

HIV/AIDS EPIDEMIOLOGY

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435 Lecture Notes by Haifaa Almohsen & Qusay Ajlan
Original Content | **Titles** | Additional Notes | **Important**

Learning 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 Immunodeficiency 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 Immunodeficiency Virus (**HIV**), which often results in progressive damage of the immune and other organ systems, especially the central nervous system (CNS)

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

-Blood (Needles or syringe + sharing shaving equipment+ drug abusers)

-Sexual intercourse with infected individuals

-Mother to child (breast feeding)

HIV/AIDS PANDEMIC: OVERALL FEATURES (Continued)

- **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/AIDS INFECTIOUS CYCLE -1

Agent: HIV retrovirus, target cell: T4 lymphocyte

Reservoir: humans (cases, carriers)

Communicability increases with: STI, TB, addiction, repeated contaminated injections / transfusions, sexual promiscuity (frequency, multiple partners)

Portal(s) of outlet: semen, vaginal secretions, blood, skin

HIV/AIDS INFECTIOUS CYCLE -2

Modes of transmission:

- **Sexual (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

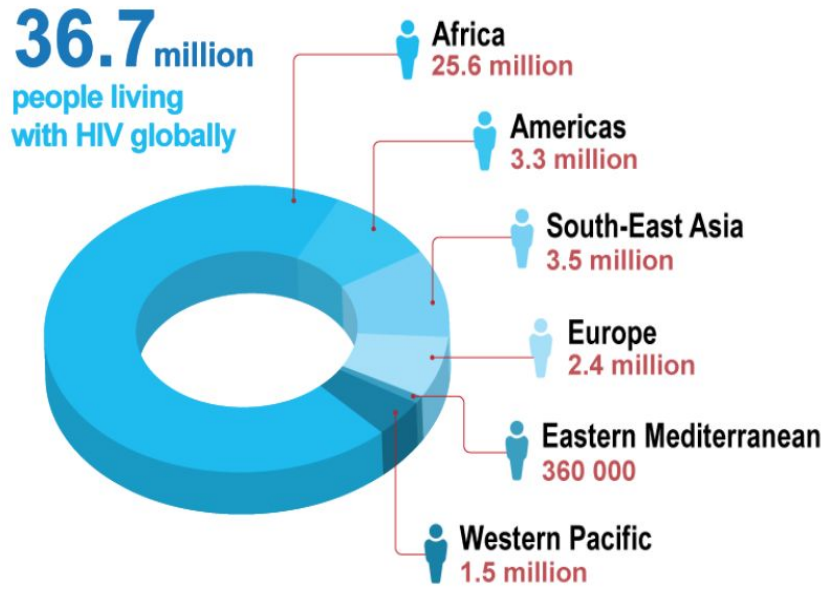
Exposure	Transmission Efficiency	%	Global Distribution
Blood Transfusion	> 90		< 1
Perinatal	20 - 45		4
Sexual	0.1 - 1.0	90	
IV Drug Abuse	0.5 - 1.0		5
Needle-prick	< 0.5		< 1

MODES OF HIV TRANSMISSION (Continued)

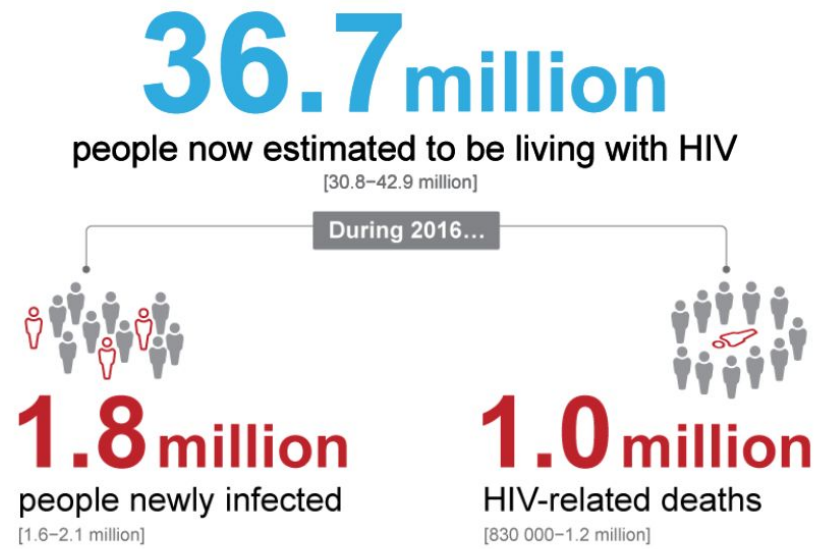
There is no current evidence to suggest that HIV is transmitted by:

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

Epidemiology



People living with HIV by WHO (2016)



