

10th lecture:

HIV/AIDS Epidemiology

Done by: Hadeel Al-Madany

Lecture objectives:

At the end of this lecture, the student should be able to:

- Describe the current estimates of HIV / AIDS infection
- Understand how people get infected with HIV
- Appreciate the features which characterize the pandemic in the Eastern Mediterranean Region
- Differentiate what could work best, as far as prevention & control efforts are concerned, in our Region



What is AIDS?

- Acquired Immuno-Deficiency Syndrome (AIDS) is a severe life-threatening clinical condition, first recognized as a distinct syndrome in 1981.
- This syndrome represents the **late stage of infection with the Human Immuno-deficiency Virus (HIV)**, which often results in progressive damage of the immune and other organ systems, especially the central nervous system (CNS)

*It attacks CD4 and immune cells with increases the probability of infections.

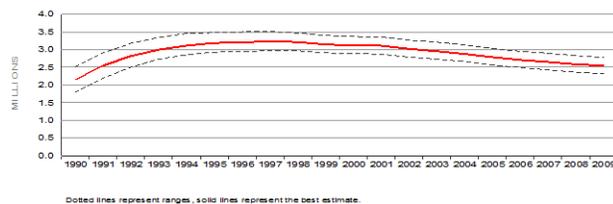
HIV/AIDS PANDEMIC: OVERALL FEATURES

- Pandemic: all continents, all nations
- HIV has been isolated from ALL body fluids
- There are only three modes of transmission
- Incubation & communicability: **long**
- **Asymptomatic** infected (incubating carriers)
- are capable of transmission of the infection
- Impacts of infection: health, social, productivity,
- life expectancy, economic, overall development

HIV Epidemiologic Update -1

GLOBAL REPORT

Figure 2.1
Number of people newly infected with HIV



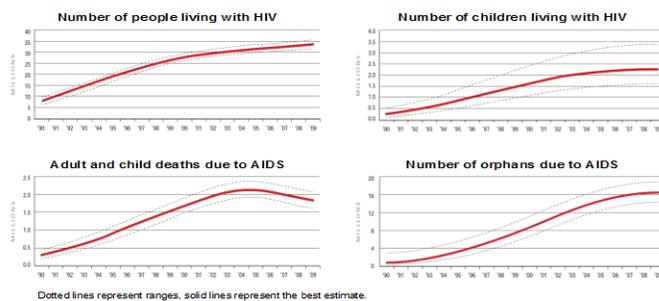
The number of HIV infected people from 1990 till 2009 went up. However, it started to decline.



HIV Epidemiologic Update -3

GLOBAL REPORT

Figure 2.5
Global HIV trends, 1990 to 2009



Source: UNAIDS



*Adult and children deaths due to AIDS is decreasing due to good treatment.

*However, the infection is rising.

*Anti retro viral drugs are centrally controlled from the US AND who to prevent resistance.

Global summary of the AIDS epidemic | 2011

Number of people living with HIV	Total	34.2 million [31.8 million–35.9 million]
	Adults	30.7 million [28.6 million–32.2 million]
	Women	16.7 million [15.7 million–17.8 million]
	Children (<15 years)	3.4 million [3.1 million–3.9 million]
People newly infected with HIV in 2011	Total	2.5 million [2.2 million–2.8 million]
	Adults	2.2 million [2.0 million–2.4 million]
	Children (<15 years)	330 000 [280 000–380 000]
AIDS deaths in 2011	Total	1.7 million [1.6 million–1.9 million]
	Adults	1.5 million [1.3 million–1.7 million]
	Children (<15 years)	230 000 [200 000–270 000]



Global estimates for adults and children | 2011

People living with HIV	34.2 million [31.8 million – 35.9 million]
New HIV infections in 2011	2.5 million [2.2 million – 2.8 million]
Deaths due to AIDS in 2011	1.7 million [1.6 million – 1.9 million]



