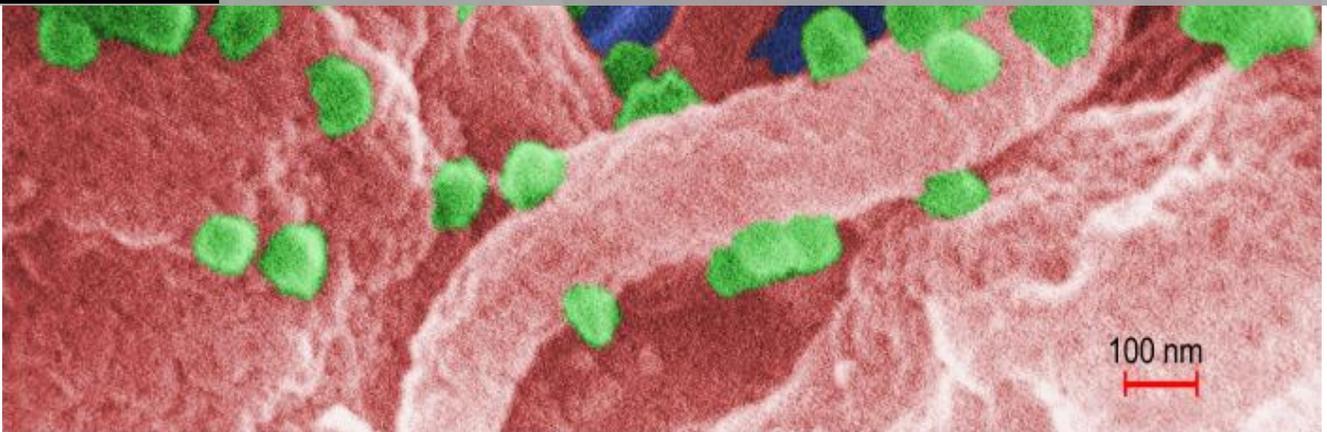


HU CFAR

BASIC HIV COURSE EXAMINATION



Harvard Global Health Institute

# Basic HIV Course Exam

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The mission of the Harvard University Center for AIDS Research (HU CFAR) is to expand, promote, and facilitate collaborative, multidisciplinary activities in HIV/AIDS research, education and training among CFAR members and associate members throughout the University, in order to help end the AIDS pandemic.

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## Epidemiology:

1. What Country has the most people living with HIV?
  - a. Swaziland
  - b. South Africa
  - c. Lesotho
  - d. Botswana
  - e. China
  - f. India
  
2. How many people in that country are estimated to be HIV positive?
  - a. 300,000
  - b. 1.8 Million
  - c. 5.8 Million
  - d. 8.2 Million
  - e. 12 million
  
3. What is the estimated Antenatal Clinic HIV prevalence rate in KwaZulu Natal, South Africa?
  - a. 11%
  - b. 25%
  - c. 35%
  - d. 40%
  - e. 50%
  
4. What age and gender group has the highest incidence of HIV in South Africa?
  - a. Males 15 – 24
  - b. Females 15 – 24
  - c. Males 25 – 34
  - d. Females 25 – 34
  - e. Males < 15
  - f. Females < 15
  
5. In 2010 the life expectancy in South Africa was \_\_\_\_\_ (compared to 1995.)
  - a. Decreasing
  - b. Increasing
  - c. Unchanged
  - d. Unable to be calculated

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## **Prevention:**

1. Which of the following does NOT transmit HIV?
  - a. Unprotected sexual intercourse
  - b. Sharing of needles / sharp objects
  - c. Blood transfusion
  - d. During delivery of a child
  - e. Breast feeding
  - f. None of the above (all of these can transmit HIV)
  
2. Which of the following can transmit HIV?
  - a. Coughing / sneezing
  - b. Insect bites
  - c. Kissing
  - d. Sharing public toilets
  - e. Sharing cups, glasses, plates, forks
  - f. None of these can transmit HIV
  
3. Which body fluids that can potentially transmit HIV infection?
  - a. Spinal fluid
  - b. Saliva
  - c. Sputum
  - d. Urine
  - e. Vomit
  
4. What is the LEAST important factor in HIV transmission for needle stick injuries?
  - a. Depth of the injury
  - b. A device visibly contaminated with the patient's blood
  - c. CD4 count of index patient
  - d. Needle placement in a vein or artery
  - e. Viral load of index patient
  
5. Which of the following is NOT a proven method of HIV prevention?
  - a. Daily oral tenofovir for heterosexual females
  - b. Daily oral tenofovir for homosexual males
  - c. Tenofovir gel for heterosexual females
  - d. Male and Female Condoms
  - e. Single dose nevirapine taken by pregnant women during labor
  - f. Male circumcision

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## **RSA Guidelines:**

1. Which of the following would NOT qualify an adult for ART in South Africa based on the National treatment guidelines?
  - a. Extensive Herpes Zoster (Shingles)
  - b. CD4 190 in asymptomatic patient
  - c. CD4 288 in a male with pulmonary TB
  - d. CD4 of 325 in a pregnant female
  - e. Kaposi Sarcoma limited to the skin
  - f. Abdominal TB
  
2. Which of the following would NOT qualify a child for ART initiation based on the South African National Pediatric ART guidelines?
  - a. Asymptomatic 5 month old with positive PCR and CD4 of 1250/32%
  - b. Asymptomatic 8 month old child with a positive PCR and no CD4 results
  - c. A 6 year old child with a CD4 of 320/28%
  - d. A 2 year old child with CD4 of 488/24%
  - e. A 7 year old child with pulmonary TB and CD4 of 420/30%
  - f. A 10 year old child with papular pruritic eruption and CD4 375/30%
  
