimated to cost the UK economy over Â£7.9 billion a year (including direct health care costs and productivity losses).
Among the more developed countries in Europe, only Ireland and Finland have a higher rate of IHD than the UK.

INJURIES

Introduction

Injuries are a long standing public challenge and require intervention to deal with them. In the following resources, we will present the case of injuries.
What problems and challenges are caused by injuries?
What are the known or acceptable methods of control (available programs of main intervention)?
What are the emerging issues around this condition?

Definition of injuries

Injury is a damage or harm caused to the structure or function of the body due to an external agent or force; the agent may be physical or chemical. Injuries may be accidental or intentional. Intentional injuries are usually violence related.

Globally, about 16 000 people die of injuries every day and about 5.8 million people die every year. This corresponds to an annual mortality rate of 97.9 per 100 000 population. World Health Report 2002, injury accounts for 12.2% of total burden of disease. Road traffic injuries account for 25% of all deaths from injury. In comparison to other diseases and health conditions, injury morbidity, mortality and disability account for disproportionate deaths among children and young adults. This leads to a major burden on health sector and social welfare services, and its economic consequences for the care as well as loss of productivity.

- Types and grading of injuries
- Classification of injuries
- Impacts of injuries
- What are the known or acceptable methods of controlling injuries?
- Emerging issues
- References

Types of injuries

Injuries fall into six types; burns and scalds (that are due to flames, steam, radiations and hot liquids), electric shock, drowning and near drowning, falls, road

traffic accidents, air travel injuries, bites, diving injuries, poisoning and occupational (work related). The most vulnerable groups for road traffic injuries are pedestrians, pedal cyclists and motorcyclists.

Grading of injuries

Injuries are in two main grades, minor and severe. Most injuries are minor and are not life threatening. They can be managed using first aid methods and hospitalization is rarely required. *Minor injuries* include: - bruises, superficial wounds, superficial burns, concussion, strain and sprain.

- Bruise is a haemorrhage that is under the skin caused by contusion.
- Wound is as a result of cuts to and grazes under the skin that can cause bleeding and lacerations.
- Burns are injuries that are caused by excess heat, chemical exposure, or sometimes cold (frostbite)
- Concussion is the type of injury that gives mild traumatic brain injury caused by a blow usually without any penetration to the skull or brain
- Sprain is the type of injury that occurs to ligaments caused by the sudden over stretching.
- Strain on the other hand is the type of injury that occurs to muscles caused by the sudden over stretching.

Severe injuries are: head injuries apart from concussion, fractures, deep wounds, traumatic amputation and any injury that involves an organ. Signs of severe injuries include severe pain; swelling; fever; numbness; deep wounds; wounds over bones; inability to use the injured area.

- Fractures are injuries that occur to the bones.
- Shock is a serious medical condition that arises from tissues not getting sufficient oxygen and nutrients.
- Amputation is the removal of part arising from trauma or surgery.
- Joint Dislocation is the displacement of a bone from its normal joint position.

Classification of Injuries

Injuries are classified basing on the WHO scheme (ICECI) that is a multi-axial and hierarchical structure. It is based on seven modules:

- Mechanisms of injuries
- Objects/substances causing injuries
- Place of occurrence
- Activity when injuries
- The role of human intent
- Use of alcohol
- Use of other psycho-active drugs.
- Occupational injury).

However, in addition to the above modules there are modules that are used collect additional data on special topics (violence, transport, place, sports and occupational injury).

Clinical presentation of injuries
This usually depends on the type and severity of the injury. In minor injuries, there pain, swelling, heat, reddening, lack of function and major injuries, there is shock, severe pain, heavy bleeding, obvious loss of function which is sometimes permanent like blindness and sometimes loss of consciousness.

Management of injuries
The management of injuries like clinical presentation also depends on the type and severity of the injury. For example minor injuries can be managed using simple measures such as first aid and out-of-hospital or as out patients. The management is usually simple and less costly as compared to the management of major injuries.

Major injuries usually require hospitalization and expensive in terms of resource use and management. The patients need a lot of time for injury management before recovery/ healing and they normally end up being impaired or disabled or handicapped or all the three.

Impacts of injuries

-Impacts of injuries can be grouped into; physical, social, economic and psychological.

-*Physical effects* include loss of body parts and loss of/reduction of function and death.

-*Social effects* include stigma, separation from family and friends, in some cases traditional divorce, marriage break-ups, inability to participate in leisure activities and loss of effective participation on social events. Death brings about bereavement.

-*Economic effects* is loss of job, loss of time while in hospital, loss of productivity or reduction in productivity, loss of income, increased expenditure on medical care and hospitalisation for injured. Reduction of income may bring about transition towards poverty, especially in middle and low income groups. Injuries economically, by loss of government revenue from taxation of income of citizens who have jobs and income. Increased bed occupancy leads to congestion in hospitals and subsequent increase of nosocomial infections. This increases work loads on health workers leading decline of quality of care.

-*Psychological effects* cause depression, anxiety, fear and Post-Traumatic Stress Disorder (PTSD).

What are the known or acceptable methods of controlling injuries?
There are five domains that should be talked and looked into in order to control injuries in any community or society.

1. Improvement in local environment
2. Legislation
3. Public education

4. Product safety
5. Improvement of the levels and quality of emergency care.

Prevention of traffic road accidents and injuries
Accidental injuries also known as intentional injuries can be prevented by designing a safe and sustainable road traffic system; reducing motor vehicle traffic; encouraging use of safer modes of travel; safety awareness in planning road networks; incorporating safety features into road design; remedial action at high risk crash sites; improving the visibility of vehicles; using crash protective vehicle design; setting and securing compliance with key road safety rules; setting and enforcing speed limits; installing cameras at traffic lights; regulating drivers hours of work in commercial and public transport systems; setting and enforcing mandatory crash helmet use; seat belts and child restraints; control of drink-driving.

Household preventive measures
This are some of the measures that should be put in place; keeping all chemicals out-of-reach of children, use safe stoves for cooking, putting in place fire safety measures such as raising fire places and other physical barriers that do not allow children to access certain household items, use of ramps for persons who are physically challenged, building and use of fire escapes and putting in place fire-assembly areas in case of fires and fire drills. There should be deliberate effort on the side government to legislate and enforce building and engineering regulations and engineering professional practice.

Preventive measures of injuries in recreation places
Design of recreation centres and facilities that have safety measures taken care-of. Swimming pools must have clear instructions on their usage.

Prevention of violence related injuries
Violence related injury is also known as intentional injury. The ways of preventing are; promotion multi-media campaigns to promote non-violence social norms, restricting access to fire arms, enforcement of liquor and licensing laws, reduction of available alcohol through and pricing, pre-school enrichment programs to give children an educational head start. Life skills trainings like in swimming, communicating emergencies and resuscitation. Conducting parents training on child development, non-violent disciplining and problem-solving skills. Professional nurses and social workers should carry out home visiting to inspect the safety of the homes.

The public health approach to injury prevention has various major aspects that include:

- Defining the problem before we can address an injury problem, we need to know how big the problem is, where it is, and whom it affects. We also need to know why and what factors put people at risk for that injury? And conversely, what factors protect people from it?
- Identify risk and protective factors
- Develop and test prevention strategies In this step, we put knowledge into action. Using the information gathered in the previous steps develop strategies

to prevent particular injury problems. We implement these strategies in communities that are experiencing the problem. And we study the effects of these strategies to determine whether and how well they are working. We use this information to identify any elements we need to change to eliminate difficulties or increase effectiveness.

- Intersectoral coordination should be setup for overseeing/developing injury prevention and control strategy.. Injury prevention programme should be integrated within the policies of various organizations such as schools, hospitals, factories etc.
- Referral system: hospitals should separate trauma centre in each zone with trained staff and adequately equipped facilities with definite guidelines/flow chart for injury management and referral. For surveillance of injury, trauma registry should be initiated at these centres.
- Training: Training should be imparted in relation to emergency management of injury at under graduate/post-graduate levels of medical schools as well as periodic orientation practical training to dispensary doctors/private practitioners. Capacity of nurses and paramedics need to be strengthened as well. Various organizations and schools should have fire-fighting measures and under go periodic drills of fire fighting.
- Health education: Public health education awareness campaigns should be initiated regarding the hazards of injury and its prevention. Health education should be included in school curricula and awareness spread through mass media, social workers and health personnel. For this mass education campaign, there should be a separate unit for IEC (information, education, and communication) activities. Modification of environment and infrastructure safety are the longer term investment for sustainable safety.
- Assure widespread adoption What we learn in the developing and testing step has little benefit if we keep the information to ourselves. In this final step of the public health approach, share the knowledge with the public through sensitization and provide funding or expert consultation so that communities can replicate these successful strategies
- Obtaining political commitment which is vital for enforcement of regulations and law.

Emerging issues

- Substance abuse and misuse for intoxication
- Use of corrosive liquids like acids to burn people
- Toxic effects of new drugs
- Terror attacks like arson in schools and bombs in buses
- Dangerous effects of medicine
- Inadequate staffing
- Inadequate training and inadequate equipment to handle injuries
- Resistance of wound infections to available drugs and antibiotics
- Poor supervision of building works and poor control of construction materials causing construction related injuries and death (Bwebajja, Nalya SS, and NSSF Pensions Towers)
- Issues concerning manufacture of poor standard household items and foods
- Displacement of populations

- Increasing levels of poverty
- Domestic violence

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Questions to Ponder

What Is Nutrition and why Is Nutrition Important?
What Is Malnutrition and what Causes Malnutrition?

As a Public health officer, what would you suggest to be done to curb the problem of Malnutrition in Uganda.In not more than 2500 words write an essay about what you would do to improve the issue at stake?

The term 'food' brings to our mind countless images. We think of items not only that we eat and drink but also how we eat them and the places and people with whom we eat and drink. Food plays an important role in our lives and is closely associated with our existence. It is probably one of the most important needs of our lives.
The food that we eat is composed of small units that provide nourishment to the body. These are required in varying amounts in different parts of the body for performing specific functions. This means that good nutrition is essential for good health. However, if our diet provides the important units in incorrect amounts, either very less or in excess of what is required, it results in an imbalance of nutrients in your body. The condition is responsible for various deficiency diseases and slow or no growth of the body.
In this lesson you will learn about why food is essential, its functions and components. You will also be introduced to the terms like 'nutrition' and 'nutrients'. After learning the meaning of these terms, you will then learn the sources and functions of the nutrients and the amounts required by different individuals.

OBJECTIVES

After reading this lesson, you will be able to explain the functions of food; enumerate the sources and functions of the nutrients; relate the nutritional requirements in terms of Recommended Allowances Dietary (RDAs) to nutrition and health.
WHAT IS FOOD?
The term 'food' refers to anything that we eat and which nourishes the body It includes solids, semi-solids and liquids. Thus, two important features for any item to be called food are:

(i) It should be worth eating, that is, it should be 'edible'.
(ii) (ii) It must nourish the body.

Have you ever wondered why food is considered a basic necessity? Food is anything that we eat and which nurishes our body. It is essential because it contains substances which perform important functions in our body.

FUNCTIONS OF FOOD

There are basically three important functions of food:
1. **Social Function**
Food and eating have significant social meaning. Sharing food with any other person implies social acceptance. Food is also an integral part of festivity every where in the world. Have you noticed that certain occasions such as birth of a child

or a marriage or birthdays, are celebrated by having feasts and serving delicacies? Food also has a specific significance and meaning in the religious context.

2. **Psychological Function**

We all have emotional needs, such as need for security, love and affection. Food is one way through which these needs are satisfied. For example, how do you feel when your mother prepares your favourite food or dish? You feel that she loves you and cares for you. Food is often served as a reward also. Do you recall giving a chocolate because someone had been good to you? Similarly, certain foods become associated with sickness, such as Rice and meat and bland foods. Sickness is an unpleasant experience; hence, even the food items served during this state may be associated with unpleasant feelings.

3. **Physiological Function**

There are three physiological functions performed by food. These are energy giving, body building, regulating body processes and providing protection against diseases. Let us see them in detail.

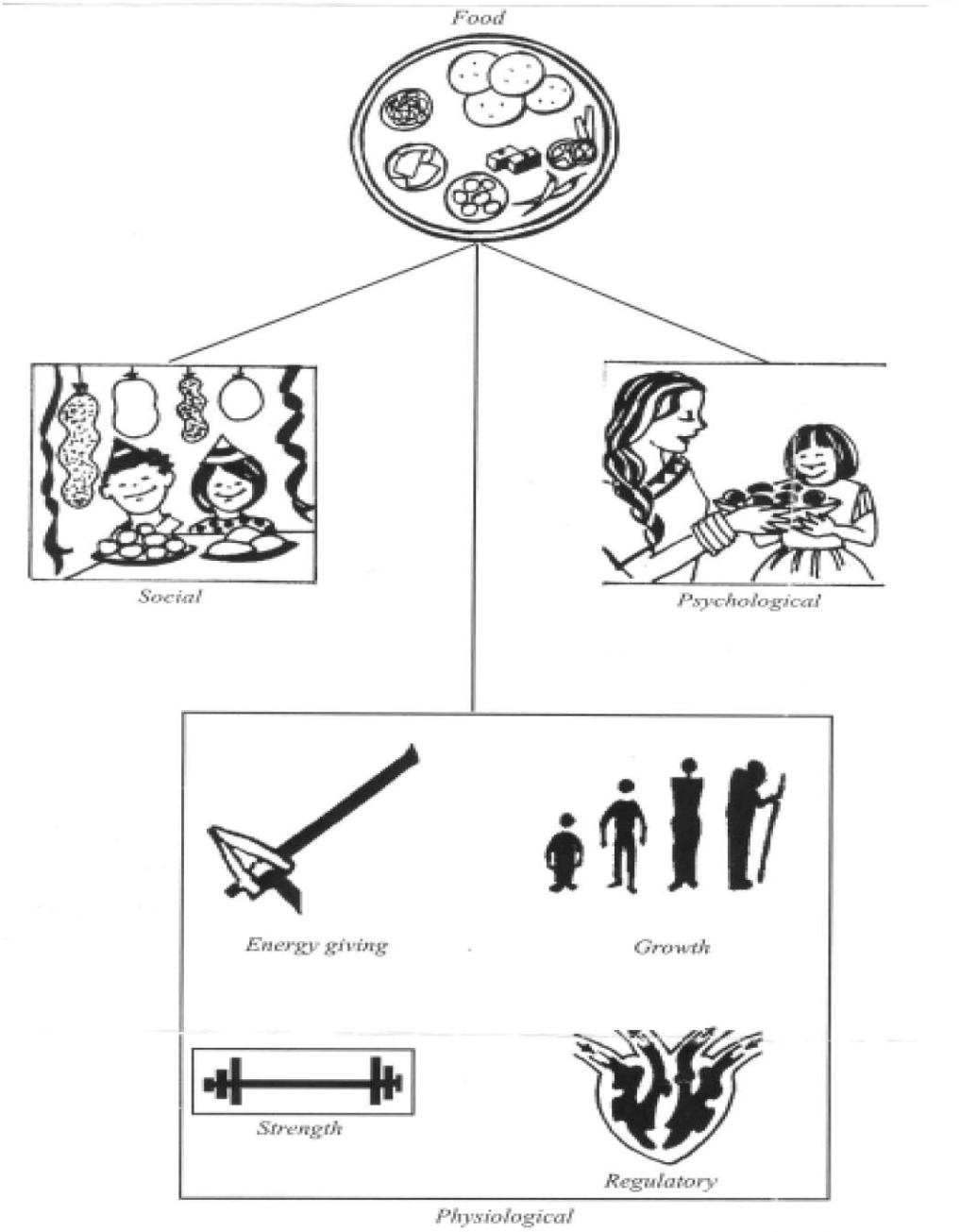
(i) Food provides energy everybody needs energy to do work. Energy is required for walking,

Studying, eating, working in the house or outside. You get this energy from the food that you eat. You need energy even when you are resting. Can you tell why? Different organs inside your body are always working, for example, heart is pumping blood, stomach is digesting food, lungs are breathing in air, etc. All these organs need energy for their respective functions and food provides that energy.

(ii) Food helps in body building Have you ever wondered how a small child grows into an adult. Our body is already made up of thousands of small cells. New cells are added to these to help the body to grow. Food is needed for the formation of new cells. Cells also die or are damaged due to injury. New cells need to be formed and this repair work is done with the help of food.

(iii)Food regulates body processes and provides protection against diseases Regulatory functions refer to the role of food in controlling body processes, for example, our body temperature is maintained at 98.60F or 370C. Similarly, the heart beats are also maintained at 72 beats/minute. Excretion of waste products from the body is also regular. If not, the body suffers from a disease called constipation which can lead to further complications. All these processes are regulated by the food that you eat. The food that we eat gives us strength to fight against disease and germs.

Look at the illustration 4.1 to learn about the functions of food.



NUTRITION AND NUTRIENTS

Let us now read about the meaning of nutrition. All of us eat food. Food provides nourishment to the body and enables it to stay fit and healthy. The food that we eat undergoes many processes, like, first the food is digested, then it is absorbed into blood and transported to various parts of the body where it is utilised. The waste products and undigested food are excreted from the body.

NUTRITION is the process by which food is taken in and utilised by the body.

NUTRITION = Eating→Digestion →Absorption →Transportation →Utilisation

Nutrients and their Functions

We all know that food helps in the nourishment and health of our body. The nourishment is brought about by small units called nutrients present in food. Now what are these nutrients?

Nutrients are the chemical substances present in food and are responsible for nourishing the body.

Nutrients are of two types:

Macronutrients

Micronutrients

Both macronutrients and the micronutrients are equally essential for good health. Each nutrient plays a significant role in the body.

1. Macronutrients

These are present in large quantities in foods and are also required in large amounts by the body. Carbohydrates, proteins, fats and oils are macronutrients.

A. Carbohydrates

(i) Available carbohydrates;Carbohydrates are present in a large quantity as starch in cereals, legumes, pulses and potatoes. They are presented as simple carbohydrates in sugar, jaggery, fruits, honey and milk. Starch and sugars are easily digested and provide energy to the body.

(ii) Unavailable carbohydrates or dietary fibre

They are present in the form of cellulose and hemicellulose which are not digested in our body. They add bulk to the stool and help in easy defecation process. Energy can be derived from carbohydrates, fats and proteins and it is measured in kilo calories. However, carbohydrates are cheapest sources of energy. If there is a short supply of carbohydrates and fats in our body, proteins are utilised for energy production. Function of proteins is to provide for body building. Therefore, carbohydrates have to be consumed in proper amounts to spare proteins for body building purpose.

Functions of carbohydrates are summarised here:.

- Carbohydrates provide energy
- . Carbohydrates are the main source of energy
- . Carbohydrates spare proteins for body building function
- . Dietary fibre increases the bulk in stool and helps in defecation

1 gm of carbohydrate gives 4kcal of energy. Kilocalorie is the measure of energy in food. Food sources of carbohydrates are: Cereals - wheat, rice, bajra, maize, etc. Pulses - Rajma, channa, all dals Roots and tubers - potatoes, sweet potatoes, beetroot and tapioca Sugar, jaggery

B. Proteins

Protein are needed in the body for body building.

1 gm of protein gives 4kcal of energy

Proteins are made up of smaller units known as amino acids. There are all together 22 amino acids, out of which there are 8 amino acids which our body cannot manufacture. Rest of the amino acids can be manufactured by the body. Essential amino acids are those which our body cannot manufacture and hence have to be supplied through the diet. Non essential amino acids are those amino acids which our body can manufacture.

Functions and sources of proteins

(i) Needed for growth, maintenance and repair of tissues.
(ii) Necessary for production of enzymes, hormones, antibodies, haemoglobin, etc.
(iii) Help in the clotting of blood
(iii) Provide energy, if necessary

Sources ;

-Meat, poultry, fish, eggs
-Milk, cheese, paneer, curd
-soybeans, peas, pulses,
-cereals, nuts and oilseeds like til, groundnuts, etc.

Special features

(i) Animal proteins, i.e., proteins from meat, eggs, milk, etc., are better than vegetable proteins, i.e., proteins, from pulses, cereals, etc. This is because proteins from vegetable sources do not contain all essential amino acids.
(ii) Including two or more sources of vegetable proteins in each meal helps to improve the quality of proteins and their utilization.
Note:
When the body does not get enough carbohydrates or fats to meet its energy needs, proteins are broken down to supply these calories. When proteins are used for energy they are not available for other vital functions.

C. Fats and Oils

Fats and oils are the concentrated source of energy in our diet. 1 gm of fat gives 9 kcal of energy. Fats are made up of small units called fatty acids. The nature of fats is dependent on the type of fatty acids present. Fatty acids may be saturated or unsaturated. Saturated fatty acids are found in solid fats whereas oils contain more of unsaturated fatty acids. Vegetable oils are rich in unsaturated fatty acids. Do you know there is a difference between fats and oils?
If a substance is liquid at room temperature it is called oil and if it is solid a the room temperature, it is known as fat.

Functions and sources of fats and oils

- Provide concentrated source of energy
- Reduce the use of proteins for energy
- Carry fat soluble vitamins (A, D, E, K) into the body and help in the absorption of these vitamins
- Help to maintain body temperature. The layer of fat under the skin helps to conserve body heat
- Act as a cushion to certain vital organs

- Help in growth of tissues

Sources

-Cooking oils, ghee, butter
-Oilseeds, nuts , Meat, poultry, fish, eggs -Whole milk, cheese

Special features

(1)Fats improve the texture as well as absorb and retain flavours making meals more appetizing.

(ii) Fats have properties that help them to remain in the stomach longer and prolong the feeling of fullness

2. Micronutrients

Other important nutrients which are present in small quantities in foods but are essential for our body are called micronutrients. These are minerals and vitamins and are required in very small quantities. If these micronutrients are not eaten in required amounts, it results in deficiency diseases.
Minerals and vitamins are called micronutrients .Let us study some of the important micronutrients.

1. Vitamins

Our body contains very little quantity of vitamins, however, you will be surprised to know that they are responsible for all the major functions of the body. These vitamins are of two types:
(i) Fat soluble: A,D,E and K
(ii) Water soluble: B and C
Now, let us study the functions, food sources and deficiency diseases of these vitamins as given in table 4.1 and 4.2.

Fat Soluble Vitamins: Functions and Sources

Vitamin A

- Essential for proper functioning of eyes, that is, vision in dim light, Liver, eggs, fish liver oils.

Milk and its products, Green leafy vegetables, i.e., bathua, etc.

- Necessary for healthy skin and linings of nose, mouth, throat, eyes, ears, lungs and other organs

  -Sources are Yellow or orange fruits and vegetables such as pumpkin, carrot, papaya, mango, etc.

Vitamin D

- Necessary for formation of strong and healthy teeth and bones
- Helps in proper absorption and utilisation of Calcium in the body

-Exposure of skin to sunlight (When the body is exposed to the sun rays, a substance in the skin is converted into vitamin D and transferred to the blood stream)
-Sources are Eggs, liver, fish liver oils, Milk, butter ,Refined oils and ghee are fortified with vitamin D

Vitamin E

- ❖ Prevents destruction of certain substance in presence of oxygen
- Sources are All cereals, pulses, vegetables oils

Vitamin K

- ❖ Necessary for clotting of blood

-Formed in the intestines by bacteria normally present there
Sources are Green leafy vegetables, like cabbages, Spinach, Egg, liver

Minerals

Minerals constitute a very small amount of the total body tissues. However, these are essential for many vital processes and also for the maintenance of the body. In total, there are about 19 minerals required by the body in various amounts.
Let us now study some of the important minerals.

Calcium: Calcium and phosphorus are available in sufficient quantities in milk, curd, green leafy vegetables, ragi and oil seeds. Other foods also provide fair quantity of calcium.
The major function of calcium is the formation and development of bones and teeth. Calcium is also required in blood clotting and muscular contraction. Calcium is necessary for bone formation, blood clotting and muscular contraction
Deficiency of calcium in the body results in poor bone development, particularly in children, women and elderly. The deficiency disease is known as osteoporosis. In this, the bones becomes brittle and people become prone to frequent fractures.

Iron: Iron is required in very small quantity by the body. It is an important material present in haemoglobin which is a part of red blood cells and is responsible for the red colour of blood. Whole grain cereals and pulses are the major sources of iron in our diet. Other sources of iron are green leafy vegetables, egg yolk, liver and meat. In our country, majority of the population, especially women and children, suffer from iron deficiency disease called anaemia.
Young girls (12-18 yrs.) need move iron rich foods in their diets because of loss of iron during the menstrual cycle. Extra iron is also needed during pregnancy for healthy development and growth of the focus.
This is not because people do not consume food which are rich in iron but because the absorption and utilization of iron is poor. This is due to the presence of certain naturally occuring constituents in food called oxalates and phytates. These oxalates and phytates are called inhibitors of iron. Vitamin C and proteins help in better absorption of iron and are known as enhancers of iron.

Iron is essential for haemoglobin formation.

Iodine: Iodine is an important substance present in thyroxine hormone produced from thyroid gland. Thyroxine regulates various functions of the body. We get iodine from water and food. The foods which grow in iodine rich soil provide iodine for us. Sea foods are also rich in iodine. Iodine deficiency disorder is known as goitre or enlargement of the neck region. Deficiency of iodine causes mental retardation in children. Recent studies have shown a direct link between iodine deficiency and academic performance of children. Iodine deficiency disorders have been identified in many parts of India.

Iodine is necessary for growth and development.
To avoid goitre we must have iodine rich food sources in our daily meals. Iodized salt is a good source of iodine and we must consume it instead of the non-iodized salt.

Make iodized salt a part of your daily diet.
Certain foodstuff like cabbage, cauliflower, radish, ladies finger, oilseeds etc., contains substances known as goitrogens which interfere with the body's ability to produce and use thyroxin. These goitrogens are destroyed on cooking. Therefore, these foodstuffs should be cooked before eating.

WATER
Water is the major constituent of our body. It forms about two-thirds of the body weight. We can do without food more readily than water. It is present in all the cells, being a vital part of all living tissues. It surrounds tissues and organs, and gives protection from shock. Water helps in digestion, absorption and transportation of nutrients in the body. It helps to excrete unwanted materials in the form of urine and maintains body temperature through perspiration.
Normally, we need to drink 6-8 glasses of water everyday. Other forms in which we can receive water are milk, juice, kanji, etc. Water is vital for survival

NUTRIENT REQUIREMENTS
Now we know that all the nutrients are required for good health. But how much should we eat so that our nutritional requirements are met? There are various factors which influence the nutritional requirements of an individual. Let us learn about them.
Nutritional requirements are influenced by:
-Age
-height/weight
-sex
-climatic condition
. health
. occupation
. physiological condition

Indian Council of Medical Research (ICMR) after conducting a lot of research has recommended nutritional intakes for various age groups. You will find recommended dietary allowances (RDAs) given by ICMR for various
physiological age groupshave you noticed that a sedentary worker needs lesser calories than a person performing heavy work? There is a difference in energy requirements of males and females as well as physically fit or sick persons. Notice

the difference in nutritional requirements of a woman during pregnancy and lactation and between boys and girls, men and women.

If you take a closer look at the above table, you will find the recommendations for infants, preschool and school children, adults and adolescents. Variations in energy needs according to activity are indicated in adult stage. Special requirements of pregnancy and lactation are also covered in the recommendation. A liberal margin of safety is provided in the recommended allowances to cover individual differences for need of the nutrients.

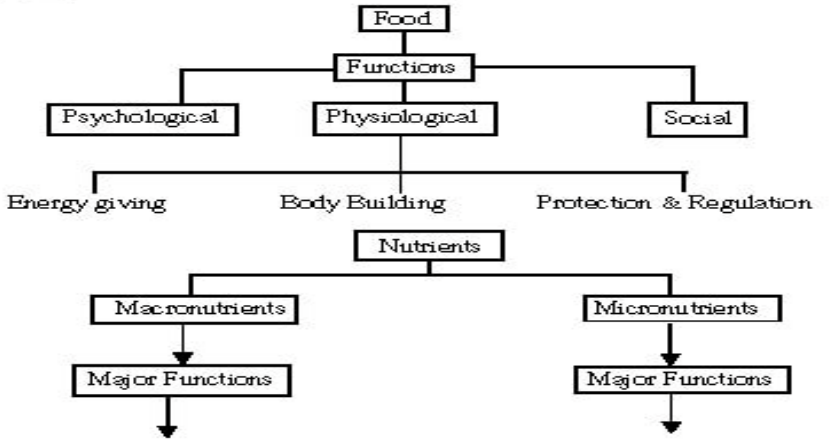
INTER-RELATIONSHIP OF FOOD, NUTRITION AND HEALTH

Earlier in this lesson you have learnt about the meaning and functions of food. You have also read the definition of health in previous unit. Let us now learn about nutrition in detail and understand how food and nutrition are related to health.

Nutrition is a scientific discipline in which food is a major focus of interest. The simplest definition of nutrition is the study of what happens to food once it enters the mouth and thereafter. A more formal definition of nutrition is study of processes by which the living organism receives and utilises the materials necessary for growth, renewal and maintenance of body components. All foods contain some essential substances which perform important functions in our body. These essential substances contributed by our food are called nutrients. These nutrients help us to maintain our body functions, that is, to grow and to protect our organs from diseases and infections.

