Community Health

Healthy Community

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Learning Targets

| Values and attitudes | Demonstrate a commitment to the promotion of personal health and a healthy lifestyle Encourage and support others in making health decisions for healthier lifestyles | |
|-------------------------------|--|--|
| Skills | • Carry out health practices that contributes to personal and public health | |
| Knowledge 6.1 / 6.3 | • Understand the impact of globalization on health and well-being | |

| Knowledge | • Identify factors leading to the increases in vulnerability | |
|------------------|---|--|
| 6.2 / 6.3 | and exposure to diseases | |
| Knowledge 6.4 | Analyse the relationships between lifestyle changes and common illnesses Understand how personal practices and attitudes contribute to disease prevention | |
| Knowledge 6.5 | Understand the protective factors and risk factors to health and well-being Understand the roles of individual, community and government in health maintenance and ill-health prevention Differentiate among primary, secondary and tertiary disease prevention Understand how personal practices and attitudes contribute to disease prevention | |
| Knowledge 6.6 | Understand the linkages between personal health practices and public health Evaluate the roles of government in maintenance and promotion of public health | |

Disease prevention

How can we build a healthy community?



6.1 Trends of Diseases and Illnesses

- Topic 2 Health and Social Care in the Local and the Global Contexts
- 2C Recent increases in vulnerability and exposure due to lifestyle changes, globalization and family changes
 - * 2C1 Lifestyle changes and illness
 - Common illnesses in the local context
 - 2C2 Globalization
 - Globalization and afflictions Mobility and the spreading of communicable diseases

 •To understand the impact of globalization on health and well-being

6.1A Globalization and Afflictions

High Human Mobility



International Spread of Diseases

Examples of International Spread

HIV/AIDS

Ebola Virus

Human flu (H3N2)/Avian Influzena (H5N1)

6.1B Disease Burdens

World-wide

Non-communicable Diseases

Non-communicable diseases are fast replacing the traditional infectious diseases (such as typhoid, tuberculosis etc.) as the leading cause of disability and premature death

<u>Mental Disorders</u>

Increased no. of people suffering from depression and schizophrenia

<u>Injuries</u>

caused by accidents, violence and self inflicted incidents such as suicides and impact on functional and psychosocial disability Local

Four Major Leading Causes of Death:

1. Malignant

neoplasms (Cancer)

2. Pneumonia

3. Diseases of heart

4. Cerebrovascular

diseases (Stroke)

6.2 Communicable Diseases

- Topic 2 Health and Social Care in the Local and the Global Contexts
- 2C Recent increases in vulnerability and exposure due to lifestyle changes, globalization and family changes
 - * 2C1 Lifestyle changes and illness
 - Communicable diseases
 - Lifestyle changes and communicable diseases
 - > To identify factors leading to the increases in vulnerability and exposure
 - > To analyse the relationships between lifestyle changes and common illnesses

What are infectious diseases?

Pathogens include bacteria, viruses, parasites or fungi

caused by the invasion of pathogens. Pathogens may release toxins and damage normal body cells and their functions. It may result in death in severe cases

can spread, directly or indirectly, from one person to another

Zoonotic diseases are infectious diseases of animals that can cause disease when transmitted to humans

Epidemiologic Triad of Infectious Diseases



- Pathogens include bacteria, viruses, parasites or fungi
- Generally, a pathogen must be present for disease to occur; however, presence of that pathogen alone is not always sufficient to cause disease
- A variety of factors influence whether exposure to the pathogen will result in disease, including the pathogenicity and dose of the pathogen

Viruses

- Many have a spiny outside layer, called the envelope. Viruses have a core of genetic material, but no way to reproduce it on their own. Viruses infect cells and take over their reproductive machinery to reproduce
- Example: influenza viruses, human immunodeficiency virus (HIV)

Bacteria

- They are singlecelled organisms that can reproduce themselves. Most of them are larger than viruses but still much too small to be seen with the naked eye
- Examples: Staphylococcus

Fungi

- They can be made up of many cells. They cannot produce their own food. Instead, they live off animals / plants. They can grow in or on the body, causing infections of internal organs or of the skin, hair, and nails
- Examples: Candida

Parasites

- They are bigger than viruses and bacteria in size. They must live on or inside a human or other organisms to survive
- Examples: intestinal parasites include roundworms, pinworms, hookworms, tapeworms and liver flukes

