

**Sexually transmitted  
diseases**

**STD**

**sexually transmitted  
infection (STI)**



# Session objectives

- What is STD (STI)?
- Why it is important?
- Commonest complications
- Classification(Etiological & Syndromic )
- Diagnosis
- Syndromes & the STD causing them
- How are STD transmitted
- Gonorrhoea, Non-specific urethritis, Chlamydia infection & AIDS

**STI** is an illness that has a significant probability of transmission between humans by means of human sexual behavior.

While in the past, these illnesses have mostly been referred to as **STDs or VDs**

**STD** are very common.

The most widely known are gonorrhea, syphilis and AIDS but there are more than 35 MO transmitted by sexual contact.

WHO: > 330 million new cases/yr.

About 1 million infections/day

## **Why it is important?**

1. Disease burden.
2. Links between STD & HIV.
3. Serious complication.

STD can be devastating; in women they can be fatal.

**Commonest complications include:**

1. Infertility; &
2. Blinding eye infections or pneumonia in infants
3. Sepsis, ectopic pregnancy and cervical cancer death
4. Spontaneous abortion, adverse pregnancy outcomes.
5. Urethral stricture
6. Social consequences

# Etiological classification of STDs:

## Bacterial infections

- a) *N. gonorrhoea* (G.C)
- b) *T. pallidum* (syphilis)
- c) *H. ducreyi* (chancroid)
- d) Group B streptococci

## Viral infections

- a) HIV
- b) Hepatitis B virus
- c) Herpes simplex v.
- d) Human papilloma (HPV)
- e) Molluscum contagiosum

## Parasitic infections

- a) *T. vaginalis*
- b) Pediculosis
- c) Scabies

## Chlamydial infections

- a) Non-specific urethritis (non-gonococcal urethritis) NSU
- b) Lymphogranuloma venereum
- c) *Chlamydia trachomatis*

## Fungal infection

*Candida albicans*

## Mycoplasma

*M. hominis* (NSU)

# Syndromes & the STD causing them

<b>Syndrome</b>	<b>Cause of STD</b>
<b>Urethral discharge (men)</b>	<b>Gonorrhea</b> <b>Chlamydial infection</b>
<b>Vaginal discharge</b>	<b>Trichomoniasis</b> <b>Bacterial vaginosis</b> <b>Candidiasis</b> <b>Gonorrhea</b> <b>Chlamydial infection</b>
<b>Ulcer/s</b>	<b>Syphilis</b> <b>Chancroid</b> <b>Herpes</b> <b>FDE</b>
<b>Lower abdominal pain</b>	<b>Gonorrhea</b> <b>Chlamydial infection</b> <b>Anaerobic bacteria</b>

# Syndromic classification of STDs

This approach includes the syndromic management of STD, using the **flow-charts**. It offers many **benefits**:

1. All trained 1<sup>st</sup> line service providers can diagnose and treat patients with STD
2. Deliver comprehensive care to patient by following all instructions in the chart.
3. Management of partner.
4. Health education (safe sex)



Patient complains of urethral discharge

Examine: milk urethra  
If necessary

Discharge  
Confirmed?

No

Ulcer (s)  
Present?

No

- Educate
- Counsel if needed
- Promote/provide condoms

yes

yes

Use appropriate  
Flow-chart

- Treat for gonorrhea & Chlamydia:  
Ciprofloxacin 500 mg in a single  
dose AND Doxycycline 100 mg by  
mouth twice daily for 7 days
- Educate
- Promote/provide condoms
- Partner management
- Return if necessary

- **How are STD transmitted:**

- 1- Human **sexual** behavior, unprotected

- 2- Transfusion or contact with **blood** (syphilis, HIV).

- 3- **Mother-to-child**: pregnancy (syphilis, HIV, HB), at delivery (gonorrhea & Chlamydia, HIV), or after birth (breastfeeding) (HIV, HB).

- 4- Some STIs can also be transmitted via the use of **IV drug needles** after its use by an infected person.