The health of a person depends on the type and Food Nutrition quantity of food stuff consumed. Good nutrition is essential for a person to grow and develop normally and to remain healthy throughout life. When a person does not eat proper food, there are chances of the body not developing normally. There are chances that some organs of the body Health may start malfunctioning or there may be some disease. Poor nutrition may also influence the mental and social well being adversely. Good nutrition is a prerequisite for good health.

WHAT HAVE YOU LEARNT



- Carbohydrates: Energy
- Fats: Energy
- Protein: Body building
- Water: regulatory and excretory function

- Minerals: Calcium, iron, iodine: Body building and regulation
- Vitamins: Vitamin A: healthy vision
- Vitamin D: development of bones and teeth
- Vitamin E: Reproduction
- Vitmain K: Blood coagulation
- B complex: Normal growth and development
- Vitamin C: Normal teeth & bones

NUTRITION → Eat → Digestion → Absorption → Transportation → Utilization
Food → Nutrients → Nutrition → Health

MALNUTRITION

According to the National Health Service (NHS), UK, it is estimated that over two million people are affected by malnutrition (sub nutrition).

Malnutrition is a broad term which refers to both under nutrition (sub nutrition) and over nutrition. Individuals are malnourished, or suffer from under nutrition if their diet does not provide them with adequate calories and protein for maintenance and growth, or they cannot fully utilise the food they eat due to illness. People are also malnourished, or suffer from over nutrition if they consume too many calories.

Malnutrition can also be defined as the insufficient, excessive or imbalanced consumption of nutrients. Several different nutrition disorders may develop, depending on which nutrients are lacking or consumed in excess.

Perhaps Malnutrition is the condition that results from taking an unbalanced diet in which certain nutrients are lacking, in excess (too high an intake), or in the wrong proportions.
A number of different nutrition disorders may arise, depending on which nutrients are under or overabundant in the diet.

Sub nutrition occurs when an individual does not consume enough food. It may exist if the person has a poor diet that gives them the wrong balance of basic food groups.
The World Health Organization cites malnutrition as the greatest single threat to the world's public health. Improving nutrition is widely regarded as the most effective form of aid. Emergency measures include providing deficient micronutrients through fortified sachet powders, such as peanut butter, or directly through supplements. The famine relief model increasingly used by aid groups calls for giving cash or cash vouchers to the hungry to pay local farmers instead of buying food from donor countries, often required by law, as it wastes money on transport costs.

There are various methods used to gauge the degree of malnutrition, including the Gomez Classification. This classifies as 1st, 2nd or 3rd degree malnutrition according to the percentage of normal body weight a person is.

Long term measures include fostering nutritionally dense agriculture by increasing yields, while making sure negative consequences affecting yields in the future are minimized.
Recent efforts include aid to farmers. However, World Bank strictures restrict government subsidies for farmers, while the spread of fertilizer use may adversely affect ecosystems and human health and is hampered by various civil society groups.

EFFECTS

Mortality

According to Jean Ziegler(the United Nations Special Rapporteur on the Right to Food for 2000 to March 2008), mortality due to malnutrition accounted for 58% of the total mortality in 2006: "In the world, approximately 62 million people, all causes of death combined, die each year. One in twelve people worldwide is malnourished. In 2006, more than 36 million died of hunger or diseases due to deficiencies in micronutrients".
According to the World Health Organization, malnutrition is by far the biggest contributor to child mortality, present in half of all cases. Six million children die of hunger every year. Underweight births and inter-uterine growth restrictions cause 2.2 million child deaths a year. Poor or non-existent breastfeeding causes another 1.4 million. Other deficiencies, such

as lack of vitamin A or zinc, for example, account for 1 million. Malnutrition in the first two years is irreversible. Malnourished children grow up with worse health and lower educational achievements. Their own children also tend to be smaller. Malnutrition was previously seen as something that exacerbates the problems of diseases as measles, pneumonia and diarrhoea. But malnutrition actually causes diseases as well, and can be fatal in its own right.

Causes

Malnutrition increases the risk of infection and infectious disease; for example, it is a major risk factor in the onset of active tuberculosis. In communities or areas that lack access to safe drinking water, these additional health risks present a critical problem. Lower energy and impaired function of the brain also represent the downward spiral of malnutrition as victims are less able to perform the tasks they need to in order to acquire food, earn an income, or gain an education.

Nutrients	Deficiency	Excess
Food energy	Starvation, Marasmus	Obesity, diabetes mellitus, Cardiovascular disease
Simple carbohydrates	none	diabetes mellitus, Obesity
Complex carbohydrates	none	Obesity
Saturated fat	low sex hormone levels	Cardiovascular disease
Trans fat	none	Cardiovascular disease
Unsaturated fat	none	Obesity
Fat	Malabsorption of Fat-soluble vitamins, Rabbit Starvation (If protein intake is high)	Cardiovascular disease (claimed by some)
Omega 3 Fats	Cardiovascular disease	Bleeding, Hemorrhages
Omega 6 Fats	none	Cardiovascular disease, Cancer
Cholesterol	none	Cardiovascular disease
Protein	kwashiorkor	Rabbit starvation
Sodium	hyponatremia	Hypernatremia, hypertension
Iron	Iron deficiency: Anemia	Cirrhosis, heart disease
Iodine	Iodine deficiency: Goiter, hypothyroidism	Iodine Toxicity (goiter, hypothyroidism)
Vitamin A	Vitamin A deficiency: Xerophthalmia and Night Blindness, low testosterone levels	Hypervitaminosis A (cirrhosis, hair loss)
Vitamin B_1	Beri-Beri	
Vitamin B_2	Ariboflavinosis: Cracking of skin and Corneal Ulceration	
Vitamin B_3	Pellagra	dyspepsia, cardiac arrhythmias, birth defects
Vitamin B_{12}	Pernicious anemia	

Vitamin C	Scurvy	diarrhea causing dehydration
Vitamin D	Rickets	Hypervitaminosis D (dehydration, vomiting, constipation)

Vitamin E	nervous disorders	Hypervitaminosis E (anticoagulant: excessive bleeding)
Vitamin K	Vitamin K deficiency: Haemorrhage	
Calcium	Osteoporosis, tetany, carpopedal spasm, laryngospasm, cardiac arrhythmias	Fatigue, depression, confusion, anorexia, nausea, vomiting, constipation, pancreatitis, increased urination
Magnesium	Magnesium deficiency: Hypertension	Weakness, nausea, vomiting, impaired breathing, and hypotension
Potassium	Hypokalemia, cardiac arrhythmias	Hyperkalemia, palpitations
Boron	Boron deficiency	
Manganese	Manganese deficiency	

Psychological

Malnutrition, in the form of iodine deficiency, is "the most common preventable cause of mental impairment worldwide."] Even moderate iodine deficiency, especially in pregnant women and infants, lowers intelligence by 10 to 15 I.Q. points, shaving incalculable potential off a nation's development.]The most visible and severe effects disabling goitres, cretinism and dwarfism affect a tiny minority, usually in mountain villages. But 16 percent of the world's people have at least mild goitre, a swollen thyroid gland in the neck.

Protein-calorie malnutrition can cause cognitive impairments. For humans, "critical period varies from the final third of gestation to the first 2 years of life".

Research indicates that improving the awareness of nutritious meal choices and establishing a long-term habit of healthy eating has a positive effect on a cognitive and spatial memory capacity, potentially increasing a student's potential to process and retain academic information.

Some organizations have begun working with teachers, policymakers, and managed food service contractors to mandate improved nutritional content and increased nutritional resources in school cafeterias from primary to university level institutions. Health and nutrition have been proven to have close links with overall educational success. Currently less than 10% of American college students report that they eat the recommended five servings of fruit and vegetables daily. Better nutrition has been shown to have an impact on both cognitive and spatial memory performance; a study showed those with higher blood sugar levels performed better on certain memory tests. In another study, those who consumed yogurt performed better on thinking tasks when compared to those who consumed caffeine free diet soda or confections. Nutritional deficiencies have been shown to have a negative effect on learning behaviour in mice as far back as 1951.

"Better learning performance is associated with diet induced effects on learning and memory ability".

The "nutrition-learning nexus" demonstrates the correlation between diet and learning and has application in a higher education setting.

"We find that better nourished children perform significantly better in school, partly because they enter school earlier and thus have more time to learn but mostly because of greater learning productivity per year of schooling."
91% of college students feel that they are in good health while only 7% eat their recommended daily allowance of fruits and vegetables.
Nutritional education is an effective and workable model in a higher education setting.
More "engaged" learning models that encompass nutrition is an idea that is picking up steam at all levels of the learning cycle.
There is limited research available that directly links a student's Grade Point Average (G.P.A.) to their overall nutritional health. Additional substantive data is needed to prove that overall intellectual health is closely linked to a person's diet, rather than just another correlation fallacy.
Nutritional supplement treatment may be appropriate for major depression, bipolar disorder, schizophrenia, and obsessive compulsive disorder, the four most common mental disorders in developed countries. Supplements that have been studied most for mood elevation and stabilization include eicosapentaenoic acid and docosahexaenoic acid (each of which are an omega-3 fatty acid contained in fish oil, but not in flaxseed oil), vitamin B12, folic acid, and inositol.

Cancer

Cancer is now common in developing countries. According a study by the International Agency for Research on Cancer, "In the developing world, cancers of the liver, stomach and oesophagus were more common, often linked to consumption of carcinogenic preserved foods, such as smoked or salted food, and parasitic infections that attack organs." Lung cancer rates are rising rapidly in poorer nations because of increased use of tobacco. Developed countries "tended to have cancers linked to affluence or a 'Western lifestyle' cancers of the colon, rectum, breast and prostate that can be caused by obesity, lack of exercise, diet and age."

Metabolic syndrome

Several lines of evidence indicate lifestyle-induced hyperinsulinemia and reduced insulin function (i.e. insulin resistance) as a decisive factor in many disease states. For example, hyperinsulinemia and insulin resistance are strongly linked to chronic inflammation, which in turn is strongly linked to a variety of adverse developments such as arterial microinjuries and clot formation (i.e. heart disease) and exaggerated cell division (i.e. cancer). Hyperinsulinemia and insulin resistance (the so-called metabolic syndrome) are characterized by a combination of abdominal obesity, elevated blood sugar, elevated blood pressure, elevated blood triglycerides, and reduced HDL cholesterol. The negative impact of hyperinsulinemia on prostaglandin PGE1/PGE2 balance may be significant.
The state of obesity clearly contributes to insulin resistance, which in turn can cause type 2 diabetes. Virtually all obese and most type 2 diabetic individuals have marked insulin resistance. Although the association between overweight and insulin resistance is clear, the exact (likely multifarious) causes of insulin resistance remain less clear. Importantly, it has been demonstrated that appropriate exercise, more regular food intake and reducing glycemic load (see below) all can reverse insulin resistance in overweight individuals (and thereby lower blood sugar levels in those who have type 2 diabetes).
Obesity can unfavourably alter hormonal and metabolic status via resistance to the hormone leptin, and a vicious cycle may occur in which insulin/leptin resistance and obesity aggravate one another. The vicious cycle is putatively fuelled by continuously high insulin/leptin stimulation and fat storage, as a result of high intake of strongly insulin/leptin stimulating foods and energy. Both insulin and leptin normally function as satiety signals to the hypothalamus in the brain; however, insulin/leptin resistance may reduce this signal and therefore allow continued overfeeding despite large body fat stores. In

addition, reduced leptin signalling to the brain may reduce leptin's normal effect to maintain an appropriately high metabolic rate.
There is a debate about how and to what extent different dietary factors such as intake of processed carbohydrates, total protein, fat, and carbohydrate intake, intake of saturated and Tran's fatty acids, and low intake of vitamins/minerals contribute to the development of insulin and leptin resistance. In any case, analogous to the way modern man-made pollution may potentially overwhelm the environment's ability to maintain homeostasis, the recent explosive introduction of high glycemic index and processed foods into the human diet may potentially overwhelm the body's ability to maintain homeostasis and health (as evidenced by the metabolic syndrome epidemic).

Hyponatremia
Excess water intake, without replenishment of sodium and potassium salts, leads to hyponatremia, which can further lead to water intoxication at more dangerous levels. A well-publicized case occurred in 2007, when Jennifer Strange died while participating in a water-drinking contest. More usually, the condition occurs in long-distance endurance events (such as marathon or triathlon competition and training) and causes gradual mental dulling, headache, drowsiness, weakness, and confusion; extreme cases may result in coma, convulsions, and death. The primary damage comes from swelling of the brain, caused by increased osmosis as blood salinity decreases. Effective fluid replacement techniques include Water aid stations during running/cycling races, trainers providing water during team games such as Soccer and devices such as Camel Bakes which can provide water for a person without making it too hard to drink the water.

Overeating vs. Hunger
Although a lot of the focus regarding malnutrition centres around undernourishment, overeating is also a form of malnutrition. Overeating is much more common in the United States, where for the majority of people, access to food is not an issue. The issue in these developed countries is choosing the right kind of food. Fast food is consumed more per capita in the United States than in any other country. The reason for this mass consumption of food is the affordability and accessibility. Oftentimes the fast food, low in cost and nutrition, is high in calories and heavily promoted. When these eating habits are combined with increasingly urbanized, automated, and more sedentary lifestyles, it becomes clear why gaining weight is difficult to avoid.
However, overeating is also a problem in countries where hunger and poverty persist. In China, consumption of high-fat foods has increased while consumption of rice and other goods has decreased. Overeating leads to many diseases, such as heart disease and diabetes that may result in death.

Causes
Major causes of malnutrition include poverty and food prices, dietary practices and agricultural productivity, with many individual cases being a mixture of several factors. Malnutrition can also be a consequence of other health issues such as gastroenteritis or chronic illness, especially the HIV/AIDS pandemicClinical malnutrition, such as in cachexia, is a major burden also in developed countries.

Poverty and food prices
As much as food shortages may be a contributing factor to malnutrition in countries with lack of technology, the FAO (Food and Agriculture Organization) has estimated that eighty percent of malnourished children living in the developing world live in countries that produce food surpluses. The economist Amartya Sen observed that, in recent decades,

famine has always a problem of food distribution and/or poverty, as there has been sufficient food to feed the whole population of the world. He states that malnutrition and famine were more related to problems of food distribution and purchasing power.
It is argued that commodity speculators are increasing the cost of food. As the real estate bubble in the United States was collapsing, it is said that trillions of dollars moved to invest in food and primary commodities, causing the 2007–2008 food price crisis.
The use of bio fuels as a replacement for traditional fuels may leave less supply of food for nutrition and raises the price of food. The United Nations special rapporteur on the right to food, Jean Ziegler proposes that agricultural waste, such as corn cobs and banana leaves, rather than crops themselves be used as fuel.

Dietary practices
A lack of breastfeeding can lead to malnutrition in infants and children. Possible reasons for the lack in the developing world may be that the average family thinks bottle feeding is better. The WHO says mothers abandon it because they do not know how to get their baby to latch on properly or suffer pain and discomfort.
Deriving too much of one's diet from a single source, such as eating almost exclusively corn or rice, can cause malnutrition. This may either be from a lack of education about proper nutrition, or from only having access to a single food source.
Many tend to think malnutrition only in terms of hunger, however, overeating is also a contributing factor as well. Many parts of the world have access to a surplus of non-nutritious food, in addition to increased sedentary lifestyles. In turn, this has created a universal epidemic of obesity. Yale psychologist Kelly Brownell calls this a "toxic food environment" where fat and sugar laden foods have taken precedent over healthy nutritious foods. Not only does obesity occur in developed countries, problems are also occurring in developing countries in areas where income is on the rise.

Agricultural productivity
Food shortages can be caused by a lack of farming skills such as crop rotation, or by a lack of technology or resources needed for the higher yields found in modern agriculture, such as nitrogenfertilizers, pesticides and irrigation. As a result of widespread poverty, farmers cannot afford or governments cannot provide the technology. The World Bank and some wealthy donor countries also press nations that depend on aid to cut or eliminate subsidized agricultural inputs such as fertilizer, in the name of free market policies even as the United States and Europe extensively subsidized their own farmers. Many, if not most, farmers cannot afford fertilizer at market prices, leading to low agricultural production and wages and high, unaffordable food prices. Reasons for the unavailability of fertilizer include moves to stop supplying fertilizer on environmental grounds, cited as the obstacle to feeding Africa by the Green Revolution pioneer Norman Borlaug.

Future threats
There are a number of potential disruptions to global food supply that could cause widespread malnutrition.
Climate change is of great importance to food security. With 95% of all malnourished peoples living in the relatively stable climate region of the sub-tropics and tropics. According to the latest IPCC reports, temperature increases in these regions are "very likely." Even small changes in temperatures can lead to increased frequency of extreme weather conditions. Many of these have great impact on agricultural production and hence nutrition. For example, the 1998–2001 central Asian droughts brought about an 80% livestock loss and 50% reduction in wheat and barley crops in Iran. Similar figures were present in other nations. An increase in extreme weather such as drought in regions such as Sub-Saharan would have even greater consequences in terms of malnutrition. Even without an increase of

extreme weather events, a simple increase in temperature reduces the productiveness of many crop species, also decreasing food security in these regions.
Colony collapse disorder is a phenomenon where bees are dying in large numbers. Since many agricultural crops worldwide are pollinated by bees, this represents a serious threat to the supply of food.
An epidemic of stem rust on wheat caused by race Ug99 is currently spreading across Africa and into Asia and, it is feared, could wipe out more than 80% of the world's wheat crops.

Management

Main articles: Ready-to-Use Therapeutic food and famine relief
Fighting malnutrition, mostly through fortifying foods with micronutrients (vitamins and minerals), improves lives at a lower cost and shorter time than other forms of aid, according to the World Bank. The Copenhagen Consensus, which look at a variety of development proposals, ranked micronutrient supplements as number one. However, roughly $300m of aid goes to basic nutrition each year, less than $2 for each child below two in the 20 worst affected countries. In contrast, HIV/AIDS, which causes fewer deaths than child malnutrition, received $2.2 billion—$67 per person with HIV in all countries.

Emergency measures

Micronutrients can be obtained through fortifying foods. Fortifying foods such as peanut butter sachets (see Plumpy'Nut) and Spirulina have revolutionized emergency feeding in humanitarian emergencies because they can be eaten directly from the packet, do not require refrigeration or mixing with scarce clean water, can be stored for years and, vitally, can be absorbed by extremely ill children. The United Nations World Food Conference of 1974 declared Spirulina as 'the best food for the future' and its ready harvest every 24 hours make it a potent tool to eradicate malnutrition. Additionally, supplements, such as Vitamin A capsules or Zinc tablets to cure diarrhea in children, are used.
There is a growing realization among aid groups that giving cash or cash vouchers instead of food is a cheaper, faster, and more efficient way to deliver help to the hungry, particularly in areas where food is available but unaffordable. The UN's World Food Program, the biggest non-governmental distributor of food, announced that it will begin distributing cash and vouchers instead of food in some areas, which Josette Sheeran, the WFP's executive director, described as a "revolution" in food aid. The aid agency Concern Worldwide is piloting a method through a mobile phone operator, Safaricom, which runs a money transfer program that allows cash to be sent from one part of the country to another.
However, for people in a drought living a long way from and with limited access to markets, delivering food may be the most appropriate way to help. Fred Cuny stated that "the chances of saving lives at the outset of a relief operation are greatly reduced when food is imported. By the time it arrives in the country and gets to people, many will have died." US Law, which requires buying food at home rather than where the hungry live, is inefficient because approximately half of what is spent goes for transport. Fred Cuny further pointed out "studies of every recent famine have shown that food was available in-country though not always in the immediate food deficit area" and "even though by local standards the prices are too high for the poor to purchase it, it would usually be cheaper for a donor to buy the hoarded food at the inflated price than to import it from abroad." Ethiopia has been pioneering a program that has now become part of the World Bank's prescribed recipe for coping with a food crisis and had been seen by aid organizations as a model of how to best help hungry nations. Through the country's main food assistance program, the Productive Safety Net Program, Ethiopia has been giving rural residents who are chronically short of food, a chance to work for food or cash. Foreign aid organizations like the World Food Program were then able to buy food locally from surplus areas to distribute in areas with a shortage of food. Not only has Ethiopia been pioneering a program but Brazil has also established a recycling program for organic waste that benefits farmers, urban poor, and the

city in general. City residents separate organic waste from their garbage, bag it, and then exchange it for fresh fruit and vegetables from local farmers. As a result, this reduces its countries waste and the urban poor get a steady supply of nutritious food.

Long-term measures

The effort to bring modern agricultural techniques found in the West, such as nitrogenfertilizers and pesticides, to Asia, called the Green Revolution, resulted in decreases in malnutrition similar to those seen earlier in Western nations. This was possible because of existing infrastructure and institutions that are in short supply in Africa, such as a system of roads or public seed companies that made seeds available. Investments in agriculture, such as subsidized fertilisers and seeds, increases food harvest and reduces food prices. For example, in the case of Malawi, almost five million of its 13 million people used to need emergency food aid. However, after the government changed policy and subsidies for fertilizer and seed were introduced against World Bank strictures, farmers produced record-breaking corn harvests as production leaped to 3.4 million in 2007 from 1.2 million in 2005, making Malawi a major food exporter. This lowered food prices and increased wages for farm workers. Proponents for investing in agriculture include Jeffrey Sachs, who has championed the idea that wealthy countries should invest in fertilizer and seed for Africa's farmers.

Breast-feeding education helps. Breastfeeding in the first two years and exclusive breastfeeding in the first six months could save 1.3 million children's lives. In the longer term, firms are trying to fortify everyday foods with micronutrients that can be sold to consumers such as wheat flour for Beladi bread in Egypt or fish sauce in Vietnam and the iodization of salt.

Restricting population size is a proposed solution. Thomas Malthus argued that population growth could be controlled by natural disasters and voluntary limits through "moral restraint." Robert Chapman suggests that an intervention through government policies is a necessary ingredient of curtailing global population growth. However, there are many who believe that the world has more than enough resources to sustain its population. Instead, these theorists point to unequal distribution of resources and under- or unutilized arable land as the cause for malnutrition problems. For example, Amaryta Sen advocates that, "no matter how a famine is caused, methods of breaking it call for a large supply of food in the public distribution system. This applies not only to organizing rationing and control, but also to undertaking work programmes and other methods of increasing purchasing power for those hit by shifts in exchange entitlements in a general inflationary situation." One suggested policy framework to resolve access issues is termed food sovereignty, the right of peoples to define their own food, agriculture, livestock, and fisheries systems in contrast to having food largely subjected to international market forces. Food First is one of the primary think tanks working to build support for food sovereignty. Neoliberals advocate for an increasing role of the free market. Another possible long term solution would be to increase access to health facilities to rural parts of the world. These facilities could monitor undernourished children, act as supplemental food distribution centres, and provide education on dietary needs. These types of facilities have already proven very successful in countries such as Peru and Ghana. New technology in agricultural production also has great potential to combat under nutrition. By improving agricultural yields, farmers could reduce poverty by increasing income as well as open up area for diversification of crops for household use. The World Bank itself claims to be part of the solution to malnutrition, asserting that the best way for countries to succeed in breaking the cycle of poverty and malnutrition is to build export-led economies that will give them the financial means to buy foodstuffs on the world market.

When aiming to prevent rather than treat overeating, which is also a form of malnutrition, starting in the school environment would be the perfect place as this is where the education children receive today will help them choose healthier foods during childhood, as well as into

adulthood. As seen in Singapore, if we increase nutrition in school lunch programs and physical activity for children and teachers, obesity can be reduced by almost 30–50%.

Epidemiology

Disability adjusted life year for nutritional deficiencies per 100,000 inhabitants in 2002. Nutritional deficiencies included: protein-energy malnutrition, iodine deficiency, vitamin A deficiency, and iron deficiency anaemia.

There were 925 million undernourished people in the world in 2010, an increase of 80 million since 1990, despite the fact that the world already produces enough food to feed everyone 6 billion people and could feed double 12 billion people.

Percentage of population affected by undernutrition by country, according to United Nations statistics.Number of undernourished people (million) in 2001–2003 and 2005-2007. According to the FAO, these countries had 5 million or more undernourished people in 2001-2003 and in 2005-2007

Country	2001-2003	2005-2007
India	217.05	237.7
China	154.0	130.4
Bangladesh	43.45	41.7
Democratic Republic of Congo	37.0	41.9
Pakistan	35.2	43.4
Ethiopia	31.5	31.6
Tanzania	16.1	13.7
Philippines	15.2	13.2
Brazil	14.4	12.1
Indonesia	13.8	29.9
Vietnam	13.8	9.6
Thailand	13.4	10.8
Nigeria	11.5	9.2
Kenya	9.7	11.2
Sudan	8.8	8.8
Mozambique	8.3	8.1
North Korea	7.9	7.8
Yemen	7.1	6.7
Madagascar	7.1	4.5
Colombia	5.9	4.3
Zimbabwe	5.7	3.7
Mexico	5.1	-
Zambia	5.1	5.2
Angola	5.0	7.1
Myanmar	-	7.8

Note: This table measures "undernourishment", as defined by FAO, and represents the number of people consuming (on average for years 2001 to 2003) less than the minimum amount of food energy (measured in kilocalories per capita per day) necessary for the average person to stay in good health while performing light physical activity. It is a conservative indicator that does not take into account the extra needs of people performing extraneous physical activity, nor seasonal variations in food consumption or other sources of variability such as inter-individual differences in energy requirements.

Malnutrition and undernourishment are cumulative or average situations, and not the work of a single day's food intake (or lack thereof). This table does not represent the number of people who "went to bed hungry today."Various scales of analysis also have to be considered in order to determine the socio-political causes of malnutrition. For example, the population of a community may be at risk if it lacks health-related services, but on a smaller scale certain households or individuals may be at even higher risk due to differences in income levels, access to land, or levels of education. Also within the household, there may be differences in levels of malnutrition between men and women, and these differences have been shown to vary significantly from one region to another with problem areas showing relative deprivation of women. Children and the elderly tend to be especially susceptible. Approximately 27 percent of children under 5 in developing world are malnourished, and in these developing countries, malnutrition claims about half of the 10 million deaths each year of children under 5.

Middle East
Malnutrition rates in Iraq had risen from 19% before the US-led invasion to a national average of 28% four years later.

South Asia
According to the Global Hunger Index, South Asia has the highest child malnutrition rate of world's regions. India contributes to about 5.6 million child deaths every year, more than half the world's total. The 2006 report mentioned that "the low status of women in South Asian countries and their lack of nutritional knowledge are important determinants of high prevalence of underweight children in the region" and was concerned that South Asia has "inadequate feeding and caring practices for young children".
Half of children in India are underweight, one of the highest rates in the world and nearly double the rate of Sub-Saharan Africa.
Research on overcoming persistent under-nutrition published by the Institute of Development Studies, argues that the co-existence of India as an 'economic powerhouse' and home to one-third of the world's under-nourished children reflects a failure of the governance of nutrition: "A poor capacity to deliver the right services at the right time to the right populations, an inability to respond to citizens' needs and weak accountability are all features of weak nutrition governance." The research suggests that to make under-nutrition history in India the governance of nutrition needs to be strengthened and new research needs to focus on the politics and governance of nutrition. At the current rate of progress the MDG1 target for nutrition will only be reached in 2042 with severe consequences for human wellbeing and economic growth.

United States
Childhood malnutrition is generally thought of as being limited to developing countries, but although most malnutrition occurs there, it is also an ongoing presence in developed nations. For example, in the United States of America, one out of every six children is at risk of hunger.[A study, based on 2005–2007 data from the U.S. Census Bureau and the Agriculture Department, shows that an estimated 3.5 million children under the age of five are at risk of hunger in the United States. In developed countries, this persistent hunger

problem is not due to lack of food or food programs, but is largely due to an underutilization of existing programs designed to address the issue, such as food stamps or school meals. Many citizens of rich countries such as the United States of America attach stigmas to food programs or otherwise discourage their use. In the USA, only 60% of those eligible for the food stamp program actually receive benefits. The U.S. Department of Agriculture reported that in 2003, only 1 out of 200 U.S. households with children became so severely food insecure that any of the children went hungry even once during the year. A substantially larger proportion of these same households (3.8 percent) had adult members who were hungry at least one day during the year because of their households' inability to afford enough food.

Underweight

Underweight refers to a human who is considered to be under a healthy "weight". "Underweight" means weighing less than what is expected to be a healthy person (underweight = insufficiency of weight). The definition is usually made with reference to the body mass index (BMI). A BMI of under 18.5 is usually referred to as underweight. *Calculate your Body Mass Index*, National Institutes of Health, retrieved 2009-04-27

Causes

The most common cause of a person being underweight is primarily malnutrition caused by the unavailability of adequate food.

Some people are underweight due to genetics; others due to poverty.

Being underweight can sometimes be the result of mental or physical disease, such as hyperthyroidism, cancer, or tuberculosis. People with gastrointestinal or liver problems may be unable to absorb nutrients adequately. People with eating disorders, such as anorexia nervosa, are likely to become underweight.

Problems

The immediate problem with being underweight is that it might be secondary to, and/or symptomatic of, an underlying disease. Unexplained weight loss requires professional medical diagnosis.