3. Which of the following should be monitored in all HIV positive patients on ART during routine visits?
  - a. Clinical response
  - b. Immunologic response
  - c. Virologic response
  - d. Adherence
  - e. Toxicity
  - f. All of the above
  - g. A and D only
  
4. Which of the following is NOT a recommendation for patients who do not yet qualify for ARV's?
  - a. 6 Monthly Cd4 and Clinical staging
  - b. Prescribe Isoniazid to all
  - c. Discuss HIV prevention
  - d. Prescribe Bactrim to all with WHO stage 3
  - e. Obtain yearly PAP in all women > 18 years
  - f. None of the above (all are recommended for patients who do not yet qualify for ART)

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## Pathophysiology:

1. Which of the following is NOT an enzyme found in the HIV virus?
  - a. DNA polymerase
  - b. Integrase
  - c. Protease
  - d. Reverse Transcriptase
  - e. None of the above. (all are enzymes found in the HIV virus)
  
2. What enzyme is responsible for resistance?
  - a. DNA polymerase
  - b. Integrase
  - c. Protease
  - d. Reverse Transcriptase
  - e. None of the above
  
3. Primary infection is.....?
  - a. The time period when a person first test positive for HIV.
  - b. The first person in a family to become HIV infected.
  - c. The time period when the HIV virus remains dormant at low levels in the body.
  - d. Characterized by very high viral loads.
  - e. A time period when patients never have symptoms of HIV infection.
  
4. The window period..... ?
  - a. A time period when a person is HIV infected but the HIV rapid tests, ELISA, and Western Blot tests can all be negative.
  - b. Typically lasts 7 – 10 years.
  - c. Patients have a high level of antibodies to HIV.
  - d. Is characterized by a slow steady decline in CD4.
  - e. None of the above.
  
5. Clinical Latency..... ?
  - a. Is the time period when the viral load is the highest.
  - b. Is when patients start to develop symptoms of HIV infection.
  - c. Lasts 7 – 10 years in about 80% of patients.
  - d. A time period when the ELISA is usually negative.
  - e. None of the above
  
6. In the “Train of life” Analogy: The speed of the Train represents the ....?
  - a. CD4
  - b. VL
  - c. Hemoglobin
  - d. ALT
  - e. Creatinine

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7. In the “Train of life” Analogy: This distance to the edge of the cliff represents the....?
- a. CD4
  - b. VL
  - c. Hemoglobin
  - d. ALT
  - e. Creatinine

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## Diagnosis of HIV

1. What test do you use to definitively diagnose HIV in a child < 18 months old?
  - a. Rapid Test
  - b. DNA PCR
  - c. RNA PCR
  - d. CD4
  - e. viral load
  
2. What test do you use to diagnose HIV in a child > 18 months old?
  - a. Rapid Test
  - b. DNA PCR
  - c. RNA PCR
  - d. CD4
  - e. viral load
  
3. Once a person tests HIV positive, what should be done next?
  - a. Screen for TB
  - b. Clinical staging WHO criteria
  - c. Immunological staging by CD4
  - d. Discuss HIV prevention measures
  - e. Prescribe Bactrim
  - g. Screen for other STIs
  - f. All of the above
  
4. Which of the following is NOT a WHO 1 Condition?
  - a. Papular Puritic Eruption
  - b. Asymptomatic
  - c. Persistent generalized lymphadenopathy
  - d. None of the above (all are WHO 1 conditions)
  
5. Which of the following is NOT a WHO 2 condition?
  - a. Papular Puritic Eruption
  - b. Persistent generalized lymphadenopathy
  - c. Molluscum Contagiosum
  - d. Herpes Zoster
  - e. Extensive Human Papilloma virus infection
  - f. None of the above (all are WHO 2 conditions)
  
6. Which of the following is NOT a WHO 3 Condition?
  - a. Moderate Malnutrition
  - b. Oral Thrush
  - c. Esophageal Candidiasis
  - d. Persistent diarrhea
  - e. None of the above (all are WHO 3 conditions)

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7. Which of the following is NOT a WHO stage 4 condition?
- a. Lymphocytic Interstitial Pneumonitis
  - b. Kaposi's Sarcoma
  - c. Pneumocystis jiroveci pneumonia
  - d. CNS Lymphoma
  - e. Cryptococcal meningitis
  - f. None of the above (all are WHO 4 conditions)

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## Assessing Readiness

1. Which of the following is FALSE regarding assessing readiness to start ART?
  - a. It is important to assess whether the patient wants to start ART.
  - b. It is important to assess who will give the medication to a child starting ART.
  - c. Having a support system can assist in adherence.
  - d. Children who cannot swallow pills cannot take ART.
  
2. Adherence involves all of the following EXCEPT....?
  - a. Disclosing HIV status to all family members.
  - b. Storing the medication correctly.
  - c. Taking the correct dose.
  - d. Taking medication at the same time.
  - e. Regularly attending clinic visits.
  