# Gonorrhea

45% of G. patients have also Chlamydial infection

**Male** Some may have no symptoms at all.

However, some have signs or symptoms that appear two to five days after infection; symptoms can take as long as 30 days to appear(include a burning sensation when urinating, or a white, yellow, or green discharge from the penis).

Gonorrhea may complicated with orchitis, epididymitis and proctitis.



- **Female** 80 – 90 % asymptomatic (source of infection), only 10% vaginal discharge, bartholinitis, cervicitis 20% uterine invasion endomateritis and salpingitis, pelvic inflammatory disease (PID)& urethritis.

- **Systemic complications:**
  1. Ophthalmia neonatorum & conjunctivitis.
  2. Pneumonia and pharyngitis.
  3. septicemia, arthritis, endocarditis and other.

# Gonorrhea

**Agent:** *N. gonorrhoeae*

## **Communicability:**

Remain infectious for months if unRx

Effective Rx ends communicability within hours.

## **Treatment:**

ciprofloxacin 500 mg single dose or

spectinomycine 2 gm IM single dose

+ Doxycycline 100 mg / twice/ 7 days or

erythromycin 500 mg \*4 / 7days

## Non-specific urethritis

### (non-gonococcal urethritis) NSU

- **Bacterial;** The most common bacterial cause of NGU is **chlamydia trachomatis** 50 – 60 %, but it can also be caused by **Ureaplasma urealyticum** 10-20%, **Haemophilus vaginalis**, and **Mycoplasma genitalium**.
- **Viral;** **Herpes simplex virus** (rare), **Adenovirus**,
- **Parasitic;** Parasitic causes include **Trichomonas vaginalis** (rare).
- **Noninfectious;** Urethritis can be caused by mechanical injury (from a urinary catheter or a **cystoscope**), by an irritating chemical (**antiseptics** or some **spermicides**).

## Chlamydial infection

Its an obligate intracellular bacteria, sensitive to broad spectrum Antibiotics

- *C. psittaci* Psittacosis
- *C. trachomatis*:
  1. Trachoma
  2. Genital infection (NSU in male and cervical infection in female) same presentation as G.C
  3. *C. conjunctivitis*
  4. Infant pneumonia
  5. Lymphogranuloma venerium (other serotype)
- *C. pneumoniae* pneumonia