Underweight can also be a primary causative condition. Severely underweight individuals may have poor physical stamina and a weak immune system, leaving them open to infection. According to Robert E. Black of the Johns Hopkins School of Public Health, "Underweight status ... and micronutrient deficiencies also cause decreases in immune and non-immune host defences, and should be classified as underlying causes of death if followed by infectious diseases that are the terminal associated causes. People who are malnutrative underweight raise special concerns, as not only gross caloric intake may be inadequate, but also intake and absorption of other vital nutrients, especially essential amino acids and micro-nutrients such as vitamins and minerals.

In women, being grossly underweight can result in amenorrhea (absence of menstruation), infertility and possible complications during pregnancy. It can also cause anaemia and hair loss.

Underweight is an established risk factor for osteoporosis, even for young people. This is a particular insidious consequence, because the affected persons do not notice the danger. After the occurrence of first spontaneous fractures the damage is often already irreversible.

Being underweight causes increased mortality at rates comparable to that seen in morbidly obese people.

TREATMENT

Diet

There are two ways to gain weight through diet- an unhealthy way and a healthy way. The unhealthy route to gaining weight is consuming junk food and not getting adequate exercise.

The healthy way to gain weight is by increasing calorie amounts of the food that you already eat. Placing reasonable amounts of butter, cream or cheesesauces, peanut butter, olive oil, salad dressing, seeds, and nuts on foods help increase food calories. Eating calorie-dense foods can also be beneficial. Some examples of calorie-dense foods are: dried fruits, cheese, raisins, and nuts. Drinking liquids with high calories can add up weight. Some examples of popular weight gain drinks are Ensure and Boost. Other examples are milk and fruit juice. Eating a healthy diet is also crucial in weight gain. Consuming starchy vegetables like potatoes and corn can also add weight gain. Eating protein, healthy fats, carbohydrates, vegetables, fruits are important for a weight gain diet. Nutritional supplements may be beneficial for people who aren't getting enough vitamins or minerals.

Exercise

Another way for underweight people to gain weight is by exercising. The addition of muscles will increase your body mass. Weight-lifting exercises are effective in helping to increase muscle tone as well as helping with gaining weight.

Appetite Stimulants

Orexigenic

Finally, certain drugs may increase appetite either as their primary effect, or as a side-effect as in the majority of cases. Antidepressants such as mirtazapine or amitryptiline, antipsychotics (particularly chlorpromazine and haloperidol, as well as tetrahydrocannabinol (found in cannabis), all present an increase in appetite as a side-effect. In states where it is approved, medicinal marijuana may be prescribed for severe appetite loss, such as that caused by cancer, AIDS or even severe levels of persistent anxiety. Other drugs which may increase appetite include certain benzodiazepines (such as diazepam), sedating antihistamines (such as diphenhydramine or promethazine, or B vitamin supplements.

Exercise itself is catabolic, which results in a brief reduction in mass. The gain in weight that can result of it comes from the anabolic over-compensation when the body recovers (via rest and eating) and overcompensates via muscle hypertrophy. This can happen via an increase in the muscle proteins, or through enhanced storage of glycogen in muscles. Exercise can help stimulate people's appetite if they are not inclined to eat.

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COURSE UNIT:
HEALTH IN OUR WORLD TODAY /POLICIES AND REGULATIONS

Course description

This course examines the nature of globalization in order to set the scene for an understanding of the concerns about health and public health in this first decade of the third millennium and also analyses the interrelationship between health policy, politics and power with particular focus on developing countries. and seeks to empower students with the analytical and conceptual skills to perform this analysis themselves. The models, actors, process, content and context of health policies are examined.

Although globalisation is a long-standing, many-faceted, and complex area of investigation, its effects on health, more especially public health, are only relatively recently becoming apparent. And while globalization is generally the subject of much criticism, some of the health-related effects are extremely beneficial, especially for the so-called “developing” countries. Our examination of international health will reveal just how much smaller the world has become through globalization such that we can actually talk about “international” health. In the section “a global world: disease and disaster”, we outline the extent to which diseases and disasters at local levels can have global implications.

Contents

- **Introduction to health in the world today Resource**
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- **The Policies and Regulations in Public Health**

Aim of the course

The course is intended to equip students with the knowledge and skills to analyze health policies and the process of health policy making and to enable students to appreciate the influence of power and politics at international, national and community levels in the design and implementation of health policies.

Course objectives

The objectives of the course are to enable students to:

- Understand and analyse the role of health policy in building effective health systems.
- Understand the various models, actors, process, content and values in health policy formulation and implementation.

Course Work

In not less than 2000 words write and essay critically explore the influence of politics and power on health policies and systems in your Country.

Briefly account for the following terms in relationship to Public Health

- Evidence-based policy
- Health care reform
- Health crisis
- Health economics
- Health insurance
- Health promotion
- Health law
- Inverse benefit law
- Inverse care law
- Medical law
- National health insurance
- Patient safety
- Pharmaceutical policy
- Policy typologies
- Public health law

Health in the world today: Globalisation context

The challenge in this era of globalization –for countries and individuals– is to find a healthy balance between preserving a sense of identity, home and community and doing what it takes to survive within the globalization system. Any society that wants to thrive economically today, must constantly be trying to build a better Lexus and driving it out into the world. But no one should have any illusions that merely participating in this global economy will make a healthy society. If that participation comes at the price of a country's identity, if individuals feel their olive tree roots crushed, or washed out, by this global system, those olive tree roots will rebel. They will rise up and strangle the process. Therefore, the survival of globalization as a system will depend, in part, on how well all of us strike this balance. A country without healthy olive trees will never feel rooted or secure enough to open up fully to

the world and reach out into it. But a country that is only olive trees, that is only roots, and has no Lexus, will never go, or grow, very far. Keeping the two in balance is a constant struggle. (Friedman, 2000: 42)

Globalization is a phenomenon that everyone has been talking about for the past decade and more. Ever since Samuel P. Huntington published *The Clash of Civilizations and the Remaking of World Order* in 1997, academics, especially political economists, have been worrying the issue of globalization to death. According to Thomas Friedman in *The Lexus and The Olive Tree*, "globalization has replaced the Cold War as the defining international system". (Friedman, 2000: 7) Whereas the world was characterized by division during the period of the Cold War, now, with globalization, the world is characterized by integration. And most of this integration has taken place, and is continuing to take place through the Web – incidentally, making our world a much less human place. When the first explorers from Europe came to the continent of Africa, the world was a rather big place, full of unknowns. Their journey to us was long and arduous. Today, we can contact their descendants in Europe in the blink of an eye. That in itself, is something of a miracle; and yet it can also be de-humanizing, as we shall see later in this unit.

The cultural homogenization of this age of globalization has its own defining technologies: computerization, digitalization, satellite communication, fibre optics, and the Internet, all of which make it much more easy to communicate across vast distances. And it is this closing of distance that causes some of the problems associated with globalization. In this topic of module 1, Foundations of Public Health, we want to bring a closer analysis of the issue of globalization to your attention so that you can begin to appreciate the fact that the world is growing smaller by the day –and when that happens, all sorts of problems raise their heads. In Friedman's book about the Lexus and the olive tree, he describes the Lexus as a forward-looking process whereby people (and countries) strive for improvement, prosperity, and modernization. The olive tree, on the other hand, stands for what roots us: family, friends, home, community. The problems begin when one or other takes the upper hand, according to Friedman. And, it must be said, that many people are torn between the two: torn, in a sense, between tradition and rootedness and an a-cultural prosperity attained through modernization.

The features of globalization

There are many explanations of globalization as there are many types of it. However, the economic explanations seem to dominate. It generally refers to the accelerating interdependence of the world's economies, characteristic of modern history. Some people talk of the "global village"/"villagization", with many benefits as well as many disadvantages, especially for the marginalized, the poor, and the powerless. Globalization is related to the so-called maturation of capitalism/imperialism and its imminent interdependencies, alongside the information superhighway. What does all this mean?

Economic globalization is characterized by increases in capital movements, faster growth of world trade than domestic trade, the internationalization of production,

with the rapid expansion of companies with multinational corporations, declining communications costs due to the information technology revolution with increased technological interdependence, and the convergence in state economic policy approaches in favour of neo-liberal market-oriented development.

Social scientists recognize that globalization is not a new feature of the contemporary world economy. Various ideas on globalization were expressed by people such as Adam Smith, Karl Marx, John Stuart Mill, John Maynard Keynes, and Vladimir Ilyich Lenin, to name only a few. In the last few years there has been a flurry in the number of writings and intellectual contributions on and about globalization: its evolution, meaning, impacts, and broader implications. And there are almost as many points of view as there are writers. Many people are really concerned and preoccupied with this powerful multi-faceted trend known as globalization. Some of the efforts have been directed towards understanding the evolution of globalization: is it part of the evolutionary trend of humanity in general or of capitalism in particular or an advanced stage in the development of the 20th century multilateralism, or simply one of many processes of change?

The challenges of globalisation

For any country and society globalisation presents both formidable challenges and promising opportunities. To cultivate the fruits of "going global" and to minimize its adverse impacts requires continuously developed human capital. The dynamism, speed, and scale of globalization processes could very well marginalize countries as well as people, and generate processes of social exclusion and polarization even in countries benefiting, on the macro level, from globalization. Being dependent on one or a few exports to generate the needed revenues, having less diversified industrial structure, characterized by a micro and small-family type private sector, heavy dependency on both foreign capital and highly skilled expatriate workers and imported products, and for variety of other reasons, we would have to say that African countries are among those countries facing marginalization under globalization.
The political economy of globalization seems to be facing a challenge of the tension between the “globe” and the “local”. It is no longer as homogeneous as the word globalization would seemingly suggest. And it gets mixed reactions from different people and institutions according to whether they benefit or not. However much globalization as growth has not been good news for the world’s marginalized peoples, it has had some “positive side effects”, such as increased human rights advocacy, gender sensitization, and so on. This consideration suggests that there are "good" forms of globalization as well as "bad" ones. What is important, then, is to globalize in what society deems as good globalization and to de-globalize in what society sees as detrimental globalization.

There are more questions than answers in the debate concerning the advantages and disadvantages of globalization precisely because, as a process, it has meant many things to different people and nations. On one hand, it has contributed to and become a source of human deprivation through processes of marginalization and social exclusion. On the other, it has enhanced human development through various processes which lead to increased efficiency of both investment and production,

expansion of choices and provision of wider opportunities for most people. Human development, viewed in the context of capability, choice, and contribution, is likely to be effected by globalization.

Globalization and health

It should be obvious by now that the smallness of our world will have its effects on human lives, especially on health. While it is the case that globalization is somehow regarded as being “bad” for Africa and other marginalized countries, it must be said that there are some positive benefits of globalization in relation to health. But before we outline some of these benefits, let us see how globalization affects health in its most general ways.

First of all we should note that the kind of development that focusses on economic growth will not be the kind of development that puts people and people's health as a first priority. Yet it must be said that poverty is possibly the greatest disease affecting African countries. While malaria, communicable diseases, and maternal and infant deaths claim more lives than they should each day, often poverty is the underlying cause for sickness and disease in the first place. In recognition of this fact, Live Aid and the Make Poverty History Campaign focussed on improving the lives of the poorest of the poor not only through cash donations, but also through self-help initiatives. The thinking behind the approach of artists as Bob Geldof and Bono was that people who can feed and shelter themselves will be more self-sufficient in relation to other aspects of health and well-being. However, poverty will not simply go away through further economic growth and modernization – these can actually cause more poverty.

In a globalizing world, the increasing interconnectedness of nations and peoples has made the differences between them more glaring, especially in relation to health care. A girl born in a "highly-developed" country today may have a 50% chance of seeing the 22nd century - while a newborn in many "developing" countries has a 1 in 4 chance of dying before the age of 5. And the richest 5% of the world's people have incomes 114 times those of the poorest 5%. Every day more than 30,000 children around the world die of preventable diseases, and nearly 14,000 people are infected with HIV/AIDS. In Botswana more than a third of adults have the disease; in Swaziland and Zimbabwe the number is more than a quarter. And if tuberculosis control does not improve world wide, 1 billion people will contract it by 2020 and 35 million will die from this disease.

International health and health organisations

Contrary to what most people think, almost the entire cost of health care in the developing world is borne by the developing countries themselves. Aid from international health organizations in the developed countries pays for less than 5% of the total health care costs in many countries of the developing world. Yet, according to the World Bank, in sub-Saharan Africa (excluding South Africa) aid from donor countries averages 20% of total health expenditures.

Although the aid given to the developing world as a whole is relatively small in financial terms, it can be of crucial importance. Research and pilot programs sponsored by agencies from the industrial nations have generated many of the best ideas for improving health in developing countries. Also, the international health organizations are a major source of expert technical advice and training for local health professionals. Finally, these organizations produce the major textbooks in tropical health, as well as the most important manuals for health care workers.

A large number of organizations of various sizes provide international health aid. The exact roles played by these organizations can be bewildering at times, even to professionals in this field. What follows is a description of the functions of the largest international health organizations. The international health organizations providing long-term health care are usually divided into three groups: multilateral organizations, bilateral organizations, and non-governmental organizations (NGOs).

Multilateral organisations

The term **multilateral** means that funding comes from multiple governments (as well as from non-governmental sources) and is distributed to many different countries. The major multilateral organizations are all part of the United Nations. The **World Health Organization** (WHO) is the premier international health organization. Technically it is an "intergovernmental agency related to the United Nations." WHO and other such intergovernmental agencies are "separate, autonomous organizations which, by special agreements, work with the UN and each other through the coordinating machinery of the Economic and Social Council." According to its constitution (1948) its principal goal is "the attainment by all peoples of the highest possible level of health."

WHO has three main divisions. The governing body, the *World Health Assembly*, meets once a year to approve the budget and decide on major matters of health policy. All the 190 or so member nations send delegations. The World Health Assembly elects 31 member nations to designate health experts for the *Executive Board*, which meets twice a year and serves as the liaison between the Assembly and the *Secretariat*, which carries on the day-to-day work of the WHO. The Secretariat has a staff of about 4,500 , with 30% of the employees at headquarters in Geneva, 30% in six regional field offices, and 40% in individual countries, either as country-wide WHO representatives or as representatives of special WHO programmes.

The principal work of WHO is directing and coordinating international health activities and supplying technical assistance to countries. It develops norms and standards, disseminates health information, promotes research, provides training in international health, collects and analyzes epidemiologic data, and develops systems for monitoring and evaluating health programs. The Pan American Health Organization (PAHO) serves as the regional field office for WHO in the Americas and, since it pre-dates WHO, carries on some additional autonomous activities.

The **World Bank** is the other major "intergovernmental agency related to the UN" heavily involved in international health. The World Bank loans money to poor countries on advantageous terms not available in commercial markets. The amount

of money loaned to developing countries for human resources development, i.e. health and education, has increased steadily over the past 10 years, from 5% of total loans in the early 1980s to 15% in the past two years, with a projected 50% increase in human resource development loans over the next three years. The total amount of loans for health, nutrition, and population activities in 1995 was approximately $1,200 million.

Three subsidiary agencies of the UN Economic and Social Council are heavily committed to international health programs. The **United Nation Children's Fund (UNICEF)** spends the majority of its program (non-administrative) budget on health care. UNICEF makes the world's most vulnerable children its top priority, so it devotes most of its resources to the poorest countries and to children younger than 5. In 1994 UNICEF received about $1 billion in contributions, all voluntary - 70% from governments and 30% from private sources. (The US government is the largest single donor to UNICEF, but the per capita contribution from the US, including private sources, is much less than that from Canada, Switzerland, the Netherlands, and the Scandinavian countries.) In 1994 UNICEF spent $202 million on child health, $81 million on water supply and sanitation, $30 million on child nutrition, and $216 million on emergency relief. UNICEF runs many of the child health programs in cooperation with WHO. The **United Nations Population Fund (UNFPA)** spent about $130 million of its $260 million budget for 1994 on family planning programs, with 59 priority countries receiving 70% of this money. (Priority is based on rate of population growth and poverty.) The **United Nation Development Programme (UNDP)** allocated $141 million, out of a total budget for field expenditures of $1 billion, to "health, education, employment." Its major health concerns are AIDS, maternal and child nutrition, and excessive maternal mortality. In conjunction with WHO and the World Bank it sponsors the Special Programme for Research and Training in Tropical Diseases (TDR).

Bilateral organisations

Bilateral agencies are governmental agencies in a single country which provide aid to developing countries. The largest of these is the **United States Agency for International Development (USAID)**. Most of the industrialized nations have a similar governmental agency. Political and historical reasons often determine which countries receive donations from bilateral agencies and how much they receive. For example, France concentrates on its former colonies, and Japan gives mostly to developing countries in Asia. In 1994, USAID, through its Center for Population, Health, and Nutrition, donated $1,050 million for long-term health care in developing countries. USAID channels most of this aid through "cooperating agencies" - private international health agencies which contract with USAID.

Non-governmental organisations

Non-governmental organizations (NGOs), also known as private voluntary organizations (PVOs), provide approximately 20% of all external health aid to developing countries. Most of these organizations are quite small; many are church-affiliated. In the very poorest countries, hospitals and clinics run by missionary societies are especially important. Data from Uganda indicates that church mission

hospitals are much more efficient than government health facilities, with mission doctors treating five times as many patients as their counterparts in government facilities and mission nurses attending twice the number of patients that government nurses do. The largest NGO devoted to international health in the United States is **Project Hope**, with an annual budget exceeding $100 million. Worldwide, the most important NGO in long-term international health is probably **Oxfam International**. Founded in the United Kingdom in 1943, it now has affiliates in 10 other countries.

The **International Red Cross and Red Crescent Movement** is the largest and most prestigious of the world's humanitarian NGOs. It has three components: the *International Committee of the Red Cross (ICRC)*; the *International Federation of Red Cross* and *Red Crescent Societies*; and the 160 or so individual national *Red Cross societies*. The seven fundamental principles of the movement are: humanity; impartiality; neutrality; independence, i.e. autonomy vis-à-vis national governments; voluntary service; unity, i.e. for each country only one national Society, open to all and serving the entire country; universality.

The **ICRC** is a Swiss organization, founded in 1863 and mandated by the Geneva Conventions to protect and assist prisoners of war and civilians in international armed conflicts. It may also offer its services in civil wars. Its functions include: visiting and treating prisoners of war and political detainees and providing them with a communication service with the outside world; setting up surgical hospitals or providing expatriate teams to work in existing hospitals; providing other types of medical assistance and relief, especially rehabilitation of war-disabled patients; development and dissemination of educational materials concerning health care of prisoners and victims of war. In regard to this last function, the book *Surgery for Victims of War* is especially well-known. In 1994, the ICRC expended about $530 million on these various activities.

The **International Federation of Red Cross and Red Crescent Societies** receives its principal support from the individual national societies. Its main mission is to provide disaster relief. It works closely with the national Red Cross societies in the affected countries. In addition, it issues international appeals for emergency aid and often serves as the organizing agency for the relief efforts of smaller organizations. In 1994 it supplied almost $400 million in disaster aid.

Like the Red Cross, **Medecins Sans Frontieres (MSF)** provides health aid to victims of war and natural disasters. Unlike the Red Cross, MSF is willing to enter war-torn areas without the permission of authorities. Another difference between the two organizations is that MSF, although its charter includes the same principles of impartiality and neutrality followed by the Red Cross, considers one of its functions to be speaking out on human rights abuses. Usually this speaking out consists of drawing attention to cases of human rights violations that MSF considers under-reported, but on occasions MSF will take a strong stand and denounce egregious violations. Such denunciation can render the humanitarian work of MSF more difficult and dangerous. Founded in 1971 in France, MSF now has six operational centers in Europe and 13 delegate offices throughout the developed world. In 1994 it spent over $300 million on its programs and sent 2,950 volunteers into the field. In

addition to aiding in acute disasters, MSF also provides aid in "chronic emergencies" (e.g. Somalia, Sudan), assists in several long-term health projects, and publishes a series of field manuals/texts on disaster medicine.

It is important to note that alongside the large international health organizations there are many excellent, smaller NGOs, with long records of valuable contributions to health care in developing countries. There are about 65 official multi-lateral and bilateral international health agencies. The total number of NGOs worldwide has been estimated at 1,500. Thus it is not unusual to find two hundred or more international health agencies operating in the world's poorest countries.

Refugee and disaster relief organisations

In most natural disasters, e.g. earthquakes, floods, volcanic eruptions, the majority of deaths occur in the first few hours or days, and likewise most of the lives that are saved are saved early on and saved by local efforts at disaster relief. A major disaster, however, can overwhelm the resources of a poor country and, by destruction of an already somewhat tenuous economic and social infrastructure, set the stage for famine and epidemics. The aid provided by international relief organizations in the days immediately following the disaster can play a major role in averting health crises and re-establishing a functioning society.

In contrast to natural disasters, famines and refugee crises tend to develop slowly, often preceded by warning signs of the impending emergency, so that international agencies can coordinate relief efforts with national agencies in a timely fashion. The United Nations agencies are probably the most important of the international relief organizations, but there are several very large NGOs active in refugee and disaster relief, notably the ICRC and MSF.

United Nations Organisations

Six major UN organizations are involved in refugee and disaster relief. The Department of Humanitarian Affairs, established in 1992, coordinates UN activities in this area. The Department operates on a 24-hour basis the UN Disaster Assessment and Coordination Team, which can be deployed immediately to an affected country. Three of the six major agencies are mentioned above in the section on long-term health care. *UNICEF* allocated $216 million to emergency relief in 1994. The *WHO* budget does not contain a line item for disaster relief, but WHO is active in this area through its Division of Emergency and Humanitarian Action, which coordinates the response of the international relief community and supplies technical assistance and emergency drugs and equipment. *UNDP* allocated $59 million to disaster relief in 1994; its special function is organizing efforts at rehabilitation in the disaster-struck area.

The *World Food Programme (WFP)* supplies food relief in disasters and coordinates the activities of NGOs involved in food relief, as well as assisting them with transportation and logistics. In 1994 it spent $874 million on relief. The WFP also supports agricultural and rural development ($181 million), and education ($131 million).

The *Office of the UN High Commissioner for Refugees (UNHCR)* provides international protection to refugees and also attempts to find long-lasting solutions to their problems. UNHCR is the major international organization for the world's 20 million refugees. It aids refugees directly and coordinates the work of NGOs involved in refugee relief. Although it has no formal authority over displaced persons), upon request of the UN General Assembly and the Secretary General, UNHCR has provided assistance to displaced persons in such countries as Bosnia and Herzegovina, Somalia, and Rwanda in recent years. In 1994, UNHCR spent almost $1.2 billion on its programs.

The sixth of the UN organizations involved in relief work is the *Food and Agriculture Organization (FAO)*. Like the World Bank and WHO it is technically an "intergovernmental agency related to the UN." It helps developing countries prepare for famine through its Global Information and Early Warning System and its Food Security Assistance Scheme, which helps developing countries set up national food reserves. In disasters its principal role is to assist in the re-establishment of agricultural production.

A global world: disease and disaster

The spread of a disease does not stop at a country's borders. With more people travelling to other countries and living in crowded cities, it is much easier for germs to spread. Infectious diseases that start in one part of the world can very quickly reach another. Drug resistance is on the rise, making it more difficult to treat some diseases. Natural and human-made disasters create refugee populations with immediate and long-term health problems.

According to the World Health Organization: in our globalized and mobile world, infectious diseases are emerging and spreading at an unprecedented rate. Around 40 new diseases have been identified since the 1970s, and in the past five years alone, the WHO has verified over 1,100 epidemic events worldwide. The 2*007 World Health Report, A Safer Future: Global Public Health Security in the 21st Century*, explores the challenges underlying today's most urgent public health threats. The WHO sends a clear message throughout the report: effectively preventing and responding to new and emerging public health risks will require enhanced international cooperation and transparency.

The world now faces a number of public health threats originating from both human and environmental sources. With an estimated 2.1 billion airline passengers travelling in 2006, the rapid global spread of epidemic-prone diseases, such as Acute Respiratory Syndrome (SARS) in 2003, is a constant risk. Although the SARS virus was ultimately contained within 4 months, the human and economic toll in Asian countries included over 10,000 people infected and $60 billion of gross expenditure and business losses. Appearing shortly after the SARS outbreak, Avian Influenza is now the most feared public health threat globally, although early warning has provided the international community with an opportunity for planning and preparedness.

Inadequate surveillance, inconsistent policies, and lack of material and financial

resources in some countries presents a major challenge to achieving public health security worldwide. The emergence and spread of HIV/AIDS in the 1970s demonstrates the global consequences of failing to recognize a new disease threat quickly. In 2003, a change in vaccination policy in Nigeria led to an outbreak of polio, a disease that had been virtually eliminated. The outbreak paralyzed thousands of children in Nigeria and spread the disease to 19 previously polio-free African countries.

Selected Emerging and Re-emerging Infectious Diseases, 1996-2004 (Source: WHO, 2007)The effects of infectious diseases, such as HIV/AIDS and tuberculosis include the destabilization of nations and damage of social and political infrastructures. The rapid spread of communicable diseases such as SARS, West Nile virus, and avian influenza, and the resistance to a growing number of antibiotic drugs have contributed to the increased prominence of publicThe effects of infectious diseases, such as HIV/AIDS and tuberculosis include the destabilization of nations and damage of social and political infrastructures. The rapid spread of communicable diseases such as SARS, West Nile virus, and avian influenza, and the resistance to a growing number of antibiotic drugs have contributed to the increased prominence of public health as a security priority for the entire world.

The emergence of infectious diseases reflects complex social, economic, political, environmental, ecological, and microbiological factors that are globally linked. Recent natural disasters (December 2004 tsunami, Hurricane Katrina) have demonstrated the threat to human life and health posed by non-human sources of fear. Developing countries, in particular, suffer from the impacts of natural disasters, urbanization, deforestation, population growth, poverty, malnutrition, political instability, and even terrorism, and have created the conditions for several infectious diseases to become new or recurrent threats.

The WHO report discusses these and many other of the most critical public health threats in the 21st century, including:

- Foodborne diseases, such as bovine spongiform encephalopathy (commonly known as mad cow disease), which are facilitated by international food trade.
- Toxic chemical or radioactive accidents, such as the dumping of 500 tons of petrochemical waste around the city of Abidjan, Cote d'Ivoire, forcing over 90,000 to seek medical help.
- Bioterrorism, a risk made real by the USA anthrax letters in 2001.
- Environmental disasters, such as the European heat wave in 2003 that claimed at least 35,000 lives, but also including disease outbreaks associated with disasters such as floods, Hurricane Katrina, and the Tsunami that claimed so many lives in the recent past.
- Conflict situations, which disable public health services and sometimes force millions of people into overcrowded camps with inadequate water and sanitation.
- Microbial adaptation and drug resistance, which has resulted in a drug-resistant strain of tuberculosis in Africa (XDR-TB) and is emerging in HIV/AIDS.

  According to the report, no single country is alone capable of preventing,

detecting or responding to all public health threats. Strengthening public health security at the global level will require stepped up international cooperation, especially regarding those countries that lack resources, have weak health infrastructure, or are particularly vulnerable. The World Health Organization gives six key recommendations to improve global public health security:

- All countries must fully implement the International Health Regulations, which were revised in 2005 to include new and emerging public health threats.
- All countries must cooperate in surveillance and outbreak alert and response.
- Countries must share knowledge, technologies and materials openly.
- The health infrastructure of all countries must become a global responsibility.
- Cross-sector collaboration within governments should be improved.
- Global and national resources for health must be increased.

More detail concerning global health issues will be found in the course Health in Conflict and Complex Emergencies.

Measuring development, measuring health

In this section of the unit on measuring health, we begin with a brief introductory discussion of development since “development” is the framework within which we place health and health indices when attempting to measure health. Development itself has many dimensions, not only the economic one: it is at once political, social, personal, and spiritual. In short, development is human. Someone once said that there are no specific political, economic, or religious problems, there are simply human problems.

If development means concentrating on human beings, then it must focus on human well-being or flourishing and that means: good health, peace, abundance, respect, honour, security, happiness, responsibility, participation, empowerment, freedom, and self-reliance. Thus, with the idea of human development in mind, development becomes a sort of journey; it cannot be a state to be reached because we can never reach the stage where we can say: “we are developed".

The concept of human development has attracted many interdisciplinary contributions and orientations from diverse fields. The writings of various philosophers, from Aristotle to Emmanuel Kant, and among the leading political economists, from Adam Smith, David Ricardo, and Thomas Malthus, to Karl Marx and John Stuart Mill, all make reference to and emphasize "human good", "flourishing lives", and human beings as the "real end" of all activities.

In the field of managerial and industrial psychology, as early as 1954 Abraham Maslow brought to the fore the very essence of contemporary human development thinking when he proposed the theory of a human "hierarchy of needs". Maslow argued that human needs are hierarchical by nature and when people are assured of all those needs they can then be able to reach and use their full potential. From Maslow's initial reflections, the concept of human needs has undergone a number of significant transformations. Contemporary scholars and philosophers, for example,

have enriched the debate on human development greatly. For example, Amartya Sen conceives development as an expansion in positive freedoms, while Martha Nussbaum distinguishes between internal capabilities of a person and external factors that facilitate the exercise of such capabilities.