•Summary of global hiv epidemic 2016

Summary of global HIV epidemic (2016)

Number of people living with HIV in 2016

Total	36.7 million	[30.8 million – 42.9 million]
Adults	34.5 million	[28.8 million – 40.2 million]
Women	17.8 million	[15.4 million – 20.3 million]
Men	16.7 million	[14.0 million – 19.5 million]
Children (<15 years)	2.1 million	[1.7 million – 2.6 million]

People newly infected with HIV in 2016

Total	1.8 million	[1.6 million – 2.1 million]
Adults	1.7 million	[1.4 million – 1.9 million]
Children (<15 years)	160 000	[100 000 – 220 000]

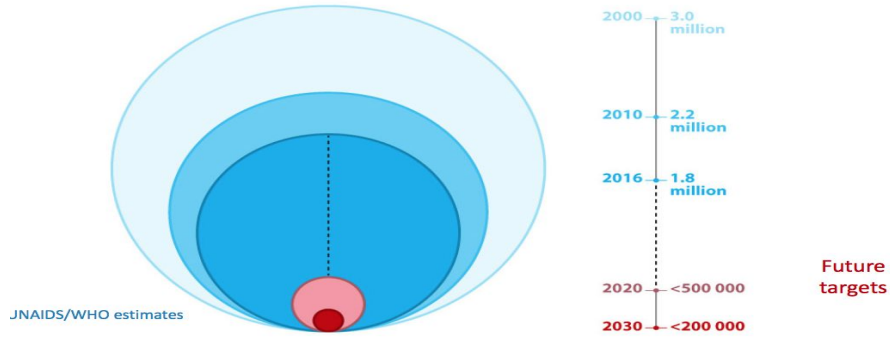
AIDS deaths in 2016

Total	1.0 million	[830 000 – 1.2 million]
Adults	890 000	[740 000 – 1.1 million]
Children (<15 years)	120 000	[79 000 – 160 000]

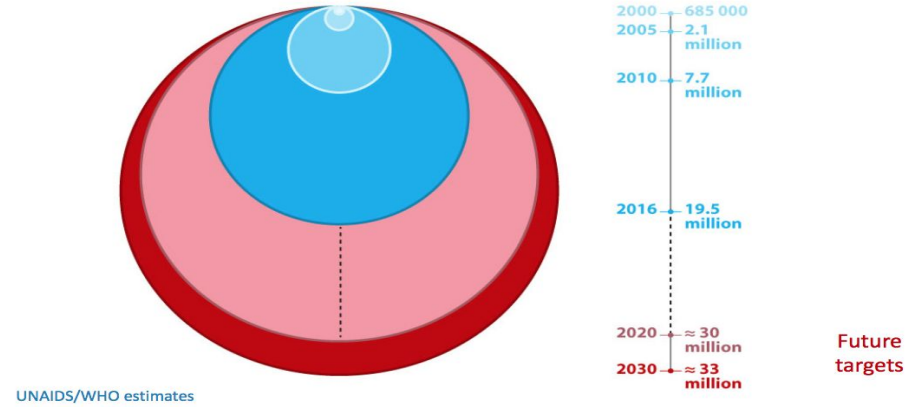
Source: UNAIDS/WHO estimates.

Don't memorize the numbers just have general idea

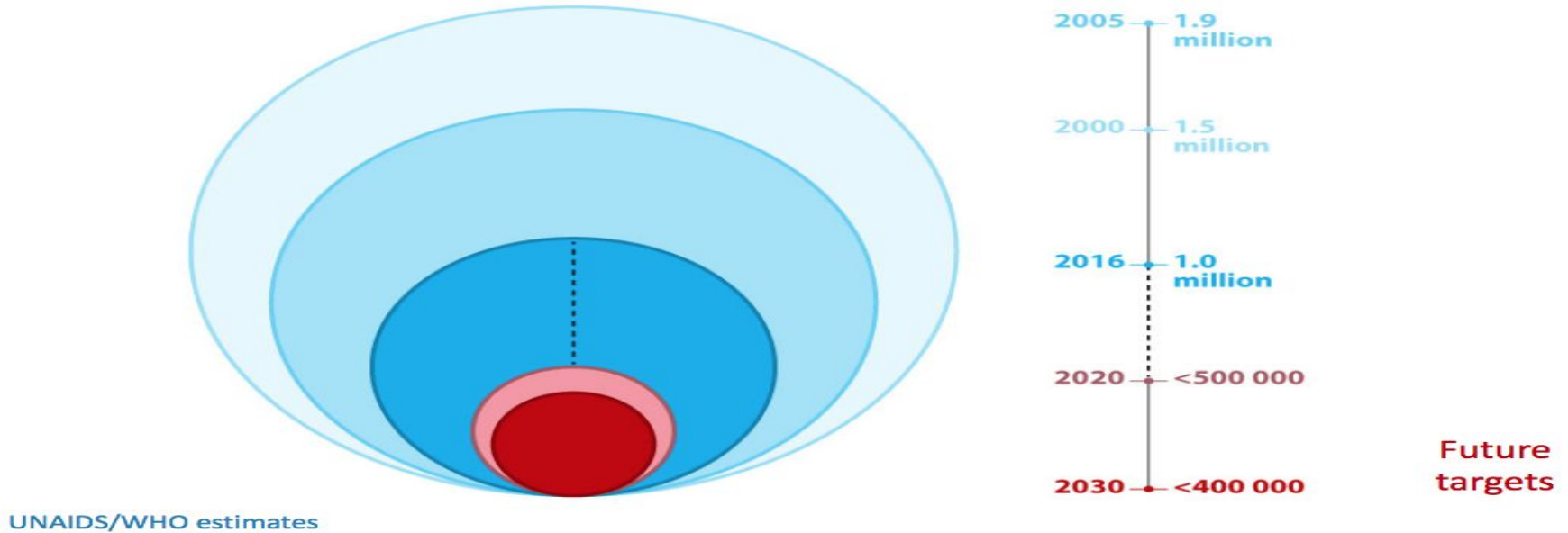
Number of people newly infected with HIV