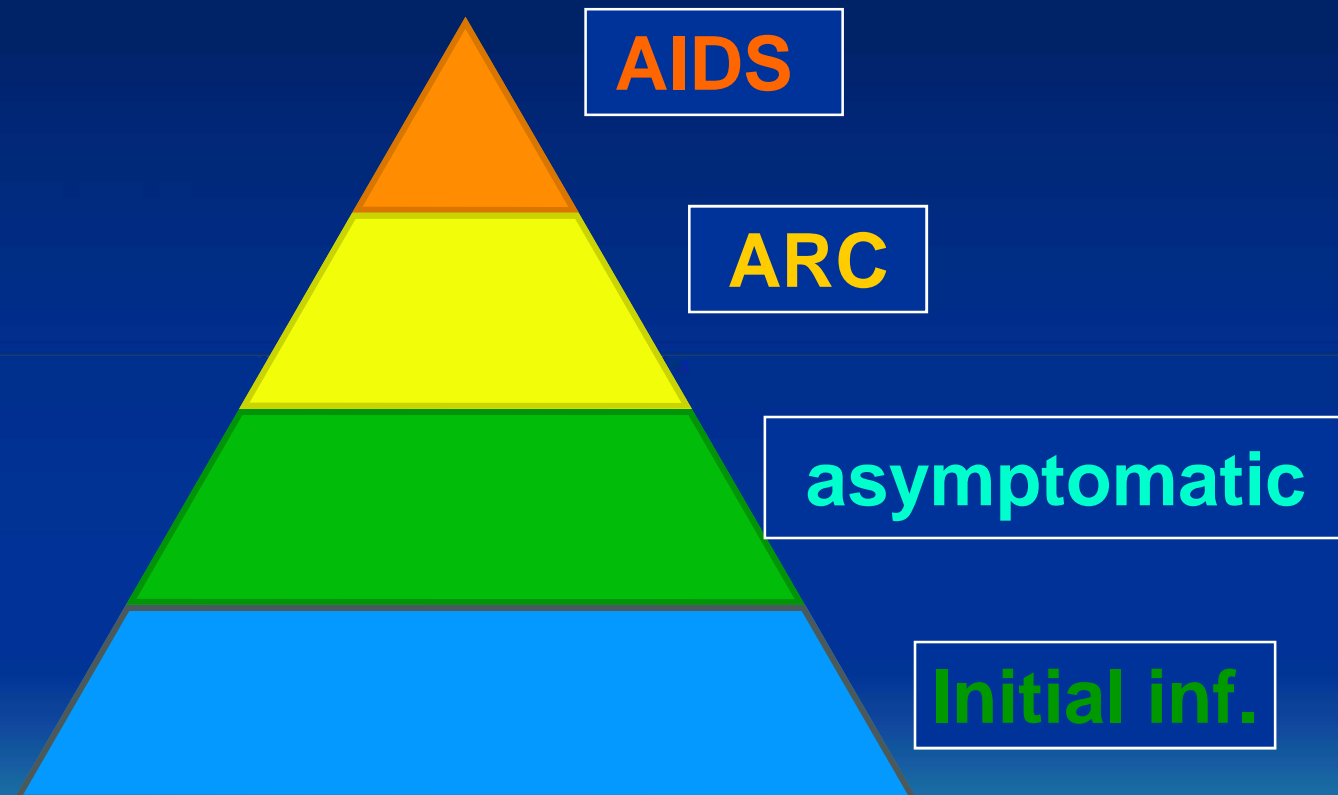
## Treatment ;

- is based on the prescription and use of the proper **antibiotics** depending on the strain of the ureaplasma.
- Because of its multi-causative nature, initial treatment strategies involve using a broad range antibiotic that is effective against chlamydia (such as doxycycline).
- It is imperative that both the patient and any **sexual contacts** are treated.

AIDS



# Spectrum of diseases caused by HIV infection



- **AIDS** ; Its 1<sup>st</sup> recognized 1981.
- AIDS reduces the body's immunity and ability to fight disease.
- People with HIV/AIDS are susceptible to problems such as **pneumonia, tuberculosis, certain tumors, and diarrhea** (bacterial pneumonia is one of the commonest presentation)
- HIV+ person can pass HIV to others.
- Over 90% of HIV infection; develop AIDS(if?).
- CFR of unRx AIDS is 80 -90 % . Die within 1-3 year.



## AIDs:

- ☹ Depletion of T-helper lymphocytes (CD4)
- ☹ Hypergammaglobulinaemia
- ☹ Opportunistic infection (e.g. *Pneumocystis carinii*) & *Kaposi's sarcoma* . Africa –GI system and TB

*May include:*

Fever

Lymphadenopathy

Night sweating

Head ache & cough

AIDs dementia → 1/3 patient if progressive →  
incontinence & paraplegia

➤ HIV +ve → remain +ve life long

➤ No vaccine has developed & fully tested yet (under trials).

# 1. Dx

1. Clinical

2. Serological:

HIV AB detected within 1 -3 months after infection by **ELISA** and Western blot test. This gap time called **window period** (i.e. from infection and before detection of AB). Some time we repeat test for conformation

3. virus isolation

4. CBP:

A. Lymphopenia

B. Anemia

C. Thrombocytopenia

D. ESR

## Blood Detection Tests

HIV enzyme-linked immunosorbent assay (ELISA)	Screening test for HIV Sensitivity > 99.9%
Western blot	Confirmatory test Specificity > 99.9% (when combined with ELISA)
HIV rapid antibody test	Screening test for HIV Simple to perform
Absolute CD4 lymphocyte count	Predictor of HIV progression Risk of opportunistic infections and AIDS when <200
HIV viral load tests	Best test for diagnosis of acute HIV infection Correlates with disease progression and response to HAART



