

Hiv aids hiv aids
(bhurgri). hiv
structure: hiv is



**ASSIGN
BUSTER**

HIV/AIDS Case study Introduction: HIV/AIDS is a serious health issue across the globe. HIV is exceptionally epidemic, target of HIV is human line of defense i.e. our immune system. It has been seen that HIV/AIDS has high prevalence rate in developing states. Poverty, lack of community education, hunger, lack of medical measurements, high illiteracy ratio are key factors that triggered high incidence rates of HIV/AIDS (Bhurgri).

HIV Structure: HIV is a retrovirus, categorized in separate genus lentiviruses and belongs to family Retroviridae. This genus contains a large number of infectious agents particularly infecting animals. Electron Microscopy reveals that HIV has core shaped, core is made up of p25 (or p24) Gag protein (Leis et al., 1988). Nucleotide is in form of 2 identical RNA strands within which reverse transcriptase is present (Gelderblom et al., 1987; Haase, 1986; Levy, 1986). **HIV Genome information:** HIV is retrovirus, which packs two copies of unspliced RNA. Viral RNA as dimer, both dimerization and packing is mechanically coupled (Luet al., 2011).

It is believed that due to cross species events both HIV 1 and HIV 2 were evolved (Keele et al., 2006). Pandemic HIV is classified into 9 subtypes. It has many recombinant forms, whereas 2 or more than two subtypes encode their genetic makeup (Thomson and Nájera, 2005). It's a greatest challenge for Therapeutic companies to design effective therapeutic drug against HIV 1 due to continuously changing genetic makeup by HIV 1 (Korber et al.

, 2001). Dominant subtype C makes up 55 to 60% of worldwide HIV infections (Thomson and Nájera, 2005). Whereas Non subtype B isolates differ

from subtype B isolates in terms of viral genetic makeup (Blackard et al., 2002; Centlivre et al., 2006; Laeyendecker et al., 2006).

Estimated size of HIV genome is 9.8 kb. Gag, Pol and Env are basic viral proteins of HIV, translated by primary transcript of virus mRNA, which upon proteolytic cleavage give rise to different sets of proteins needed by HIV.

Synthesis ratio of Gag, Gag-pol products is 20: 1 (Luftig and Lupo, 1994). Regulatory proteins Tat, Rev also known as RNA binding proteins control optimal activity upon interacting with cellular factors. Negative factor Nef involved in down regulation of viral expression. Vif, Vpr, Vpu/Vpx have important role in viral assembly, packing, budding and synthesis of viral infectious agents (Levy, 1993). HIV Pathogenicity: HIV is capable of downregulating innate, adapted and intrinsic immunity (Bieniasz, 2004; Mahalingam et al.

, 2002). HIV life cycle is too complicated. Its time duration, possible damaging effects to cell depends upon type of cell and cell activation (Johnson and Coffin, 1999). Initially HIV upon reaching to cellular components (gp 120 is 1st protein that interacts with cell's CD4+ receptor) poses no lethal effects but entry of HIV triggers intracellular transduction pathways which in turn might be beneficial in viral genome replication (Balabanian et al., 2004; Cicala et al., 2002).

HIV is too clever to enter in human cells by neutralizing and hiding from different types of immunological factors and pathways, systems (Barré-

Sinoussi, 1996; Emerman and Malim, 1998; Howley, 1996). HIV Prevalence globally: 38.6 million people are estimated with HIV 1 globally.

25 million deaths have been reported up till now. South Africa is still hot spot of HIV pandemic with significantly high rate of HIV 1 infection (Simon et al., 2006).

S. NO Year New HIV infection HIV related Deaths People living with HIV 1

2001 3.4 million 1.9 million 30.0 million 2 2002 3.3 million 2.1 million 31.

0 million 3 2003 3.1 million 2.2 million 31.70 million 4 2004 3.0 million 2.3 million 32.2 million 5 2005 2.9 million 2.

3 million 32.5 million 6 2006 2.8 million 2.3 million 32.

8 million 7 2007 2.7 million 2.2 million 33.

2 million 8 2008 2.6 million 2.1 million 33.5 million 9 2009 2.6 million 2.0 million 34.0 million 10 2010 2.

5 million 1.9 million 34.4 million 11 2011 2.

5 million 1.8 million 34.9 million 12 2012 2.

3 million 1.6 million 35.3 million S. NO Region New HIV infection HIV

related Deaths People living with HIV 1 Eastern and southern Africa 79000

million 420000million 19.4 million 2 Western and central Africa

370000million 310000million 6.1 million 3 Middle East and North Africa

18000 million 11000million 230000million 4 Asia and the Pacific

270000million 170000million 5.

1 million 5 Latin America 97000 million 36000million 1. 8 million 6 Caribbean 18000 million 9400 million 310000million 7 Eastern Europe and central Asia 190000million 40000million 1. 6 million This data is according to(Organization, 2017) . HIVprevalence in Pakistan: Pakistan is largelyinfected by HIV/AIDS due to unsafe blood transfusions, sharing of commonsyringes and needles, unsafe sex, and with low level of condom usage, highnumber of afghan refugees on border areas, truck drivers who move to remotedeareas and do not acknowledge safe sex measures, local migrants presence, highrate of sexually transmitted diseases and then there is no more proper sexuallytransmitted care centers to deal these issues (Bhurgri). S.

NO Year New HIV infection HIV related Deaths People living with HIV 1 2005 9400 <100 <100-<100 12000 2 2010 14000 1300 <1000-1800 66000 3 2015 19000 5500 4500-6600 13000 This data is according to(Johnston et al., 2015). Treatmentby Drugs: ART (antiretroviraltreatment) is best and most effective choice to control HIV/AIDS. It not onlylessens death ratio but also significantly suppresses viral replication withlong lasting impact. 20 antiretroviral drugs have been approved by FDA whichspecifically targets DNA dependent polymerase or proteases (Lalezari et al., 2003; Lazzarin et al.

, 2003). HIV 1 is prone tocontinuously changing its genome so only single drug is not effective against HIV. Highly active antiretroviral treatment is now being used because of highobserved genetic mutation rate in HIV. A combination of multiple potent drugsis being used to at least delay resistance against HIV.

HAART is being highly used by modern and developed countries which ultimately resulted in low death rates (Hogg et al., 1998; Mocroft et al., 1998; Palella Jr et al., 1998). Conclusion: HIV/AIDS is global issue.

HIV mainly targets cells that possess CD4 receptors. Every year millions of people around the world are infected by HIV and millions of cases of deaths are reported. Local governments must take preventive measures and active participation of community by providing community education is necessary to control this infectious disease. People must be educated about transmission routes of HIV/AIDS including hetero transmission, intravenous drugs usage, sexual transmission. Proper diagnosis and antiviral treatment can reduce mortality rate.