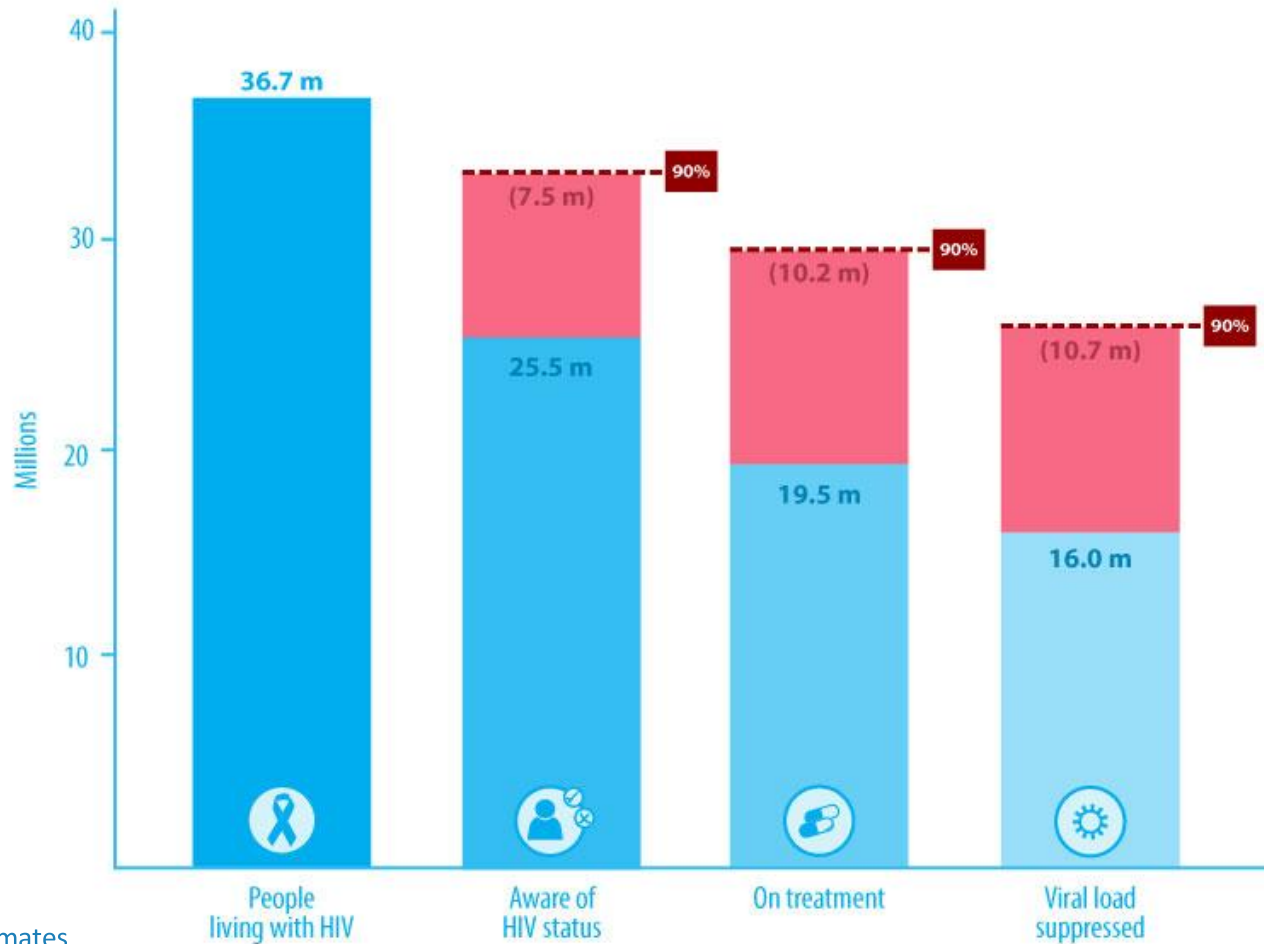
Number of people receiving antiretroviral treatment