## Diagnosis;

- WHO disease staging system
- CDC classification system
- HIV test

## WHO disease staging system

- **Stage I:** HIV infection is **asymptomatic** and not categorized as AIDS
- **Stage II:** includes minor **mucocutaneous** manifestations and **recurrent upper respiratory tract** infections
- **Stage III:** includes unexplained **chronic diarrhea** for longer than a month, severe bacterial infections and pulmonary tuberculosis
- **Stage IV:** includes **toxoplasmosis of the brain**, **candidiasis** of the esophagus, trachea, bronchi or lungs and **Kaposi's sarcoma**; these diseases are indicators of AIDS.

- **CDC classification system** (AIDS include all HIV positive people with a CD4<sup>+</sup> T cell count below 200 per  $\mu\text{L}$  of blood or 14% of all lymphocytes)
- **HIV test** (detect anti-HIV antibody (IgG and IgM) and the HIV p24 antigen), Detection of the virus using polymerase chain reaction (PCR) during the window period is possible.



## **2. Infectious agent:**

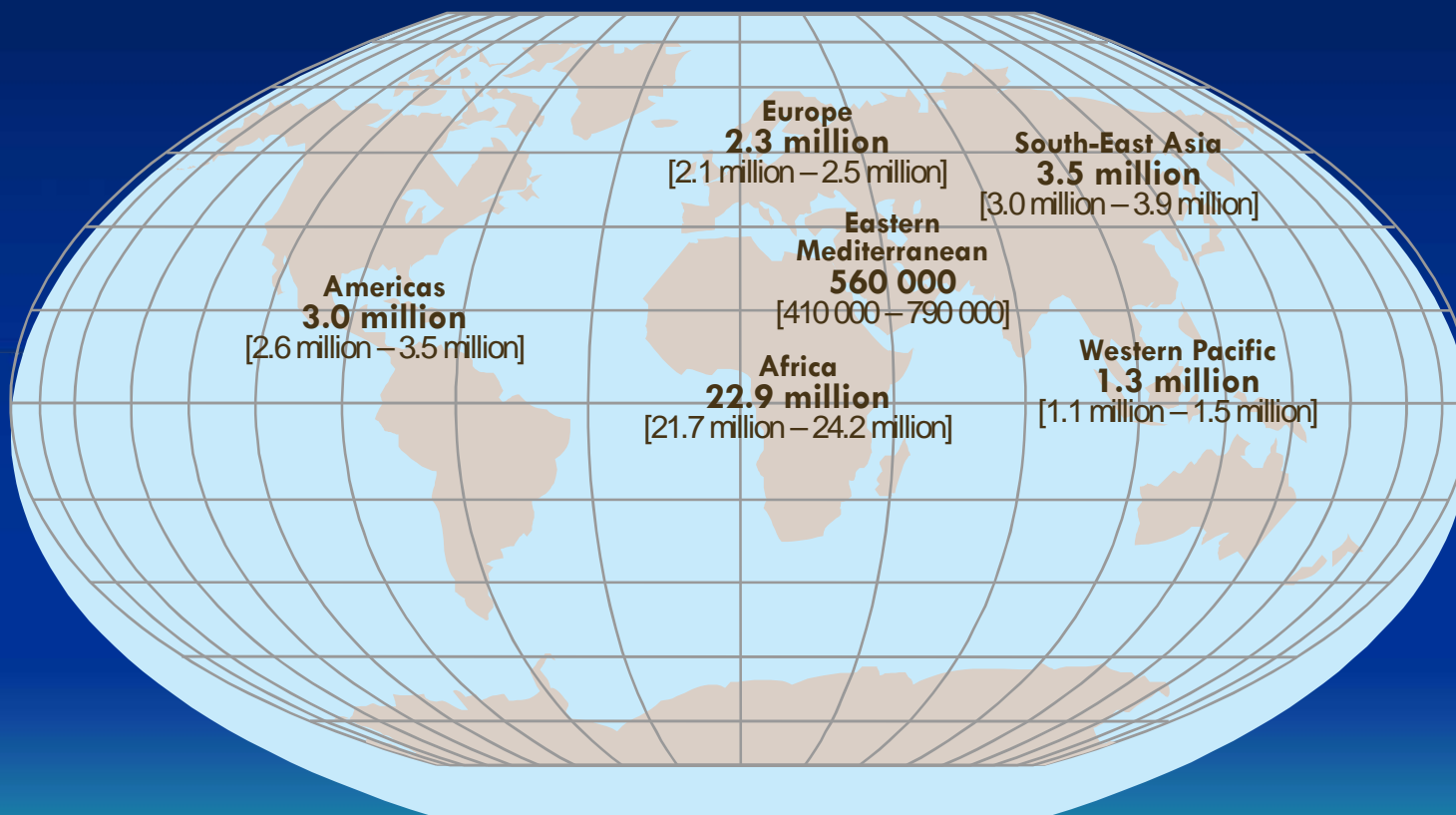
### **Human immunodeficiency virus (HIV)**