In the aftermath of World War II, development economics was predominantly concerned with growth in average income: GDP per capita. When the concept of human capital arose in the 1960s, it emphasized the qualitative aspects of human inputs, namely skills and education, in wealth generation and capital accumulation. A shift towards issues of income distribution had taken place by the 1970s in response to the failure of the then adopted development strategies to have significant impacts on reducing poverty. The switch to distributional aspects of growth facilitated the emergence of Basic Needs strategies, a fundamental element of which was the concept of human development and its relationship with income growth. In the mid-1970s, The Club of Rome called for the creation of a Quality of Life index to measure development and economic welfare in and between nations. Recently, attention has been directed towards another important dimension of human inputs in community development and well-being, and that is social capital.

The fact that human development has been conceptualized in a variety of ways emphasizing many and diverse issues, means that there are some implications on the measurement of such development. Measures are needed and used for planning, comparison and decision-making purposes, and they are meaningful when real, accurate, and sufficient data are available. It is not possible to construct a measure based on a philosophical conceptualization unless such a measure is translated into quantifiable variables. This explains why we find a significant gap between the richness of conceptualization and the limitation of measurements, despite their vast and growing number, of human development. Nevertheless, the attention to human deprivation and development has boosted efforts to devise some yardsticks for measurement, and led to an unprecedented mushrooming of various indices, indicators, and formulas, only few of which are considered below.

Most people today are aware that GNP is not an adequate measure of development. However, given that economic well-being is so central to development viewed as growth, the most traditional measure of development has been GNP per capita. However, there is a number of major problems associated with this rather traditional measurement of development. Chief among them is that it tells us nothing about the actual or real distribution of wealth amongst people in an economy and it does not include wealth generated in the unofficial or “informal” sector. Thus, while it could be said that GNP per capita is a real measure of economic development at the national level, it is purely theoretical at the individual level. This, however, is a criticism levelled at any "average" measurement. Another criticism of GNP as a measure is that it assumes that economic wealth equals development and it takes no account of the human dimension of development

The US Overseas Development Council, motivated by the above mentioned call from the Club of Rome, proposed the *Physical Quality of Life Index (PQLI)* to assess progress in terms of human welfare. The PQLI combines three indicators: life expectancy, infant mortality, and literacy, in an equally weighted composite index.

However, some empirical work proved that PQLI was defective since its three independent variables were closely correlated and any one of them could give the same result. The index could also rank most countries similar to that of GNP per capita. Others found it difficult to accept its results without a stronger theoretical foundation.

When the UNDP launched its first issue of the Human Development Report (HDR) 1990, it constructed a composite *Human Development Index*. The three components of HDI are: life expectancy, representing a long and healthy life; educational attainment, representing knowledge; and real GDP (in purchasing power dollars), representing a decent standard of living. The successive HDRs came with many new composite indices, in addition to the improvement in the main HDI, while others were dropped. The HDI measures the average achievements of a country in basic human capabilities. It indicates whether people lead long and healthy lives, are educated, and enjoy a better standard of living.

The *Gender-related Development Index (GDI)* measures average achievements of a country in basic human capabilities as the HDI does, but takes note of inequality in achievement between men and women. The greater the gender disparities, the lower a country's GDI compared with its HDI. The *Gender Empowerment Measure (GEM)* examines whether women and men are able to participate actively in economic and political life and take part in decision-making. So, while GDI focuses on the enhancement of basic capabilities of women, GEM is concerned with the utilization of those capabilities to take advantage of the opportunities of life.

In 1996, HDR (UNDP 1996) introduced a new multi-dimensional measure of human deprivation: the *Capability Poverty Measure (CPM)*. The measure is composed of three variables having equal weight in the index, expressed in percentage terms they are: births unattended by trained health personnel, underweight children under five, and female illiteracy rate. A lower value of CPM is better.

The CPM was elaborated upon and improved further and was replaced, in HDR 1997, by a new *Human Poverty Index- HPI.* Unlike CPM, HPI was intended to measure deprivation in terms of five, instead of three variables: people expected to die before age 40; adults who are illiterate; people without access to health services; people without access to safe water; and underweight children under five. Again, like CPM, a lower value of HPI indicates an improvement in poverty levels. As was the case with PQLI, HDI has been subject to many criticisms and has provoked some controversies related to: limited dimensions and variables, quality of data, the way in which income variable is treated, and suggestions to add political freedom, cultural values, and environmental sustainability.

In 1995, UNICEF came up with a measure of relevance to children's health and education: *National Performance Gap (NPG).* NPG is the difference between a country's actual level of progress in under-five mortality rates (u5mr), malnutrition rates and the percentage of children reaching grade 5 (crg5) on one hand, and their respective expected levels for that country per capita GNP. When the actual performance of individual countries diverge (lower) from this trend line - the

expected level of performance - a performance gap emerges. All these measurement techniques have one major goal: to improve human development statistics.

No one disputes the fact that the African countries have, since early 1990s, seen improvements in human development. However, while these countries continue to make some significant progress, they have also witnessed serious setbacks since the mid 1990s.The comparative levels of HDIs and their progress during these years since 1990, show some discomforting trends after an impressive progress attained by all countries during the 1970s and 1980s. The incremental improvement in the value of HDI and its trend is not comforting. In many countries, the situation moved from bad to worse and then to severe deprivation. Progress and deprivation in human development (measured as the periodic difference in the value of HDI multiplied by 100) ranged from negative to negligible levels in most countries. The most troubling of all is the increasing level of human deprivation in countries such as the Democratic Republic of Congo and Somalia. Therefore, it is clear that in spite of raising GDP per capita and, accordingly, high ranking HDI for the many African countries, still more needs to be done to enhancing peoples "basic" capabilities in health, education, and poverty eradication.

While indices and techniques have improved since 1994 and we have gone some way towards including the human element into development statistics, we still have a very long way to go before the economic aspect becomes secondary to the human aspect. Of course, the question of who is measuring development is another key issue which needs to be addressed because the measuring process could be in danger of becoming modelled on one country's development. In fact, the whole enterprise of measurement might well be misguided since human life is not a reality that can accurately be measured.

An unequal world

All the recent World Development Reports have been outlining in great detail what is wrong with the world and how the inequalities of our world can be changed for the better. They tell us in graphic detail why the world needs to change its priorities, and the reasons can be summarized as follows.

Half the world's people live on less than $2 a day. 1.2 billion people live on less than $1 per day. Although poverty has been dramatically reduced in many parts of the world, a quarter of the world's people remain in severe poverty. In a global economy of $25 trillion, this is a real scandal - reflecting shameful inequalities and inexcusable failures of national and international policy.

The richest 1% of the world have income equivalent to the poorest 57%. Four fifths of the world's population live below what countries in North America and Europe consider the poverty line. The poorest 10% of Americans are still better off than two-thirds of the world population. The assets of the 200 richest people in 1998 were more than the total annual income of 41% of the world's people. Three families – Bill Gates, the Sultan of Brunei and the Walton family – have a combined wealth of some $135 billion. Their value equals the annual income of 600 million people living in the

world's poorest countries. The richest 20% of the world population now receives 150 times the income of the poorest 20%.

While 1.3 billion people struggle to live on less than $US1 a day, the world's richest 200 people actually doubled their net worth between 1994 and 1998 to more than $1 trillion. The world's top three billionaires alone possess more assets than the combined Gross National Product of all the least developed countries and their combined population of 600 million people. Far from narrowing, the gulf between rich and poor is growing. The past decade has shown increasing concentration of income, resources, and wealth among people, corporations, and countries.

Health in the "developed" world

Those living in the highest income countries have 86 percent of world Gross Domestic Product (GDP), 82 percent of world export markets, 68 percent of foreign direct investment and 74 percent of world telephone lines. Those living in the poorest countries share only one percent of any of these. OECD countries, with 19 percent of global population, control 71 percent of global trade in goods and services, and consume 16 times more than the poorest fifth of the globe.

Almost ten years ago, the richest one-fifth of the world:

- Consume 45% of all meat and fish, the poorest fifth 5%.
- Consume 58% of total energy, the poorest fifth less than 4%.
- Have 74% of all telephone lines, the poorest fifth 1.5%.
- Consume 84% of all paper, the poorest fifth 1.1%.
- Own 87% of the world's vehicle fleet, the poorest fifth less than 1%.

(UNDP Human Development Report 1998).
The situation is worse today.

Given all these rather frightening statistics, we can conclude without any doubt that the world is becoming a more unequal place, with an unethical growing gap between rich and poor households. Our world in the formative years of the twenty-first century is a world of haves and have nots – a world where one child can die for the simple lack of rehydration fluids and another from obesity!

Health in the "developing" world

There is a number of acute problems affecting health in the "developing" world – access to health care is only one of them. HIV/AIDS is perhaps the most serious problem and has already claimed more lives in SSA than anywhere else in the world. Malaria reports almost 300 million cases per year (90% in SSA). Of the 1 million people who die from this disease each year, the majority are poor Africans. Every day, almost 30,000 children around the (mostly "developing") world die of preventable diseases such as diarrhoea, malaria, pneumonia, and neonatal disorders, and nearly 14,000 are infected with HIV/AIDS. A girl born in a "developed" country may have a 50% chance of seeing the 22nd century, while a newborn in many "developing" countries has only a 1 in 4 chance of living beyond

the age of 5.

Every year more than half a million women die as a result of pregnancy and/or childbirth complications (and many more are disabled) – most of them in the "developing" world where the poor cannot afford medical care or medical care is too far away from them.

In Uganda alone, it is estimated that a shocking 6,000 women die from pregnancy or childbirth-related complications per year. The average age of Uganda's 31 million population is 15.3 – the global average age is 28. If Uganda's population projections do reach 40 million by the end of 2010 and the staggering estimated 90 million by 2050, then the current health training institutions will not be able to cope with the increased demands of an already health-starved population. With 1.3 million babies being born in the course of 2007 in Uganda alone, the current quality and quantity of health care workforce is woefully inadequate.

Indicator	**2004**
Physicians	2,209
Physicians (per 1 000 population)	0.08
Nurses	16,221
Nurses (per 1 000 population)	0.61
Midwives	3,104
Midwives (per 1 000 population)	0.12
Dentists	363
Dentists (per 1 000 population)	0.01
Pharmacists	688
Pharmacists (per 1 000 population)	0.03
Lab technicians	1,702
Lab technicians (per 1 000 population)	0.06
Health management and support workers	6,499
Health management and support workers (per 1 000 population)	0.24

Source World Health Organization – World Health Report 2006 – Working Together for Health

In "developing" countries, the gap between the rich and the poor is increasing at a very fast pace which means that the privileged minority can generally afford health care, while the majority continues to die from preventable and easily-curable diseases. All this has a toll on economic performance with knock-on effects on every aspect of life, quite apart from the fact that more than half the population cannot generate income and are, therefore, dependent on others.

In policy terms, through the Uganda Health Policy (1999), which aims to reduce mortality, morbidity, and fertility by ensuring access to a minimum health care package (UNMHC Package1), and the Health Sector Strategic Plans I & II (2000 &

2005), government is committed to ensuring that all Ugandans have access to health care. However, there are simply not enough health care workers to go around. With the decentralization of health care delivery to Uganda's districts, central government has placed a huge burden on the districts and access to relevant and adequate health care has not improved significantly. In fact, funding for health care has decreased in recent years as a result of strategic policy implementation. Apart from assisting with health facility infrastructure and developing health sub-districts within each district, government is now (with the assistance of the donor community) committed to revamping or constructing Health Centres from Grade I (first aid station) through to Grade IVs, or working with already existing smaller or mission hospitals to provide necessary health services for the people in all parts of the country.

In the midst of this long-awaited re-structuring, serious consideration is now being given to the question of who will “human” these facilities because increasing access to effective health care depends on having the human resources to run the health facilities being constructed or upgraded. The Ministry of Health's attempts to re-orient health services to Primary Health Care have thus far been difficult given the fact that urban areas take the lion's share of health care professionals. In Uganda today, it is estimated that up to 54% of trained health workers is currently working in the larger hospitals or health care facilities in the city and towns. This leaves the rural areas seriously deprived of a well-trained and adequate health care workforce. Because the population of Uganda is growing faster than the health workforce, it is foreseen that there will be an even more serious crisis in health care provision within the next decade.

The migration of health workers to “greener” pastures is a problem that will not perhaps go away. Given that individuals have the freedom to chose where to live and work, it would appear that government cannot force its young health workers to remain in the country. The huge cost incurred in training medical doctors, for example, is not returned to society. The salaries paid to doctors and other health workers in the public sector are less than acceptable. It is not surprising that some of our brightest young professionals leave to earn a living elsewhere.

While a great deal of effort, time, and money is being used to address these issues, they remain problems that are not easily solved. Solutions are elusive. In the meantime, thousands of unnecessary deaths occur every year in the “developing” world. We can only hope that the next decade of this millennium sees some improvement in the health status of the world's poorest countries.

In the final part of this unit we examine the nature of the Millennium Development Goals, specifically, the health-related goals. This ambitious project is an example of the good-will that does exist.

The Millennium Development Goals

At the UN General Assembly in 2000, heads of state and government took stock of the gross inequalities in human development worldwide and recognized their collective responsibility to uphold the principles of human dignity, equality and

equity at the global level. In addition to declaring their support for freedom, democracy and human rights, they set eight goals for development and poverty eradication, to be achieved by 2015. These are:

1. Eradicate extreme poverty and hunger
2. Achieve universal primary education
3. Achieve gender equality and empower women
4. Reduce child mortality
5. Improve maternal health
6. Combat HIV/AIDS, malaria and other diseases
7. Ensure environmental sustainability
8. Develop a global partnership for development

Most of the Millennium Development Goals have quantifiable, monitorable targets to measure progress against standards set by the international community and many countries have made progress. But much of the world, generally the poorest countries, seem unlikely to achieve the goals. Although 55 countries, with 23% of the world's people, are on track to achieve at least three-quarters of the goals, 33 countries with 26% of the world's people are failing on more than half. Extraordinary efforts will be needed in sub-Saharan Africa, where 23 countries are failing and 11 others do not have enough data to be assessed - a possible indication that they are even further behind. That leaves just 10 sub-Saharan countries on track to meet at least half of the goals.

Lack of data makes it difficult to assess progress on the goal of halving income poverty. But slow growth in average incomes indicates that many countries will have to struggle to achieve the goal. Optimistic estimates suggest that 3.7% annual growth in per capita GDP will be needed, yet in the 1990s only 24 countries achieved such growth. China and India, the most populous countries, are in this group. But incomes in nearly 130 countries, with 40% of the world's people, are not growing fast enough - including 52 countries that actually had negative growth in the 1990s. Again, progress is most elusive in the poorest countries: 40 of 44 sub-Saharan countries, with 93% of the region's people, grew too slowly. Half of those 40 countries, with, more than half of the region’s people, are poorer now than in 1990. These include 11 of the world's 20 poorest countries. Even though economic growth is not necessarily the best indicator for "development", these statistics are more than a little disturbing.

Some countries have come closer to some goals than others. Many developing countries have already achieved or are on track to achieve universal primary education and gender equity in education. Given the importance of education to so many other areas of development, this bodes well for accelerating progress towards the other goals. Most developing countries have also achieved or are on track to achieve the targets for eradicating hunger and improving water supplies (part of the environmental goal). But more than 40 countries, with 28% of the world's people, are not on track to halve hunger by 2015. And 25 countries, with 32% of the world's people, may not halve the share of people lacking access to an improved water source. Most pressing, however, is child mortality: 85 countries with more than 60% of the world's people are not on track to achieve the goal.

A goal that cannot be monitored cannot be met or missed. The targets for poverty, HIV/AIDS and maternal mortality cannot be monitored directly with current international data. Even targets that can be monitored have many gaps in the data. Complicating matters, is the fact that countries lacking data may have the worst performance, giving an inflated impression of the proportion of countries that are progressing.

In order to see if these goals are being met, we have to be able to measure accurately the levels of achievement in relation to each of them and that means that we must be able to measure development. How do we measure something that is so difficult to express in words? And yet, many development analysts have tried to evaluate how far the global community has come towards meeting the requirements for each goal. Below we list the specific health-related goals before giving a summary of the MDG 2005 report.

Millennium Development Goal 4

GOAL 4 : Reducing Child Mortality
Target 4a: Reduce infant and under-five mortality rate by two-thirds

Every year about 11 million children die of preventable causes, often for want of simple and easily provided improvements in nutrition, sanitation, and maternal health and education. Some developing regions have made rapid improvements in this area - especially Arab States, where 6% of children die before age five, down from 20% in 1970.

Although Latin America and the Caribbean is doing well as a whole, eight countries are far from achieving the infant mortality target. In East Asia and the Pacific 13 countries are on track but 3, including China, are far behind - and in Cambodia under-five mortality rates are increasing. Central and Eastern Europe and the CIS, doing badly as a whole, combines good performance from the European countries and worse performance from the more populous CIS countries. In Sub-Saharan Africa 34 of 44 countries are far behind or slipping back. Immunizations against leading diseases are a vital element in improving child survival. After soaring in the 1980s, immunizations in developing countries levelled off at about 75% in the 1990s. And in recent years the proportion of children immunized in Sub-Saharan Africa has fallen below 50%.

Child mortality has a dramatic effect on a country's life expectancy, which is part of the HDI and is an excellent indicator of a country's overall health. Between 1975 and 2000 East Asia and the Pacific increased life expectancy by about 8 years, to almost 70. South Asia, Latin America and the Caribbean and Arab States also achieved consistent increases. But high-income OECD countries are still head and shoulders above the rest, with a life expectancy of 77 years - 7 years more than the next-highest region.

Sub-Saharan Africa, ravaged by HIV/AIDS and conflict, saw life expectancy reverse in the 1990s from already tragically low levels. Eastern Europe and the CIS also suffered a decline, and is the only other region where life expectancy is lower now than in 1990.

Millennium Development Goal 5

GOAL 5 : Improving Maternal Health
Target 5a: Reduce maternal mortality ratios by three-quarters

Every year more than 500,000 women die as a result of pregnancy and childbirth, with huge regional disparities. The situation is worst in sub-Saharan Africa, where a woman has a 1 in 13 chance of dying in pregnancy or childbirth, and the rates are rising in some countries.

Increasing the number of births attended by skilled health personnel is key to reducing maternal mortality ratios, and again there is wide variation with as few as 29% of births attended by skilled personnel in South Asia and 37% in Sub-Saharan Africa. Uganda's policy of TBAs (Traditional Birth Attendants) has been successful in many areas and can be seen as a positive way to bring local knowledge and tradition to bear on current situations.

There are not enough data on maternal mortality or births attended by skilled health personnel to assess how countries are progressing towards this important goal, indicating an urgent need for more complete, comparable data on this vital issue.

Millennium Development Goal 6

6a. Halt and begin to reverse the spread of HIV/AIDS

By the end of 2000, almost 22 million people had died from AIDS, 13 million children had lost their mother or both parents to the disease and more than 40 million people were living with the HIV virus - 90% of them in developing countries, 75% in sub-Saharan Africa. In Botswana, the most affected country, more than a third of adults have HIV/AIDS and a child born today can expect to live only 36 years - about half as long as if the disease did not exist. In Burkina Faso, the 20th most affected country, 330,000 adults are living with HIV/AIDS, and life expectancy has fallen by 8 years.

The toll on life expectancy is only the beginning. In Thailand one-third of AIDS-affected rural families saw their incomes fall by half because the time of farmers, and those caring for them, was taken from the fields. At the same time, medical expenses shoot up. In Côte d'Ivoire caring for a male AIDS patient costs an average of $300 a year, a quarter to half of the net annual income of most small farms. The effect on poor households, with little or no savings to cope with such shocks, is devastating. In urban Côte d'Ivoire food consumption dropped 41% per capita, and school outlays halved.

HIV/AIDS is also a concern in the Caribbean, the region with the second highest infection rate. In Latin America 1.3 million people have HIV/AIDS. Central and Eastern Europe and the CIS has fast-rising infection rates - 240,000 people are now infected in Ukraine. And there are warnings that Asia is on the verge of an epidemic. In Ho Chi Minh City, Vietnam, one sex worker in five is HIV positive, up from almost none in the mid-1990s. And nearly 4 million people are now infected in India, second only to South Africa. Without strong preventative measures, as in Thailand, the epidemic could rage out of control.

There are no comparable trend data for assessing how well countries are fighting the disease. But it is clear that policies can make a difference and that contraceptive prevalence and reproductive rights for women are vital. Through preventive measures, Uganda reduced HIV rates from 14% in the early 1990s to around 8% by the end of the 1990s.

Also vital is providing treatment and care to those already affected. But at a cost of $300 per year per patient - well over half the GDP per capita of sub-Saharan Africa - antiretroviral drugs that can prolong life expectancy are out of reach for the average African HIV patient. As homes to the leading pharmaceutical companies, some industrial countries have pressured developing countries not to manufacture generic alternatives of these patented drugs. But in November 2001 the World Trade Organization ministerial conference in Doha, Qatar, adopted the Declaration on Trade-Related Intellectual Property Rights and Public Health, affirming the sovereign right of governments to protect public health. One issue that remains uncertain is whether countries can override patents and produce generic drugs for export to other developing countries - a crucial question for all developing countries with no pharmaceutical industry of their own. Goal 8, developing a global partnership for development, includes the aspiration of resolving this problem with the help of pharmaceutical companies.

Target 6b: Halt and begin to reverse the incidence of malaria and other major diseases

Every year there are more than 300 million cases of malaria, 90% of them in sub-Saharan Africa. And every year 60 million people are infected with tuberculosis. Current medical technologies can prevent these diseases from being fatal, but lack of access means that tuberculosis kills 2 million people a year and malaria 1 million. The poorest people typically suffer most.

Without much more effective control, by 2020 nearly 1 billion people will be infected and 35 million will die from tuberculosis. In addition to its human costs, disease takes a heavy economic toll: for instance, high malaria prevalence can lower economic growth by 1% or more a year. Work is under way to strengthen national health systems and increase international support, and there are some encouraging signs: the World Health Organization, for example, has struck a deal with the Swiss firm Novartis on the drug Coartem, an extremely effective malaria treatment. The price of this drug, which can reduce infection and fatality rates by 75%, has fallen to less than $2.50 a treatment. But this is still far more than many people can afford. In Uganda, artemesia is now being cultivated to treat and eradicate malaria and

early signs of success are very promising.

These statistics and figures should make any right-minded person think twice about the kind of institutional health improvement programmes being initiated all over Africa today. Given the ambitious nature of the MDGs, it is not surprising that many countries are not on target to meeting them. In the case of the countries of sub-Saharan Africa, the global economic order is one of the reasons why these countries find it almost impossible to allocate sufficient funds to education, health, and so on, although we must also remember that monies donated by foreign aid are often miss-directed as a result of the growing phenomenon of corruption!

The MDGs in 2005

The *Millennium Development Goals+5* conference took place at the World Summit in New York from 14-16 September 2005. The aim of that conference was to evaluate the progress towards the United Nations Millennium Declaration adopted by over 150 Heads of State at the UN Millennium Summit in September 2000. Opinions on the progress and usefulness of the MDGs vary, however: while some development analysts and organisations are cautiously optimistic about the potential of the MDGs, given some re-thinking of priorities, others claim that the goals are totally unrealistic without a radical shift in policy from donor countries as well as aid recipients.

Jeffrey Sachs, for example, believes that extreme poverty can be eliminated through greater large-scale investment in basic and economic infrastructure, and better analysis of the specific economic problems underlying poverty in different contexts. We shall be examining the position of Sachs and other neo-liberal economists in a later topic of this module.

Other critics argue that efforts to reach the MDGs need to go beyond Sachs's recommendations to invest in pro-poor growth by strengthening the dynamic sectors of the economy and encouraging rapid modernisation. Most Southern organizations believe that little progress has been made five years into the MDGs programme. They point to, among other things, aid conditionality and linked policies that contribute to donor countries' dominance over poverty reduction strategies.

The field research for Gold's report identified a number of interlinking risks associated with the current drive to reaching the MDGs. These include:

- given the holistic nature of the goals, and their cross-cutting dimensions, they encapsulate the breadth of development cooperation efforts that have been in existence for many years. In this respect, it is possible that the only thing that the MDGs will change is the discourse of poverty and development (making it even more technical) and not the substance of policies
- the MDGs make no distinction between best practice and bad practice: within the terms of the goals, there is no distinction made between a totalitarian regime that "halves poverty" on the basis of an ethnic divide and a state that enables poor people to participate actively in budget processes

- the MDGs tend to entrench a top-down approach to development that ignores local knowledge, participation and solutions in the name of a global agenda and global targets
- the MDGs tend to foster a "charity" approach to development, focused on the volume of financial aid, while side lining necessary reforms to the national and international financial, commercial and political systems.

Gold's key recommendations to ensure that the Millennium Development Goals benefit the world's poor in means as well as ends include:

- there should be a stronger focus on processes and quality within the global consensus on the MDGs
- greater participation of poor people and countries should be facilitated within the structures of global economic governance
- the global trade agenda should be brought into line with a rights-based approach to human development
- additional funds should be dedicated to financing the MDGs, and the international aid system should be reformed to ensure that aid is well spent. Conditions associated with these funds should include 100% debt cancellation, untying of aid, and the realization of the 0.7% aid targets.

According to Gold, the following challenges need to be met:

The challenge of measurement. Many of these strengthened goals and targets are not easily measured. Reliable, direct measures of the incidence or prevalence of many diseases are unavailable. And because models and data sources are still evolving, estimates may not be comparable over time or across countries. Gaps remain even for the well established measures of poverty, education, mortality, and health care, and major investments in statistical systems will be needed to fill them, by developing countries themselves and international agencies.

Expanding targets to support the goals. The World Summit resolution draws attention to four issues that should receive greater prominence over the next five years:

1. Reproductive health, integrating reproductive health into strategies for achieving the goals of improving maternal health, reducing child mortality, promoting gender equality, combating HIV/AIDS, and eradicating poverty.
2. Combating disease, intensifying the fight against HIV/AIDS by "providing sufficient health workers, infrastructure, management systems, and supplies to achieve the health-related [goals] by 2015" and calling for renewed efforts to come "as close as possible to the goal of universal access to HIV treatment by 2010."
3. Employment, strengthening the focus of the goals on employment by making it "a central objective of our relevant national and international policies as well as our national development strategies ..."
4. Environment, extending the areas of concern in at least three dimensions: biodiversity, development of indigenous people, and protection from natural

and human-caused hazards. The resolution calls on all states to “significantly reduce the loss of biodiversity by 2010.”

Conclusion

At the end of this unit of the module we hope you are now better informed about the general state of the world today in relation to health and development. By placing our discussion of health in a development context, we hope you have internalized the idea that health is primarily a development issue – indeed, it is also a human rights issue. The fact that a globalized world can lead to “globalized” health, is an issue that all of us should be aware of. The world continues to shrink, and with this the health of the world's populations can either improve through the sharing of health technologies, or the situation can become worse for “developing” countries as the economic drivers of development continue to harvest the gains for the richest countries.

Health policy Resource

Health policy can be defined as the "decisions, plans, and actions that are undertaken to achieve specific health care goals within a society." According to the World Health Organisation, an explicit health policy can achieve several things: it defines a vision for the future; it outlines priorities and the expected roles of different groups; and it builds consensus and informs people

Policy refers to interrelated decisions taken by political actors concerning social goals and means of achieving them (Walt, 1994). Hogwood and Gunn (1984) presented policy as a course of action taken by political actors who show particular form of behaviour and intention to address a matter of social concern.
The key elements of policy from these definitions are:

- Decisions
- Actions
- Political process
- Political actors
- Intended to achieve goals/address social concerns

What then is health policy?

Health policy is the course of action taken by political actors about the organisation, financing and management of health services and promotion in order to improve service delivery and ultimately health (Walt 1994). WHO (2000) indicated that health policy defines a vision for the future which in turn helps to establish benchmarks for the short and medium term health activities. It outlines priorities and the expected roles of different groups (actors). It builds consensus and informs people and fulfils an important role of governance.
Similar to the elements of policy, health policy entails:

- Actions (organisation, financing and management)

- Actors (including politicians) and their expected roles
- Goal (improving health service delivery, health promotion and health)
- Provides benchmark (for measuring improvements)
- Priorities for the health sector (prevention, curative or rehabilitation)
- It is a process and spells out the role of Government.

Health policy can thus be summed up as a plan of action to attain the desired health goals and priorities.
PS. Forgotten what **health** is? Health is a state of complete physical, psychological, social and mental wellbeing and not necessarily the absence of a disease or infirmity (WHO, 1979).

Definition of key concepts

Politics and power Resource

Politics is the process and method of making decisions for groups. Although it is generally applied to governments, politics is also observed in all human group interactions including corporate, academic, and religious institutions. Politics is a process by which groups of people make collective decisions. The term is generally applied to behaviour within civil governments, but politics has been observed in other group interactions, including corporate, academic, and religious institutions. It consists of social relations involving authority or power. **Power** is the capacity to make decisions or the ability to influence and control. All relationships are affected by the exercise of power (at individual, community, group, national and international/global level) (GoU and UNAIDS, 2009).

What is the linkage between power and policy making?