3. Which of the following is NOT an adherence strategy for infants?
  - a. Ensure care givers know the correct times and doses of medication.
  - b. Have the care givers demonstrate correct doses of liquid medication.
  - c. Have multiple care givers in charge of giving the medication each day.
  - d. Plan for a back-up care giver to give medication when the primary care giver is unavailable.
  - e. None of the above (all are adherence strategies for infants)
  
4. Which of the following is NOT an adherence strategy for school aged children?
  - a. Teach them how to point out or measure their medication
  - b. Do not teach them the name of their medications or the name of the virus since they are too young.
  - c. Help them understand how medicines help keep them healthy
  - d. Reward them for “good” behavior with verbal praise
  - e. None of the above (all are adherence strategies for school aged children)
  
5. Which of the following is NOT an adherence strategy for adolescents?
  - a. Adolescents should no longer be monitored by care givers since they are now old enough to take medication themselves
  - b. Adolescents should have access to individual counseling
  - c. Access to peer and group counseling and/or Teen clinics can be helpful
  - d. Discreet pill boxes can be used for social situations
  - e. Role play can be used to assist in problem solving skills
  
6. Which of the following is NOT an adherence strategy for adults?
  - a. Enlisting a treatment supporter
  - b. Disclosing to a partner and family
  - c. Individual or group counseling if needed
  - d. Peer support groups
  - e. Discreet pill boxes for social situations

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- f. Medication calendars
  - g. None of the above (all are adherence strategies for adults)
7. What percentage of adherence is necessary for ARV's to be effective?
- a. >65%
  - b. >85%
  - c. >90%
  - d. >95%
  - e. >99%

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## Clinical Manifestations

1. Which of the following is FALSE about LIP?
  - a. LIP stands of Lymphocytic Interstitial Pneumonitis.
  - b. LIP is a chronic lung condition.
  - c. LIP is commonly misdiagnosed as tuberculosis.
  - d. LIP is easily treated when diagnosed properly.
  - e. LIP affects mostly children.
  
2. Which of the following is TRUE regarding papular puritic eruption
  - a. It is an itchy, bumpy rash that can be treated symptomatically with steroid creams.
  - b. It is a life threatening condition that has no cure.
  - c. It is easily cured by topical steroids and oral antihistamines.
  - d. It is a WHO stage 3 condition.
  - e. It does not improve despite adequate ART.
  
3. What Clinical WHO stage qualifies a child for ART?
  - a. WHO 1
  - b. WHO 2
  - c. WHO 3
  - d. WHO 4
  
4. What Clinical WHO stage qualifies an adult for ART?
  - a. WHO 1
  - b. WHO 2
  - c. WHO 3
  - d. WHO 4
  
5. What laboratory values below would qualify a child for ART?
  - a. Hemoglobin: 6.8
  - b. Platelets 75,000
  - c. ALT: 625
  - d. White blood count of 6 with 8% neutrophils
  - e. None of the above

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## Opportunistic Infections.

1. Which of the following is TRUE regarding a child with respiratory problems?
  - a. A child should never be treated for bacterial pneumonia and PCP at the same time.
  - b. PCP is a rare cause of death in children less than one year old.
  - c. All HIV infected children with chronic cough > 30 days should be treated for tuberculosis
  - d. Most children with bacterial pneumonia or PCP respond by 72 hours on antibiotics.
  - e. LIP and tuberculosis are easily distinguished by chest X-ray
  
2. Which is FALSE regarding Kaposi's Sarcoma?
  - a. Kaposi's Sarcoma is caused from the Human Herpes Virus 8.
  - b. Lesions can occur on the skin, gastrointestinal tract, or respiratory tract.
  - c. Kaposi's Sarcoma only responds to intensive chemotherapy.
  - d. Complications from Kaposi's Sarcoma can cause lymphedema or airway obstruction.
  - e. None of the above (all are true regarding Kaposi's Sarcoma)
  
3. Which is FALSE regarding Immune Reconstitution Inflammatory Syndrome (IRIS)?
  - a. IRIS usually occurs within the first 8 weeks on antiretroviral therapy.
  - b. Patients with very low CD4 (<50) are at highest risk for developing IRIS.
  - c. Tuberculosis is always the cause of IRIS.
  - d. Patient with IRIS experience a dramatic drop in their CD4 count.
  - e. IRIS is the immune system reacting to a pathogen that was not previously treated.
  
4. Which is FALSE regarding brain masses in HIV infected individuals?
  - a. The most common causes of brain masses in HIV infected individuals are: Tuberculosis, toxoplasmosis, and lymphoma.
  - b. CT scans are helpful in assessing brain mass lesions.
  - c. Cotrimoxazole (Bactrim) is the treatment of choice for toxoplasmosis in South Africa
  - d. It is essential to confirm the diagnosis with a biopsy prior to treating a patient with a suspected brain mass.
  - e. A new onset seizure is a common symptom in patients with a brain mass.

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## Medication:

Match the Drug Name with the side effects: (each letter can be used once, more than once or not at all)

- A. Potentially Fatal Hypersensitivity syndrome
- B. Diarrhea, increased blood sugar, and increased cholesterol
- C. Liver toxicity and skin rash
- D. Hair growth and conjunctivitis
- E. Peripheral neuropathy, lypodystrophy, lactic acidosis
- F. Bad dreams, fatigue, dizziness, hallucinations
- G. Gastritis and hemorrhagic cystitis
- H. Kidney damage and osteoporosis
- I. Anemia, thrombocytopenia

- |                   |   |
|-------------------|---|
| 1. Nevirapine:    | C |
| 2. Stocrin:       | F |
| 3. DDI:           | E |
| 4. AZT:           | I |
| 5. Abacavir:      | A |
| 6. Kaletra:       | B |
| 7. D4T/Stavudine: | E |
| 8. Tenofovir:     | H |

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## Adherence:

1. Why is adherence so important in ARV therapy?
  - a. It is an important factor in ensuring successful outcomes.
  - b. Short-term lapses in adherence may lead to resistance.
  - c. Poor adherence can lead to cross-resistance.
  - d. All of the above.
  
