infectious disease

cholera
- pathogen
  - vibrio cholerae
    - it secretes a toxin called choleragen in the intestine
- transmission
  - food-borne
    - faeces from patient contains a amount of the pathogen
  - water-borne
    - the water used for utensil cleaning, drinking and bathing is contaminated by the pathogen then the pathogen can be transmitted
- signs and symptoms
  - diarrhoea
  - vomitting
  - dehydration: loss of water and salt
- treatment
  - rehydration theapy
    - solution containing glucose, salt and water
  - intravenous injection
  - use antibiotics in severe cases to avoid antibiotics resistance
- prevention
  - chlorinate piped water to kill bacteria
  - provide adequate sewage treatment infrastructure
  - monitoring program by WHO

antibiotics
- drugs that kill or stop the growth of bacteria but do not harm the cells of the infected organism
- antibiotics are derived from living organism and also be made synthetically
- how antibiotics interfere with the growth or metabolism of the target bacterium
  - synthesis of bacterial cell wall
  - activity of proteins in bacterial cell surface membrane
  - bacterial enzyme protein
  - bacterial DNA synthesis
  - bacterial protein synthesis
- antibiotics resistance
  - reasons for antibiotic resistance
    - overuse of antibiotics and antibiotics are prescribed when not necessary
    - large scale use of antibiotics in farming to prevent disease in livestock
    - patients failing to complete the full course of antibiotics prescribed
  - ways to prevent antibiotics resistance
    - using antibiotics only when necessary not prescribing antibiotics on viral infection
    - complete the full round of medication
    - use narrow spectum antibiotics instead of wide-spectum antibiotics
    - disposal of antibiotics need to be handled cautiously
    - the prescription and sales of antibiotics should be strictly controlled
    - avoid using antibiotics in farming to prevent rather than cure

tuberculosis
- pathogen
  - mycobacterium tuberculosis
  - mycobacterium bovis
- transmission
  - air- borne (tuberculosis)
    - water droplets
    - TB can spread quickly from person to person when the infected person coughs, sneezes or spits. Then, the health person inhale the droplet to be infected
  - unpasteurized milk and uncooked meat (bovis)
- sign and sysptoms
  - fever
  - cough
  - sneeze
  - short of breath
  - cheat pain
  - cough of blood
- treatment
  - antibiotics
- tuberosis prevention
  - BCG vaccine
  - contract tracing: quarantine
- bovis prevention
  - vaccinate cattle and routining test for TB
  - pasteurizing milk
  - ensuring meat is cooked properly

AIDS
- pathogen
  - human immunodeficiency virus
    - cannot survive outside
- transmission
  - blood donation without screening or sharing of needles
  - sexual intercourse
  - mother to child through placenta or breast milk
  - mixing of blood between mother and child during birth
- treatment
  - no vaccines and no cure
  - drugs that delay the onset of AIDS
    - downside: side-effect, very expensive
    - opportunistic disease: TB, pneumonia
- signs and symptom
  - mild fever
  - sneeze
  - running nose
- prevention and control
  - education programs about how the virus is transmitted and encouraging people to charge their behaviors
  - contact tracing
  - screening blood donation
  - the disposal of needles need to handle correctly and cautiously
  - encourage high-risk individuals (male-homosexual, prostitutes, injecting drug users to be tested)
  - use anti-retroviral drugs in 48 hours
  - using drugs to block the transmission between mother and child at placenta, during birth and through breast milk

malaria
- pathogen
  - plasmodium vivax
  - plasmodium malariae
  - plasmodium ovale
  - plasmodium falciparan
- transmission
  - vector-borne: female Anopheles mosquitoes
  - blood-borne: blood transfusion
- sign and sysptom
  - fever
  - headache
  - muscle pain
  - fatigue
- treatment
  - use antibiotics
    - antibiotics resistance is a problem to treat malaria
- control
  - spray insectides
  - spread oil over the surfaces of water where mosquitoes lay their eggs
  - draining marshes and unnecessary bodies of water
  - stock fish in ponds as the fish can feed on mosquito larvae
- prevention
  - spray mosquito repellent
  - use bed net
  - prophylactic drugs
- recent advancement
  - improve the drug efeectiveness
  - improve diagnosis
  - use drugs in combination to reduce drug resistance
  - biological control to target larvae
  - the development of vaccine