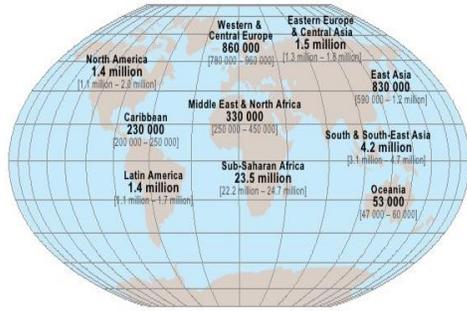
Regional HIV and AIDS statistics and features | 2011

	Adults and children living with HIV	Adults and children newly infected with HIV	Adult prevalence (15–49) [%]	Adult & child deaths due to AIDS
Sub-Saharan Africa	23.5 million [22.2 million – 24.7 million]	1.7 million [1.6 million – 1.9 million]	4.8% [4.6% – 5.1%]	1.2 million [1.1 million – 1.3 million]
Middle East and North Africa	330 000 [250 000 – 450 000]	39 000 [29 000 – 60 000]	0.2% [0.1% – 0.2%]	25 000 [17 000 – 35 000]
South and South-East Asia	4.2 million [3.1 million – 4.7 million]	300 000 [220 000 – 340 000]	0.3% [0.2% – 0.4%]	270 000 [140 000 – 600 000]
East Asia	830 000 [590 000 – 1.2 million]	89 000 [44 000 – 170 000]	0.1% [0.1% – 0.1%]	60 000 [42 000 – 83 000]
Latin America	1.4 million [1.1 million – 1.7 million]	86 000 [52 000 – 140 000]	0.4% [0.3% – 0.5%]	57 000 [35 000 – 86 000]
Caribbean	230 000 [200 000 – 250 000]	13 000 [9700 – 16 000]	1.0% [0.8% – 1.1%]	10 000 [8200 – 12 000]
Eastern Europe and Central Asia	1.5 million [1.3 million – 1.8 million]	170 000 [110 000 – 220 000]	1.0% [0.8% – 1.1%]	90 000 [74 000 – 110 000]
Western and Central Europe	860 000 [780 000 – 960 000]	30 000 [21 000 – 40 000]	0.2% [0.2% – 0.2%]	9300 [8300 – 10 000]
North America	1.4 million [1.1 million – 2.0 million]	58 000 [21 000 – 130 000]	0.6% [0.5% – 1.0%]	20 000 [16 000 – 27 000]
Oceania	53 000 [47 000 – 60 000]	2900 [2200 – 3800]	0.3% [0.2% – 0.3%]	1300 [<1000 – 1800]
TOTAL	34.2 million [31.8 million – 35.9 million]	2.5 million [2.2 million – 2.8 million]	0.8% [0.7% – 0.8%]	1.7 million [1.6 million – 1.9 million]

The ranges around the estimates in this table define the boundaries within which the actual numbers lie, based on the best available information.



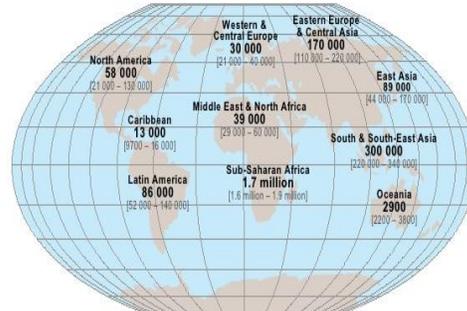
Adults and children estimated to be living with HIV | 2011



Total: 34.2 million [31.8 million – 35.9 million]



Estimated number of adults and children newly infected with HIV | 2011



Total: 2.5 million [2.2 million – 2.8 million]



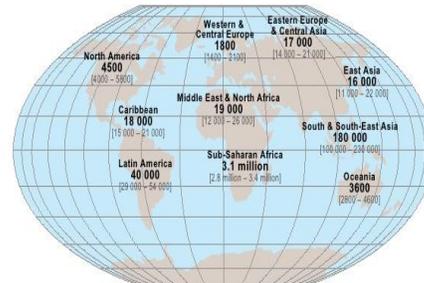
Estimated adult and child deaths from AIDS | 2011



Total: 1.7 million [1.6 million – 1.9 million]