Pathogenicity

- the ability of a pathogen to cause disease after infection, measured as the proportion of hosts infected by the pathogen who then experience clinical disease
- examples of highly pathogenic diseases are Ebola

Virulence

- the ability of a pathogen to cause severe disease, measured as the proportion of hosts with the disease who become severely ill or die
- severe symptoms, such as dengue hemorrhagic fever; serious complications, such as life-long physical disability caused by poliomyelitis

Infectivity

- the ability of a pathogen to cause infection, measured as the proportion of hosts exposed to the pathogen who become infected
- examples of acute disease with high infectious potential is measles

Host

Who is the host?

• humans or animals exposed to a pathogen and harbor a disease

Infection≠Illness

• Infection only refers to the invasion of the body tissues of a host by a pathogen. A host infected by a pathogen may not always exhibit clinical symptoms. It also depends on the immunity of the host. Some people are more prone to disease after infection. For instance, young children and patients with chronic diseases are more susceptible to complications after infection due to insufficient body immunity. Adults infected with the virus varicella (chickenpox) are more likely than children to develop serious complications. Other factors include the dose of pathogens as well as the sex, socioeconomic status, behavioural risk factors and susceptibility to infection of the hosts

Environment

- The environment is the favourable conditions external to the host that cause or allow the pathogen to be transmitted.
- General sanitation, temperature, air pollution and water quality are the factors that influence all stages of in the chain of infection.
 Socioeconomic factors include overcrowding living environment and poverty etc..
- For example, *E. Coli* thrive in warm temperatures but are killed by high heat. Flu is seasonal and it usually occurs in the winter

Activity (2)

- The epidemiologic triad helps the experts understand how to prevent and control disease outbreaks. The spread of the disease is controlled by breaking any one side of the Triangle to disrupt the connection between the environment, the host, and the agent
- Search for the information about the Coronavirus disease 2019 in the following websites and organise the information with the epidemiologic triangle:
 - Centre for Health Protection Coronavirus Disease 2019
 https://www.coronavirus.gov.hk/eng/index.html
 - World Health Organization Coronavirus Disease 2019

https://www.who.int/emergencies/diseases/novel-coronavirus-2019

| | -art. (C |
|-------------|----------|
| COVID-19 | |
| Agent | |
| Host | |
| Environment | 18 |



Understanding the transmission process: chain of infection

Infectious diseases occur as a result of the interaction between:

- The infectious agent
- The transmission process
- The host
- The environment



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| COVID-19 | |
|-------------|----|
| Agent | |
| Host | |
| Environment | 27 |

Understanding the transmission process: chain of infection

Infectious diseases occur as a result of the interaction between:

- The infectious agent
- The transmission process
- The host
- The environment

Chain of Infection

- A pathogen leaves its host usually corresponds to the site where the pathogen is localized.
- For example,
 - Influenza viruses and Mycobacterium tuberculosis exit the respiratory tract
 - Schistosomes through urine
 - Vibrio cholerae in faeces
 - Bacteria or viruses causing conjunctivitis in conjunctival secretions

Modes of transmission

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Leave Host (A) Direct transmission Indirect transmission

> Enter Host (B)

- A pathogen enters another host : must provide access to tissues in which the pathogen can multiply or a toxin can act
 - Often use the same portal to enter a new host that they used to exit the source host. For example, influenza virus exits the respiratory tract of the source host and enters the respiratory tract of the new host
 - In contrast, many pathogens that cause
 gastroenteritis follow a so-called "faecal-oral"
 route. They exit the source host in faeces, are
 carried on inadequately washed hands to a
 vehicle such as food, water, or utensils, and
 enter a new host through the mouth.
 - The victim is infected (e.g. with HIV) via the wound on the skin / injection / sexual intercourse



Examples of modes of transmission

- Contact
- Droplet
- Air-borne
- Food-borne / Water-borne
- Vector-borne
- Blood / Body fluid
- Congenital infection



Contact transmission

 Through direct body contact with the infected persons, e.g. playing together with direct skin contacts; or indirect through contact with objects contaminated by infective agents, e.g. sharing towels, combs and clothes

