

# Lecture 6: mortality and global health estimates

There are 3 categories of death causing morbidities by WHO and GBD:

- **communicable disease**. With maternal, perinatal, nutritional (refer back to the first slide for definitions)
- **noncommunicable diseases**, such as heart attacks, stroke and cancer.
- **injuries**, like motor vehicle accidents, homicide and suicide

Most common cause of death:

- > developed → non-communicable
- > developing → communicable

Least in both? Injuries

Problem in both? Non communicable

Burden in developing? Communicable

Disability adjusted life equals the sum of YLL and YLD

(top 5 changes only)

Males:

Summary→

Constant: non communicable diseases and musculoskeletal disorders

Rise: chronic Respiratory diseases (to the top) and neoplasms

Fall: Digestive diseases (imagine a slide for 'fall') except cirrhosis

Rank	2015	2030	Rank
1	Digestive diseases except cirrhosis	Chronic respiratory diseases	1
2	Chronic respiratory diseases	Digestive diseases except cirrhosis	2
3	Other non-communicable diseases	Other non-communicable diseases	3
4	Musculoskeletal disorders	Musculoskeletal disorders	4
5	Diabetes, urogenital, blood, and endocrine diseases	Neoplasms	5
6	Cardiovascular and circulatory diseases	Diabetes, urogenital, blood, and endocrine diseases	6

Leading cause of YLL in Jordan 2013:

**Birth defects**

**Mortality estimates: (cause)**

Low-income countries:

communicable (mainly lower respiratory infections, diarrheal Ds.)

Lower-middle-income countries:

Non-communicable (mainly CV diseases)

Upper-middle income:

Non-communicable (CVDs)

High income countries:

Non communicable (CVDs + neural)

Females:

Constant: Chronic respiratory disease and musculoskeletal disorders (top)

Significant fall: diabetes

Rise: maternal, digestive and non-communicable \*in quarantine, eating a lot was the pregnant lady\*

Rank	2015	2030	Rank
1	Musculoskeletal disorders	Musculoskeletal disorders	1
2	Diabetes, urogenital, blood, and endocrine diseases	Other non-communicable diseases	2
3	Other non-communicable diseases	Digestive diseases except cirrhosis	3
4	Chronic respiratory diseases	Chronic respiratory diseases	4
5	Digestive diseases except cirrhosis	Maternal disorder	5
6	Maternal disorder	Neurological disorders	6
7	Cardiovascular and circulatory diseases	Diabetes, urogenital, blood, and endocrine diseases	7

**Neonatal mortality rates:**

Deaths in under 28 days of age at a certain year.

Early: <7 days late: 7> & <28

- Useful indicator of maternal and newborn neonatal health and care.
- Death means lack of quality care at birth or skilled care after birth and in the first days of life.

• Large proportion of <5 deaths

• Preterm birth, intrapartum-related complications (birth asphyxia or lack of breathing at birth), infections and birth defects cause most neonatal Ds

All regions halved neonatal deaths. Most of neonatal deaths are in **Africa and south east Asia**

**Africa being the highest of all**

10-14, 15-19 male and female deaths abstract:

Common in all ( F, M 10-19) : road injury

Females 10-19: road injury, diarrheal diseases

Males 10-19: road injury, drowning, HIV/AIDS

All 10-14: lower respiratory infections, road injury, diarrheal diseases, HIV/AIDS

All 15-19: self-harm, road injury

Most: road injury, HIV/AIDS, diarrheal disease

**Leading causes of YLD (10-14): \*in order**

1. Unipolar depressive disorders
2. Iron deficiency anaemia
3. Asthma
4. Back and neck pain
5. Anxiety disorders

Global life expectancy:  
72 years

Jordan life expectancy:  
68.0 – 69.9

Top five life expectancy countries:  
Japan (82) > Sweden > Singapore > US > Mexico

Lowest five:  
Botswana (35) least < Malawi < Kenya < Haiti < south Africa

# Lectures 7-9

Disease	Causative organism	transmission	Symptoms	Notes (epi-dem, prevention, treatment)
Dengue fever	Viral (dengue virus)	<b>Vector-borne</b> Aedes mosquitoes (transmits chikangunya, y fever, zika infection)	<b>Flu-like illness</b> High fever with 2/7 symptoms, sever <b>headache</b> , pain behind the eyes, muscle and joint pain, nausea vomiting, swollen glands and rash, <b>Severe dengue:</b> Warning signs: fever <38, severe abdominal pain vomiting, rapid breathing, bleeding gums, fatigue, restlessness, blood in vomit.	-Infected humans are the main carriers and multipliers. -no specific treatment, the earlier the diagnosis the better the outcomes. - prevention depends on <b>vector control (prevention of access to egg laying habitat)</b>
				