#### **A retro-virus, HIV-1 and HIV-2.**

- HIV-2 less pathogenic, slower disease progression and lower rates of mother to child transmission.
- Replicate in actively dividing T4 lymphocyte
- Can destroy T4 (helper cells ) which plays key role of regulating the immune system
- Can spread through the body & pass blood –brain barrier
- Easily killed by ether, acetone, ethanol 20%
- Relatively resist UV & ionizing radiation

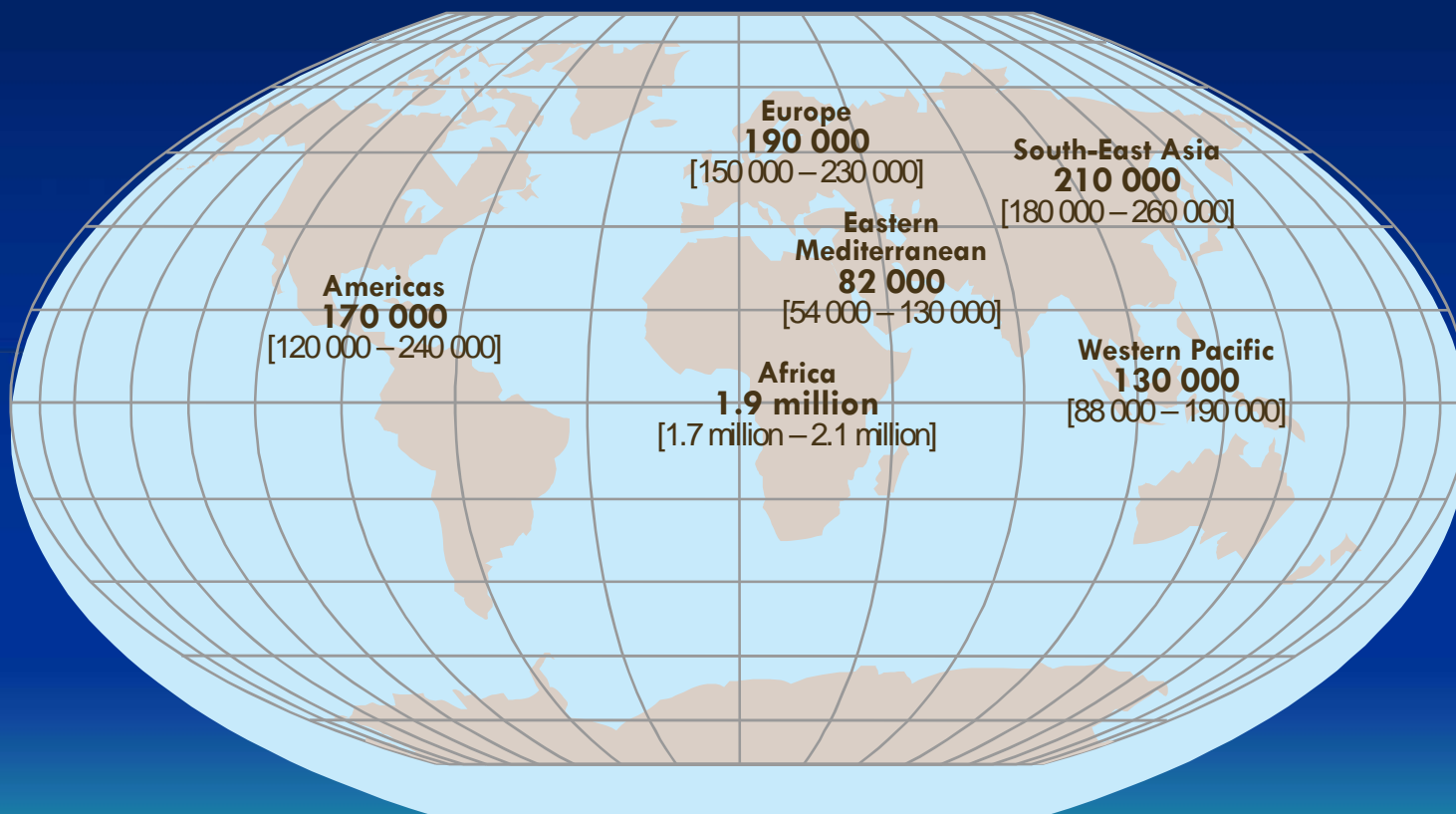


# Adults and children estimated to be living with HIV, by WHO Region, GLOBAL HIV/AIDS RESPONSE Epidemic update



**Total: 34.0 million [31.6 million – 35.2 million]**

# Estimated number of adults and children newly infected with HIV, by WHO Region, GLOBAL HIV/AIDS RESPONSE Epidemic update



**Total: 2.7 million** [2.4 million – 2.9 million]

## 3. Occurrence:

### Global summary of the AIDS epidemic | 2011

Number of people living with HIV	Total	34.0 million [31.4–35.9 million]
	Adults	30.7 million [28.2–32.3 million]
	Women	16.7 million [15.4–17.6 million]
	Children (<15 years)	3.3 million [3.1–3.8 million]

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People newly infected with HIV in 2011	Total	2.5 million [2.2–2.8 million]
	Adults	2.2 million [1.9–2.4 million]
	Children (<15 years)	330 000 [280 000–390 000]

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AIDS deaths in 2011	Total	1.7 million [1.5–1.9 million]
	Adults	1.5 million [1.3–1.7 million]
	Children (<15 years)	230 000 [200 000–270 000]



World Health  
Organization