Hand, foot and mouth disease Acute conjunctivitis
 Head lice Scabies



Droplet transmission

 Inhale or contact of droplets expelled from the sick during sneezing, coughing, spitting and speaking, or through subsequent touching of mucous membranes of the mouth, nose and the eyes, etc with hands contaminated with infective agents

- Influenza
- Common cold
- Severe acute respiratory syndrome (SARS)
- Scarlet fever



Airborne transmission

• The infective agents float in the air for some time and enter the body through the respiratory tract

- Measles
- Pulmonary tuberculosis

Food-borne / water-borne transmission

- Through ingestion of contaminated food or water, or use of contaminated eating utensils
- Viral gastroenteritis
- Food poisoning
- Cholera
- Bacillary dysentery
- Hepatitis A
- Hepatitis E

Vector-borne transmission

• Through vectors, usually insects. The infective agents parasitise and breed in the bodies of the insects.

- Mosquito-borne
 - Dengue fever
 - Malaria
 - Japanese encephalitis

Blood / Body fluid

•Through blood transfusion, tattooing, ear piercing or sexual intercourse

Hepatitis B
Acquired immunodeficiency syndrome (AIDS)

6.4B Sexually transmitted diseases





6.2 How Immunity is built?



Human Immunodeficiency Virus(HIV)

HIV infects and damages T-cell lymphocytes. These cells are an important part of the immune system.

How HIV Attacks the Immune System

HIV Keeps the immune system from responding as it should. Eventually the body is destroyed by one or more infections.



easily resist.

Vaccination





Primary response: the first time invaded by a certain pathogen which stimulates the body to produce antibodies.

Secondary response: the invasion of the same type of pathogen which stimulates lymphocytes to produce much larger amount of antibodies and much more quickly.

6.4 Lifestyle changes and communicable diseases

| | Lifestyle | Change | Example |
|---------------------------|--|--|--|
| Pathogen | Globalization | Cross-boarder transmission due to increased international trades and travels. (6.1A) | Influenza (H3N2) |
| Host | Attitudes towards sex and sexual behaviours (HIV / AIDS Patients) | Unsafe or unprotected sexual behaviour contributes to the problems of cross-border transmission of HIV / other sexually transmitted diseases (STDs) | |
| Environment and agents | High-risk sex behaviour | accept / engage in premarital sex/ have multiple sexual partners/ lack of knowledge about STDs | Syphilis, Gonorrhoea, Genital Warts, Trichomoniasis, Pubic Lice and Herpes Simplex type II infection |
| | Hygiene practice | Public awareness on the hygiene practices such as hand-washing and wearing masks Less hand-washing practice and more cases of food | Food poisoning 44 |

6.3 Non- Communicable Diseases

- Topic 2 Health and Social Care in the Local and the Global Contexts
- 2C Recent increases in vulnerability and exposure due to lifestyle changes, globalization and family changes
 - - Lifestyle changes and non-communicable diseases
 - > To identify factors leading to the increases in vulnerability and exposure
 - > To analyse the relationships between lifestyle changes and common illnesses

6.3 Non- Communicable Diseases

(Refer to Booklet 3 – body systems and indicators of physical health)

| Chronic Diseases | | Description |
|----------------------------------|---|--|
| Cancer | lung cancer, colorectal cancer, liver cancer, stomach cancer and breast cancer etc. | linked to changes in the normal make-up of a cell, leading to the uncontrolled growth of abnormal cells. |
| Cerebro- vascular diseases | Stroke etc. | related to disease of the blood vessels supplying the brain. The arteries of the brain can be blocked by blood clots and deprive the brain cells of nutrients and oxygen. Alternatively, bursting of an artery of the brian causes a devastating cerebral haemorrhage with disruption of brain tissue |
| Heart diseases | coronary heart disease, hypertensive heart disease, chronic rheumatic heart disease and congenital heart disease etc. | when cholesterol layers deposit on the inner wall of coronary arteries and narrow the lumens of the arteries. The process reduces blood supply to cardiac muscle and causes exertional chest pain known as angina. |
| Diabetes mellitus | Type I - little or no insulin is produced due to heredity or diseases Type II - reduced insulin secretion and the body cells do not react to insulin due to risk factors such as obesity | characterised by a raised blood glucose level resulting from insulin deficiency, insulin resistance or both |
| Obesity | | BMI from 23 to less than 25 is classified as overweight and BMI 25 or above is classified as obese. |