2. What percentage of adherence must be obtained to prevent resistance of HIV?
  - a. >80%
  - b. >85%
  - c. >90%
  - d. >95%
  - e. >99%
  
3. Which of the following is NOT a common barrier to adherence?
  - a. Transportation
  - b. Money or finances
  - c. Lack of disclosure to family/household members
  - d. Change of care givers
  - e. None of the above (all are potential barriers)
  
4. Which of the following is a direct method of measuring adherence?
  - a. Pill counts
  - b. Pharmacy refill rates
  - c. Directly observed therapy
  - d. Clinical response to therapy
  - e. None of the above (all are indirect methods)
  
5. Which of the following is NOT an *indirect* method of measuring adherence?
  - a. Pill counts
  - b. Pharmacy refill rates
  - c. Electronic medication reminders
  - d. Measurement of the drug level in the blood
  - e. None of the above (all are indirect methods)
  
6. Which of the following is NOT a realistic strategy to improve adherence for ART in a resource-limited setting?
  - a. Look for markers of non-adherence: missed appointments (“no-shows”), lack of response to medication, missed refills
  - b. Ask about barriers to adherence without being confrontational
  - c. Emphasize the value of the regimen and the effect of adherence
  - d. Listen to the patient, and customize the regimen in accordance with the patient’s wishes

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- e. Obtain the help from family members, friends, and community services when needed
- f. Use Depot Medication

## **Disclosure:**

1. What age should a child be disclosed to?
  - a. When they are 10 years old
  - b. When they enter senior secondary school
  - c. Starting at a young age with simple explanations, increasing in complexity as the child matures
  - d. Children should never be told their HIV status since they may tell others their status
2. Which of the following is TRUE regarding disclosure of HIV status to children?
  - a. Children disclosed to at an early age have better self-esteem.
  - b. Disclosure is a lengthy process that is difficult to incorporate into routine practice
  - c. After a child is disclosed their HIV status, adherence usually decreases
  - d. After a child is disclosed to they have fewer opportunities to receive peer support or counseling
  - e. It is uncommon for children less than 10 years old to ask about their medication.
3. Which of the following is FALSE regarding the steps in disclosing HIV status to children?
  - a. Pictures are helpful in explaining the soldier's story
  - b. Learning the name of the CD4 cell and HIV virus is the most important part of disclosure for small children
  - c. Disclosure can be begin at a young age with pictures and simple stories
  - d. Children should be taught then names of their medication

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## PMTCT:

1. Which of the following is NOT a way a mother can pass HIV infection to her child?
  - a. During Delivery
  - b. Exclusive Breast feeding
  - c. Mixed feeding
  - d. Exclusive formula feeding
  - e. In utero (prior to delivery)
2. Which of the following PMTCT interventions is correctly matched with the pregnancy stage that it affects?
  - a. Dual therapy and labor
  - b. Single dose NVP and in Utero
  - c. Exclusive formula feeding and in Utero
  - d. Caesarian section and post delivery
  - e. Maternal ART and in Utero, labor/delivery, and post delivery
3. Which of the following is NOT a factor that INCREASES mother-to-child transmission of HIV?
  - a. High Cd4 in mother
  - b. High viral load in the mother
  - c. Inter-current STI in the mother
  - d. Acute HIV infection in the mother
  - e. Poor nutritional status in the mother
4. Which of the following is FALSE regarding dual therapy for PMTCT?
  - a. Dual therapy is for mothers whose CD4 count is greater than 350.
  - b. Women who are stage 4 should receive dual therapy
  - c. Pregnant women should receive AZT beginning at 14 weeks even if their CD4 count is unknown
  - d. Pregnant women with hemoglobin less than 7 should not receive AZT
  - e. Women on dual therapy should take Nevirapine at the onset of labor
5. According to the 2010 South African PMTCT guidelines what regimen do mothers receive if they do not qualify for ARV's when pregnant?
  - a. Daily AZT and NVP beginning at 14 weeks
  - b. Daily NVP beginning at 14 weeks then AZT 3 hourly during onset of labor
  - c. Twice daily AZT beginning at 14 weeks then single dose NVP during onset of labor and AZT 3 hourly during labor
  - d. Twice daily AZT/3TC beginning at 14 weeks followed by single dose NVP at onset of labor
6. According to the 2010 South African PMTCT guidelines, what standard regimen do women take if they do qualify for ART during pregnancy?
  - a. Stocrin (EFV), 3TC, Tenofovir (TDF)

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- b. EFV, 3TC, D4T
  - c. NVP, AZT, TDF
  - d. NVP, 3TC, TDF
7. At what CD4 do pregnant women qualify for ART in South Africa?
- a. CD4 < 200
  - b. CD4 < 250
  - c. CD4 < 300
  - d. CD4 < 350
  - e. CD4 < 500

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## **Infant Feeding Practices:**

1. What feeding practice poses the greatest *mortality* risk?
  - a. Exclusive formula feeding
  - b. Exclusive breastfeeding
  - c. Mixed feeding
  - d. Breastfeeding through an HIV negative surrogate (Wet nurse)
  
2. What feeding practice poses the greatest risk for *HIV infection*?
  - a. Exclusive formula feeding
  - b. Exclusive breastfeeding
  - c. Mixed feeding
  - d. Breastfeeding through an HIV negative surrogate (Wet nurse)
  