UNAIDS

unicef



**4. Reservoir: Humans.**

**5. Mode of transmission:**

**HIV is transmitted by:**

- 1. Sexual rout – Most common (homo, heterosexual, vaginal, anal or oral sex)**
- 2. Blood & blood products**
- 3. Mother to her child (intrauterine, labor and milk).**

## Blood

Whole blood, platelets, factor 8 & 9, plasma.

No evidence of risk for albumin and immunoglobulin

Risk of transmission from infected one pint of blood is  
> 95% and it is dose related.

Risk of skin piercing is much less than of blood  
transfusion





# Sexual

## Risky behaviors:

The risk of transmission of HIV via sexual intercourse is much lower than other STD.

every single act of unprotective intercourse with HIV infected person 1 % risk of infection to the partner, however this risk increased by:

1. Presence of other STD specially ulcerative types as chancroid 2-5 times, syphilis 3-9 times
2. Gender: Male female twice female male due to higher concentrations of HIV in semen than vaginal secretions & larger vaginal surface area

3. Age of uninfected partner:
  - A. Female > 45 years high risk due to thin mucosa
  - B. Adolescent girls high risk due to less effective cervix barrier
4. High risk in very early (window period) & very late infections. Because level of virus in blood is higher than other times.
5. Type of sexual act: anal sex Higher risk abrasions/ trauma. Also during menstruation
6. Low risk in circumcised males (8 folds in uncircumcised)



## **Vertical**

Placenta , delivery & breast feeding.