6.4BLifestyle changes and non-communicable diseases

| Lifestyle | | non-communicable diseases |
|-------------------------------|---|--|
| Sedentary lifestyles | less exercise and more physically inactive lifestyle results in the decline in energy expenditure and increase in the risk of obesity | colorectal cancer (colon / bowel cancer), breast cancer cerebrovascular diseases, obesity, heart diseases |
| Unhealthy dietary practice | low intake of fiber and high intake of red meat and processed meat lead to the accumulation of the bad cholesterol and fat in the blood vessels / Diets with high fat, high salt and high sugar but low fibre and low calcium increase the risk of various diseases | colorectal cancer cerebrovascular diseases, obesity, heart diseases |
| Cigarette smoking | nicotine is addictive and can be used in the psychotropic drugs. The chemicals produced in tobacco can quickly reach the brain through the blood vessels and the lungs | bladder cancer, lung cancer, cerebrovascular diseases, heart diseases |
| Alcohol consumption | excessive intake of alcohol will directly affect the body's tissue, leading to the damages of the liver, kidney and brain | liver cancer cerebrovascular diseases, heart diseases |
| Hazards in workplace | persisting exposure to the chemical and radiation substances in industries | bladder cancer, lung cancer, leukemia (cancer of the blood) |
| Stress | lead to the cerebrovascular changes , lower the immunity and hinder the production of the hormones that repair body and prevent cancers | heart diseases and cancers |

6.5 Disease Prevention

- Topic 3 Responding to the Needs in the Areas of Health (care, promotion and maintenance) and Social Care
- 3A The notion and practice of health promotion, health maintenance, ill-health prevention, social care, welfare and community services
- 3A2 Health maintenance and ill-health prevention
 - Personal Role
 - Protective factors: exercise, recreation and rest, balanced diet, good hygiene practices, protective measures (e.g. helmets, seat-belts), universal precautions
 - Risk factors: drug abuse, inadequate exercise/rest, unhealthy dietary habits, non-hygienic practices, harmful/unsafe practices, a sedentary lifestyle
 - > To understand the protective factors and risk factors to health and wellbeing
 - To understand the roles of individual in health maintenance and ill-health prevention

6.5 Disease Prevention – Three Levels

- Topic 4 Promotion and Maintenance of Health and Social Care in the Community
- 4A Disease prevention (primary, secondary and tertiary) and using precautions in our daily living patterns and lifestyles
 - AA1 Primary, secondary and tertiary prevention
 - > To differentiate among primary, secondary and tertiary disease prevention

6.5 Disease Prevention – Three Levels

- Target : healthy population
- Aim : avoiding the development of a disease or injury
- Examples : public education and vaccinations
- Target : population at risk
- Aim : early detection of diseases, thereby increasing opportunities for intervention to prevent the progression of the disease
- Examples : health check-ups (e.g. blood pressure assessment) and disease screening, such as Pap smears
 - Target : the sick

primary

secondary

tertiary

- Aim : proper rehabilitation of patients with an established disease to minimize residual disabilities and complications
- Examples : rehabilitation services

6.5 Disease Prevention – Individual Level

- Topic 4 Promotion and Maintenance of Health and Social Care in the Community
- AA Disease prevention (primary, secondary and tertiary) and using precautions in our daily living patterns and lifestyles
 - 4A2 Personal hygiene practices and prevention of communicable diseases
 - 4A3 Regular exercise, leisure activities and healthy diet in preventing health problem e.g. heart attacks, strokes, obesity and hypertension
 - 4A4 Attitude towards sex and substance abuse for the prevention of sexually transmitted disease or addiction
 - > To understand how personal practices and attitudes contribute to disease prevention
 - To carry out health practices that contributes to personal and public health
 - To understand the linkages between personal health practices and public health