3. Which of the following has the LOWEST mortality risk?
  - a. Exclusive formula feeding
  - b. Exclusive breastfeeding
  - c. Mixed feeding
  
4. Which of the following is NOT part of the WHO AFASS feeding guidelines?
  - a. Acceptable
  - b. Accessible
  - c. Affordable
  - d. Feasible
  - e. Safe
  - f. Sustainable
  
5. Which is FALSE regarding bottle feeding?
  - a. Children who bottle feed have a higher risk of developing pneumonia and diarrhea compared to breast fed children.
  - b. Improper bottle cleaning can lead to diarrhea in bottle fed children.
  - c. Formula should be made fresh for each feeding unless excess is stored in a refrigerator for less than 24 hours.
  - d. Water should be boiled prior to mixing formula
  - e. Feeding children with a cup and spoon increases the risk of diarrhea in formula fed children

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## Nutrition

1. What of the following causes of death in children are NOT affected by nutrition?
  - a. Pneumonia
  - b. Diarrhea
  - c. Malaria
  - d. Measles
  - e. HIV/AIDS
  - f. None of the above (all are affected by nutrition)
  
2. What blood test can be used to assess nutritional status?
  - a. Full blood count
  - b. CD4
  - c. Viral Load
  - d. All of the Above

Match the vitamin/mineral to the deficiency/syndrome that it prevents.

- |              |   |
|--------------|---|
| 3. Iron      | A |
| 4. Folate    | A |
| 5. B1        | B |
| 6. B3        | D |
| 7. B12       | A |
| 8. Vitamin D | C |

Each letter can be used once, more than once or not at all

- a. Anemia
- b. Beriberi
- c. Rickets
- d. Pellagra
- e. Measles

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## Toxicity

1. Which of the following is a correct order for mitochondrial toxicity?
  - a. DDI>D4T>AZT
  - b. DDI>AZT>D4T
  - c. D4T>DDI>AZT
  - d. D4T>AZT>DDI
  - e. AZT>D4T>DDI
2. Which of the following is NOT associated with mitochondrial toxicity?
  - a. Peripheral Neuropathy
  - b. Lactic Acidosis
  - c. Lipodystrophy
  - d. Steven's Johnson Syndrome
  - e. None of the above (all are associated with mitochondrial toxicity)
3. Which is FALSE regarding mitochondrial toxicity?
  - a. Mitochondrial toxicity is responsible for all of the side effects of the NNRTIs.
  - b. Mitochondrial toxicity is due to the NRTIs damage to a normal host enzyme.
  - c. Among the NRTIs that are still in use in South Africa DDI and D4T cause the most mitochondrial toxicity.
  - d. Lactic acidosis is a potentially fatal result from mitochondrial toxicity.
  - e. None of the above (all are true about mitochondrial toxicity)
4. What class of ARV causes the most mitochondrial toxicity?
  - a. Nucleoside Reverse Transcriptase Inhibitors
  - b. Non-nucleoside Reverse Transcriptase Inhibitors
  - c. Protease Inhibitors
  - d. Integrase Inhibitors
5. What is the initial treatment for fat accumulation Lipodystrophy?
  - a. Change of regimen
  - b. Addition of Tenofovir to current regimen
  - c. Diet and Exercise
  - d. Addition of Metformin to current regimen
6. Which of the following is TRUE regarding lactic acidosis?
  - a. Lactic acidosis is life threatening condition which usually occurs in the first few weeks on ARVs
  - b. Lactic acidosis can only be caused by ARVs
  - c. Patients taking either DDI, D4T, or AZT carry the highest risk of developing Lactic acidosis
  - d. Taking D4T and DDI together lowers the risk of developing lactic acidosis
  - e. Excellent adherence to ARVs lowers the risk of developing lactic acidosis

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7. Which is FALSE regarding peripheral neuropathy?
  - a. D4T and DDI are the most common ARV's that cause peripheral neuropathy.
  - b. Peripheral neuropathy is due to mitochondrial toxicity.
  - c. Peripheral neuropathy is typically a short term side effect that goes away after the first few weeks on ART.
  - d. None of the above.
  
8. Which is the FALSE regarding the side effects from Stocrin?
  - a. Stocrin can cause gynecomastia (development of breasts in men)
  - b. Many of Stocrin's central nervous system side effects typically last 2 -3 months
  - c. Stocrin can cause skin rash similar to Nevirapine but is usually less severe
  - d. Patients who experience ANY neuropsychiatric side effect from Stocrin should stop taking it immediately.
  - e. None of the above. (all are true)
  
9. Which is FALSE regarding Steven's Johnson Syndrome (SJS)?
  - a. Nevirapine is the most common ART to cause SJS.
  - b. Bactrim/Cotrimoxazole can also cause SJS.
  - c. SJS can involve the eyes, lips, and respiratory tract.
  - d. Patients who experience SJS should stop their nevirapine immediately and continue their other ARV's until the rash disappears.
  - e. None of the above. (all are true)
  
10. Which is TRUE regarding abnormal blood tests?
  - a. Patients with increased LFTs should not start ART.
  - b. Anemia is common in patients with HIV and does not need additional treatment.
  - c. Patients taking ART and tuberculosis treatment are at increased risk for developing increased LFT's.
  - d. Asymptomatic patients who develop increased LFTs, 5 times the upper limit of normal, should stop their ART.