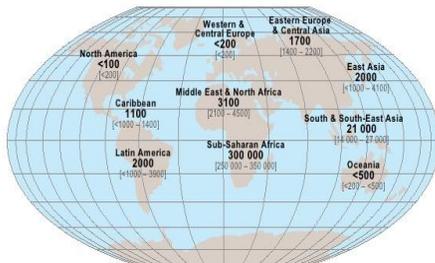
Children (<15 years) estimated to be living with HIV | 2011



Total: 3.4 million [3.1 million – 3.9 million]



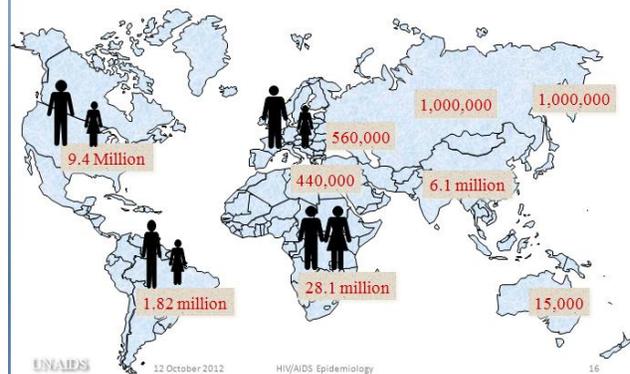
Estimated number of children (<15 years) newly infected with HIV | 2011



Total: 330 000 [280 000 – 380 000]



Estimated global distribution of HIV/AIDS infections, by sex (1970s - 2001)



HIV / AIDS Infectious Cycle

- Agent: HIV retrovirus, target cell: **T4 lymphocyte**
- Reservoir: **humans** (cases, carriers)
- Communicability increases with: STI (**sexually transmitted infections**) , TB, addiction, repeated contaminated injections / transfusions, sexual promiscuity (frequency, multiple partners)
- Portal(s) of outlet: **semen, vaginal secretions, blood, skin**

Modes of transmission:

- **Sexual (most common)** (90 %): hetero- , homo- , bi sexually.
- Parenteral (5 %): blood, IDU, skin-piercing
- Perinatal (4 %): during pregnancy, labor, milk
- Portal of inlet: according to transmission
- Susceptibility: general, more among high risk groups especially: TB & STI patients

HIV Transmission by Efficiency & Global Distribution:

Exposure	Transmission Efficiency %	Global Distribution
Blood Transfusion	> 90	< 1
Perinatal	20 - 45	4
Sexual	0.1 - 1.0	90
IV Drug Abuse	0.5 - 1.0	5
Needle-prick	< 0.5	< 1

There is no current evidence to suggest that HIV is transmitted by:

- Casual contact
- Respiratory route
- Enteric route
- Insects
- Food/water
- Toilets
- Swimming pools
- Seats, door-knobs
- Tears
- Sharing eating utensils

HIV / AIDS in the EMR “ELECTRONIC MEDICAL RECORDS”

HIV/AIDS PANDEMIC: EMR FEATURES (1)

- Late introduction (late 1980s), slow progression
- By end of 2007, reported low overall prevalence of 0.2 % in EMR nations
- Generalized epidemic (> 1 %): in Djibouti, Sudan, some parts of Somalia
- Concentrated epidemic (> 5 %): among IDU “intravenous drug users” in Iran, Libya, Pakistan
- Generalized Vs. concentrated epidemics: generalized epidemic is when the prevalence of the infection in the community in a locality is more than 1% which is considered very high. While concentrated epidemic is where the proportion of people living with HIV is more than 5% in a certain amount of people and not there at the community level, only present in some tropics.
- Age-gender distribution: predominantly affecting adult (91 %) males (71 %)
- Modes: mainly heterosexual (77 %); IDU (11 %); blood transfusion (5 %), mother to child (2 %)

HIV/AIDS PANDEMIC: EMR FEATURES (2)

- Current indigenous transmission among high risk groups: IDU, STI patients, T.B. patients, blood recipients, dialyzed patients, prostitutes, imprisoned people, homosexuals (some of whom are underground groups with social / legal difficulties to deal with)
- Serious current limitation in deeply needed surveillance activities.