cholera	Bacterial (vibrio cholera)	ingestion of food or water contaminated with <i>V.cholera</i> (feco-oral?) -consequences of a humanitarian crisis can increase the risk of cholera transmission	Majority show no or mild to moderate symptoms <b>Sever acute watery diarrhea (rice water)</b> <b>Dehydration in severe cases</b> Accompanied with fever, drowsiness, convulsions or coma in children	-indicator of inequity and lack of social development - associated with slums, refugee camps .. - many carriers are passive or healthy. - 1in 10 people develops the typical signs. -endemic or epidemic <b>-ORS for treatment (IV fluids + Abx in severe cases)</b> - prevention by a combination of surveillance, water, sanitation etc - 3 WHO qualified vaccines, Dukoral®, Shanchol™, and Euvichol®. All 3 vaccines require 2 doses.
Malaria	parasitic	<b>Vector-borne</b> bites of infected female Anopheles mosquitoes	<b>Fever, headache, and chills</b> In sever cases: Children→ severe anaemia, respiratory distress in relation to metabolic acidosis, or cerebral malaria Adults→multi-organ involvement is frequent	-preventable and curable - WHO African region is the most affected. -In malaria endemic areas, people may develop partial immunity -Early diagnosis and treatment of malaria reduces disease and prevents deaths. - WHO recommends that all cases of suspected malaria be

				<p>confirmed using parasite-based diagnostic testing <b>before administering treatment.</b></p> <ul style="list-style-type: none"> <li>- The best available treatment, particularly for P. falciparum malaria, is <b>artemisinin-based combination therapy (ACT).</b></li> </ul>
Small pox	Viral	<p>Aerosols and air droplets          Person to person (can spread through face to face contact with a patient)  <b>Can be transmitted through contaminated clothes and bedding</b></p>	<ul style="list-style-type: none"> <li>- fever is present for 2 to 4 days <b>before the rash begins</b></li> <li>All the pocks of the smallpox rash are in the <b>same stage of development</b> on any given part of the body and develop slowly</li> <li>- smallpox lesions are uniformly larger than CP, between 5 and 10 mm</li> <li>- The smallpox pustules are <b>firm and deeply embedded</b> in the skin</li> <li>- <b>More on the extremities</b></li> </ul>	<ul style="list-style-type: none"> <li>- very fetal</li> <li>- eradicated natural transmission but still in laboratories.</li> <li>- During the first day or two of rash it may be impossible, from the rash alone, to differentiate smallpox from chickenpox.</li> <li>- On day 10 of the rash, the smallpox scabs are just beginning to form, and they're looking larger and worse.</li> <li>- more pocks usually occur on the <b>arms and legs than on the body</b></li> <li>- lesions are <b>commonly found on the palms and soles</b></li> </ul>
Chicken pox	Viral	Same as small pox	<ul style="list-style-type: none"> <li>- fever and rash develop <b>at the same time</b></li> <li>- the rash develops more rapidly, and vesicles, pustules, and scabs may be <b>seen at the same time. (different stages)</b></li> <li>- Most of the chickenpox lesions are small, between 1 and 5 mm</li> <li>- lesions of chickenpox are much more <b>superficial.</b></li> <li>- <b>more on the trunk</b></li> </ul>	<ul style="list-style-type: none"> <li>- In chickenpox, the scabs may form as early as day 3 or 4 of rash and normally fall off by day 14.</li> <li>- more pocks occur <b>on the body.</b></li> <li>- very <b>few or no lesions on the palms and soles.</b></li> </ul>
Polio	Viral (polio virus)	<p>Direct contact from person to person (v. contagious)  <b>Feco-oral mainly,</b> can be through droplets and sneezes  <b>Can be transmitted indirectly</b>  <b>Only infects HUMANS</b></p>	<p><b>Most show NO symptoms</b>  <b>Mainly flu-like symptoms</b>          Sore throat o Fever o Tiredness          o Nausea o Headache o Stomach pain          More advanced (spectrum):</p> <ul style="list-style-type: none"> <li>- Paresthesia</li> <li>- Meningitis occurs</li> <li>- Paralysis</li> </ul>	<ul style="list-style-type: none"> <li>- vaccine is very crucial</li> <li>- Paralysis is the most severe symptom</li> <li>- Even children who seem to fully recover can develop new muscle pain, weakness, or paralysis as adults, 15 to 40 years later. This is called <b>post-polio syndrome.</b></li> <li>- it has 2 vaccines: OPV and IPV  <b>OPV is the most used</b>            IPV used in the states</li> </ul>