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## TB and HIV

1. Why is TB treated prior to ARV initiation?
  - a. To prevent resistance
  - b. To decrease toxicity
  - c. To improve adherence
  - d. To reduce Immune Reconstitution Inflammatory Syndrome (IRIS)
  - e. All of the above
  
2. Which of the following is true regarding the length of time a patient should wait to initiate ARV if they are diagnosed with TB and HIV at the same time?
  - a. TB treatment and ART should be started the same day
  - b. TB treatment should be completed prior to ART initiation
  - c. TB treatment and ART should never be taken together
  - d. Patients with a CD4 < 50 should start TB treatment immediately and start ART within 2 weeks
  - e. Patients who are WHO stage 3 should start TB treatment immediately and wait 2 months prior initiating ART regardless of CD4
  
3. Which of the following is False regarding HIV-TB co-treatment?
  - a. HIV-TB co-treatment can increase toxicity
  - b. Nevirapine levels are reduced by rifampicin containing TB treatment
  - c. Lopinavir/ritonavir levels are reduced by rifampicin containing TB treatment
  - d. Most NRTI levels are relatively unchanged during co-treatment for TB.
  - e. None of the above. (all are correct)

Match the following drugs to what should be done if a patient is diagnosed with TB and is also taking the following medication.

- |  |   |
|--|---|
| 4. Nevirapine:                           | C |
| 5. Efavirenz (Stocrin):                  | A |
| 6. Lopinavir/ritonavir (Kaletra/Aluvia): | D |
| 7. Tenofovir:                            | A |

The following items can be used once, more than once, or not at all.

- A. No Changes required
  - B. Change to Nevirapine
  - C. Change to Efavirenz/(Stocrin)
  - D. Double the dose
  - E. Half the dose
- 
8. Which is TRUE regarding TB?
    - a. TB is best diagnosed by X-ray.
    - b. It is important to use all available resources to diagnose TB in suspected individuals, including symptom screen, sputum smear and culture, and X-ray.

## Basic HIV Course Exam

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- c. If a patient is HIV infected and asymptomatic (no cough) they are unlikely to have TB.
  - d. Mantoux skin test should not be used in South Africa since most are positive.
  - e. BCG vaccination prevents tuberculosis infections.
9. Which of the following is NOT a manifestation of tuberculosis?
- a. Pneumonia
  - b. Meningitis
  - c. Peritonitis
  - d. Pericarditis
  - e. Osteomyelitis
  - f. None of the above (all can be manifestations of tuberculosis)
10. Which is TRUE regarding latent TB infection?
- a. Latent TB infection should be treated with isoniazid monotherapy
  - b. All patients with latent TB infection have negative mantoux skin tests
  - c. Asymptomatic patients with latent TB infection should not be treated
  - d. An abnormal chest X-ray in an asymptomatic patient commonly represents latent TB infection
  - e. None of the above

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## Resistance:

1. What enzyme is responsible for resistance?
  - a. Reverse Transcriptase
  - b. DNA polymerase
  - c. Integrase
  - d. Protease
  - e. None of the above
  
2. Why is resistance such a problem with HIV?
  - a. Even short term lapses in adherence can lead to resistance.
  - b. Resistance to one medication can cause cross-resistance to a different medication.
  - c. There are a limited number of medications available.
  - d. All of the above.
  
3. What of the following is NOT a factor that can cause to resistance?
  - a. Drug-drug interactions
  - b. Insufficient doses of medication
  - c. Excellent adherence
  - d. Latent reservoirs of HIV
  - e. None of the above (all are factors that lead to resistance)
  
4. Which is TRUE regarding mutations?
  - a. All mutations cause resistance
  - b. Mutations are mistakes made during HIV replication
  - c. Mutations are all due to errors made by the enzyme DNA polymerase during HIV replication
  - d. Lopinavir/ritonavir (Kaletra/Aluvia) has a low genetic barrier and quickly develops resistance
  
5. What are ways to prevent resistance?
  - a. Promote excellent adherence
  - b. Monitor weight gain in children and adjust doses appropriately
  - c. Use multiple drugs
  - d. Monitor all medications that a patient is taking
  - e. All of the above
  
6. Which of the following is the BEST method to measure HIV resistance?
  - a. Pill counts
  - b. Cd4 monitoring
  - c. Viral load monitoring
  - d. Genotype assay
  - e. Patient interview and physical examination

## ANSWER KEY

### Epidemiology:

1. What Country has the most people living with HIV?  
**South Africa**
2. How many people in that country are estimated to be HIV positive?  
**5.8 Million**
3. What is the estimated Antenatal Clinic HIV prevalence rate in KwaZulu Natal, South Africa?  
**40%**
4. What age and gender group has the highest incidence of HIV in South Africa?  
**Females 15 – 24**
5. In 2010 the life expectancy in South Africa was \_\_\_\_\_ (compared to 1995.)  
**Decreasing**

### Prevention:

1. Which of the following does NOT transmit HIV?  
**None of the above (all of these can transmit HIV)**
2. Which of the following can transmit HIV?  
**None of these can transmit HIV**
3. Which body fluids that can potentially transmit HIV infection?  
**Spinal fluid**
4. What is the LEAST important factor in HIV transmission for needle stick injuries?  
**CD4 count of index patient**
5. Which of the following is NOT a proven method of HIV prevention?  
**Daily oral tenofovir for heterosexual females**

### RSA Guidelines:

1. Which of the following would NOT qualify an adult for ART in South Africa based on the National treatment guidelines?  
**Extensive Herpes Zoster (Shingles)**
2. Which of the following would NOT qualify a child for ART initiation based on the South African National Pediatric ART guidelines?  
**A 10 year old child with papular pruritic eruption and CD4 375/30%**
3. Which of the following should be monitored in all HIV positive patients on ART during routine visits?  
**All of the above**
4. Which of the following is NOT a recommendation for patients who do not yet qualify for ARV's?  
**Prescribe Isoniazid to all**

### Pathophysiology:

1. Which of the following is NOT an enzyme found in the HIV virus?  
**DNA polymerase**
2. What enzyme is responsible for resistance?  
**Reverse Transcriptase**
3. Primary infection is.....?  
**Characterized by very high viral loads.**
4. The window period..... ?