The way planning/policy making is carried out will reflect organization structure/leadership system, the stated or constituted aims of the organization, the relative power of different groups, individual aims, the political ideology or climate and the relationship with consumers/beneficiaries of the policy/plan (Green, 1998).

. **Health system** consists of all organizations, people and actions whose primary intent/purpose is to promote, restore and maintain health. This includes efforts to influence determinants of health as well as more direct health improving activities. Thus a health system is more than the pyramid of publicly owned facilities that deliver personal health services. It includes a mother caring for a sick child at home, private providers, behaviour change programmes, vector control campaigns, legislation etc. (WHO, 2007). What is evident from the above definition is that a health system goes far beyond the confines of public health facilities. This is in consonance with the 3 sector categorization of a health system that includes medical, popular and the folk sub-sectors by Helman, C. G. (2001).

The WHO (2007) outlines the six building blocks of a health system as:

1. Good health services

2. A well-performing health workforce
3. A well-functioning health information system
4. Equitable access to essential medical products, vaccines & technologies
5. A good health financing system
6. Leadership and governance

Note: Having good health policies, their appropriate implementation and monitoring are critical requirements in realizing the above building blocks of a strong health system.

The value base of health policies

The major values that guide health policies and systems in many countries stem from the Alma Ata Declaration of 1978. These values are:

- Universal access
- Equity
- People's Participation
- Intersectoral approach
- Health as a fundamental human right
- Good health for all advances social and economic development and world peace
- Political will is critical for PHC

Interdependence between countries in health care delivery directly concerns and benefits all countries Baum, 2007).The late 1980s saw the emergence of new paradigms aimed at health care reforms with focus on cost minimization, efficiency and limited involvement of the public sector spearheaded by the World Bank. As a result many developing countries saw the growth of the private sector as a major player in the health sector, introduction of user fees and reduction in Government expenditure on public services including health care. All these were counter to the values and virtues of the Alma Ata Declaration.

Overview of the health policy making and implementation process

Health policy making is a process (Walt, 1994) and involves a number of stages including: agenda setting, consensus building, rationale, value base, prioritization, option appraisal, implementation and evaluation (Green, 1998).

The many include personal health care policy, pharmaceutical policy, and policies related to public health such as vaccination policy, tobacco control policy or breastfeeding promotion policy. They may cover topics of financing and delivery of health care, access to care, quality of care, and health equity.[

There are also many topics in the politics and evidence that can influence the decision of a government, private sector business or other group to adopt a specific policy. Evidence-based policy relies on the use of science and rigorous studies such as randomised controlled trials to identify programs and practices capable of improving policy relevant outcomes. Most political debates surround personal health

care policies, especially those that seek to reform health care delivery, and can typically be categorized as either philosophical or economic. Philosophical debates center around questions about individual rights, ethics and government authority, while economic topics include how to maximize the efficiency of health care delivery and minimize costs.

The modern concept of health care involves access to medical professionals from various fields as well as medical technology, such as medications and surgical equipments. It also involves access to the latest information and evidence from research, including medical research and health services research.In many countries it is left to the individual to gain access to health care goods and services by paying for them directly as out-of-pocket expenses, and to private sector players in the medical and pharmaceutical industries to develop research. Planning and production of health human resources is distributed among labour market participants.

Other countries have an explicit policy to ensure and support access for all of its citizens, to fund health research, and to plan for adequate numbers, distribution and quality of health workers to meet health care goals. Many governments around the world have established universal health care, which takes the burden of health care expenses off of private businesses or individuals through pooling of financial risk. There are a variety of arguments for and against universal health care and related health policies. Health care is an important part of health systems and therefore it often accounts for one of the largest areas of spending for both governments and individuals all over the world. For example, medical debt is now a leading cause of personal bankruptcy in the United States.

- *UDHR Article 25:* "Everyone has the right to a standard of living adequate for the health and well-being of himself and of his family, including food, clothing, housing and medical care and necessary social services, and the right to security in the event of unemployment, sickness, disability, widowhood, old age or other lack of livelihood in circumstances beyond his control."

In some jurisdictions and among different faith-based organisations, health policies are influenced by the perceived obligation shaped by religious beliefs to care for those in less favourable circumstances, including the sick. Other jurisdictions and non-governmental organisations draw on the principles of humanism in defining their health policies, asserting the same perceived obligation and enshrined right to health. In recent years, the worldwide human rights organization Amnesty International has focused on health as a human right, addressing inadequate access to HIV drugs and women's sexual and reproductive rights including wide disparities in maternal mortality within and across countries. Such increasing attention to health as a basic human right has been welcomed by the leading medical journal *The Lancet*.[

Another issue in the rights debate is governments' use of legislation to control competition among private medical insurance providers against national social insurance systems, such as the case in Canada's national health insurance program. Laissez-faire supporters argue that this erodes the cost-effectiveness of the

health system, as even those who can afford to pay for private health care services drain resources from the public system.The issue here is whether investor-owned medical insurance companies or health maintenance organizations are in a better position to act in the best interests of their customers compared to government regulation and oversight. Another claim in the United States perceives government over-regulation of the health care and insurance industries as the effective end of charitable home visits from doctors among the poor and elderly

ECONOMICS; HEALTH CARE FINANCING

Many types of health policies exist focusing on the financing of health care services to spread the economic risks of ill health. These include publicly funded health care (through taxation or insurance, also known as single-payer systems), mandatory or voluntary private health insurance, and complete capitalisation of personal health care services through private companies, among others. The debate is ongoing on which type of health financing policy results in better or worse quality of health care services provided, and how to ensure allocated funds are used effectively, efficiently and equitably.

There are many arguments on both sides of the issue of public versus private health financing policies:

Claims that publicly funded health care improves the quality and efficiency of personal health care delivery:

- Government spending on health is essential for the accessibility and sustainability of health care services and programmes
- For those people who would otherwise go without care due to lack of financial means, any quality care is an improvement.
- Since people perceive universal health care as *free* (if there is no insurance premium or co-payment), they are more likely to seek preventive care which may reduce the disease burden and overall health care costs in the long run.
- Single-payer systems reduce wastefulness by removing the middle man, i.e. private insurance companies, thus reducing the amount of bureaucracy In particular, reducing the amount of paperwork that medical professionals have to deal with for insurance claims processing allows them to concentrate more on treating patients.

Claims that privately funded health care leads to greater quality and efficiences in personal health care:

- Perceptions that publicly funded health care is *free* can lead to overuse of medical services, and hence raise overall costs compared to private health financing.
- Privately funded medicine leads to greater quality and efficiencies through increased access to and reduced waiting times for specialized health care services and technologies.
- Limiting the allocation of public funds for personal health care does not curtail the ability of uninsured citizens to pay for their health care as out-of-pocket

expenses. Public funds can be better rationalized to provide emergency care services regardless of insured status or ability to pay, such as with the Emergency Medical Treatment and Active Labor Act in the United States. Privately funded and operated health care reduces the requirement for governments to increase taxes to cover health care costs, which may be compounded by the inefficiencies among government agencies due to their greater bureaucracy.

OTHER HEALTH POLICY OPTIONS

Health policy options extend beyond the financing and delivery of personal health care, to domains such as medical research and health workforce planning, both domestically and internationally.

Medical research policy

Medical research can be both the basis for defining evidence-based health policy, and the subject of health policy itself, particularly in terms of its sources of funding. Those in favor of government policies for publicly funded medical research posit that removing profit as a motive will increase the rate of medical innovation. Those opposed argue that it will do the opposite, because removing the incentive of profit removes incentives to innovate and inhibits new technologies from being developed and utilized.

The existence of sound medical research does not necessarily lead to evidence-based policymaking. For example, in South Africa, whose population sets the record for HIV infections, previous government policy limiting funding and access for AIDS treatments met with strong controversy given its basis on a refusal to accept scientific evidence on the means of transmission. A change of government eventually led to a change in policy, with new policies implemented for widespread access to HIV services. Another issue relates to intellectual property, as illustrated by the case of Brazil, where debates have arisen over government policy authorizing the domestic manufacture of antiretroviral drugs used in the treatment of HIV/AIDS in violation of drug patents.

Health workforce policy

Some countries and jurisdictions have an explicit policy or strategy to plan for adequate numbers, distribution and quality of health workers to meet health care goals, such as to address physician and nursing shortages. Elsewhere, health workforce planning is distributed among labour market participants as a laissez-faire approach to health policy. Evidence-based policies for health workforce development are typically based on findings from health services research.

Health in foreign policy

Many governments and agencies include a health dimension in their foreign policy in order to achieve global health goals. Promoting health in lower income countries has been seen as instrumental to achieve other goals on the global agenda, including:

- Promoting global security linked to fears of global pandemics, the intentional spread of pathogens, and a potential increase in humanitarian conflicts, natural disasters, and emergencies;
- Promoting economic development including addressing the economic effect of poor health on development, of pandemic outbreaks on the global market place, and also the gain from the growing global market in health goods and services;
- Promoting social justice reinforcing health as a social value and human right, including supporting the United Nations' Millennium Development Goals.

NEED FOR HEALTH CARE

Community health-improvement collaborative, which represent both health care consumers and health care providers in efforts to improve health care systems at the local level, are becoming a major force for improving health care systems throughout the world .However, many authors have argued that members of local collaborative must unite around shared principles in order for their efforts to be successful .This article describes the development of a set of ethical principles, based on essential health needs, that can serve as a common foundation for collaborative attempting to improve local health care systems.

Many nations have already organized their health care systems according to principles chosen to help them best meet the needs of consumers. For example, Canada based its health care system on the principles of comprehensiveness, universality, portability, accessibility, and public administration .Similarly, the proposed Clinton health plan and Newt Gingrich's recommendations for transforming the U.S. health care system both placed basic ethical principles and fundamental consumer health interests at the forefront.

Development of the Memphis Health Care Principles

In early 2000, as a small group of community leaders in Memphis, Tennessee, considered how to reorganize regional health systems to better meet the needs of their community, they sought to articulate principles that communities could use to improve the health of community members. These leaders served as the founding board for a newly incorporated non-profit Memphis health-improvement collaborative that was to become the Healthy Memphis Common Table. The founding board's first step was to form a diverse, 12-member interdisciplinary team that included the 9 founding board members and 3 additional community representatives. The board consisted of four experts in pertinent areas (health care policy, preventive medicine, international health insurance finance, and ethics), three consumer representatives (a small business owner, a person with a chronic illness, and a faith community representative), a primary care physician, and a specialist physician. The three additional members added to the interdisciplinary team were an attorney with expertise in corporate health care, a political scientist, and a nurse. This team led a 5-year process to identify the principles that can best guide health care providers, payers, and consumers toward common goals related to the health of community members and to the quality of the health care that they receive

How the Health Care Principles Were Developed

Team members began by brainstorming at a group retreat during which they produced a preliminary list of potential core principles. They then conducted independent literature reviews to identify ethical principles articulated by other health care systems and shared their findings with all team members. The group next identified a list of core ethical principles that other systems had in common and merged this with the preliminary list. Team leaders then refined this augmented list of principles with facilitator assistance. During near monthly meetings, the team continued to refine its list of principles through a consensus process until team members reached agreement on what the principles should be and how they should be worded.

The principles identified during this process were adopted as the founding principles of the Healthy Memphis Common Table, a healthy city collaborative for the Memphis metropolitan area. In November 2003, the Healthy Memphis Common Table organised a summit at which it presented the principles to community leaders. At the end of the summit, in a public ceremony attended by more than 300 health care leaders, the chief executive officers of all the major area hospitals, together with government, public health, physician, consumer, and faith community leaders, publicly signed a pledge to uphold the principles.

Following the initial publication of the principles, the Healthy Memphis Common Table board conducted a second group consensus process to consider additional public input and formulate an acronym for these principles that would be useful in disseminating them to the public. The acronym they came up with, Healthcare (*health* plus *choice, access, responsibility,* and *education* in health care), depicts the health care principles shared by health care consumers, providers, and payers. These principles provide a framework for bringing everyone together in a spirit of cooperation around a "common table" to improve the health and health care of the community.

The Memphis Health Care Principles

The following principles are based on what people need from a health care system in order to flourish. The broad acceptance of such needs-based principles requires that community members share a basic conception of what minimum standards for human health and health care will be sufficient to enable them to pursue happiness without outstripping their community's ability to provide what are determined to be necessary services.

Health

The principle of *health* means that all constituents of a health care system must commit to making the health of community members their first priority. Health care providers or systems that put financial profit, shareholder interest, or political gain ahead of patients' health are less likely to truly serve individual and community needs, as are not-for-profit systems that place financial, research, educational, or other interests ahead of their patients' health. The health principle demands that all health care systems inform their partners or shareholders that their first responsibility is to serve their patients and that they make themselves transparently accountable to this standard through public reporting of their performance data.

The health principle further affirms that people need health, not simply health care services. A corollary of this principle is that the health care industry must redefine health care to include everything that people need to be healthy. Health care systems should expand beyond the bounds of hospitals, clinics, and traditional public health activities and consider all factors that affect people's health, including their economic condition, their occupation, their education, their behaviour, and their environmental exposures. Communities, particularly in developing nations, frequently need to consider these factors first when working to improve the health of community residents.

Choice

The *choice* principle derives from the ethical principle of autonomy, which recognizes the fundamental nature of free choice and self-determination. Respect for a person's freedom to choose directly reflects Immanuel Kant's most fundamental moral principle, that people should not be treated merely as a means to advance another person's self-interest. The choice principle is also consistent with the World Health Organization's Alma-Ata declaration following the International Conference on Primary Health Care in 1978, which included the statement, "The people have the right and duty to participate individually and collectively in the planning and implementation of their health care" . The choice principle means that people should participate not only as payers but also as partners in pursuing optimal health.

This principle does not imply that choice is only possible in independent fee-for-service systems, nor does it require that people be offered an infinite choice of insurance benefit options, providers, or treatments. However, it does reflect consumers' desire for some choice of providers and treatment options, and well-designed health plans with sufficiently diverse provider panels should be able to offer them such options. Studies have shown that a choice of insurers, health plans, and benefit packages may be substantially less important to consumers than having accessible, high-quality health care.

Access

The *access* principle is based on the premise that access to health care is a fundamental good that all just health care systems should work to ensure. The Alma-Ata declaration recognizes that a just community has a basic responsibility to provide community members with universal access to primary health care. To achieve such universal health care access, the members of a society must accept that they have a duty to ensure that all members of their society receive primary health care.

Responsibility

The principle of *responsibility* is based on the premise that people need to take personal responsibility for their own health but are also obligated to care for their neighbours by helping them to obtain services that promote health. Consumers, providers, and health care institutions must all take responsibility for the health of community members and for the use of the health care resources with which they are entrusted. All of the world's major religions recognize the importance of hospitality — the responsibility of people to care for one another and especially the responsibility of the "host" toward his or her "guest." Indeed, this responsibility of a host to be hospitable is inherent in the name hospital.

Education

The principle of *education* reflects the responsibility of healthy community collaborative to encourage all their partners, including both health care providers

and health care consumers, to continually strive to learn and to share what they learn with others. Devotion to evidence-based, cost-effective care is essential to the improvement of health care systems. As Mintzberg noted in an article on the management of government programs, everyone in a health care organization designed for public benefit should serve as 1) a worker in the organization, 2) a citizen with a right to expect needed care, and 3) an informed customer whose demand for quality helps to create a marketplace that provides exceptional value in health care.

The five Health Care principles described here are interdependent and sometimes in conflict. For example, the principle of responsibility requires that consideration be given toward using resources in a way that best meets population needs or the common good, whereas the principle of choice requires that consideration be given to the personal needs and desires of individuals within that population. Communities thus may sometimes need to balance the demands of competing principles, in this example, perhaps by limiting the health care choices of community members to those that value-conscious community members might reasonably expect. Decisions that are best for a community are those that reflect both individual and population needs.

Community Validation of the Health Care Principles

Health care principles, such as those of Health Care, provide a framework on which communities can base their expectations for justice in health care and develop health care systems that are accountable to community members and committed to the good of society. By rallying communities around common goals, healthy city collaborative can help improve local health care systems, but to be most effective and overcome divisions that afflict the health of our communities, these collaborative must foster broad participation and consensus among community members. Because of the local nature of many health issues, communities should adopt, affirm, and adhere to health care principles that hold all community members consumers, providers, health care administrators, insurers, businesses, government entities, and other institutions accountable for the health of people in their own neighbourhoods.

LEGISLATION AND LAW

The terms "legislation" and "law" are used to refer generically to statutes, regulation and other legal instruments (e.g. ministerial decrees) that may be the forms of law used in a particular country.

In general, there are a wide range of regulatory strategies that might be used to ensure people's health and safety. Increasingly, regulators are taking an approach of "responsive regulation". This involves using mechanisms that are responsive to the context, conduct and culture of those being regulated, providing for a range of regulatory mechanisms to achieve the behaviour desired. Where appropriate, the aim is to use incentives before sanctions. However, when those being regulated do not respond accordingly, escalating sanctions can be invoked. These strategies may be broadly classified into five groups:

1. voluntarism: voluntary compliance undertaken by an individual organisation without any coercion;
2. self-regulation : for example, an unorganised group that regulates the behaviour of its own members through a voluntary code of practice;
3. economic instruments: for example, supply funding sanctions or incentives for health care providers, and/or demand-side measures that give more power to consumers;
4. meta-regulation: involving an external regulatory body to ensure that health care providers implement safety and quality practices and programmes;
5. command and control mechanisms : involving enforcement by government

PUBLIC HEALTH LAW

Law is an important public health tool that plays a critical role in reducing illness and premature death. Public health law examines the authority of the government at various jurisdictional levels to improve health of the general population within societal limits and norms.

Public health law focuses on legal issues in public health practice and on the public health effects of legal practice. Public health law typically has three major areas of practice:police power, disease and injury prevention, and the law of populations.

Inverse Law

The Inverse Benefit Law states that the ratio of benefits to harms among patients taking new drugs tends to vary inversely with how extensively a drug ismarketed. Two Americans, Howard Brody and Donald Light, have defined the Inverse Benefit Law, inspired by Tudor Hart's Inverse care law.

A drug effective for a serious disorder is less and less effective as it is promoted for milder cases and for other conditions for which the drug was not approved. As effectiveness becomes more diluted, the risks of harmful side effects proliferate, thus the benefit-harm ratio worsens as a drug is marketed more widely. The inverse benefit law highlights the need for comparative effectiveness research and other reforms to improve evidence-based prescribing

Inverse care law

The Inverse care law is the principle that the availability of good medical or social care tends to vary inversely with the need of the population served. Proposed by Julian Tudor Hart in 1971, the term has since been widely adopted.

The law states that: *"The availability of good medical care tends to vary inversely with the need for it in the population served. This ... operates more completely where medical care is most exposed to market forces, and less so where such exposure is reduced."* (Hart, 1971)

Inverse laws are commonplace, and arise because of inequality and a lack of social justice. In most areas of life (politics of envy aside) most of us are reasonably happy

with this state of affairs; the fact that the rich have more clothes than they strictly 'need' is not too great a cause for concern. However, it is unsettling to many that an inverse law applies to health, offending a sense of fairness a view which forms the basis for the existence of the National Health Service in the United Kingdom.

Health Insurance

Health insurance is insurance against the risk of incurring medical expenses among individuals. By estimating the overall risk of health care expenses among a targeted group, an insurer can develop a routine finance structure, such as a monthly premium or payroll tax, to ensure that money is available to pay for the health care benefits specified in the insurance agreement. The benefit is administered by a central organization such as a government agency, private business, or not-for-profit entity

Health promotion

Health promotion has been defined by the World Health Organisation's 2005 Bangkok Charter for Health Promotion in a Globalised World as "the process of enabling people to increase control over their health and its determinants, and thereby improve their health. The primary means of health promotion occur through developing healthy public policy that addresses the prerequisites of health such as income, housing, food security, employment, and quality working conditions. There is a tendency among public health officials and governments—and this is especially the case in liberal nations such as Canada and the USA—to reduce health promotion to health education and social marketing focused on changing behavioural risk factors.

Recent work in the UK *(Delphi consultation exercise due to be published late 2009 by Royal Society of Public Health and the National Social Marketing Centre)* on relationship between health promotion and social marketing has highlighted and reinforce the potential integrative nature of the approaches. While an independent review (NCC 'It's Our Health!' 2006) identified that some social marketing has in past adopted a narrow or limited approach, the UK has increasingly taken a lead in the discussion and developed a much more integrative and strategic approach (see Strategic Social Marketing in 'Social Marketing and Public Health' 2009 Oxford Press) which adopts a whole-system and holistic approach, integrating the learning from effective health promotion approaches with relevant learning from social marketing and other disciplines. A key finding from the Delphi consultation was the need to avoid unnecessary and arbitrary 'methods wars' and instead focus on the issue of 'utility' and harnessing the potential of learning from multiple disciplines and sources. Such an approach is arguably how health promotion has developed over the years pulling in learning from different sectors and disciplines to enhance and develop.

Police power

These areas perpetuate are employed by governmental agencies. Bioterrorism is a growing focus of this practice area in some jurisdictions; for example, public health

lawyers in the United States have worked in the creation of the Model State Emergency Health Powers Act and the Model State Public Health Act.

Disease and injury prevention

This broader area of public health law applies legal tools to public health problems associated with disease and injury. Practitioners apply legislation, regulation, litigation (private enforcement), and international law to public health problems using the law as an instrument of public health. Litigation against tobacco companies in the United States provides an excellent example.

Law of populations

Population-based legal analysis is the theoretical foundation of public health law. The law of populations is a relatively new theoretical framework in jurisprudence that seeks to analyze legal problems using the tools of epidemiology. Population-based legal analysis can be applied to traditional public health problems but also has application in environmental law, zoning, evidence, and complex tort.

Public Health Law Research

In 2010, a Public Health Law Research(PHLR) program at Temple University in the US was founded to promote effective regulatory, legal and policy solutions to improve public health. It is funded by the Robert Wood Johnson Foundation. Lawyers have long proclaimed the maxim that “the health of the people is the supreme law,”(Salus populi suprema lex esto) but in practice, making law work for public health is a constant challenge. PHLR provides the evidentiary foundation for these efforts. Through policymaking studies, PHLR identifies forces that shape public health policy and strategies for effecting policy change. Through mapping studies, it illuminates what has been done, and thus, what kind of action it is possible for various government units to take. Through implementation studies, it provides information about how best to ensure that “law on the books” becomes effective “law on the streets”. Through intervention studies, it determines which legal approaches are most efficacious in improving health environments, behaviours, and outcomes, and identify harmful legal side effects. Finally, through mechanism studies, it tells us why laws have the effects they do, and what mechanisms are at our disposal for improving the effectiveness of legal interventions.

The Network for Public Health Law

The Network for Public Health Law is a non-profit organization whose mission is to provide free legal technical assistance in the field of public health law. The five regional centres of the Network serve all 50 states in the U.S. as well as its territories, and their primary audiences include local, tribal, state and federal officials; lawyers; policy-makers; and public health advocates, though anyone may ask for their assistance. Some of the topics on which they provide assistance include food safety, health care reform, and tobacco control. In addition to delivering technical assistance, the Network builds relationships and provides training within the public health community.

Heath Law

Health law is the federal, state, and local law, rules, regulations and other jurisprudence affecting the health care industry and their application to health care patients, providers and payers, and vendors to the health care industry, including without limitation the (1) relationships among providers, payers and vendors to the health care industry and its patients; and (2) delivery of health care services; all with an emphasis on operations, regulatory and transactional legal issues

QUALITY OF SYSTEMS

Information Technology Help develop IT systems for health H data collection, management and reporting.

Lend in-kind service to train staff on using the IT systems and for the maintenance and updating of systems.

Help develop IT systems to manage health system accounting processes and centrally monitor devolved financial resources.

Provide the technology necessary to ensure continued learning by nurses and doctors in remote areas (eg, via telemedicine).

Help to create inexpensive and durable technologies, telemedicine and software that can link remote communities.

Provide ongoing maintenance of software for remote settings.

Strategic Opportunity #1

Develop regional and local centres of excellence in training on essential management and professional skills, based in various institutions throughout Sub-Saharan Africa.

Focus on building capacity and establishing centres of excellence in least developed countries (LDC).

Goals

• To build a skilled cadre of managers and professionals to support scale-up of programmes and promote efficient management of health systems at all levels.

• To improve management attitudes, practices and capabilities in all sectors systematically and increase the performance of health systems through effective management.

• To instil a culture of continuous quality improvement and make skills development a permanent part of institutions.

How

• Groups of corporations agree to support and sponsor the development of existing management and professional training institutions regionally and nationally. Training centres of excellence could be based in a variety of settings including public health facilities, universities, institutes, corporations, NGOs, faith-based organisations and international agencies.

• Pre- and post service courses would be offered, as well as long-term continuous education for retraining, support and mentorship. A combination of long and short courses might be delivered onsite or remotely through distance learning.

• Training centres could “adopt” facilities in more remote areas to provide a management cascade of skills building.

Target population

• Individuals and institutions associated with any element of the healthcare supply chain that play a management role.

• Healthcare providers such as doctors, nurses, lab technicians, biomedical engineers, finance and planning analysts, community health workers, home-based workers and shopkeepers, etc.

What Might Be Offered

• Basic training on general management and technical skills. Advanced skills where needed. • Specific technical skills, in such areas as lab equipment, biomedical engineering (to keep equipment functioning), procurement and materials management.

• Training of nurses to prescribe, dispense and manage patients where no doctor is available.

• Training on guidelines and policies associated with treatment and care.

Potential Partners

• Health product suppliers, African businesses and multinational employers could help to develop models for training and provide training in specific management and technical areas.

• Governments at all levels (national, regional, local) could provide coordination with health system strategies and help to support and identify centres of excellence.

• Existing local and regional training institutions could provide trainers, develop curricula and provide facilities.

• International academic organizations could provide trainers and support curricula development (twinning programmes).

• Agencies such as the World Bank Institute and the WHO could provide expertise.

• Private providers, NGOs, faith-based organisations and public facilities could provide trainers and serve as local centres of excellence.

Possible Funding

• Pooled corporate funds for capacity development of institutions.

• Cost sharing from in-kind contributions of business experts.

• Donor funding through the World Bank Institute and others who invest in training.

• Co funding from those who can afford to pay.

• Public funding for baseline institutional running costs, etc.

• Individuals who can afford to share in costs.

• Twinning with international academic institutions.

Strategic Opportunity #2

Support the development and operations of mandatory health coverage in those countries with high out-of-pocket expenditures.

Goals

• To reduce the number of people plunged into poverty due to catastrophic health expenditures.

• To allocate public funds more efficiently and equitably.

• To lower financial barriers to access.

• To increase patient choice by funding the “demand side” and giving people purchasing power rather than simply funding the “supply side” by providing services.

• To provide opportunities for governments to focus on the role of stewardship, policy and financing, rather than service provision. As experience in other countries shows,

developing a viable, sustainable insurance sector can encourage private providers and hospitals to enter the market.

How

• Assist governments in creating an *Essential Financial Protection Package*.

Traditional essentialintervention plans are based on those conditionsthat have the highest burden of disease, mostoften covering primary care services that are usedby many people but usually do not present afinancial hardship for non-poor households.

Healthcoverage, however, is most effective at providingfinancial protection from high medical expendituresand sharing the financial burden for ill healthbetween the healthy and the sick.

Affordablepackages can be designed to provide coverage forconditions that are relatively less common in thepopulation but which can lead to catastrophicexpenditures by households, such ashospitalisations, cancer treatment and HIV/AIDStreatment.

Strategic Opportunity #3

Establish minimum evidence-based quality standards specifically for LDCs focused on resource-poor and rural settings. Provide a mechanism for quality accreditation of health care facilities, laboratories and outreach centres.

Goals

• To establish quality of care and service standards that are tailored to resource-poor and rural environments in Sub-Saharan Africa.
• To provide a benchmark for quality in resource poor settings that can be used as reassurance for consumers, governments and funders.
• To build capacity in quality management techniques and expertise and, where needed, in accreditation skills.
• To instil a culture of continuous quality improvement in health facilities.
• To provide knowledge transfer and sharing of best practices among facilities in Africa those are facing similar challenges.

How

• Establish an external, objective, voluntary accreditation organisation along the lines of the International Standards Organisation (ISO) or the US Joint Commission for the Accreditation of Healthcare Organisations (JCAHO). Based in a low-income country, the institution would develop and monitor quality standards for healthcare in resource-poor and rural settings. This body would be separate from national regulatory or licensing authorities but could work with these agencies to ensure coordination with national requirements.
• Contract with an existing, respected accreditation body (such as ISO, JCAHO) to work with African professional associations, business associations, existing quality assurance bodies, public and private facilities and Ministries of Health to develop standards and monitoring processes tailored to conditions in Sub-Saharan Africa.
• Several sources can be referenced to develop these standards. For example, the NGO Code of Practice offers guidance on how to provide quality community services. Professional associations also provide standards of practice.

• Build accreditation capacity by training and using evaluators who are healthcare providers. Encourage knowledge transfer on quality and standards within sub-regions and countries in Sub-Saharan Africa.
• Identify advantages and incentives to seeking accreditation such as the ability to participate in clinical trials, expedited processes for funding from governments and donors and national recognition.