6.5 Disease Prevention – Individual Level

Healthy Lifestyles

| Personal hygiene practices | hand hygiene -correct hand washing practice and proper use of alcohol-based hand rub wearing mask-properly worn and disposed will be effective in preventing the spread of respiratory tract infections through droplets |
|----------------------------------|---|
| Regular exercise | improves cardio-pulmonary function and reduces the risk of developing many chronic diseases maintain body weight and healthy bones, muscles and joints decrease bone loss and prevent osteoporosis in menopausal women promotes psychological well-being and reduces stress, depression as well as anxiety refer to booklets : 2.2A2/ 3.2A2/6.4C1-2 |
| Recreation and rest | restoration of the body, mind or spirit : (1) producing feelings of relaxation or excitement; (2) enhancing self-reliance, mental health, and life-satisfaction quality sleep at night enables the body to regain strength and energy. Lack of quality rest results in poor mental condition and may lead to some accidents. |
| Diet | the intake of all essential nutrients should be within proper limits, e.g. avoid over intake of cholesterol and salt in diets / adequate intake of fruit and vegetables refer to booklets : 2.2A1 / 3.2A1 / 6.4C2 / 6.5B |
| Sexual relationship | avoid casual sex safe sex and condoms used properly during each sexual contact |

6.6 Government Strategies in Disease Prevention

- Topic 3 Responding to the Needs in the Areas of Health (care, promotion and maintenance) and Social Care
- 3A The notion and practice of health promotion, health maintenance, ill-health prevention, social care, welfare and community services
- 3A2 Health maintenance and ill-health prevention
 - Society Role
 - the role of government in health maintenance
 - the collection and application of data in health protection of the citizens
 - To understand the roles of government in health maintenance and ill-health prevention

6.6 Government Strategies in Disease Prevention

- Topic 4 Promotion and Maintenance of Health and Social Care in the Community
- 4A Disease prevention (primary, secondary and tertiary) and using precautions in our daily living patterns and lifestyles
- AA7 Government strategies :
 - Policy making
 - Diseases prevention and surveillance
 - Control of the disease spreading
 - Public health promotion
 - Resources management
 - To evaluate the roles of government in maintenance and promotion of public health

6.6 Government Strategies in Disease Prevention Strategy

| Control of the | During the outbreak of disease, to set up relevant infection control and |
|----------------|--|
| disease | management policies for hospitals, clinics, schools, kindergartens, old- |
| spreading | age homes |

Policy makingTo plan and conduct consultation on strategic directions of the
government to achieve the objectives of health care reform, e.g. to
strengthen the preventive care

Public healthTo provide the necessary information, encouragement andpromotioninfrastructure to enable people to control and improve their health

DiseasesTo oversee the development of disease prevention, identify and assesspreventionthe impact of social and environmental variables to health, as well as toandprotect health through legislation and regulation

surveillance

Resources management To provide services ranging from disease surveillance and prevention, health education and promotion, to immunization and health screening

6.6 Government Strategies in Disease Prevention – Communicable Diseases



6.6 Government Strategies in Disease Prevention – Non -communicable Diseases

| Strategy | Example | |
|--|---|--|
| Support and strengthen health promotion and NCD prevention initiatives or activities | Fostering implementation of territory-wide health promotion programmes such as "healthy eating", "active living" and "tackling the issue of being overweight" Supporting health promoting schools, smoke-free public places, healthy workplaces and healthy cities | |
| Generate an effective information base and system to guide actions across the disease pathway | • Improving surveillance of NCD and track changes in the risk profile and health determinants of the population | |
| Strengthen partnership and foster engagement of all relevant stakeholders | • Involving and engaging all levels of the Government, local communities and the public to create an environment conducive to the promotion of healthy behaviours | |
| Build the capacity and capability to combat NCD | • Developing health literacy in the general public with appropriate information and tools | |
| Ensure a health sector that is responsive to the NCD challenges and improve the system of care | • Encouraging healthcare professionals to identify and address the risk factors of NCD, engaging early intervention through appropriate screening and counselling, and supporting patients for self-management | |
| Strengthen and develop supportive health promoting legislation | Tobacco control policy, and food labelling and safety | |

6.6 Government Strategies in Disease Prevention – Collection and Application of Data



Organisations for Disease Control

| | World Health Organization (WHO) | Provide support for infection control and response to public health emergencies of international concern |
|----------------|--|--|
| | Centers for Disease Control and Prevention (CDC) | prevention and control of infectious diseases focus on "emerging" infectious diseases in the US and around the world |
| | Centre for Health Protection (6.6B) | Strengthen the public health system in diseases prevention Hong Kong |
| A DITIONAL ALL | | |