Number of people dying from HIV



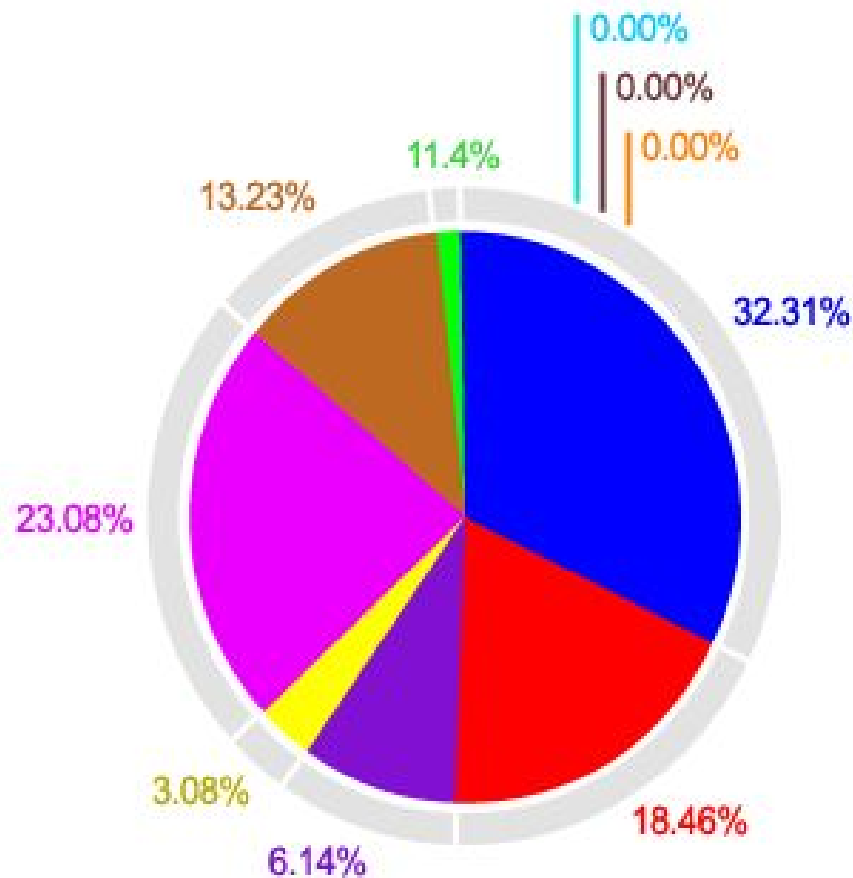
HIV testing and care continuum (2016)