De Beers: Comprehensive Healthcare Programmes in South Africa, Botswana, Namibia, Tanzania

De Beers, a mining company which operates in several countries in Sub-Saharan Africa, has made it a part of their company mission to provide healthcare services not only to their employees but also, where possible, to the communities in which they operate. They provide a range of primary care, trauma services and hospital care to over 150,000 people in four countries.

One of their ventures, Debswana, is a partnership between the Botswana Government and De Beers. The Debswana Health service provides services to the local populations in Orapa and Jwaneng. Two 100-bed hospitals were built when the mines were established in the early 1970s because there were no health services in the area. The mine hospitals eventually came to be regarded as the district hospitals, and currently serve as referral hospitals for the public hospitals in the district. Over half of outpatients and 80% of hospitalised patients seen at the hospitals are not mine employees or their dependants. The local population is treated free of charge in these Botswana hospitals. In 2003 the mine health service became the registered site responsible for providing ARTs as part of the government's HIV/AIDS programme.

Target Population

• Public and private healthcare facilities that wish to improve the quality of their system and the care they provide.
• Ultimately the patients and clients of these facilities would be the primary beneficiaries.

What Might Be Offered

• Evidence-based quality standards appropriate to the environment.
• Training for accreditors.
• On-site accreditation visits and consultation services to health facilities.
• Tools for health facilities to use for self-monitoring performance on an ongoing basis.

Potential Partners

• Ministries of Health, government bodies and professional associations could support the process and ensure that standards meet national guidelines.
• Businesses, especially those in the health sector, could support development of standards and provide training on total quality management processes, based on their experience with ISO and other accreditation bodies.
• International organisations such as WHO, professional associations and NGOs could contribute to standards development.
• Healthcare facilities (public, NGO, faith-based, private) could provide input into standard-setting and volunteer staff who could serve as accreditors.

Possible Funding

• Donor and government, co funding for establishment of standards and creation of institutions.
• Co funding or in-kind skills contribution from businesses.
• Co funding and in-kind expertise from accredited healthcare facilities in Africa, Europe, Asia and North America (twinning programmes).
• Public and private funding for ongoing institutional operating costs.

Becton Dickinson and Company (BD):Improving Laboratory Quality and Skills

Diagnostics are an essential quality control for drug therapy. In the absence of appropriate diagnostics, drug therapy will not be properly administered, leading to unnecessary costs for people being treated who might not require treatment and additional complications because those who require treatment are not receiving it.The problem of drug resistance is also compounded without appropriate diagnostics. Increased funding for laboratory equipment means that a greater number of hospitals and clinics can now perform more complex and reliable diagnostic tests at remote sites.

The quality of skilled laboratory personnel to perform and analyse those tests presents a significant constraint to use these facilities fully. To address this problem, BD has joined forces with local ministries of health in 41 countries to provide basic training on quality control, quality assurance, standard laboratory operating procedures, record keeping, safety and testing methodologies needed to improve the quality of laboratory services. BD uses the *train the trainer* approach, focusing on laboratory workers or managers who are then capable of training others. The training has resulted in better-skilled and more motivated workers, as well as improved processes such as standardised operating procedures, testing and certification.

Strategic Opportunity #4

Take advantage of new, inexpensive technologies to build communities of practice amongst healthcare providers who are sparsely located and address the challenge of providing quality care in remote settings.

Goals

• To link healthcare providers with centres of excellence, sources of information and experts.
• To provide efficient, real-time consultation services to those in remote settings.
• To retain and develop community health workers by connecting them with a broader network for support and advice.
• To provide professional development of health workers in rural areas and encourage retention through providing support and connectivity.
• To integrate more effectively information technology (generally hardware) being funded by donors into daily management of healthcare operations in resource-poor and rural settings.

How

• Provide simple and low technology telemedicine using mobile telephones and/or personal digital assistants (PDAs) to create communities of practice between isolated clinical staff and community health workers.
• Engage IT companies to build inexpensive software tailored to managing in resource-poor environments and remote locations, leverage Internet broadband where available.

Target population
• Community health workers and health professionals in isolated areas.
• Managers and health professionals in rural and resource-poor communities.
• Rural populations and populations those are difficult to reach.

What Might Be Offered
• Reliable technologies such as mobile telephones, PDAs, computers that are robust and appropriate to the setting.
• Software to support technologies.
• Basic and ongoing training in use of technologies and software.
• Ongoing maintenance of technologies and software.
• Centres of reference to link health professionals and facilities.

Potential Partners
• Government ministries could be involved with planning and implementation of health at the community level.
• The IT sector could provide technology, software development, skills training as well as maintenance and equipment support.
• Businesses based in Africa, such as mining companies, could share existing IT systems.
• Health companies could help develop software content.
• NGOs/healthcare organisations could be involved in software development and technology selection.
• NGOs in other low-income countries that already use these technologies and have low-cost software could provide advice, technology and knowledge transfer, such as the Aravind Eye Institution in India.
• International organizations, such as WHO, and national organisations with a technology focus could support development of technical standards and compatibility within countries and across national boundaries.

Possible Funding
• Funding for model development and new software development could come from governments, NGOs, donors, software developers, IT companies.

Strategic Opportunity #5
Develop programmes to empower communities to determine their own health needs. More specifically, such programmes would select, train and support influential community members so they can cater to the basic health needs of their community.

Goals

.To address inequities in access to healthcare and allow outreach to the most vulnerable communities.

.To provide 24/7, holistic and accessible care for rural communities.

• To train and empower rural communities to be able to take ownership of their own health issues and the related solutions.

• To foster development within a community, starting with community health programmes.

• To support the role of community health workers so that they remain engaged and grow into community health experts over time.

How

• Groups of companies, government entities and NGOs would agree to support a selected community in partnership.

• Phases of work to be carried out by the group

---Define the community and problems to be targeted in conjunction with the government.

—Mobilise the community leaders/influencers.

—Develop the holistic package to address the major issues in conjunction with the community.

Most importantly, the solutions would be developed in conjunction with communities and leverage existing programmes/initiatives where these exist in the community.

—Identify gaps in resources and skills needed to implement the solutions.

—Develop a funding, action, monitoring and evaluation plan. The emphasis should be on monitoring and evaluating programmes with the community so they are able to learn and redefine their own needs.

—Mobilise the community at large.

Target population

• Resource-limited and vulnerable communities.

What Might Be Offered

• Financial and training resources to community health workers.

• Health information in local languages.

• Structured linkages to existing health facilities.

Potential Partners

• All ministries in governments involved with planning and implementation of health at community level could support planning and implementation of the programmes.

• Businesses could advocate for other businesses to get involved and transfer organisational thinking to health management challenges.

• Businesses could support programmes by filling in the knowledge, management skill and funding gaps. Examples of how different sectors can do this include:

- Mining sector could help with infrastructure building and capacity.
- Healthcare sector could provide business, financial and project management skills, access to medications, training for disease areas, supply chain and procurement expertise and technology transfer.

- Fast-moving consumer goods companies could help with awareness and social marketing.
- Horticulture sector (tea estates, coffee estates, etc)—could extend "in the fence" programmes to the outside communities.

• NGOs/community-based organisations/faith-based organisations could be the implementing partners.

Possible Funding

• Pooled corporate funds and expertise to support the community health worker support package (such as training, information).
• Public funding and provision of medical supplies.
• Local NGO resources to foster continuous engagement with the communities.

Existing Examples of Similar Successful Programs

• AMREF and GlaxoSmithKline: Uganda's community drug distributors.
• AMREF and AstraZeneca: Eastern Cape, community-based management of TB.
• Bristol-Myers Squibb Company: Secure the Future Programme a community-based treatment support for HIV/AIDS in resource-limited settings 6 countries.
• Merck: Mectizan Donation programme uses community health workers in some 90,000 communities in more than 30 countries to help in treating some 70 million people each year at risk of river blindness or lymphatic filariasis.

The Bristol-Myers Squibb "Secure the Future" Community-based Treatment Support Programme

Secure the Future (STF) has established an innovative, community-based treatment supportprogramme in five southern African countries to determine if comprehensive medical treatment, when combined with broad-based community support, can be successful in fighting HIV/AIDS in very resource-limited settings. These programmes provide support not only during the half hour with patients in the clinic but also for the other twenty-three and a half hours of their day. The programmes were agreed upon after consultation with the relevant governments. They are tripartite partnerships among the communities (NGOs, community-based organisations and faith-based organisations), a public health facility and theprivate sector. STF provided funding, access to medication and capacity-building in financialmanagement, project management and operational research skills.

The programmes were designed by local stakeholders. Chiefs, traditional leaders and healers were actively engaged. Community activities and support services include community mobilisation, education and prevention, voluntary counselling and testing, home-based care, psychosocial support, training in wellness and positive living, buddies, food security, income generating activities and orphan care.

Extensive monitoring and evaluation are incorporated in the programme and results exceed expectations. After two and a half years of operation, more than 10,500 patients have been enrolled, of whom more than 4,250 are on antiretroviral. The response rate is 67% measured in sustainable increase in CD4 count and 76% in undetectable viral load. Eighty-two percent of the patients are more than 95% adherent. Those who are not on antiretroviral have access to all the community support services, with the objective of keeping them as healthy as possible. Community mobilisation, education and testing have been strong. Since the start of the programme, there has been a ten-fold increase in voluntary counselling and

testing, changing from approximately 100 people to more that 950 per month. Initial data demonstrate improvement in patients' quality of life and reduction in stigma, both correlating with the level of community support. It is now the objective of the initiative to develop a tool kit available for public use for establishing holistic programmes for managing HIV/AIDS patients in resource limited settings, with the community taking the leading role.

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- The World Health Organization website is a valuable store of relevant information http://www.who.int/en/

Course Name: Substance Abuse and Addictions Management

Course description

Substance abuse, also known as **drug abuse**, is a patterned use of a substance (drug) in which the user consumes the substance in amounts or with methods neither approved nor supervised by medical professionals. Substance abuse/drug abuse is not limited to mood-altering or psycho-active drugs. If an activity is performed using the objects against the rules and policies of the matter (as in steroids for performance enhancement in sports), it is also called substance abused. Therefore, mood-altering and psychoactive substances are not the only types of drug abuse. Using illicit drugs – narcotics, stimulants, depressants (sedatives), hallucinogens, cannabis, even glues and paints, are also considered to be classified as drug/substance abuse. Substance abuse often includes problems with impulse control and impulsive behaviour.

Course objectives

To enable students know about the different diseases associated with substance abuse
To enable students learn more about addictions associated with substance abuse
To assist students identify the signs and symptoms of substance abuse such as gambling

Course Content

Medical definitions
Public health definitions
Drug misuse
As a value judgment
Signs and symptoms
Epidemiology
History
Society and culture
Legal approaches
Cost
Europe
Special Populations
Etiology of Substance Abuse
Addictions Management
Risk factors
Prevention
Heath care models
Evaluation

Mode of Delivery

Face to face lectures
Personal Studies

Online dialogue

Assessment
Course work 40%
Exams 60%
Total Mark 100%

SUBSTANCE ABUSE AND ADDICTIONS MANAGEMENT MODULE

The term "drug abuse" does not exclude dependency, but is otherwise used in a similar manner in nonmedical contexts. The terms have a huge range of definitions related to taking a psychoactive drug or performance enhancing drug for a non-therapeutic or non-medical effect. All of these definitions imply a negative judgment of the drug use in question (compare with the term responsible drug use for alternative views). Some of the drugs most often associated with this term include alcohol, amphetamines, barbiturates, benzodiazepines (particularly temazepam, nimetazepam, and flunitrazepam), cocaine, methaqualone, and opioids. Use of these drugs may lead to criminal penalty in addition to possible physical, social, and psychological harm, both strongly depending on local jurisdiction.[3] There are many cases in which criminal or antisocial behavior occur when the person is under the influence of a drug. Long term personality changes in individuals may occur as well.[4] Other definitions of drug abuse fall into four main categories: public health definitions, mass communication and vernacular usage, medical definitions, and political and criminal justice definitions. Substance abuse is prevalent with an estimated 120 million users of hard drugs such as cocaine, heroin and other synthetic drugs.

Substance abuse is a form of substance-related disorder.

Public health definitions

Public health practitioners have attempted to look at drug abuse from a broader perspective than the individual, emphasizing the role of society, culture and availability. Rather than accepting the loaded terms alcohol or drug "abuse," many public health professionals have adopted phrases such as "substance and alcohol type problems" or "harmful/problematic use" of drugs.

The Health Officers Council of British Columbia — in their 2005 policy discussion paper, *A Public Health Approach to Drug Control in Canada* — has adopted a public health model of psychoactive substance use that challenges the simplistic black-and-white construction of the binary (or complementary) antonyms "use" vs. "abuse". This model explicitly recognizes a spectrum of use, ranging from beneficial use to chronic dependence (see diagram to the right).

Medical definitions

In the modern medical profession, the three most used diagnostic tools in the world, the American Psychiatric Association's Diagnostic and Statistical Manual of Mental Disorders (DSM),the World Health Organization's International Statistical Classification of Diseases and ICRIS Medical organization Related Health Problems (ICD), no longer recognize 'drug abuse' as a current medical diagnosis. Instead, DSM has adopted *substance abuse*[5] as a blanket term to include drug abuse and other things. ICD refrains from using either *substance abuse* or *drug abuse*, instead using the term "harmful use" to cover physical or psychological harm to the user from use. Physical dependence, abuse of, and withdrawal from drugs and other miscellaneous substances is outlined in the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV-TR)). Its section Substance dependence begins with:

Substance dependence When an individual persists in use of alcohol or other drugs despite problems related to use of the substance, substance dependence may be diagnosed. Compulsive and repetitive use may result in tolerance to the effect of the drug and withdrawal symptoms when use is reduced or stopped. These, along with Substance Abuse are considered Substance Use Disorders...
—[5]

However, other definitions differ; they may entail psychological or physical *dependence*,[5] and may focus on treatment and prevention in terms of the social consequences of substance uses.

Drug misuse

Drug misuse is a term used commonly for prescription medications with clinical efficacy but abuse potential and known adverse effects linked to improper use, such as psychiatric medications with sedative, anxiolytic, analgesic, or stimulant properties. Prescription misuse has been variably and inconsistently defined based on drug prescription status, the uses that occur without a prescription, intentional use to achieve intoxicating effects, route of administration, co-ingestion with alcohol, and the presence or absence of abuse or dependence symptoms. Tolerance relates to the pharmacological property of substances in which chronic use leads to a change in the central nervous system, meaning that more of the substance is needed in order to produce desired effects. Stopping or reducing the use of this substance would cause withdrawal symptoms to occur.

The rate of prescription drug abuse is fast overtaking illegal drug abuse in the United States. According to the National Institute of Drug Abuse, 7 million people were taking prescription drugs for nonmedical use in 2010. Among 12th graders, prescription drug misuse is now second only to cannabis. "Nearly 1 in 12 high school seniors reported nonmedical use of Vicodin; 1 in 20 reported abuse of OxyContin."

Avenues of obtaining prescription drugs for misuse are varied: sharing between family and friends, illegally buying medications at school or work, and often "doctor shopping" to find multiple physicians to prescribe the same medication, without knowledge of other prescribers.

Increasingly, law enforcement is holding physicians responsible for prescribing controlled substances without fully establishing patient controls, such as a patient "drug contract." Concerned physicians are educating themselves on how to identify medication-seeking behavior in their patients, and are becoming familiar with "red flags" that would alert them to potential prescription drug abuse.

As a value judgment

Legal drugs are not necessarily safer. A study in 2010 asked drug-harm experts to rank various illegal and legal drugs. Alcohol was found to be the most dangerous by far.

Philip Jenkins points out that there are two issues with the term "drug abuse". First, what constitutes a "drug" is debatable. For instance, GHB, a naturally occurring substance in the central nervous system is considered a drug, and is illegal in many countries, while nicotine is not officially considered a drug in most countries. Second, the word "abuse" implies a recognized standard of use for any substance. Drinking an occasional glass of wine is considered acceptable in most Western countries, while drinking several bottles is seen as an abuse. Strict temperance advocates, which may or may not be religiously motivated, would see drinking even one glass as an abuse, and some groups even condemn caffeine use in any quantity. Similarly, adopting the view that any (recreational) use of marijuana or amphetamines constitutes drug abuse implies that we have already decided that the substance is harmful, even in minute quantities.

Signs and symptoms

Depending on the actual compound, drug abuse including alcohol may lead to health problems, social problems, morbidity, injuries, unprotected sex, violence, deaths, motor vehicle accidents, homicides, suicides, physical dependence or psychological addiction.

There is a high rate of suicide in alcoholics and other drug abusers. The reasons believed to cause the increased risk of suicide include the long-term abuse of alcohol and other drugs causing physiological distortion of brain chemistry as well as the social isolation. Another factor is the acute intoxicating effects of the drugs may make suicide more likely to occur. Suicide is also very common in adolescent alcohol abusers, with 1 in 4 suicides in adolescents being related to alcohol abuse. In the USA approximately 30 percent of suicides are related to alcohol abuse. Alcohol abuse is also associated with increased risks of committing criminal offences including child abuse, domestic violence, rapes, burglaries and assaults.

Drug abuse, including alcohol and prescription drugs can induce symptomatology which resembles mental illness. This can occur both in the intoxicated state and also during the withdrawal state. In some cases these substance induced psychiatric disorders can persist long after detoxification, such as prolonged psychosis or depression after amphetamine or cocaine abuse. A protracted withdrawal syndrome can also occur with symptoms persisting for months after cessation of use. Benzodiazepines are the most notable drug for inducing prolonged withdrawal effects

with symptoms sometimes persisting for years after cessation of use. Abuse of hallucinogens can trigger delusional and other psychotic phenomena long after cessation of use and cannabis may trigger panic attacks during intoxication and with use it may cause a state similar to dysthymia]. Severe anxiety and depression are commonly induced by sustained alcohol abuse which in most cases abates with prolonged abstinence. Even moderate alcohol sustained use may increase anxiety and depression levels in some individuals. In most cases these drug induced psychiatric disorders fade away with prolonged abstinence.[15]

Drug abuse makes central nervous system (CNS) effects, which produce changes in mood, levels of awareness or perceptions and sensations. Most of these drugs also alter systems other than the CNS. Some of these are often thought of as being abused. Some drugs appear to be more likely to lead to uncontrolled use than others.

Traditionally, new pharmacotherapies are quickly adopted in primary care settings, however; drugs for substance abuse treatment have faced many barriers. Naltrexone, a drug originally marketed under the name "ReVia," and now marketed in intramuscular formulation as "Vivitrol" or in oral formulation as a generic, is a medication approved for the treatment of alcohol dependence. This drug has reached very few patients. This may be due to a number of factors, including resistance by Addiction Medicine specialists and lack of resources.

The ability to recognize the signs of drug use or the symptoms of drug use in family members by parents and spouses has been affected significantly by the emergence of home drug test technology which helps identify recent use of common street and prescription drugs with near lab quality accuracy.

Epidemiology

The initiation of drug and alcohol use is most likely to occur during adolescence, and some experimentation with substances by older adolescents is common. For example, results from 2010 Monitoring the Future survey, a nationwide study on rates of substance use in the United States, show that 48.2% of 12th graders report having used an illicit drug at some point in their lives.[18] In the 30 days prior to the survey, 41.2% of 12th graders had consumed alcohol and 19.2% of 12th graders had smoked tobacco cigarettes.[18] In 2009 in the United States about 21% of high school students have taken prescription drugs without a prescription. And earlier in 2002, the World Health Organization estimated that around 140 million people were alcohol dependent and another 400 million suffered alcohol-related problems.

Studies have shown that the large majority of adolescents will phase out of drug use before it becomes problematic. Thus, although rates of overall use are high, the percentage of adolescents who meet criteria for substance abuse is significantly lower (close to 5%).According to BBC, "Worldwide, the UN estimates there are more than 50 million regular users of morphine diacetate (heroin), cocaine and synthetic drugs."

APA, AMA, and NCDA

In 1932, the American Psychiatric Association created a definition that used legality, social acceptability, and cultural familiarity as qualifying factors:

...as a general rule, we reserve the term drug abuse to apply to the illegal, nonmedical use of a limited number of substances, most of them drugs, which have properties of altering the mental state in ways that are considered by social norms and defined by statute to be inappropriate, undesirable, harmful, threatening, or, at minimum, culture-alien."

In 1966, the American Medical Association's Committee on Alcoholism and Addiction defined abuse of stimulants (amphetamines, primarily) in terms of 'medical supervision':

...'use' refers to the proper place of stimulants in medical practice; 'misuse' applies to the physician's role in initiating a potentially dangerous course of therapy; and 'abuse' refers to self-administration of these drugs without medical supervision and particularly in large doses that may lead to psychological dependency, tolerance and abnormal behavior.

In 1973, the National Commission on Marijuana and Drug Abuse stated:

...drug abuse may refer to any type of drug or chemical without regard to its pharmacologic actions. It is an eclectic concept having only one uniform connotation: societal disapproval. ... The Commission believes that the term drug abuse must be deleted from official pronouncements and public policy dialogue. The term has no functional utility and has become no more than an arbitrary codeword for that drug use which is presently considered wrong.[24]

DSM

The first edition of the American Psychiatric Association's Diagnostic and Statistical Manual of Mental Disorders (published in 1952) grouped alcohol and drug abuse under Sociopathic Personality Disturbances, which were thought to be symptoms of deeper psychological disorders or moral weakness.

The third edition, published in 1980, was the first to recognize substance abuse (including drug abuse) and substance dependence as conditions separate from substance abuse alone, bringing in social and cultural factors. The definition of dependence emphasised tolerance to drugs, and withdrawal from them as key components to diagnosis, whereas abuse was defined as "problematic use with social or occupational impairment" but without withdrawal or tolerance.

In 1987, the DSM-IIIR category "psychoactive substance abuse," which includes former concepts of drug abuse is defined as "a maladaptive pattern of use indicated by...continued use despite knowledge of having a persistent or recurrent social, occupational, psychological or physical problem that is caused or exacerbated by the use (or by) recurrent use in situations in which it is physically hazardous." It is a residual category, with dependence taking precedence when applicable. It was the

first definition to give equal weight to behavioural and physiological factors in diagnosis.

By 1988, the DSM-IV defines substance dependence as "a syndrome involving compulsive use, with or without tolerance and withdrawal"; whereas substance abuse is "problematic use without compulsive use, significant tolerance, or withdrawal." Substance abuse can be harmful to your health and may even be deadly in certain scenarios

By 1994, The fourth edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM) issued by the American Psychiatric Association, the DSM-IV-TR, defines substance dependence as "when an individual persists in use of alcohol or other drugs despite problems related to use of the substance, substance dependence may be diagnosed." followed by criteria for the diagnose[5]

DSM-IV-TR defines substance abuse as:

- A. A maladaptive pattern of substance use leading to clinically significant impairment or distress, as manifested by one (or more) of the following, occurring within a 12-month period:

1. Recurrent substance use resulting in a failure to fulfill major role obligations at work, school, or home (e.g., repeated absences or poor work performance related to substance use; substance-related absences, suspensions or expulsions from school; neglect of children or household)
2. Recurrent substance use in situations in which it is physically hazardous (e.g., driving an automobile or operating a machine when impaired by substance use)
3. Recurrent substance-related legal problems (e.g., arrests for substance-related disorderly conduct)
4. Continued substance use despite having persistent or recurrent social or interpersonal problems caused or exacerbated by the effects of the substance (e.g., arguments with spouse about consequences of intoxication, physical fights)

- B. The symptoms have never met the criteria for Substance Dependence for this class of substance.

The fifth edition of the DSM (DSM-5), planned for release in 2013, is likely to have this terminology revisited yet again. Under consideration is a transition from the abuse/dependence terminology. At the moment, abuse is seen as an early form or less hazardous form of the disease characterized with the dependence criteria. However, the APA's 'dependence' term, as noted above, does not mean that physiologic dependence is present but rather means that a disease state is present, one that most would likely refer to as an addicted state. Many involved recognize that the terminology has often led to confusion, both within the medical community and with the general public. The American Psychiatric Association requests input as to how the terminology of this illness should be altered as it moves forward with DSM-5 discussion.

Society and culture

Legal approaches

Most governments have designed legislation to criminalize certain types of drug use. These drugs are often called "illegal drugs" but generally what is illegal is their unlicensed production, distribution, and possession. These drugs are also called "controlled substances". Even for simple possession, legal punishment can be quite severe (including the death penalty in some countries). Laws vary across countries, and even within them, and have fluctuated widely throughout history.

Attempts by government-sponsored drug control policy to interdict drug supply and eliminate drug abuse have been largely unsuccessful. In spite of the huge efforts by the U.S., drug supply and purity has reached an all time high, with the vast majority of resources spent on interdiction and law enforcement instead of public health. In the United States, the number of nonviolent drug offenders in prison exceeds by 100,000 the total incarcerated population in the EU, despite the fact that the EU has 100 million more citizens.

Despite drug legislation (or perhaps because of it), large, organized criminal drug cartels operate worldwide. Advocates of decriminalization argue that drug prohibition makes drug dealing a lucrative business, leading to much of the associated criminal activity.

Cost

Policymakers try to understand the relative costs of drug-related interventions. An appropriate drug policy relies on the assessment of drug related public expenditure based on a classification system where costs are properly identified.

Labelled drug-related expenditures are defined as the direct planned spending that reflects the voluntary engagement of the state in the field of illicit drugs. Direct public expenditures explicitly labeled as drug-related can be easily traced back by exhaustively reviewing official accountancy documents such as national budgets and year-end reports. Unlabelled expenditure refers to unplanned spending and is estimated through modeling techniques, based on a top-down budgetary procedure. Starting from overall aggregated expenditures, this procedure estimates the proportion causally attributable to substance abuse (Unlabelled Drug-related Expenditure = Overall Expenditure × Attributable Proportion). For example, to estimate the prison drug-related expenditures in a given country, two elements would be necessary: the overall prison expenditures in the country for a given period, and the attributable proportion of inmates due to drug-related issues. The product of the two will give a rough estimate that can be compared across different countries.[28]

Europe

As part of the reporting exercise corresponding to 2005, the European Monitoring Centre for Drugs and Drug Addiction's network of national focal points set up in the

27 European Union (EU) Member States, Norway, and the candidates countries to the EU, were requested to identify labeled drug-related public expenditure, at the country level.[28]

This was reported by 10 countries categorized according to the functions of government, amounting to a total of EUR 2.17 billion. Overall, the highest proportion of this total came within the government functions of Health (66%) (e.g. medical services), and Public Order and Safety (POS) (20%) (e.g. police services, law courts, prisons). By country, the average share of GDP was 0.023% for Health, and 0.013% for POS. However, these shares varied considerably across countries, ranging from 0.00033% in Slovakia, up to 0.053% of GDP in Ireland in the case of Health, and from 0.003% in Portugal, to 0.02% in the UK, in the case of POS; almost a 161-fold difference between the highest and the lowest countries for Health, and a 6-fold difference for POS. Why do Ireland and the UK spend so much in Health and POS, or Slovakia and Portugal so little, in GDP terms?

To respond to this question and to make a comprehensive assessment of drug-related public expenditure across countries, this study compared Health and POS spending and GDP in the 10 reporting countries. Results found suggest GDP to be a major determinant of the Health and POS drug-related public expenditures of a country. Labelled drug-related public expenditure showed a positive association with the GDP across the countries considered: r = 0.81 in the case of Health, and r = 0.91 for POS. The percentage change in Health and POS expenditures due to a one percent increase in GDP (the income elasticity of demand) was estimated to be 1.78% and 1.23% respectively.

Being highly income elastic, Health and POS expenditures can be considered luxury goods; as a nation becomes wealthier it openly spends proportionately more on drug-related health and public order and safety interventions.[28]

UK

The UK Home Office estimated that the social and economic cost of drug abuse[29] to the UK economy in terms of crime, absenteeism and sickness is in excess of £20 billion a year.[30] However, it[*clarification needed*] does not estimate what portion of those crimes are unintended consequences of drug prohibition (crimes to sustain expensive drug consumption, risky production and dangerous distribution), nor what is the cost of enforcement. Those aspects are necessary for a full analysis of the economics of prohibition.[31]

The Home Office has a recent history of taking a hard line on controlled drugs, including those with no known fatalities and even medical benefits,[32] in direct opposition to the scientific community.[33]

US

The 2004 study The economic costs of drug abuse in the United States by the Executive Office of the President Office of National Drug Control Policy, lists the overall costs of drug abuse for the years 1992–2002 as follows:

Year	Cost (billions of dollars)
1992	107
1993	111
1994	117
1995	125
1996	130
1997	134
1998	140
1999	151
2000	161
2001	170
2002	181

Treatment

Treatment for substance abuse is critical for many around the world. Often a formal intervention is necessary to convince the substance abuser to submit to any form of treatment. Behavioral interventions and medications exist that have helped many people reduce, or discontinue, their substance abuse. From the applied behavior analysis literature, behavioral psychology, and from randomized clinical trials, several evidenced based interventions have emerged:

- Behavioral marital therapy
- Motivational Interviewing
- Community reinforcement approach
- Exposure therapy
- Contingency management[34][35]
- Pharmacological therapy - A number of medications have been approved for the treatment of substance abuse.[*citation needed*] These include replacement therapies such as buprenorphine and methadone as well as antagonist medications like disulfiram and naltrexone in either short acting, or the newer long acting form (under the brand name Vivitrol). Several other medications, often ones originally used in other contexts, have also been shown to be effective including bupropion (Zyban or Wellbutrin), Modafinil (Provigil) and more.

