Online Quiz

Test Your Knowledge: HIV Infection—Epidemiology and Diagnosis

This quiz is related to the Perspective in the July issue of *PLoS Medicine* (DOI: 10.1371/journal.pmed.0020214).

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Question 1. By December 2004, roughly how many people were living with HIV?

- ○ 20 million
- ○ 40 million
- ○ 60 million

Question 2. Roughly how many new cases of HIV infection were there in 2004?

- ○ 1 million
- ○ 3 million
- ○ 5 million

Question 3. What is the prognosis of untreated adult HIV infection?

- ○ About 50% of people will become ill and die from AIDS over about ten years
- ○ About 75% of people will become ill and die from AIDS over about five years
- ○ About 90% of people will become ill and die from AIDS over about three years

Question 4. What proportion of people who undergo voluntary counseling and testing or perinatal screening fail to return to collect the results?

- ○ Up to 10%
- ○ Up to 50%
- ○ Up to 70%

Question 5. Which of the following is true about rapid HIV-antibody tests that use oral fluid?

- ○ These tests have high sensitivity but low specificity
- ○ These tests have low sensitivity but high specificity
- ○ These tests have high sensitivity and specificity

Question 6. Which one of the following is a good prognostic factor for an adult infected with HIV who is about to start highly active antiretroviral therapy?

- ○ Infection through injection-drug use rather than sexual intercourse
- ○ A CD4 count less than 350 cells/ml
- ○ A viral load greater than or equal to 100,000 copies/ml
- ○ Under 50 years of age

Question 7. What is the most common AIDS-defining illness in developed nations?

- ○ Kaposi sarcoma
- ○ *Pneumocystis* pneumonia
- ○ Tuberculosis
- ○ Lymphoma

Question 8. In people infected with HIV in Africa, what is the most frequent cause of death?

- ○ Tuberculosis
- ○ *Pneumocystis* pneumonia
- ○ Herpes simplex virus
- ○ *Toxoplasma gondii* encephalitis
- ○ Invasive fungal diseases

Question 9. Without antiretroviral treatment, what is the risk that an HIV-positive mother will transmit the virus to her child during gestation, labor, or breastfeeding?

- ○ About 5%–10% in Europe and the US, and 10%–15% in Africa
- ○ About 15%–20% in Europe, 15%–30% in the US, and 25%–35% in Africa
- ○ About 20%–30% in Europe, 30%–40% in the US, and 40%–50% in Africa

Question 10. Which of the following is not a risk factor for mother-to-child transmission of HIV?

- ○ A high maternal viral load
- ○ Advanced maternal age
- ○ A low maternal CD4 count
- ○ A history of stillbirth
- ○ Prolonged rupture of membranes

Citation: Yamey G (2005) Test your knowledge: HIV infection—epidemiology and diagnosis. PLoS Med 2(7): e254.

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DOI: 10.1371/journal.pmed.0020254

Answer 1. 40 million

The Joint United Nations Programme on HIV/AIDS estimated that by December 2004 (the latest for which figures are available), about 39.4 million people globally were living with HIV [1].

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1. The Joint United Nations Programme on HIV/AIDS (2004) Global summary of the HIV and AIDS epidemic in 2004. Available: http://www.unaids.org/en/Resources/epidemiology/epicore.asp. Accessed 27 June 2005.

Answer 2. 5 million

In 2004, the Joint United Nations Programme on HIV/AIDS estimated that there were 4.9 million new cases of HIV infection [1].

References

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Answer 3. About 50% of people will become ill and die from AIDS over about ten years

Without treatment, about 50% of people infected with HIV will become ill and die from AIDS over about ten years [1].

References

1. Talbot M (2004) HIV infection. Clin Evid 2004: 983–992.

Answer 4. Up to 50%

Up to 50% of persons getting tested for HIV in voluntary counseling and testing and antenatal clinics, including many who are HIV-positive, do not return to collect their results [1–7].