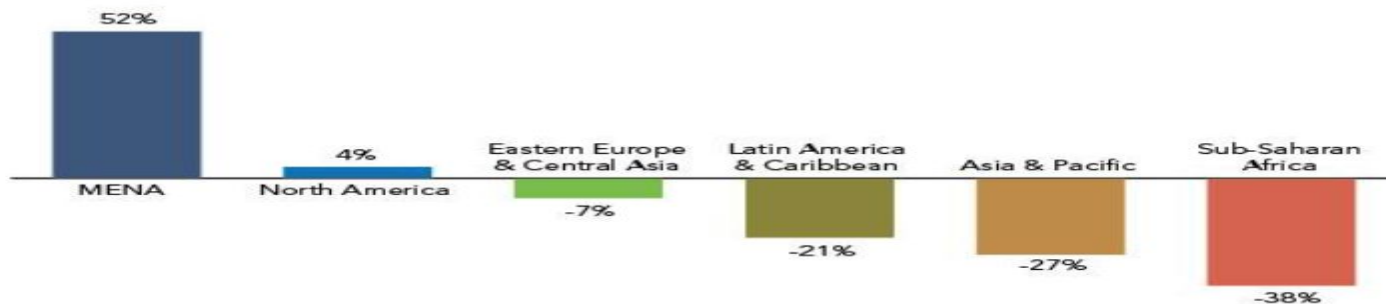
UNAIDS/WHO estimates

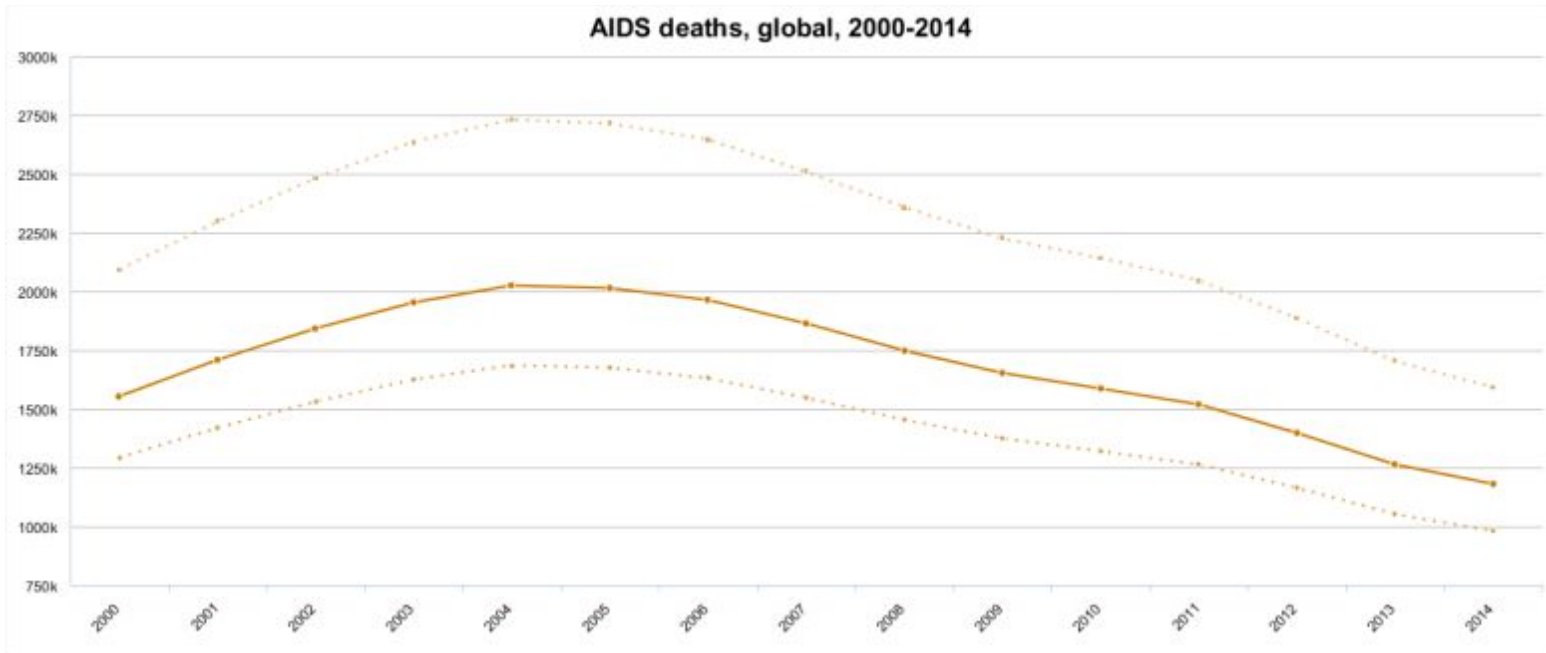
KNOWN ADULT TRANSMISSION ROUTES OF AIDS 2011

- MSM
- MSM/IDU
- IDU male
- IDU female
- Blood products male
- Blood products female
- Heterosexual contact male
- Heterosexual contact female
- Other male
- Other female



Percentage Change in the Annual Number of New HIV Infections by World Region, 2001-2012