Risk is up to 30%.

Rx of infected pregnant with zidovudine  
marked decrease of infant infection.

Risk increase in early & late infections  
& when there is cracks in the nipple,  
prematurity (<34W), maternal anemia and  
chorio-amnitis.

## HIV is not transmitted by:

1. Casual contacts as in work , school,...
2. Hand shaking & touches
3. Sneezing & coughing
4. Insects
5. Food /water & cups /spoons
6. Bathes /lavatories
7. Swimming pools
8. Second hand clothing
9. Telephones

The virus found occasionally in saliva, tears, urine and bronchial secretion but transmission is not reported after contact with these secretions.

**6. I.P** : variable

HIV AIDS < 1 year – 15 years or longer

In infants shorter I.P than adults

**7. Period of communicability:**

Unknown, early after onset of HIV infection through out life.

**8. Susceptibility:**

general + risky behavior

## 9. Method of control:

### A- Preventive measures:

HIV/AIDS prevention programs can be effective only with full community and political commitment to change and/or reduce high HIV-risk behavior.

- 1) Health education of public and schools
- 2) Avoid extra marital sexual intercourse, otherwise use condoms.
- 3) Adequately sterilization of syringes and needles and lancets, use disposable equipment whenever possible, wear gloves, eye protection and other protective equipment.

## A- Preventive measures:

- 4) In blood bank, all donors should be tested for HIV AB; reject all donors with a:
  - i. Risky persons
  - ii. History of injecting drug users or drug addicts.
- 5) WHO recommends immunization of asymptomatic HIV-infected children with routine schedule of vaccinations; those who are symptomatic should not receive BCG vaccine.

## **B- Control of patient, contacts and environment:**

- 1. Reporting :** is obligatory in most of countries
- 2. Isolation:** for HIV +ve individuals is unnecessary, ineffective and unjustified.  
universal precautions to prevent exposures to blood and body fluids for all hospitalized patients.
- 3. Disinfection:** of equipment contaminated with blood or infectious body fluids.
- 4. Quarantine:** not applicable. Patients and their sexual partners should not donate blood, plasma, organs or breast milk for human milk banks.



**5. Immunization of contacts:** not applicable

**6. Notification of contacts and source of infection:** the infected patient should ensure notification of sexual and needle sharing partners whenever possible.



## 7. Specific treatment:

- Prophylactic Rx of *P. carinii* pneumonia by methoprim. Check for TB infection.
- **Antiretroviral treatment (ARV):** complex, combination of drugs, drugs are toxic and treatment must be for life. It suppress viral replication and start the Rx aggressively.



- Typical regimens consist of two nucleoside analogue reverse transcriptase inhibitors (NARTIs) plus either a protease inhibitor or a non-nucleoside reverse transcriptase inhibitor (NRTIs) should be started (zidovudin & lamivudin + indinavir).



- Post exposure prophylaxis after accidental exposure to blood (zidovudine + lamivudine) 4weeks
- For fetus of infected mother (prevention in the newborn): zidovudine(ZVD) At the beginning of 2<sup>nd</sup> trimester, during labor and post-delivery (Cs is advised) risk to 8.3%.



# HIV and TB

☹️ Infected children or adult (latent T.B) life time risk of T.B is 10 %

But latent T.B + HIV 60-80% life time risk of T.B.

This interaction has resulted in parallel pandemics of dual infection of TB + HIV in some sub-saharan Africa where 10-15% of adults has both infections.

☹️ TB is one of the opportunistic infection in AIDS patients

☹️ No conclusive data indicate that any infection, including *M. tuberculosis*, accelerate progression to AIDS in HIV infected persons.