HIV/AIDS PANDEMIC: EMR FEATURES (3)

- HIV SEROPOSITIVES (2010)
- Estimate: 470 000 [350 000–570 000] up from 320 000 [190 000–450 000] in 2001
- New infections: 59 000 [40 000–73 000] up from 43 000 [31 000–57 000]
- AIDS related deaths: 35 000 [25 000–42 000] up from 22 000 [9700–38 000] in 2001
- STI CASES (2009) (sexually-transmitted infections)
- Estimate: 10,000,000 cases
- PROBLEMS: late reporting, under reporting, under diagnosis, conflicts, denial (few states)

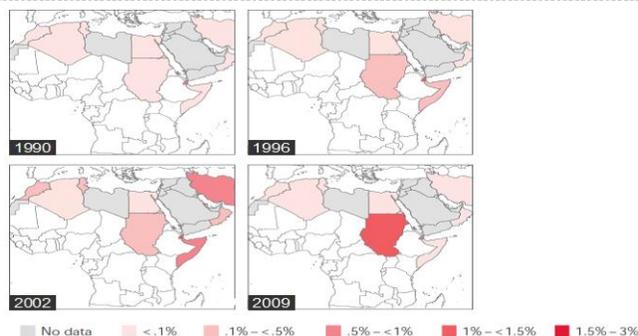
HIV/AIDS PANDEMIC: EMR FEATURES (4)

GLOBAL REPORT

Figure 2.20

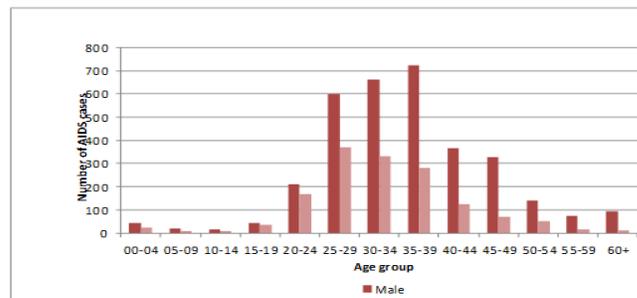
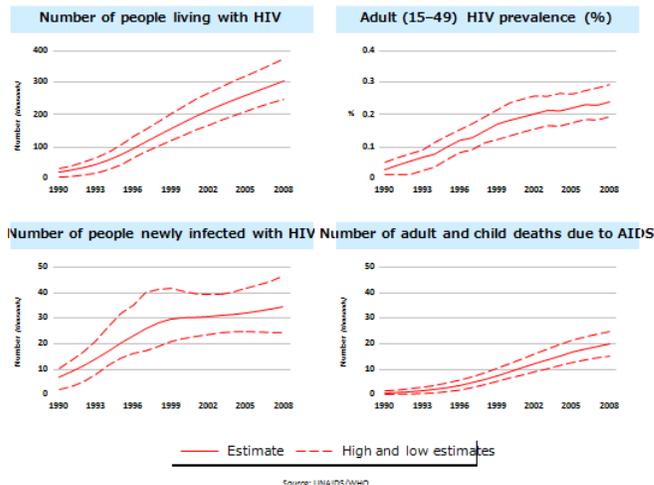
HIV prevalence in the Middle East and North Africa

HIV prevalence among adults aged 15–49 years old in the Middle East and North Africa, 1990 to 2009.



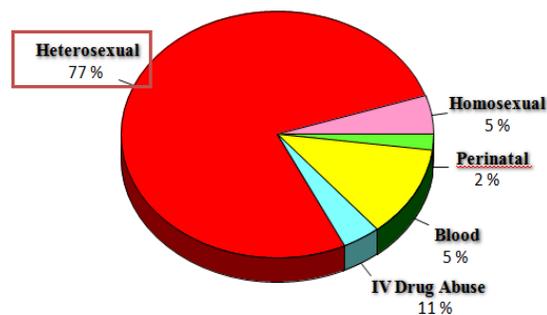
Source: UNAIDS.