Reasons????people are becoming more knowledgeable + prevention measures

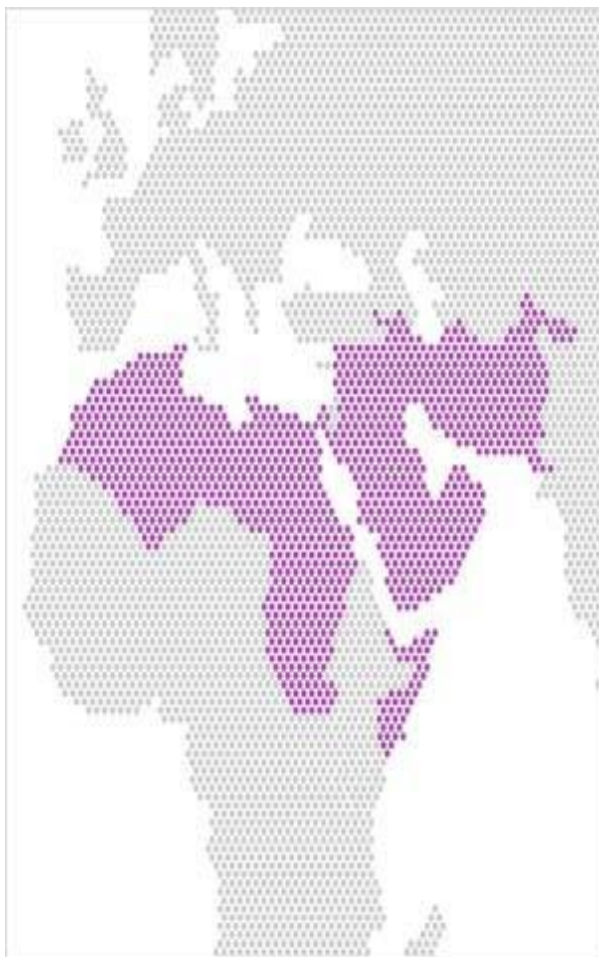
HIV/AIDS PANDEMIC: EMR

(East mediterranean region)

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 in Iran, Libya, Pakistan
- **Age-gender** distribution: predominantly affecting adult (91 %) **males** (71 %)
- **Modes**: **mainly heterosexual** (77 %); **IDU** (injecting drug users) (11 %); blood transfusion (5 %), mother to child (2 %)

HIV AND AIDS IN THE MIDDLE EAST & NORTH AFRICA (MENA)



Middle East & North Africa (2016)