According to some nurse practitioners, stopping substance abuse can reduce the risk of dying early and also reduce some health risks like heart disease, lung disease, and strokes.[36]

In children and adolescents, cognitive behavioral therapy (CBT)[37] and family therapy[38] currently have the most research evidence for the treatment of substance abuse problems. These treatments can be administered in a variety of different formats, each of which has varying levels of research support[39]

It has been suggested that social skills training adjunctive to inpatient treatment of alcohol dependence is probably efficacious,[40] including managing the social environment.

Special Populations

Immigrants and Refugees

Process and Context of Migration

Governments, advocacy organizations, academics, and migrating persons often define the term "immigrant" differently, assigning unique meanings to the word, and often using the following terms somewhat interchangeably: aliens, immigrants, nonimmigrants, undocumented aliens, refugees, asylum seekers, and lawful permanent residents. The U.S. government classifies migrating persons into multiple categories based on both the type and legality of migration. "Lawful permanent residents" is the legal term used to describe immigrants who have arrived in the United States through legal channels and with appropriate documentation. "Nonimmigrants" refers to students, tourists, short-term contract workers, and any person temporarily visiting the country while intending to return to their country of origin. "Illegal alien" describes any immigrant who has entered the country illegally or who, although entering the country legally, has fallen "out of status." Illegal aliens may be deported at any time if brought to the attention of immigration authorities.[41] The term "illegal alien" has drawn much criticism from advocacy groups as a label that is demeaning and dehumanizing. For this Wikipedia entry, the term "immigrants" will be used to refer to both documented and undocumented migratory persons.

The United States Immigration and Nationality Act of 1952 defines a "refugee" as any person who is outside his or her "country of nationality" and who is unable or unwilling to return to that country because of persecution or a well-founded fear of persecution, which must be based on the individual's race, religion, nationality, membership in a particular social group, or political opinion. The number of refugees allowed to enter the U.S. is restricted by quantity and geographic location of origin in accordance with federal policies. After one year of residence within the U.S., refugees may be eligible to obtain Lawful Permanent Residence status.[42]

Despite the relatively short history of the nation, patterns and outcomes of immigration to the United States have been complex. Noted historians, journalists, educators, and scholars, such as TatchoMindiola,[43] Howard Zinn,[44] and Samantha Power[45] have extensively detailed the evolution of federal immigration and refugee policy within the U.S., signifying the economic, political, and social contexts and motivations shaping policy initiatives. The nation's earliest immigration legislation, such as the "Free White Persons Act" of 1790 and the Chinese Exclusion Act of 1882, reflected political manipulations of the economic incentives and social pressures of the times and provided a foundation for the codification of discriminatory practices based upon race and nationality within later policy designs. Further policy actions, including the Johnson-Reed Act of 1924, the "Bracero" guestworker program begun in 1942 and consequent Operation Wetback in 1954,

and the USA Patriot Act of 2001 continued the process of selective immigration and detention according to racial and ethnic categories. Consequently, immigrant and refugee accessibility to the United States is limited according to fiscal, political, and humanitarian priorities; "numerical ceilings" for each fiscal year are determined by Congressional budget and appropriations.[46]

Immigrant and refugee migration is often analyzed as a process consisting of three phases: 1) the pre-migration or departure phase, 2) the transit phase, and 3) the resettlement phase.[47] Many economic, social, and psychological stressors are associated with each stage. Physical trauma and depression and anxiety due to separation from loved ones often characterize the pre-migration and transit phases. During the resettlement phase, "cultural dissonance," language barriers, racism, discrimination, economic adversity, overcrowding, social isolation, and loss of status regarding important social roles are just a few of the obstacles immigrants and refugees may encounter. For undocumented immigrants, difficulty obtaining work and fears of deportation are common. Refugees frequently experience concerns about the health and safety of loved ones left behind and uncertainty regarding the possibility of returning to their country of origin.[48][49]

Etiology of Substance Abuse

Many of the genetic, psychological, and environmental factors identified as potentially contributing to the development of substance abuse behaviors by multiple-generation by non-recent immigrants and refugees are similar for more recent immigrants and refugees. Heritable genetic, cognitive, and temperamental characteristics may signify increased risk or protective factors for biological family members. Psychological theories, such as the psychoanalytic, behavioral, cognitive, and social learning models may help to explain the role of environment in shaping substance abuse behaviors and patterns. Sociocultural models focusing on family interactions, peer influences, and social environments may describe the interpersonal mechanisms partially leading to substance abuse behaviors[50]

However, several models have been proposed that specifically apply to the development of substance abuse behaviors and disorders among immigrants and refugees. The majority of these models relate to individual experiences of migration and assimilation, integration, and segregation upon entry into a new culture.

One theory suggests that immigrants and refugees simply continue the substance use and abuse patterns and behaviors they maintained while residing in their country of origin, regardless of the stressors and any process of cultural adaptation they may experience in their new country.[49]

Conversely, the acculturation (or assimilation) model proposes that substance abuse behaviors may be explained by examining the process in which recent immigrants and refugees adopt the attitudes, behaviors, and norms regarding substance use and abuse that exist within the dominant culture into which they are entering. With this theory, patterns of substance abuse among immigrants and refugees will more closely resemble the patterns of the dominant society than patterns existing within the culture of origin, if there are significant differences.[49]

Similarly, the acculturative stress model suggests that substance abuse functions as a coping mechanism to attempt to deal with the stressors that result directly from the process of immigration, such as forced migration, involuntary settlement, "cultural conflict" and alienation, role transition and loss of status, economic insecurity, and the scarcity of resources.[49]

Finally, the intracultural diversity model argues that universal theories attempting to explain substance abuse by immigrants and refugees fail to address diversity within and between cultural groups. This model proposes multiple pathways to addiction and recovery that cannot be generalized as applying to specific racial and ethnic populations. Proponents of this theory also point to intergenerational differences in substance abuse behaviors as evidence supporting the model and to identify potential risk and protective factors among individuals.[49][51]

Empowerment Social Work and Culturally Competent Practice

The National Association of Social Workers (NASW) provides standardized guidelines regarding professional values and codes of ethical conduct for individual social workers. The NASW identifies the following core values: service, social justice, dignity and worth of the person, importance of human relationships, integrity, and competence. Furthermore, the association provides detailed guidelines related to confidentiality, informed consent, self-determination, and many other aspects of practice with clients and colleagues.[52] All social work values and ethics are implicated in direct practice with immigrants and refugees; however, special attention must be paid to codes of conduct regarding client self-determination, informed consent, cultural competent practice, and confidentiality.

A variety of strategies have been suggested for social work practice in the field of substance abuse recovery when working with immigrants and refugees.

In a literature review of the research on immigration, acculturation, and substance abuse, Leow, Goldstein, and McGlinchy (2006) recommend tailoring intervention and treatment services and materials for specific racial and ethnic cultures by utilizing language, images, values, and norms belonging to each culture and incorporating knowledge of cultural themes, attitudes, family structures, and service access points. However, before services can be provided, they contend, social workers should recruit and consult with members of the immigrant and refugee communities they are intending to serve regarding program development and implementation. Additionally, social work staff and volunteers should demonstrate cultural competency in two significant ways: 1) by possessing the "attitudes, knowledge, and skills" necessary when working with diverse groups, and 2) by continually evaluating their personal values and beliefs and recognizing differences in perspective.[53]

Similarly, Pumariega, Rothe, and Pumariega (2005) focus on the overall accessibility, acceptability, and relevance of programs for immigrants and refugees coming from specific cultural backgrounds. Differences in "symptom expression" between various racial and ethnic groups may bias both social workers and diagnostic tools during assessment and intervention efforts. Ignorance of the role and significance of such factors as site location, documentation, language, social stigma, and treatment

methods on individual and community perceptions regarding services may render intervention and treatment efforts largely ineffective. The authors also discuss the importance of incorporating the process of cultural transition into direct practice with immigrants and refugees by utilizing unique practices from a culture of origin into "Western-oriented" mental health services and re-evaluating characteristics and traditions within that culture that have been "negatively valued" in dominant, American culture. This includes recognizing and building on existing individual and cultural strengths to increase resilience.[48]

When working directly with refugees, Adams, Gardiner, and Assefi (2004) emphasize the necessity of interpreters and advise the use of a preventive screening tool, such as an adaptation of the Harvard trauma questionnaire, to gather information regarding exposure to physical and psychological trauma, the presence of acute and chronic illnesses, use of alcohol and other drugs, and participation (voluntary and coerced) in specific cultural and medicinal practices, such as female genital surgery. Furthermore, they highlight the importance of contextualizing and understanding the migration process by inquiring as to an individual's country of origin and reasons for migration, experience of migration (time spent in refugee camps, circumstances surrounding travel, etc.), social roles and status prior to migrating (employment, education, etc.), and the status and location of close family members.[54]

Addictions Management

Addiction is a chronic, progressive, and relapse-prone illness that affects a person both physically and psychologically. A person can become addicted to either substances (e.g. drugs, alcohol) or to certain activities (e.g. gambling, sex, the internet).

It is characterised by the following:

- The person continues the addictive behaviour despite the consequences
- The frequency or intensity of the behaviour increases over time
- When the behaviour is stopped, the person experiences unpleasant feelings and emotions

Signs and Symptoms

Signs of a possible gambling problem:

- Gambles more often
- Gamble for longer periods of time
- Gambles with larger amounts of money
- Incurs debts as a result of gambling
- Borrows money to gamble
- Gambles in spite of negative consequences, e.g. huge losses, poor job performance, relationship problems
- Gambles to escape from emotional problems, worries or frustrations
- Tells lies to hide/understate their gambling behaviour

Signs of a possible alcohol problem:

- Loses control over drinking
- Feels that drinking is getting out of hand and feels the need to cut down
- Feels annoyed when others criticise his drinking
- Has cravings to drink in the morning, or needs alcohol to steady his nerves
- Feels remorseful or guilty about drinking

Signs of a possible drug problem:

- Preoccupied with finding and consuming drugs
- Finds excuses to continue using drugs, despite promises to quit
- Conceals drug-taking behaviour, and is afraid of being discovered
- Has health and sleep problems
- Has frequent accidents and falls
- Feels exhausted and depressed because of the drug use

Specialized Programme

The National Addictions Management Service (NAMS) provides treatment for behavioural and substance addictions.

A multidisciplinary team at the Specialist Outpatient Clinic C provides comprehensive assessments, treatment planning, counselling and case management, relapse-prevention training, and psycho-education for patients and their families. Patients who require inpatient detoxification and rehabilitation are treated at the Serenity Centre at IMH.

To make an appointment to see a doctor, please call 6389 2200. You may also call the following Helplines for more information:

Combined drug intoxication

Combined drug intoxication (**CDI**), also known as **multiple drug intake** (**MDI**) or **lethal polydrug/polypharmacy intoxication**, is an unnatural cause of humandeath. It is distinct in that it is due to the simultaneous use of multiple drugs, whether the drugs are prescription, over-the-counter, recreational, or some other combination. The reasons for toxicity vary depending on the mixture of drugs.[1]

CDI can occur with numerous drug combinations, including mixtures of over-the-counter (OTC) drugs, legally or illegally obtained prescription drugs, herbal mixtures, and home remedies. Ingestion of alcoholic beverages, in combination with other drugs, increases the risk of CDI.[*citation needed*]

The CDI/MDI phenomenon seems to be becoming more common in recent years. In December 2007, according to Dr. John Mendelson, a pharmacologist at the

California Pacific Medical Center Research Institute, deaths by combined drug intoxication were relatively "rare" ("one in several million"), though they appeared then to be "on the rise".[2] In July 2008, the Associated Press and CNN reported on a medical study showing that over two decades, from 1983 to 2004, such deaths have soared.[3] It has also become a prevalent risk for older patients.[4]

Risk factors

People who engage in polypharmacy and other hypochondriac behaviors are at an elevated risk of death from CDI. Elderly people are at the highest risk of CDI, due to having many age-related health problems requiring many medications combined with age-impaired judgment, leading to confusion in taking medications.[3][4]

Recent veterans back from war and suffering from Post Traumatic Stress Disorder (PTSD) in combat are at risk of dying from CDI/MDI.[*citation needed*] Nine Veteran PTSD patients died from CDI/MDI in America in 2007.[*citation needed*] There are anecdotal reports of veterans dying from combinations of antidepressants, antipsychotics, and tranquilizers used in combination with OTC medicines like diphenhydramine.[*citation needed*] While still a U.S. senator from Illinois, United StatesPresidentBarack Obama asked the U.S. Congress to inquire about the safety of these drugs.[*citation needed*] There is an ongoing investigation of the matter.[5]

Prevention

In general, the simultaneous use of multiple drugs should be carefully monitored by a qualified individual such as board certified and licensedmedical doctor, either an M.D. or D.O.. Close association between prescribing physicians and pharmacies, along with the computerization of prescriptions and patients' medical histories, aim to avoid the occurrence of dangerous drug interactions. Lists of contraindications for a drug are usually provided with it, either in monographs, package inserts (accompanying prescribed medications), or in warning labels (for over-the-counter (OTC) drugs). CDI/MDI might also be avoided by physicians requiring their patients to return any unused prescriptions. Patients should ask their doctors and pharmacists if there are any interactions between the drugs they are taking.

Paracetamol deaths

On June 30, 2009 an FDA advisory panel recommended that Vicodin and another painkiller, Percocet, be removed from the market because they have allegedly caused over 400 deaths a year. The problem is with paracetamol (acetaminophen) overdose and liver damage. These two drugs, in combination with other drugs like Nyquil and Theraflu, can cause death by multiple drug intake and/or drug overdose. Another solution would be to not include paracetamol with Vicodin or Percocet.

Celebrity deaths due to CDI (or MDI)

Many celebrities have died from CDI/MDI, including:

- Singer Whitney Houston from drinking Alcohol beverages, Xanax, Benadryl, Cocaine, Cannabis and Flexeril.
- Writer/actor/comedian Freddy Soto from fentanyl, alprazolam and alcohol;
- Pro westling manager Elizabeth Ann Hulette aka Miss Elizabeth from alcohol, temazepam, oxycodone, hydrocodone and anabolic steroids;
- Child actress Anissa Jones from cocaine, PCP, methaqualone and secobarbital;
- Pro wrestler Louie Spicolli from carisoprodol, alcohol, painkillers and lorazepam;
- Hawthorne Heights guitarist Casey Calvert from citalopram, clonazepam and hydrocodone;[2][6]
- Actor Nick Adams from paraldehyde and promazine;
- Guitarist Jimi Hendrix from alcohol and barbiturates;
- Singer Elvis Presley had over 10 drugs in his system[*citation needed*] when he died. (The license of his physician, Dr. George C. Nichopoulos was later suspended and then revoked after press reports from then-ABC News reporter Geraldo Rivera on *20/20*.);
- Lester Bangs from diazepam and propoxyphene;
- Deep Purple's Tommy Bolin from alcohol and prescription drugs and illegal drugs in combination;
- David Anthony Kennedy, son of Senator Robert Francis Kennedy, from cocaine, pethidine and thioridazine;
- Singer Johnny O'Keefe from combining several prescription drugs;
- Steve Clark of rock group DefLeppard from combining antidepressants, tranquilizers and alcohol;
- Actor Lani O'Grady of Eight is Enough from hydrocodone and fluoxetine;
- Bridgette Andersen from alcohol and multiple drugs;
- Edie Sedgwick from barbiturates and alcohol;
- Dana Plato from carisoprodol and hydrocodone;
- Actor/comedian Eric Douglas from alcohol, hydrocodone and temazepam;
- Actor Heath Ledger from toxic combination of prescribed drugs;
- Michael Jackson from propofol and two other sedatives;
- Brittany Murphy from multiple prescription drugs;
- The Rev of Avenged Sevenfold from oxycodone, oxymorphone, diazepam, nordiazepam and alcohol.
- Slipknot bassist Paul Gray from morphine and fentanyl
- New York Rangers forward Derek Boogaard from oxycodone and alcohol. [7]

Anna Nicole Smith and Daniel Wayne Smith

In February 2007, five months after her son Daniel Wayne Smith was found dead from CDI with methadone, sertraline, and escitalopram in his system,[8]Anna Nicole Smith also died from CDI/MDI, an autopsy detecting 11 drugs in her bloodstream. Deaths of Daniel Smith and Anna Nicole Smith were declared as an accidental drug overdose. [9][10]

Heath Ledger

Australian actor Heath Ledger was found dead on January 22, 2008, in his SoHo, New York City, apartment; the toxicology report concluded that the cause of death was "acute intoxication" resulting from "the combined effects of oxycodone, hydrocodone, diazepam, temazepam, alprazolam, and doxylamine" and "that the manner of [his] death" was "accident, resulting from the abuse of prescription medications or combine drug intoxication(CDI)."[3][11][12]

Speedball deaths

Some controversially think speedball deaths are MDI/CDI when they might simply be drug overdose, which is completely different phenomena. The following list is for speedball CDI/MDI deaths only. Victims must be using cocaine and heroin in combination or amphetamine with demerol. An upper and a downer combination can be called speedball death.

Low-threshold treatment programs

Low-threshold treatment programs are harm reduction based health care centers targeted towards drug users.[1] "Low-threshold" programs are programs that make minimal demands on the patient, offering services without attempting to control their intake of drugs, and providing counselling only if requested. Low-threshold programs may be contrasted with "high-threshold" programs, which require the user to accept a certain level of control and which demand that the patient accept counselling.[2] Low-threshold treatment programs are not to be confused with simple needle exchange programs, and may include comprehensive healthcare and counseling services.

Background

Injection drug users (IDUs) are at risk of a wide range of health problems arising from non-sterile injecting practices, complications of the drug itself or of the lifestyle associated with drug use and dependence.[4] Furthermore, unrelated health problems, such as diabetes, may be neglected because of drug dependence. However, despite their increased health care needs, IDUs do not have the required access to care or may be reluctant to use conventional services.[5] Consequently, their health may deteriorate to a point at which emergency treatment is required,[6] with considerable costs to both the IDUs and the health system. Accordingly harm reduction based health care centers, also known as *targeted health care outlet* or *low-threshold health care outlet* for IDUs have been established across a range of settings utilising a variety of models.[1] These targeted outlets provide integrated, low-threshold services within a harm-reduction framework targeting IDUs, and sometimes include social and/or other services. Where a particular service is not provided, referral and assistance with access is available. In 2007, for example, 33% of all US needle-syringe programs (NSPs) provided on-site medical care, and 7% provided buprenorphine treatment.[7] Similarly, in many European countries NSP outlets serve as low-threshold primary health care centers targeting primarily IDUs.[8]

Health care models

These targeted outlets vary widely and may be either "distributive", providing basic harm reduction services and simple healthcare with facilitated referrals to specialist services, or "one-stop-shops" where a range of services including specialist services are provided onsite. The services being offered by these outlets range from simple needle and syringe provision, to expanded services including basic and preventive primary healthcare, hepatitis B and A vaccinations, hepatitis C testing, counselling, tuberculosis screening and sometimes opioid maintenance therapy. Some centers offer hepatitis, HIV treatment and dental care.[9] The goal of these outlets is to provide: (1) opportunistic health care,[10] (2) increased temporal and spatial availability of health care, (3) trustworthy services of health care, (4) cost-effective mode of health care, (5) targeted and tailored services.[11]

In the United States as of 2011, 211 NSPs were known to be operating in 32 states, the District of Columbia, Puerto Rico and the Indian Nations.[12] The bulk of funding has come from state and local governments,[9] since for most of the last several decades, federal funding for needle exchange programs has been specifically banned.[13]

Globally, as of 2008, at least 77 countries and territories offer NSPs with varying structures, aims and goals. Some countries use needle exchange services as part of integrated programs to contain drug use, while others aim simply to contain HIV infection as their top priority, considering reduction in incidence of drug use as a much lower priority.[14] Acceptance of NSPs vary widely from country to country. On the one hand, in Australia and New Zealand, electronic dispensing machines are available at selected locations such as the Auckland needle exchange and the Christchurch needle exchange, allowing needle exchange service 24 hours to registered users.[15] On the other hand, over half of the countries in Asia, the Middle East, and North Africa retain the death penalty for drug offenses, although some have not carried out executions in recent years.[16]

Evaluation

Low-threshold programs offering needle exchange have faced much opposition on political and moral grounds.[17] Concerns are often expressed that NSPs may encourage drug use, or may actually increase the number of dirty needles in the community.[18] Another fear is that NSPs may draw drug activity into the communities in which they operate.[19] It has also been argued that in fighting disease, needle exchanges take attention away from bigger drug problems, and that, contrary to saving lives, they actually contribute to drug-related deaths.[20] Even in Australia, which is considered a leading country in harm reduction,[11] a survey showed that a third of the public believed that NSPs encouraged drug use, and 20% believed that NSPs dispensed drugs.[21] In the United States, the ambivalent public attitude towards NSPs is often reflected in police interference, with 43% of NSP program managers reporting frequent (at least monthly) client harassment, 31% reporting frequent confiscation of clients' syringes, 12% reporting frequent client arrest, and 26% reporting uninvited police appearances at program sites.[22] A single 1997 study which showed a correlation between frequent program use and elevated rates of HIV infection among IDUs in Vancouver, Canada,[23] has become widely cited by opponents of NSPs as demonstrating their counter-productiveness

Authors from the 1997 Vancouver study have, in multiple publications, issued disclaimers against the misuse of their work by opponents of NSPs. They point out that frequent attendees of the program tended to be young and often indulged in extreme high-risk behaviors. The 1997 results were hence of a statistically biased sampling They have emphasized that the correct message to be derived from their 1997 study can be read in the title of their work: "Needle exchange is not enough".[23] This is the same message presented by many other articles since.

Comprehensive, systematic surveys of the costs and effectiveness of low-threshold primary healthcare programs are not available due to the heterogeneity of these programs and the study designs. Narrower focus studies dealing solely with the needle exchange issue are abundant, however, and generally support the thesis that NSPs reduce the risk of prevalence of HIV, hepatitis and other blood-bourne diseases. These studies suggest that such outlets improve the overall health status of IDUs and save on the health budget by reducing episodes in emergency departments and tertiary hospitals. In Australia, monitoring of drug users participating in NSPs showed the incidence of HIV among NSP clients to be essentially identical to that of the general population. Fears that NSPs may draw drug activity into the communities in which they operate are contradicted by a study that showed that by far the greatest number of clients of an NSP in Chicago came to the area to buy drugs (60%) rather than to exchange needles (3.8%).[34]

Internationally, support for the effectiveness of low-threshold programs including needle exchange have come from studies conducted in Afghanistan China, Spain, Taiwan, Estonia, Canada, Iran and many other countries. However, in many countries, there is strong opposition to such programs.

Despite the lack of definitive scientific evidence on the effectiveness of IDU-targeted low-threshold services, the available evidence, revealing barriers to service access and the late presentation of seriously ill IDUs to hospital, suggests the ongoing need for targeted and low-threshold services. Because of this, organizations ranging from the National Institutes of Health,[45] the Centers for Disease Control,[46] the American Bar Association,[47] the American Medical Association,[48] the American Psychological Association,[49] the World Health Organization,[50] and many others have endorsed low-threshold programs including needle exchange.

Polysubstance dependence

A person with **polysubstance dependence** is psychologically addicted to being in an intoxicated state without a preference for one particular substance.[1] Although any combination of three drugs can be used, studies have shown that alcohol is commonly used with another substance.[2] This is supported by one study on polysubstance use that separated participants who used multiple substances into groups based on their preferred drug. The three substances were cocaine, alcohol, and heroin, which implies that those three are very popular.[3] Other studies have found that opiates, cannabis, amphetamines, hallucinogens, inhalants and benzodiazepines are often used in combination as well.[4] The results of a long-term or longitudinal study on substance use led the researchers to observe that

excessively using or relying on one drug increased the probability of excessively using or relying on another drug.[5]

Epidemiology

There are not very many studies that have examined how often polysubstance dependence occurs or how many people are dependent on multiple substances. However, according to a study that analyzed the results from the National Epidemiological Survey on Alcohol and Related Conditions, approximately 215.5 out of a total of 43,093 individuals in the United States (0.5%) met the requirements for polysubstance abuse/dependence.[6] Another study suggested that the number of new cases of polysubstance dependence has been going up.[7] This idea was supported by a study that took place in Munich, Germany. A group of researchers chose to look at responses to a survey using the M-Composite International Diagnostic Interview (M-CIDI). The M-CIDI is a version of the Composite International Diagnostic Interview (CIDI).[8] The researchers collected data from 3,021 participants, all between the ages of 14 and 24, to estimate the prevalence, or total number of cases, of drug abuse/dependence and of polysubstance abuse/dependence.[9] The results of this study indicated that of the 17.3% who said that they regularly used drugs, 40% said that they used more than one substance, but 3.9% specifically reported using three or more substances, indicating that there is a lot of overlap in the use of different substances.[9] The researchers compared their results to earlier German studies and found that substance dependence seems to be increasing, at least in Germany.[9]

Diagnosis

According to the DSM-IV, a diagnosis of polysubstance dependence must include a person who has used at least three different substances (not including caffeine or nicotine) indiscriminately, but does not have a preference to any specific one. In addition they must show a minimum of three of the following symptoms listed below, all within the past twelve months.[10] There is a distinct difference between a person having three separate dependence issues and having Polysubstance dependence the main difference is polysubstance dependence means that they are not specifically addicted to one particular substance. This is often confused with multiple specific dependences present at the same time. To elaborate, if a person is addicted to three separate substance such as cocaine, methamphetamines and alcohol and is dependent on all three then they would be diagnosed with three separate dependence disorders existing together (cocaine dependence, methamphetamine dependence and alcohol dependence,) not polysubstance dependence.[10] In addition to using three different substances without a preference to one, there has to be a certain level of dysfunction in a person's life to qualify for a diagnosis of polysubstance dependence.[11] One of the bigger challenges that often occurs when trying to diagnose is the fact that people don't always report what they are taking because they are afraid of getting into legal trouble.[12] When coding polysubstance Dependence in a DSM-IV it would be a multiaxial diagnosis 304.80- Polysubstance Dependence", next to the classification, it is accompanied by a list of other types of Substance dependence (e.g. "305.00 Alcohol Abuse" or "305.60 Cocaine Abuse").[13]

The DSM-IV requires at least three of the following symptoms present during a 12 month period for a diagnoses of polysubstance dependence.[14]

- Tolerance: Use of increasingly high amounts of a substance or they find the same amount less and less effective (the amount has to be at least 50% more of the original amount needed.)

- Withdrawal: Either withdrawal symptoms when drug stops being used or the drug is used to prevent withdrawal symptoms.

- Loss of control: Repeated use of more drugs than planned or use of the drugs over longer periods of time than planned.

- Inability to stop using: Either unsuccessfully attempted to cut down or stop using the drugs or a persistent desire to stop using.

- Time: Spending a lot of time obtaining drugs, using drugs, being under the influence of drugs, and recovering from the effects of drugs.

- Interference with activities: Give up or reduce the amount of time involved in recreational activities, social activities, and/or occupational activities because of the use of drugs.

- Harm to self: Continuous use of drugs despite having a physical or psychological problem caused by or made worse by the use of drugs.[14]

Causes

Biological

There is data to support that some genes contribute to substance dependence.[15] Some studies have focused on finding genes that predispose the person to be dependent on marijuana, cocaine, or heroin by studying genes that control a person's dopamine and opioid receptors, but no conclusive findings were reported.[16] Other researchers found a connection between dopamine receptor genes and dependency on a substance.[16] A potential problem with this study was that alcohol is commonly used with another substance, so the results of the study may not have been caused by dependency on a single substance. This means that multiple substances may have been contributing to the results, but the researchers suggested that further research should be done.[16]

However, there are studies that have found evidence of the influence of genes on vulnerability to substance dependence.[17] These studies often use genotype, or the genetic information found on a person's chromosomes, and phenotype, which consists of the visible features of a person, to look at genetic patterns.[18] One study examined the phenotype and genotype of 1,858 participants from 893 families to look at differences in three nicotinic acetylcholine receptor genes found within these

individuals.[17] The experimenters found significant connections between receptor genes for nicotine and polysubstance dependence, which indicated that differences in these genes can create the risk of being dependent on multiple substances.[17]

Psychological

A 1989 study conducted by Khantzian and Treece found that nearly 60% of their opioid-dependent sample met criteria for an Axis II diagnosis. In the same study, 93% of the sample had a comorbid disorder, implying that the comorbid disorder plays some role in the addiction.[19] It has also been shown that depression and polysubstance dependence are often both present at the same time. If a person is genetically predisposed to be depressed then they are at a higher risk of having polysubstance dependence.[20]

Possibly the most widely accepted cause of addictions is the self-medicationhypothesis, that views drug addiction as a form of coping with stress throughnegative reinforcement, by temporarily alleviating awareness of or concerns over the stressor. Substance users learn that the effects of each type of drug work to relieve or better painful states. They use drugs as a form of self-medication to deal with difficulties of self-esteem, relationships, and self-care. Individuals with substance use disorders often are overwhelmed with emotions and painful situations and turn to substances as a coping method.[21]

Sociocultural

The socicultural causes are areas in a person's life that might have influenced their decision to start and continue using multiple substances. Socicultural causes can be divided into social causes and cultural causes.