HIV/AIDS	Viral	<p>Direct through exchange of a variety of body fluids from infected individuals, like <b>blood, breast milk, semen and vaginal secretions</b>. Individuals <b>cannot</b> become infected through ordinary day-to-day contact such as hugging, shaking hands, or sharing personal objects, food or water.</p> <ul style="list-style-type: none"> <li>-sexual contact</li> <li>- contaminated needles (rare) (whether by accident, B transf., needle stick injury etc)</li> </ul>	<p>Stages of HIV:</p> <p>S1 → acute infection phase (2-4 weeks) <b>flu-like illness</b> (no symptoms or illness including fever, headache, rash or sore throat)</p> <p>When people have acute HIV infection, they have a <b>large amount of virus in their blood and are very contagious. (NAT test to diagnose)</b></p> <p>S2 → Clinical latency (HIV inactivity or dormancy, AKA asymptomatic HIV infection or chronic HIV infection)</p> <p>HIV is still <b>active</b> but reproduces at very low levels. (can stay in this phase for decades), the person is <b>still infectious. No symptoms or sickness in this phase.</b></p> <p>S3 (AIDS) worst → badly damaged immune systems → increasing number of severe illnesses aka <b>opportunistic illnesses.</b></p> <p>Common symptoms of AIDS include <b>chills, fever, sweats, swollen lymph glands, weakness, and weight loss</b></p> <p>Without treatment, they could develop severe illnesses such as <b>TB, cryptococcal meningitis, and cancers such as lymphomas and Kaposi's sarcoma.</b></p>	<ul style="list-style-type: none"> <li>-HIV doesn't equal AIDS</li> <li>-attacks the T-cells of the immune system</li> <li>- most death occurs because of other opportunistic infections not HIV</li> <li>-origin is identified from chimpanzees, (SIV), the development not clear</li> <li>- is a <b>pandemic</b></li> <li>- <b>the second stage is targeted for treatment</b></li> <li>- People are diagnosed with AIDS when their CD4 cell count drops below 200 cells/mm or if they develop certain opportunistic illnesses.</li> <li>-People with AIDS can have a high viral load and be <b>very infectious.</b></li> <li>- in <b>early stages</b>, FP are very common → <b>window period</b>, this early period of infection represents the time of <b>greatest infectivity</b>;</li> <li>-test and re-test is recommended for suspected carriers before treatment .</li> <li>- No effective cure currently exists, but with proper medical care, HIV can be controlled.</li> </ul> <p>The medicine used to treat HIV → <b>ART.</b></p> <p><b>If taken the right way, can dramatically prolong the lives of many people infected with HIV and greatly lower their chance of infecting others</b></p> <ul style="list-style-type: none"> <li>-people with HIV should have a high moral to prevent infecting others</li> </ul> <p><b>Africa is the most affected region by HIV/AIDS in the world, particularly among young women</b></p>
TB	bacteria (Mycobacterium tuberculosis)	<p><b>Air-borne</b></p> <p>Coughing, speaking, singing)</p> <p>Droplets entering the RS DIRECTLY</p>	<p>Pulmonary →</p> <ul style="list-style-type: none"> <li>o <b>a bad cough</b></li> <li>o <b>pain in the chest</b></li> <li>o coughing up blood or sputum</li> <li>o weakness or fatigue</li> <li>o weight loss, lack of appetite</li> <li>o Chills, fever, night sweats</li> </ul>	<ul style="list-style-type: none"> <li>- TB is a leading killer of HIV-positive people</li> <li>- TB is the <b>ninth leading cause of death worldwide</b> and the <b>leading cause from a single infectious agent</b>, ranking above HIV/AIDS.</li> <li>- HIV and TB form a lethal combination</li> <li>Especially in <b>African region</b></li> </ul>

				<ul style="list-style-type: none"> <li>- risk factors encourage the development from latent to active TB (usual risk groups- HIV, etc)</li> <li>- <b>treatable and curable</b></li> <li>- problem with treatment is maladministration because long period.</li> <li>- MDR-TB is a form of TB</li> </ul>
<b>Ebola</b>	Viral disease	<p><b>Direct contact</b>  <b>Broken skin and mucous memb.</b> with blood, secretions, organs or other bodily fluids of infected people, and with surfaces and materials (e.g. bedding, clothing) contaminated with these fluids.</p> <p><b>FROM WILD ANIMALS</b>  <b>And from human to human</b></p>	<p>symptoms are the sudden onset of <b>fever fatigue, muscle pain, headache and sore throat.</b> This is followed by vomiting, diarrhoea, rash, symptoms of impaired kidney and liver function, and in some cases, <b>both internal and external bleeding</b> (e.g. oozing from the gums, blood in the stools)</p>	<ul style="list-style-type: none"> <li>- People remain infectious as long as their blood contains the virus.</li> <li>-persists in testicles, eyes, CNS, Pregnant women, BF women.</li> <li>-no fast diagnostic test, serological and nucleic acid tests are used to confirm.</li> <li>-NO treatment, supportive care.</li> <li>- limited immunity in infected individuals</li> </ul>