# Basic HIV Course Assignment 1

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A time period when a person is HIV infected but the HIV rapid tests, ELISA, and Western Blot tests can all be negative.

5. Clinical Latency..... ?  
Lasts 7 – 10 years in about 80% of patients.
6. In the “Train of life” Analogy: The speed of the Train represents the ....?  
VL
7. In the “Train of life” Analogy: This distance to the edge of the cliff represents the....?  
CD4

## Diagnosis of HIV

1. What test do you use to definitively diagnose HIV in a child < 18 months old?  
DNA PCR
2. What test do you use to diagnose HIV in a child > 18 months old?  
Rapid Test
3. Once a person tests HIV positive, what should be done next?  
All of the above
4. Which of the following is NOT a WHO 1 Condition?  
Papular Puritic Eruption
5. Which of the following is NOT a WHO 2 condition?  
Persistent generalized lymphadenopathy
6. Which of the following is NOT a WHO 3 Condition?  
Esophageal Candidiasis
7. Which of the following is NOT a WHO stage 4 condition?  
Lymphocytic Interstitial Pneumonitis

## Assessing Readiness

1. Which of the following is FALSE regarding assessing readiness to start ART?  
Children who cannot swallow pills cannot take ART.
2. Adherence involves all of the following EXCEPT....?  
Disclosing HIV status to all family members.
3. Which of the following is NOT an adherence strategy for infants?  
Have multiple care givers in charge of giving the medication each day.
4. Which of the following is NOT an adherence strategy for school aged children?  
Do not teach them the name of their medications or the name of the virus since they are too young.
5. Which of the following is NOT an adherence strategy for adolescents?  
Adolescents should no longer be monitored by care givers since they are now old enough to take medication themselves
6. Which of the following is NOT an adherence strategy for adults?  
None of the above (all are adherence strategies for adults)
7. What percentage of adherence is necessary for ARV's to be effective?  
>95%

## Clinical Manifestations

1. Which of the following is FALSE about LIP?

# Basic HIV Course Assignment 1

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LIP is easily treated when diagnosed properly.

2. Which of the following is TRUE regarding papular puritic eruption  
It is an itchy, bumpy rash that can be treated symptomatically with steroid creams.
3. What Clinical WHO stage qualifies a child for ART?  
WHO 3
4. What Clinical WHO stage qualifies an adult for ART?  
WHO 4
5. What laboratory values below would qualify a child for ART?  
Hemoglobin: 6.8

## Opportunistic Infections.

1. Which of the following is TRUE regarding a child with respiratory problems?  
Most children with bacterial pneumonia or PCP respond by 72 hours on antibiotics.
2. Which is FALSE regarding Kaposi's Sarcoma?  
Kaposi's Sarcoma only responds to intensive chemotherapy.
3. Which is FALSE regarding Immune Reconstitution Inflammatory Syndrome (IRIS)?  
IRIS is the immune system reacting to a pathogen that was not previously treated.
4. Which is FALSE regarding brain masses in HIV infected individuals?  
It is essential to confirm the diagnosis with a biopsy prior to treating a patient with a suspected brain mass.

## Medication:

Match the Drug Name with the side effects: (each letter can be used once, more than once or not at all)

- A. Potentially Fatal Hypersensitivity syndrome
- B. Diarrhea, increased blood sugar, and increased cholesterol
- C. Liver toxicity and skin rash
- D. Hair growth and conjunctivitis
- E. Peripheral neuropathy, lypodystrophy, lactic acidosis
- F. Bad dreams, fatigue, dizziness, hallucinations
- G. Gastritis and hemorrhagic cystitis
- H. Kidney damage and osteoporosis
- I. Anemia, thrombocytopenia

1. Nevirapine: C
2. Stocrin: F
3. DDI: E
4. AZT: I
5. Abacavir: A
6. Kaletra: B
7. D4T/Stavudine: E
8. Tenofovir: H

# Basic HIV Course Assignment 1

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## Adherence:

1. Why is adherence so important in ARV therapy?  
**All of the above.**
2. What percentage of adherence must be obtained to prevent resistance of HIV?  
**>95%**
3. Which of the following is NOT a common barrier to adherence?  
**None of the above (all are potential barriers)**
4. Which of the following is a direct method of measuring adherence?  
**Directly observed therapy**
5. Which of the following is NOT an *indirect* method of measuring adherence?  
**Measurement of the drug level in the blood**
6. Which of the following is NOT a realistic strategy to improve adherence for ART in a resource-limited setting?  
**Use Depot Medication**

## Disclosure:

1. What age should a child be disclosed to?  
**Starting at a young age with simple explanations, increasing in complexity as the child matures**
2. Which of the following is TRUE regarding disclosure of HIV status to children?  
**Children disclosed to at an early age have better self-esteem.**
3. Which of the following is FALSE regarding the steps in disclosing HIV status to children?  
**Learning the name of the CD4 cell and HIV virus is the most important part of disclosure for small children**