- Social Causes: Some studies have shown that adolescents have one of the highest rates of polysubstance dependence. According to one study this population, ages 12–25, represents about half of the nations illicit drug users. Of these illicit drug users, half of them have started using substances by the end of 12th grade. This could be attributed to social expectations of peers, peer pressure to fit it, or a way of numbing their emotions. Some of these young kids start trying different drugs initially to fit in, but then after a while they start to develop a tolerance for these substances and experience withdrawal if they don't have enough substances in their system and eventually become dependent on having the effects of substance dependence. With tolerance comes the craving for additional drugs to get high, this constant need for that feeling is polysubstance dependence.[12]

- Cultural Causes: Another factor that influences the adolescent age group in our culture today is the media. There are so many "role models" who have major drug problems, promoting a lifestyle of partying and abusing drugs. This gives our youth the idea that taking many different substances won't have any repercussions, leading to a large number of youth using substances.

In the older generations, polysubstance dependence had been linked to additional considerations such as personality disorder, homelessness, bipolar disorder, major depressive disorder and so on. Medical care being so expensive and difficult to get long term has been linked to polysubstance dependence. Those who need psychological help sometimes use multiple substances as a type of self medication to help manage their mental illnesses.[12]

Associated cognitive impairments

Cognition refers to what happens in the mind, such as mental functions like "perception, attention, memory, language, problem solving, reasoning, and decision making."[22] Although many studies have looked at cognitive impairments of individuals who are dependent on one drug, there are few researchers who have tried to determine the problems with cognitive functioning that are caused by dependence on multiple substances.[23] Therefore, what is known about the effects of polysubstance dependence on mental abilities is based on the results of a few studies.

Learning ability

The effect of polysubstance dependence on learning ability is one area of interest to researchers. A study involving 63 polysubstance dependent women and 46 controls (participants who were not using drugs) used the Benton Visual Retention Test(BVRT) and the California Verbal Learning Test(CVLT) to look at visual memory and verbal ability.[23] This study showed that in polysubstance dependent women, verbal learning ability was significantly decreased, though visual memory was not affected. In addition, alcohol and cocaine use led to more severe issues with verbal learning, recall, and recognition.[23]

Memory, reasoning and decision making

Sometimes studies about specific groups in the general population can be informative. One study decided to test the cognitive abilities of participants in rave parties who used multiple substances. To do this, they compared 25 rave party attenders with 27 control participants who were not using drugs. The results of this study indicated that in general, the rave attender group did not perform as well on tasks that tested speed of information processing, working memory, knowledge of similarities between words, ability to attend to a task with interference in the background, and decision making.[3] Certain drugs were associated with particular mental functions, but the researchers suggested that the impairments for working memory and reasoning were caused by the misuse of multiple substances.[3]

Another study that tried to find differences between the effects of particular drugs focused on polysubstance users who were seeking treatment for addictions to cannabis, cocaine, and heroin. They studied a group of polysubstance users and a group that was not dependent on any drugs. Because alcohol was a common co-substance for nearly all of thepolysubstance user group, it was difficult to tell exactly which drugs were affecting certain cognitive functions. The researchers found that the difference in the two groups' performance levels on executive function, or higher-

level cognitive processing tasks were consistently showing that the polysubstance group scored lower than the control group.[24] In general, this meant that multiple substances negatively affected the polysubstance group's cognitive functioning. More specifically, the researchers found that the amount of cannabis and cocaine affected the verbal part of working memory, the reasoning task, and decision making, while cocaine and heroin had a similar negative effect on visual and spatial tasks, but cannabis particularly affected visual and spatial working memory.[24] These results suggest that the combined use of cannabis, cocaine, and heroin impair more cognitive functions more severely than if used separately.[24]

Alcohol's negative effects on learning, spatial abilities and memory has been shown in many studies.[25] This raises a question: does using alcohol in combination with other substances impair cognitive functioning even more? One study decided to try to determine if polysubstance users who also abused alcohol would display poorer performance on a verbal learning and memory test in comparison to those who abused alcohol specifically.[26] The California Verbal Learning Test (CVLT) was used due to its ability to "quantify small changes in verbal learning and memory" by evaluating errors made during the test and the strategies used to make those errors.[26] The results of this study showed that the group of polysubstance and alcohol abusers did perform poorly on the CVLT recall and recognition tests in comparison to the group of alcohol abusers only, which implies that alcohol and drug abuse combined impaired the memory and learning of the group of polysubstance and alcohol abusers in a different way than the effects of alcohol alone can explain.[26]

Does length of abstinence matter?

Does abstinence for long periods of time help polysubstance dependent individuals to recover cognitive functioning? To examine this question, a group of researchers tested 207 polysubstance dependent men, of whom 73.4% were dependent on three or more drugs.[23] The researchers were interested in 6 areas of cognitive functioning, which included visual memory, verbal memory, knowledge of words, abstract reasoning, inhibition (interference), and attention.[23] The study used the Benton Visual Retention Test (BVRT) for testing visual memory, the California Verbal Learning Test (CVLT) for verbal memory, the Wechsler Adult Intelligence Scale vocabulary portion for knowledge of words, the Booklet Category Test for abstract reasoning, the Stroop Neuropsychological Screening task for inhibition, and the Trail Making Test for attention.[23] The results showed that neuropsychological ability did not improve with increases in the length of time abstinent. This suggests that polysubstance dependence leads to serious impairment which cannot be recovered much over the span of a year.[23]

Gender differences

Women and men differ in various ways when it comes to addictions. Research has shown that women are more likely to be polysubstant dependent. It has been noted that a larger percentage of women abuse licit (legal) drugs such as tranquilizers, sedatives, and stimulants. On the other hand, men are more likely to abuse illicit (illegal) drugs such as cocaine, meth, and other street drugs. It is also interesting to

note, as research suggests, that women addicts more frequently have a family history of drug abuse. When asked to describe their onset of addictions, women more frequently describe their addiction as sudden where as men describe them as gradual. Females have a higher percentage of fatty tissues and a lower percentage of body water than men. Therefore, women have slower absorption rates of drug substances. This means these substances are at a higher concentration in a women's bloodstream. Women addicts are known to be at greater risk for fatty liver disease, hypertension, anemia, and other disorders.[27]

Comorbidity of mental disorders

For most of these disorders, in relation to polysubstance dependence, there is a vicious cycle that those with a dependence go through. First, Ingesting the drug creates a need for more,which creates a dopamine surge, which then creates pleasure. As the dopamine subsides, the pleasure adds to the emotional and physical pain and triggers stress transmitters, which in turn creates a craving, which must then be medicated, and thus the cycle begins again. However, the next time more drugs are needed to feel as good as they did before .[28]

Depression

Scientists have hypothesized that the use of a drug either causes a mood disorder such as depression or at least attributes to a pre-existing one. Additionally, the substances that sufferers of depression use can be a misguided method of self medication in order to manage their depression.[29] This is the classic chicken or egg hypothesis, does the pre-existing condition cause dependence or does dependence cause the condition? The underlying mental illness needs to be identified and treated in conjunction with treating the polysubstance dependence in order to increase the success rate of treatment and decrease the probability of relapse.[30] One specific study focused on alcohol and depression, because they are so commonly inter-related. Researchers have discovered that depression continues for several weeks after a patient had been rehabilitated and those who relapsed developed depression again. This means that the onset of depression happens after alcohol dependence occurs, which means that alcohol is a major contributor to depression.[30]

Eating disorders

One study showed that patients who are recovering from an addiction, who have had an eating disorder in the past, use food to try and replace the substance that they are no longer getting. Or they obsess over controlling their weight and appearance. Some rehabilitation centers have licensed nutritionist to help patients develop healthy eating habits to help them cope while recovering from their addiction. It is important that those who have a former eating disorder be taught how to eat healthfully, so they don't continuously switch from one addiction back to another.[31]

Treatment

Treatment for polysubstance dependence has many critical aspects. Drug rehabilitation is a lengthy and difficult process. Treatment must be individualized

and last a sufficient amount of time to ensure the patient has kicked the addictions and to ensure the prevention of relapse. The most common forms of treatment for polysubstance dependence include: in and outpatient treatment centers, counseling and behavioral treatments, and medications.It is important that treatments be carried on throughout the patient's life in order to prevent relapse. It is a good idea that recovering addicts continue to attend social support groups or meet with counselors to ensure they do not relapse.[32]

Inpatient treatment center

Inpatient treatment centers are treatment centers where addicts move to the facility while they are undergoing treatment. Inpatient treatment centers offer a safe environment where patients will not be exposed to potentially harmful situations during their treatments as they would on the outside. Inpatient treatment centers see much higher success rates than the alternative outpatient treatments. Inpatients usually undergo the process of detoxification. Detox involves the removal (usually medically) of all drug substances from the body. Once detox is complete, the withdrawal symptoms kick in (2–3 days later). These symptoms include, but are not limited to: nausea, depression, anxiety, panic attacks, restlessness, and drug cravings. During their stay in the treatment facility, patients are learning to manage and identify their drug addictions and to find alternate ways to cope with whatever is the cause of their addiction.[33]

Outpatient treatments

Outpatient treatments include many of the same activities offered in an inpatient treatment facility, but the patient is not protected by the secure and safe environment of an inpatient treatment center. For this reason, they are significantly less effective. The patient usually continues to hold a job and goes to treatment nightly.[33]

Twelve-step programs

Both in-patient and out-patient treatments can offer introductions to 12-step programs. Suggested 12-step programs are Alcoholics Anonymous (AA) and Narcotics Anonymous (NA). They offer regular meetings where members can discuss their experiences in a non-judgmental and supportive place. In one study, conducted on 12-step outpatients, 1 in 5 reported abstinence from drug abuse 1 year post treatment. Twelve Step programs and other social support groups are a good way to prevent relapse.[34]

Cognitive behavioral therapy

Also offered to patients are one-on-one counseling sessions and cognitive behavioral therapy(CBT).[33] When looked at through a cognitive-behavioral perspective, addictions are the result of learned behaviors developed through positive experiences. In other words, when an individual uses a drug and receives desired results (happiness, reduced stress, etc.) it may become the preferred way of attaining those results, leading to addictions. The goal of CBT is to identify the needs that the

addictions are being used to meet and to develop skills and alternative ways of meeting those needs. The therapist will work with the patient to educate them on their addictions and give them the skills they need to change their cognition's and behaviors.Addicts will learn to identify and correct problematic behavior. They will be taught how to identify harmful thoughts and drug cravings. CBT is an effective treatment for addictions.[35]

Medications

Medications can be very helpful in the long term treatment of polysubstance dependence. Medications are a useful aid in helping to prevent or reducing drug cravings. Another benefit of Medications is helping to preventing relapse. Since drug addictions effect brain functioning, medications assist in returning to normal brain functioning. Polysubstance abusers require medications for each substance they are addicted to, as the current medications do not treat all addictions simultaneously. Medications are a useful aid in treatments, but are not effective when they are the sole treatment method.

Medications that aid in curing addictions

- **Methadone:** treatment for heroin addiction.[36]

- **Naltrexone:** Reduces opiates and alcohol cravings.
- **Disulfiram:** induces intense nausea after drinking alcohol.
- **Acamprosate:** decreases the pleasurable effects of alcohol.
- **Buprenorphine/naloxone:** The two drugs together reduce cravings and block the pleasure from opiates.[37]

Risk factors in pregnancy

Factors increasing the risk (to either the woman, the fetus/es, or both) of pregnancy beyond the normal level of risk may be present in a woman's medical profile either before she becomes pregnant or during the pregnancy.[1] These pre-existing factors may relate to physical and/or mental health, and/or to social issues, or a combination. [MMHE 1]

Common risk factors

Some common factors include:

- **Age** of either parent
  - Adolescent parents

    Further information: Teenage_pregnancy#Medical_outcomes

  - Older parents

    Further information: Paternal age, Maternal age effect, and Pregnancy over age 50

- **Teratogens**

  Main article: Teratology

  - Drug use or addiction
    - Alcohol Fetal alcohol syndrome, Fetal alcohol spectrum disorder
    - Tobacco Smoking and pregnancy
    - See also Prenatal cocaine exposure, Prenatal methamphetamine exposure, Long-term effects of cannabis#Pregnancy
  - Medication(s).[MMHE 2]Anti-depressants, for example, may increase risks of such outcomes as preterm delivery.[2]

    Further information: Pregnancy category

  - Ionizing radiation
- **Risks arising from previous pregnancies**:
  - Complications experienced during a previous pregnancy are more likely to recur.
  - Many previous pregnancies. Women who have had five previous pregnancies face increased risks of very rapid labor and excessive bleeding after delivery.
  - Multiple previous fetuses. Women who have had more than one fetus in a previous pregnancy face increased risk of mislocated placenta.[MMHE 3]

    Further information: multiple births

- **Social and socioeconomic factors**. Generally speaking, unmarried women and those in lower socioeconomic groups experience an increased level of risk in pregnancy, due at least in part to lack of access to appropriate prenatal care.[MMHE 4]
- Unintended pregnancy. Unintended pregnancies preclude preconception care and delays prenatal care. They preclude other preventive care, may disrupt life plans and on average have worse health and psychological outcomes for the mother and, if birth occurs, the child.[3][4]
- **Height**. Pregnancy in women whose height is less than 1.5 meters (5 feet) correlates with higher incidences of preterm birth and underweight babies. Also, these women are more likely to have a small pelvis, which can result in such complications during childbirth as shoulder dystocia.[MMHE 5]
- **Weight**
  - Low weight: Women whose pre-pregnancy weight is less than 45.5 kilograms (100 pounds) are more likely to have underweight babies.
  - Obese women are more likely to have very large babies, potentially increasing difficulties in childbirth. Obesity also increases the chances of developing gestational diabetes, high blood pressure, preeclampsia, experiencing postterm pregnancy and/or requiring a cesarean delivery.[MMHE 6]

Disorders and diseases

Pre-existing disorders and/or congenital defects can increase the usual risks involved in pregnancy. In such circumstances, women who wish to continue with a pregnancy require extra medical care, often from an interdisciplinary team. Such a team might include (besides an obstetrician) a specialist in the disorder and other practitioners (for example, maternal-fetal specialists, nutritionists, etc.).[MMHE 7]

These conditions include:

- Cancer[MMHE 8]
- Chronic hypertension[MMHE 9]
- Cirrhosis[MMHE 10]
- Congenital disorders that may be passed on to offspring
- Diabetes[MMHE 11]
- Heart defects, especially primary pulmonary hypertension and Eisenmenger's syndrome[MMHE 12]
- Hyperthyroidism[MMHE 13]
- Hypothyroidism[MMHE 14]
- Kidney disorders[MMHE 15]
- Lupus[MMHE 16]
- Mental health.
    - Depression has been linked to higher rates of preterm delivery.[5]
- Respiratory disorders and diseases (associated, for example, with placental abruption)[6]
    - Asthma[7][8]
- Seizure disorders[MMHE 17]
- Structural abnormalities in the cervix
- Structural abnormalities in the uterus
- Valvular heart disease
- Viral hepatitis[MMHE 18]

High-risk pregnancy

Some disorders and conditions can mean that pregnancy is considered high-risk (about 6-8% of pregnancies in the USA) and in extreme cases may be contraindicated. High-risk pregnancies are the main focus of doctors specialising in maternal-fetal medicine.

Serious pre-existing disorders which can reduce a woman's physical ability to survive pregnancy include a range of congenital defects (that is, conditions with which the woman herself was born, for example, those of the heart or reproductive organs, some of which are listed above) and diseases acquired at any time during the woman's life.

Low-risk pregnancy

A Dutch 2010 research showed that "low-risk" pregnancy in the Netherlands may actually carry a higher risk of perinatal death than a "high-risk" pregnancy.[9] A medical news report observed, "Under the Dutch system of obstetric care, women with low-risk pregnancies are supervised by a midwife in primary care, with the

choice of a home or hospital delivery, whereas those with potential complicating factors are supervised by an obstetrician throughout their pregnancy and given a hospital delivery".[10]

Self-medication

Self-medication is a human behavior in which an individual uses unprescribeddrugs to treat untreated and often undiagnosed medical ailments.

The psychology of such behavior within the specific context of using recreational drugs, psychoactive drugs, alcohol, and other self-soothing forms of behavior to alleviate symptoms of mental distress, stress and anxiety,[1] including mental illnesses and/or psychological trauma,[2][3] is particularly unique and can serve as a serious detriment to physical and mental health if motivated by addictive mechanisms.

Self-medication is often seen as gaining personal independence from established medicine.[4]

Definition

Generally speaking, self-medication is defined as "the use of drugs to treat self-diagnosed disorders or symptoms, or the intermittent or continued use of a prescribed drug for chronic or recurrent disease or symptoms"[5][6]

Psychology and psychiatry

As different drugs have different effects, they may be used for different reasons. According to the self-medication hypothesis (SMH), the individuals' choice of a particular drug is not accidental or coincidental, but instead, a result of the individuals' psychological condition, as the drug of choice provides relief to the user specific to his or her condition. Specifically, addiction is hypothesized to function as a compensatory means to modulate effects and treat distressful psychological states, whereby individuals choose the drug that will most appropriately manage their specific type of psychiatric distress and help them achieve emotional stability.[7][8]

The self-medication hypothesis (SMH) originated in papers by Edward Khantzian, Mack and Schatzberg,[9]David F. Duncan,[10] and a response to Khantzian by Duncan.[11] The SMH initially focused on heroin use, but a follow-up paper added cocaine.[12] The SMH was later expanded to include alcohol,[13] and finally all drugs of addiction.[7][14]

According to Khantzian's view of addiction, drug users compensate for deficient ego function[9] by using a drug as an "ego solvent", which acts on parts of the self that are cut off from consciousness by defense mechanisms.[7] According to Khantzian,[12] drug dependent individuals generally experience more psychiatric distress than non-drug dependent individuals, and the development of drug dependence involves the gradual incorporation of the drug effects and the need to sustain these effects into the defensive structure-building activity of the ego itself. The addict's choice of drug

is a result of the interaction between the psychopharmacologic properties of the drug and the affective states from which the addict was seeking relief. The drug's effects substitute for defective or non-existent ego mechanisms of defense. The addict's drug of choice, therefore, is not random.

While Khantzian takes a psychodynamic approach to self-medication, Duncan's model focuses on behavioral factors. Duncan described the nature of positive reinforcement (e.g., the "high feeling", approval from peers), negative reinforcement (e.g. reduction of negative affect) and avoidance of withdrawal symptoms, all of which are seen in those who develop problematic drug use, but are not all found in all recreational drug users.[10] While earlier behavioral formulations of drug dependence using operant conditioning maintained that positive and negative reinforcement were necessary for drug dependence, Duncan maintained that drug dependence was not maintained by positive reinforcement, but rather by negative reinforcement. Duncan applied a public health model to drug dependence, where the agent (the drug of choice) infects the host (the drug user) through a vector (e.g., peers), while the environment supports the disease process, through stressors and lack of support.[10][15]

Khantzian revisited the SMH, suggesting there is more evidence that psychiatric symptoms, rather than personality styles, lie at the heart of drug use disorders.[7]Khantzian specified that the two crucial aspects of the SMH were that (1) drugs of abuse produce a relief from psychological suffering and (2) the individual's preference for a particular drug is based on its psychopharmacological properties.[7] The individual's drug of choice is determined through experimentation, whereby the interaction of the main effects of the drug, the individual's inner psychological turmoil, and underlying personality traits identify the drug that produces the desired effects.[7]

Meanwhile, Duncan's work focuses on the difference between recreational and problematic drug use.[16] Data obtained in the Epidemiologic Catchment Area Study demonstrated that only 20% of drug users ever experience an episode of drug abuse (Anthony &Helzer, 1991), while data obtained from the National Comorbidity Study demonstrated that only 15% of alcohol users and 15% of illicit drug users ever become dependent.[17] A crucial determinant of whether a drug user develops drug abuse is the presence or absence of negative reinforcement, which is experienced by problematic users, but not by recreational users.[18] According to Duncan, drug dependence is an avoidance behavior, where an individual finds a drug that produces a temporary escape from a problem, and taking the drug is reinforced as an operant behavior.[10]

Specific mechanisms

Some mental illness sufferers attempt to correct their illnesses by use of certain drugs. Depression is often self medicated with alcohol, tobacco, cannabis, or other mind-altering drug use.[19] While this may provide immediate relief of some symptoms such as anxiety, it may evoke and/or exacerbate some symptoms of several kinds of mental illnesses that are already latently present,[20] and may lead to addiction/dependence, among other side effects of long-term use of the drug.

Sufferers of post-traumatic stress disorder have been known to self-medicate, as well as many individuals without this diagnosis who have suffered from (mental) trauma.[21]

Due to the different effects of the different classes of drugs, the SMH postulates that the appeal of a specific class of drugs differs from person to person. In fact, some drugs may be aversive for individuals for whom the effects could worsen affective deficits.[7]

CNS depressants

Alcohol and sedative/hypnotic drugs, such as barbiturates and benzodiazepines, are central nervous system (CNS) depressants that lower inhibitions via anxiolysis. Depressants produce feelings of relaxation and sedation, while relieving feelings of depression and anxiety. Though they are generally ineffective antidepressants, as most are short-acting, the rapid onset of alcohol and sedative/hypnotics softens rigid defenses and, in low to moderate doses, provides relief from depressive affect and anxiety.[7][8] As alcohol also lowers inhibitions, alcohol is also hypothesized to be used by those who normally constrain emotions by attenuating intense emotions in high or obliterating doses, which allows them to express feelings of affection, aggression and closeness.[8][14] People with social anxiety disorder commonly use these drugs to overcome their highly set inhibitions.[22]

Psychostimulants

Psychostimulants, such as cocaine, amphetamines, methylphenidate, caffeine, and nicotine, produce improvements in physical and mental functioning, including increased energy and feelings of euphoria. Stimulants tend to be used by individuals who experience depression, to reduce anhedonia[8] and increase self-esteem.[13] The SMH also hypothesizes that hyperactive and hypomanic individuals use stimulants to maintain their restlessness and heighten euphoria.[8][12][13] Additionally, stimulants are useful to individuals with social anxiety by helping individuals break through their inhibitions.[8]

Opiates

Opiates, such as heroin and morphine, function as an analgesic by binding to opioid receptors in the brain and gastrointestinal tract. This binding reduces the perception of and reaction to pain, while also increasing pain tolerance. Opiates are hypothesized to be used as self-medication for aggression and rage.[12][14] Opiates are effective anxiolytics, mood-stabilizers, and anti-depressants, however, people tend to self-medicate anxiety and depression with depressants and stimulants respectively, though this is by no means an absolute analysis.[8]

Cannabis

Cannabis is not a depressant like alcohol is. It's considered to have both stimulating and sedating properties and anxiolytic or anxiogenic properties, depending on the individual and circumstances of use. Depressant properties are more obvious in occasional users, and stimulating properties are more common in chronic users. Khantzian noted that research had not sufficiently addressed a theoretical mechanism for cannabis, and therefore did not include it in the SMH.[8] Cannabis is commonly used to self-medicate individuals with attention deficit hyperactivity disorder, which has shown to improve symptoms for individuals with ADHD in studies.[23]

Effectiveness

Self medicating excessively for prolonged periods of time with benzodiazepines or alcohol often makes the symptoms of anxiety or depression worse. This is believed to occur as a result of the changes in brain chemistry from long-term use.[24][25][26][27][28] Of those who seek help from mental health services for conditions including anxiety disorders such as panic disorder or social phobia, approximately half have alcohol or benzodiazepine dependence issues.[29]

Sometimes anxiety precedes alcohol or benzodiazepine dependence but the alcohol or benzodiazepine dependence acts to keep the anxiety disorders going, often progressively making them worse. However, some people addicted to alcohol or benzodiazepines, when it is explained to them that they have a choice between ongoing poor mental health or quitting and recovering from their symptoms, decide on quitting alcohol or benzodiazepines or both. It has been noted that every individual has an individual sensitivity level to alcohol or sedative hypnotic drugs, and what one person can tolerate without ill health, may cause another to suffer very ill health, and even moderate drinking can cause rebound anxiety syndrome and sleep disorders. A person suffering the toxic effects of alcohol will not benefit from other therapies or medications, as these do not address the root cause of the symptoms.[29]

Infectious disease

Self-medication with antibiotics is commonplace in some countries, such as Greece.[30] Such use is cited as a potential factor in the incidence of certain antibiotic resistantbacterial infections in places like Nigeria.[31]

In a questionnaire designed to evaluate self-medication rates amongst the population of Khartoum, Sudan, 48.1% of respondents reported self-medicating with antibiotics within the past 30 days, 43.4% reported self-medicating with antimalarials, and 17.5% reported self-medicating with both. Overall, the total prevalence of reported self-medication with one or both classes of anti-infective agents within the past month was 73.9%.[6] Furthermore, according to the associated study, data indicated that self-medication "varies significantly with a number of socio-economic characteristics" and the "main reason that was indicated for the self-medication was financial constraints".

Similarly, in a survey of university students in Southern China, 47.8% of respondents reported self-medicating with antibiotics.[32]

Physicians and medical students

In a survey of West Bengal, Indiaundergraduatemedical school students, 57% reported self-medicating. The type of drugs most frequently used for self-medication were antibiotics (31%), analgesics (23%), antipyretics (18%), antiulcerics (9%), cough suppressants (8%), multivitamins (6%), and anthelmintics (4%).[33]

Another study indicated that 53% of allopathic physicians in Karnataka, India reported self-administration of antibiotics.[34]

Children

A study of Luo children in western Kenya found that 19% reported engaging in self-treatment with either herbal or pharmaceutical medicine. Proportionally, boys were much more likely to self-medicate using conventional medicine than herbal medicine as compared with girls, a phenomenon which was theorized be influenced by their relative earning potential.[35]

Regulation

Self-medication is highly regulated in much of the world and many classes of drugs are available for administration only upon prescription by prescription by licensed medical personnel. Safety, social order, commercialization, and religion have historically been among the prevailing factors that lead to such prohibition.

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AFRICA POPULATION INSTITUTE
HIV/AIDS MANAGEMENT AND COUNSELLING TECHNIQUES

PAPER CODES: **APDPH 401**

1. a) What are the factors that play a major role in the increase of HIV in your community?
   b) Why has the control of HIV in the sub-Saharan countries been slow?

2. a) Discuss the stumbling block to effective empathy.
   b) According to Kubler Ross, explain the stages of a dying person
   c) What are the four tasks of mourning?

3. a) Explain the stages of antiretroviral therapy.
   b) Discuss the downsides / limitations of antiretroviral treatment
   c) Explain the different types of therapy you can apply as a public health worker

TROPICAL AND INFECTIOUS DISEASES

PAPER CODES: **APDPH 402**

1. a) Malaria as a communicable disease is number one killer in the sub Saharan Africa; what are its economic and social impact in your country?
   b) How can malaria be prevented

2. a) How is Influenza transmitted?
   b) Anthrax affects humans in three ways, explain such ways
   c) In which way can Anthrax be prevented?

3. a) How is cholera caused and transmitted?
   b) The world health standards of treating cholera is light, what are the effects of Cholera outbreak in the community?
   c) What are the different types of injuries? And discuss how such injuries can be prevented

Nutrition and Childhood Development

PAPER CODES: **APDPH 403**

1. a) Differentiate between the difference between Macro and Micro Nutrients
   b) For a health growth, the body need different types of food, what the different types of foods needed by the body?

2. a) What are the causes of malnutrition in the sub Saharan African countries?
   b) What advice would you give to the community to improve the situation?

3. a) Vitamins are external to the body, identify the importance of vitamins to the normal functioning of the body?
   b) Discuss the effects of Hypernatremia and Overreacting

HEALTH TODAY, POLCIES AND REGULATIONS

PAPER CODES: **APDPH 404**

1. a) what is the effect of globalisation on health?
   b) Explain the impact og global world in public health on disease and disaster

2. a) Private funded health care leads to greater quality and efficiency in personal health care; justify the action claim
   b) What is the impact of disease and disaster on public health in a global world?
3. a) Explain the linkage between power and policy making
   b) Discuss the health system of your country, and outline the six building blocks of a health system.

SUBSTANCE ABUSE AND ADDICTIONS MANAGEMENT

PAPER CODES: **APDPH 406**

1. a) Elaborate different public health definitions of Substance abuse
   b) Explain what is meant by etymology of substance abuse and addictions management

2. a) Explain in details the various signs and symptoms of substance abuse
   b) How can substance abuse be controlled out of your country

3. a) Narrate the impact of Substance abuse
   b) What are the disorders and diseases associated with drug abuse?

APDPH 405 Field Attachments
Placement and Laboratory Experiments

1. Give a brief background of the institution where you were attached
2. Give a brief description of roles you were assigned
3. State the opportunities you encountered during the field excursion
4. Explain how you exploited those opportunities
5. Discuss the challenges that you encountered during the internship
6. State how you dealt with such challenges?
7. Suggest the recommendations to the institution where you were attached
8. What advice would do you give to Africa Population Institute