230,000 people living with HIV

0.1% adult HIV prevalence

21,000 new HIV infections

12,000 AIDS-related deaths

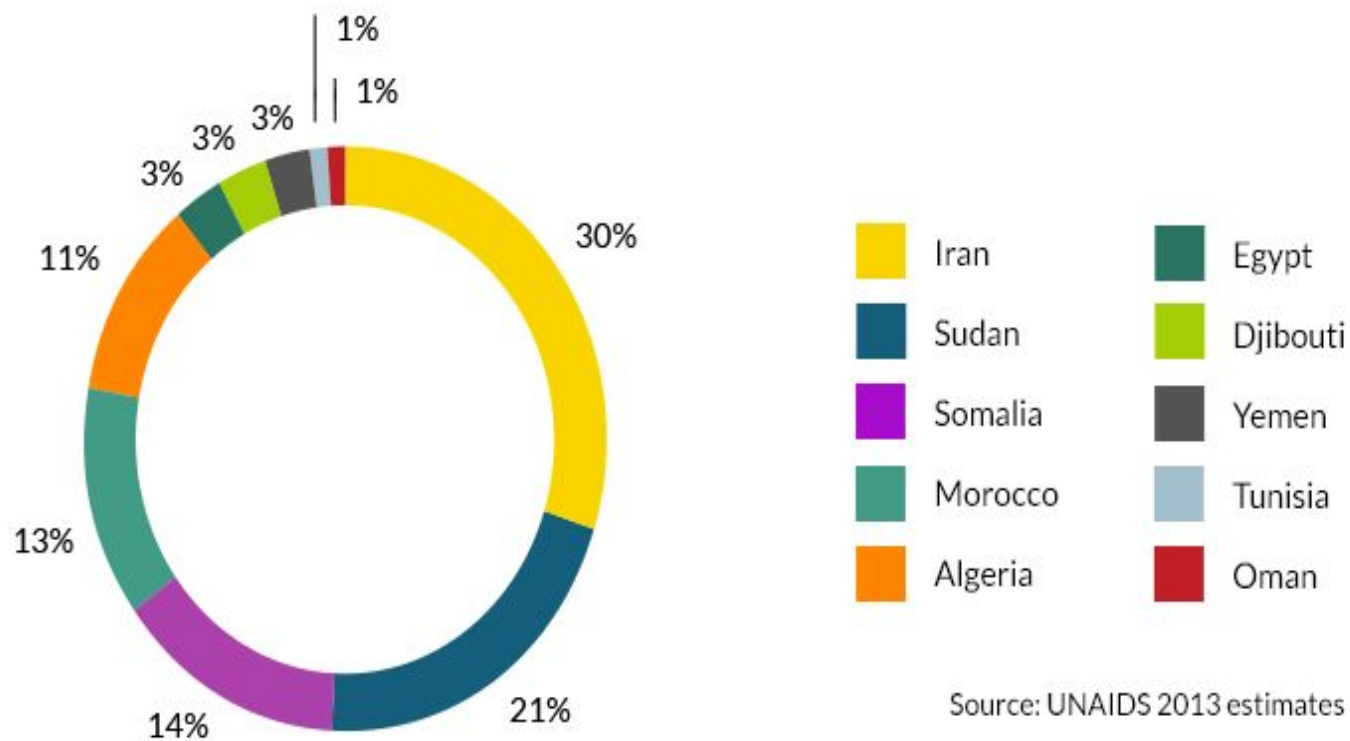
37% know their status

17% on antiretroviral treatment

11% virally suppressed

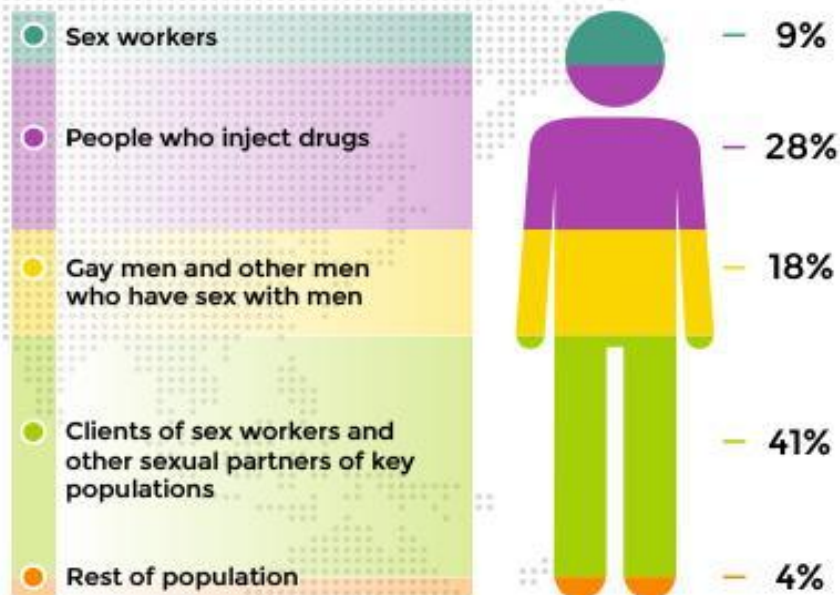
Source: UNAIDS Prevention Gap Report 2016

People living with HIV in the Middle East and North Africa, 2013

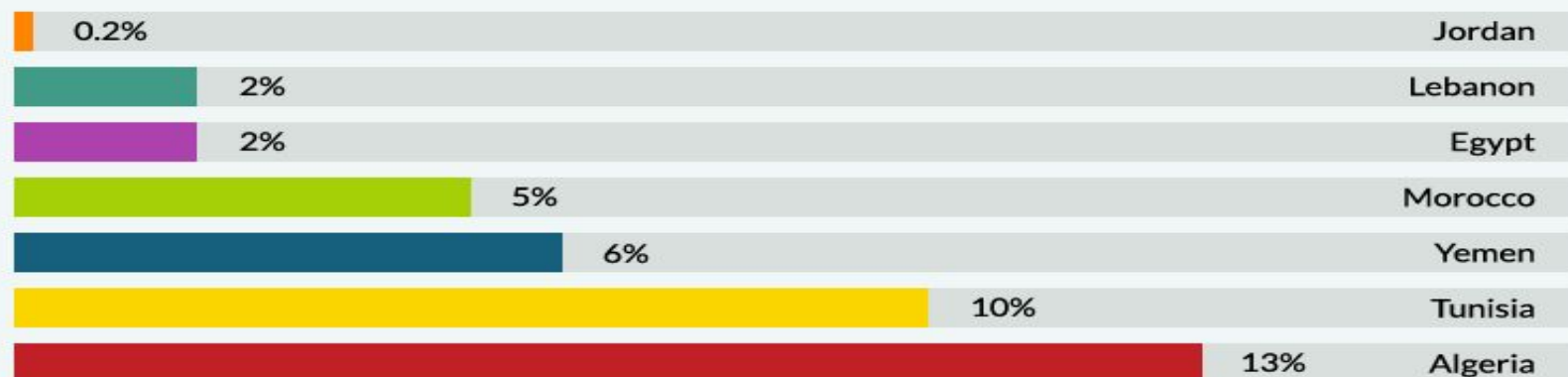


Source: UNAIDS 2013 estimates

Middle East and North Africa



HIV prevalence among MSM from selected countries in the Middle East and North Africa, 2009–2013



Source: Global AIDS Response Progress Reporting 2014.

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

Global initiative



Prevention in the EMR

Eastern region

- MENA, there is still very limited access to HIV testing and counselling. For example, in Sudan, only one in five people living with HIV are aware of their status
- Morocco, the integration of HTC into public health services has increased the number of people accessing testing services from 46,000 in 2010 to 222,620 people in 2012
- Lebanon, efforts to prevent the mother-to-child transmission of HIV have been undermined by a lack of testing services in combination with expensive referral systems, fears around testing, as well as a lack of awareness and stigma
- HIV testing has been offered to women attending antenatal clinics in Oman since 2010, and has an acceptance rate of 99%. Along with the United Arab Emirates and Morocco, Oman has one of the highest testing coverages for pregnant women in the region.