## PMTCT:

1. Which of the following is NOT a way a mother can pass HIV infection to her child?  
**Exclusive formula feeding**
2. Which of the following PMTCT interventions is correctly matched with the pregnancy stage that it affects?  
**Maternal ART and in Utero, labor/delivery, and post delivery**
3. Which of the following is NOT a factor that INCREASES mother-to-child transmission of HIV?  
**High Cd4 in mother**
4. Which of the following is FALSE regarding dual therapy for PMTCT?  
**Women who are stage 4 should receive dual therapy**
5. According to the 2010 South African PMTCT guidelines what regimen do mothers receive if they do not qualify for ARV's when pregnant?  
**Twice daily AZT beginning at 14 weeks then single dose NVP during onset of labor and AZT 3 hourly during labor**
6. According to the 2010 South African PMTCT guidelines, what standard regimen do women take if they do qualify for ART during pregnancy?  
**NVP, 3TC, TDF**
7. At what CD4 do pregnant women qualify for ART in South Africa?  
**CD4 < 350**

# Basic HIV Course Assignment 1

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## Infant Feeding Practices:

1. What feeding practice poses the greatest *mortality* risk?  
**Mixed feeding**
2. What feeding practice poses the greatest risk for *HIV infection*?  
**Mixed feeding**
3. Which of the following has the LOWEST mortality risk?  
**Exclusive breastfeeding**
4. Which of the following is NOT part of the WHO AFASS feeding guidelines?  
**Accessible**
5. Which is FALSE regarding bottle feeding?  
**Feeding children with a cup and spoon increases the risk of diarrhea in formula fed children**

## Nutrition

1. What of the following causes of death in children are NOT affected by nutrition?  
**None of the above (all are affected by nutrition)**
2. What blood test can be used to assess nutritional status?  
**All of the Above**

Match the vitamin/mineral to the deficiency/syndrome that it prevents.

- |              |          |
|--------------|----------|
| 3. Iron      | <b>A</b> |
| 4. Folate    | <b>A</b> |
| 5. B1        | <b>B</b> |
| 6. B3        | <b>D</b> |
| 7. B12       | <b>A</b> |
| 8. Vitamin D | <b>C</b> |

Each letter can be used once, more than once or not at all

- a. Anemia
- b. Beriberi
- c. Rickets
- d. Pellagra
- e. Measles

## Toxicity

1. Which of the following is a correct order for mitochondrial toxicity?  
**DDI>D4T>AZT**
2. Which of the following is NOT associated with mitochondrial toxicity?  
**Steven's Johnson Syndrome**
3. Which is FALSE regarding mitochondrial toxicity?  
**Mitochondrial toxicity is responsible for all of the side effects of the NNRTIs.**
4. What class of ARV causes the most mitochondrial toxicity?  
**Nucleoside Reverse Transcriptase Inhibitors**
5. What is the initial treatment for fat accumulation Lipodystrophy?  
**Diet and Exercise**
6. Which of the following is TRUE regarding lactic acidosis?

# Basic HIV Course Assignment 1

- Patients taking either DDI, D4T, or AZT carry the highest risk of developing Lactic acidosis
7. Which is FALSE regarding peripheral neuropathy?  
Peripheral neuropathy is typically a short term side effect that goes away after the first few weeks on ART.
  8. Which is the FALSE regarding the side effects from Stocrin?  
Many of Stocrin's central nervous system side effects typically last 2 -3 months
  9. Which is FALSE regarding Steven's Johnson Syndrome (SJS)?  
Patients who experience SJS should stop their nevirapine immediately and continue their other ARV's until the rash disappears.
  10. Which is TRUE regarding abnormal blood tests?  
Patients taking ART and tuberculosis treatment are at increased risk for developing increased LFT's.

## TB and HIV

1. Why is TB treated prior to ARV initiation?  
To reduce Immune Reconstitution Inflammatory Syndrome (IRIS)
2. Which of the following is true regarding the length of time a patient should wait to initiate ARV if they are diagnosed with TB and HIV at the same time?  
Patients with a CD4 < 50 should start TB treatment immediately and start ART within 2 weeks
3. Which of the following is False regarding HIV-TB co-treatment?  
None of the above. (all are correct)

Match the following drugs to what should be done if a patient is diagnosed with TB and is also taking the following medication.

- |  |   |
|--|---|
| 4. Nevirapine:                           | C |
| 5. Efavirenz (Stocrin):                  | A |
| 6. Lopinavir/ritonavir (Kaletra/Aluvia): | D |
| 7. Tenofovir:                            | A |

The following items can be used once, more than once, or not at all.

- A. No Changes required
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  - C. Change to Efavirenz/(Stocrin)
  - D. Double the dose
  - E. Half the dose
8. Which is TRUE regarding TB?  
It is important to use all available resources to diagnose TB in suspected individuals, including symptom screen, sputum smear and culture, and X-ray.
  9. Which of the following is NOT a manifestation of tuberculosis?  
None of the above (all can be manifestations of tuberculosis)
  10. Which is TRUE regarding latent TB infection?  
Latent TB infection should be treated with isoniazid monotherapy

## Resistance:

1. What enzyme is responsible for resistance?

## Basic HIV Course Assignment 1

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### Reverse Transcriptase

2. Why is resistance such a problem with HIV?  
**All of the above.**
3. What of the following is NOT a factor that can cause to resistance?  
**Excellent adherence**
4. Which is TRUE regarding mutations?  
**Mutations are mistakes made during HIV replication**
5. What are ways to prevent resistance?  
**All of the above**
6. Which of the following is the BEST method to measure HIV resistance?  
**Genotype assay**