Middle East and North Africa estimates 1990–2008



Distribution of cumulative AIDS cases by age and by sex
WHO / EMR, 1999–2002

Mode of Transmission of Reported Cases, EMR, 2007

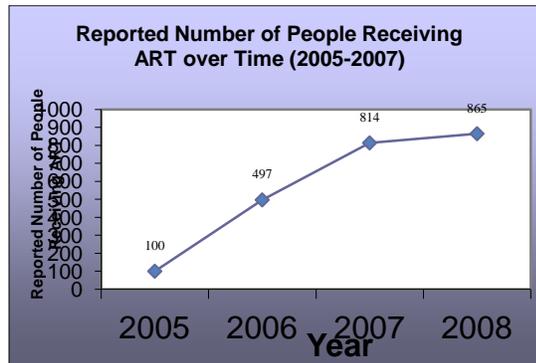


HIV in Saudi Arabia

(1)

- According to information from the National AIDS Control Program (May 2009) the following estimates are provided:
 - HIV prevalence in adult population: 0.01%
 - Prevalence among TB patients: Riyadh: 0.30%, (Surveillance reports from 2007)
 - Prevalence among STI: **Riyadh: 2.80%**, Jeddah: 1.20%, Dammam: 0.30%

HIV in Saudi Arabia (2)



HIV / AIDS Prevention & Control

– HIV/AIDS Control Bodies

- Globally: UNAIDS (includes 10 UN agencies); IHRA (International Harm Reduction Association)
- Nationally: MoH- National AIDS Program (NAP), Multi-sectoral National AIDS Committee (NAC) including: health, education, higher education, information, Islamic Affairs, Sports & Youth Welfare, planning, finance, labor, defense, interior
- Non-governmental (civil service) organizations

– MoH - National AIDS Control Program, KSA

- Established back in 1986, in response to the emergence of HIV pandemic
- Responsible for defining and implementing strategies for preventive and control of HIV/AIDS/STI activities in KSA
- Supported by different committees of experts in related aspects
- Such program activities are integrated in existing national health system

المبادرة السعودية لمكافحة الايدز بدول مجلس التعاون
Saudi initiative to combat AIDS in the GCC countries



To unify the strategy among the GCC countries that combat HIV/AIDS and motivate these countries to deal with HIV/AIDS in a way that goes in line with the global trend of HIV/AIDS prevention and control

HIV/AIDS Preventive Measures

- ◆ Primary: Health education, preventing transmission
- ◆ Secondary: health education, **counseling**, health care, support (avoid stigmatization, discrimination), protect society (public health measures)
- ◆ Tertiary: care for the terminally ill, managing complications and associated conditions

AIDS management

- ♦ **Anti retroviral treatment (ART)** all u need to know is that antiretroviral drugs are given in combinations, they are given with the CD4 cells count is decreased to 250.
 - [zidovudine + lamivudine](#)
 - [abacavir + zidovudine + lamivudine](#)
 - [lopinavir + ritonavir](#)
 - [abacavir + lamivudine](#)
 - [tenofovir/emtricitabine](#)
 - [efavirenz + tenofovir/emtricitabine](#)
 - [rilpivirine + tenofovir/emtricitabine](#)
 - [elvitegravir + cobicistat + tenofovir/emtricitabine](#)

Target Groups for HIV/AIDS Preventive Measures

- ♦ Vulnerable groups: youngsters & women (in general) but IDU, prisoners, TB & STI patients, homosexuals, prostitutes (in specific)
- ♦ Other groups: migrant workers, refugees and displaced persons, transport workers, & tourists

HIV/AIDS Preventive Measures

PREVENTION OF SEXUAL TRANSMISSION

- Global recommendations:
- abstinence, condom use
- EMR Recommendations:
- fostering religion, health education (curricula, information, skills, behavior) dealing with the problem as a social/health issue, use of mass media (advertisements, plays, dialogues)
- Safety measures & screening at every stage
- Voluntary un-paid donors only
- Transfusion, only when needed
- Careful history-taking and physical examination
- Pre-marital counseling
- Infected women are advised not to conceive
- Use of AZT (reduces transmission risk by 2/3)
- In general, breast feeding should be continued
- Case-management: compulsory notification

* AIDS must not be allowed to join the long list of problems, like poverty, hunger and ignorance, that the world has learnt to live with, because the powerful have lost interest, and the powerless have no choice.

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