Prevention in the EMR

Iran's [harm reduction programmes](#) have been recognised as good practice in preventing the transmission of HIV among people who inject drugs

In the mid-2000s, the government launched a campaign [distributing clean needles and syringes in pharmacies](#) across the country

- In 2010, 5.7% and 5.9% of men who have sex with men in Cairo and Alexandria respectively were reported to be living with HIV. In these two cities, HIV prevention projects engage and enrol people belonging to key affected populations, particularly men who have sex with men. Upon enrolment, clients become part of a coding system that enables them to access subsidised HIV prevention services such as condoms and lubricants, HIV testing and counselling, medical services, psychosocial support, legal services as well as follow-up support.
- Morocco combines condom distribution, outreach work and HIV testing with a strong online presence. In Marrakesh, there is a speciality clinic for men who have sex with men addressing issues such as sexual health and substance abuse

Prevention in the EMR

In Morocco, in 2012, a preventing mother-to-child transmission (PMTCT) programme. It includes efforts to engage private health providers to offer HIV testing and counselling (HTC) and HIV awareness for pregnant women. basic health facilities had been established to provide HTC services for pregnant women

Barriers to HIV prevention programmes in the Middle East and North Africa

- Cultural and social barriers
 - religious and cultural values, which discourage pre-marital sex, encourage married people to be faithful, and emphasise universal male circumcision
 - some cultural practices exacerbate the spread of HIV including child marriage, polygamy and bans on condom use
 - gender inequality and the low status of women has meant that women and girls have been disproportionately affected by the epidemic
 - high levels of stigma and discrimination drive the epidemic in the region, preventing those living with HIV, and those at high risk of HIV transmission from seeking the treatment and support they need

Barriers to HIV prevention programs in the Middle East and North Africa

- **Political barriers:**
 - political uprisings, Unrest and conflict disrupts
- **Legal barriers:**
 - Punitive laws (homosexual acts are punishable by death, use and the possession of drugs are criminalised)
 - Restrictions on entry, stay and residence (GCC countries)

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 in Saudi Arabia

- HIV and AIDS estimates (2015)
- Number of people living with HIV N/A
- Adults aged 15 to 49 prevalence rate N/A
- Adults aged 15 and over living with HIV N/A
- Women aged 15 and over living with HIV N/A
- Children aged 0 to 14 living with HIV N/A
- Deaths due to AIDS N/A

We have a very limited data (NUMBERS Are Unknown Or Hasn't Been Officially Recognized)

Media and research reports

<http://www.arabnews.com/news/485866>

<http://saudigazette.com.sa/saudi-arabia/95-saudi-women-got-aids-from-their-hubbies/>

Sexual practices of young educated men: implications for further research and health education in Kingdom of Saudi Arabia (KSA).
Hafsa Raheel, Muhammad Afzal Mahmood, Abdulaziz BinSaeed.
Journal of Public Health | Vol. 35, No. 1, pp. 21 –26 |
doi:10.1093/pubmed/fds055 | Advance Access Publication 1
August 2012

<http://jpubhealth.oxfordjournals.org/content/35/1/21.full.pdf+html>

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



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)
 - zidovudine + lamivudine
 - abacavir + zidovudine + lamivudine
 - Lopinavir + ritonavir
 - abacavir + lamivudine
 - tenofovir/emtricitabine
 - efavirenz + tenofovir/emtricitabine
 - rilpivirine + tenofovir/emtricitabine
 - elvitegravir + cobicistat + tenofovir/emtricitabine

Not to be memorized

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)

HIV/AIDS Preventive Measures

PREVENTION OF BLOOD TRANSMISSION

- ◆ Safety measures & screening at every stage
- ◆ Voluntary un-paid donors only
- ◆ Transfusion, only when needed
- ◆ Careful history-taking and physical examination

HIV/AIDS Preventive Measures

PREVENTION OF PERINATAL TRANSMISSION

- 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.

MCQ:

-Q1: What is the difference between necessary and sufficient cause? (write few lines)

Necessary cause: The outcome will never happen without the cause.

Sufficient cause: Each time it occurs; the outcome will follow.

EXAMPLE: A person must be infected with HIV before they can develop AIDS. HIV is therefore a necessary cause of AIDS; however, since every person with HIV does not develop AIDS, it is not sufficient.

-Q2. What is currently the most important mode of transmission of HIV/AIDS in eastern Mediterranean region?

a. Heterosexual b. Homosexual c. Blood transfusion d. Intravenous drug use

Answer: A

-Q3. what is the most efficient mode of transmission of HIV/AIDS ?

A.blood transfusion

B.needle prick

C.perinatal

D.sexual

Answer:D

-Q4. what is the predominant route of transmission of hiv/aids infection in KSA ?

A-intravenous drug

B-mother to fetal transmission

C-sexual intercourses

D-blood transfusions

Answer:c