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2. Wiley DJ, Frerichs RR, Ford WL, Simon PA (1998) Failure to learn human immunodeficiency virus test results in Los Angeles public sexually transmitted disease clinics. Sex Transm Dis 25: 342–345.
3. Tao G, Branson BM, Kassler WJ, Cohen RA (1999) Rates of receiving HIV test results: Data from the U.S. National Health interview survey for 1994 and 1995. J Acquir Immune Defic Syndr 22: 395–400.
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6. Malonza IM, Richardson BA, Kreiss JK, Bwayo JJ, Stewart GC (2003) The effect of rapid HIV-1 testing on uptake of perinatal HIV-1 interventions: A randomized clinical trial. AIDS 17: 113–118.
7. Branson BM (2003) Point-of-care rapid tests for HIV antibodies. J Lab Med 27: 288–295.

Answer 5. These tests have high sensitivity and specificity

The United States Centers for Disease Control and Prevention states that, in research settings, a rapid HIV-1/2 antibody test using oral fluid called OraQuick has a sensitivity and specificity of over 99%, and that the US Food and Drug Administration expects clinical laboratories to obtain similar results [1]. In a study of patients with various levels of exposure to highly active antiretroviral therapy, a rapid HIV-1 test using oral fluid showed 100% specificity and 96% sensitivity [2]. In a study done in the setting of multiple-transmitted HIV subtypes in Kinshasa, Republic of the Congo, sensitivity and specificity of a rapid HIV-1/2 antibody test using oral fluid were both 100% [3].

References

1. US Centers for Disease Control and Prevention (2004) OraQuick rapid HIV test for oral fluid—Frequently asked questions. Available: http://www.cdc.gov/hiv/rapid_testing/oralfluidqandafin1_1.htm. Accessed 27 June 2005.
2. O'Connell RJ, Merritt TM, Malia JA, VanCott TC, Dolan MJ, et al. (2003) Performance of the OraQuick rapid antibody test for diagnosis of human immunodeficiency virus type 1 infection in patients with various levels of exposure to highly active antiretroviral therapy. J Clin Microbiol 41: 2153–2155.
3. Reynolds SJ, Ndongala LM, Luo CC, Mwandagalirwa K, Losoma AJ, et al. (2002) Evaluation of a rapid test for the detection of antibodies to human immunodeficiency virus type 1 and 2 in the setting of multiple transmitted viral subtypes. Int J STD AIDS 13: 171–173.

Answer 6. Under 50 years of age

Egger and colleagues did a meta-analysis of 13 cohort studies that looked at 12,574 treatment-naive people starting highly active antiretroviral therapy with a combination of at least three drugs [1]. Predictors of poorer outcomes were infection through injection-drug use, lower baseline CD4 cell count, higher baseline HIV-1 viral load, and advanced age.

References

1. Egger M, May M, Chene G, Phillips AN, Ledergerber B, et al. (2003) Prognosis of HIV-1-infected patients starting highly active antiretroviral therapy: A collaborative analysis of prospective studies. Lancet 360: 119–129.

Answer 7. *Pneumocystis* pneumonia

Pneumocystis pneumonia is the most common AIDS-defining illness in developed nations [1].

References

1. Selik RM, Starcher ET, Curran JW (1987) Opportunistic diseases reported in AIDS patients: Frequencies, associations, and trends. AIDS 1: 175–182.

Answer 8. Tuberculosis

The most frequent cause of death is tuberculosis [1,2].

References

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2. Bellamy R (2005) Tuberculosis in people with HIV. Clin Evid 13: 1–3.

Answer 9. About 15%–20% in Europe, 15%–30% in the US, and 25%–35% in Africa

A review of 13 cohort studies found that the risk of mother-to-child transmission of HIV without antiretroviral treatment is on average about 15%–20% in Europe, 15%–30% in the US, and 25%–35% in Africa [1].

References

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Answer 10. Advanced maternal age

Young maternal age is a risk factor, as are a high maternal viral load, a low maternal CD4 count, a history of stillbirth, prolonged rupture of the membranes, breastfeeding, sexually transmitted diseases, chorioamnionitis, vaginal delivery, advanced maternal HIV disease, and obstetric events that increase bleeding [1].

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