

Patient Profiles for HIV Testing

HIV stands for Human Immunodeficiency Virus. It is the virus responsible for causing the Acquired Immune Deficiency Syndrome, or AIDS. HIV attacks and destroys a type of T lymphocyte of the immune system called CD4⁺ cells, and thereby severely weakens immune defense. Shortly after infection by HIV, the body begins producing antibodies against the virus, and the infected person may feel flu-like symptoms. The virus then enters a latent phase, in which the infected person does not experience symptoms but the virus and the immune cells continue to attack each other. Eventually, the HIV virus gains the upper hand. The immune system loses its ability to fight off the opportunistic infections it could normally combat, and advanced AIDS results. HIV is communicable and can be transmitted from person to person through blood, pregnancy, breast milk, and other bodily fluids.

Instructions

Read the following patient profiles. Perform an ELISA (simulation) to test each individual for antibodies against HIV.

Patient A

Patient A has just learned that her ex-boyfriend was diagnosed with HIV. Although they often used protection when sexually active, she is concerned that she could have contracted the virus from him.

Patient B

Patient B is the current boyfriend of Patient A. Although they are not sexually active, they have engaged in deep kissing. Patient B is concerned for his girlfriend and for himself, and decides to get tested along with her.

Patient C

Patient C is an EMT who treated a bleeding car accident victim who was HIV positive. After attending to the accident victim's injuries, he realized that his glove was torn and his hand cut.

Patient D

Patient D just broke up with her boyfriend after learning about several lies he told her. She worries that he has not been monogamous and decides to be tested for HIV.

Patient E

Patient E is happily married with young children when he gets a call from an old college girlfriend who is HIV positive. She does not know when she contracted the virus and is contacting all her old partners so that they can be tested as well.

Patient F

Patient F experimented with drugs during college and used some intravenous substances. Although he has been clean and sober for years, he remembers sharing a needle with a friend at a social function and decides to be tested for HIV.

Patient Profiles for Lyme Disease Testing

The pathogenic agent of Lyme Disease is a spirochete bacterium, *Borrelia burgdorferi*. The bacterium is transmitted to people through the bite of infected ticks, such as deer ticks and black-legged ticks. It cannot be transferred from person to person. The life cycle stages of ticks require meals of blood obtained from warm-blooded animals. When an infected tick bites a victim, it transmits the infectious bacteria after 36–48 hours of attachment. An immune response is then launched in the infected individual. Early removal of ticks can prevent such transmission of infection. Early symptoms of Lyme Disease include a characteristic bull's eye rash (erythema migrans) surrounding the bite, and flu-like symptoms such as fever, headache, chills, muscle aches, and fatigue. If the disease goes untreated, it can result in more serious symptoms such as severe muscle pain, extreme fatigue, neurological difficulties, and respiratory and gastrointestinal problems.

Instructions

Read the following patient profiles. Perform an ELISA (simulation) to test each individual for antibodies against *Borrelia burgdorferi*.

Patient A

Patient A went on a hike with her hiking club and has since felt feverish and achy. She is an avid hiker who knows the risks of Lyme Disease and always uses insect spray and wears protective clothing. She thinks she probably has the flu.

Patient B

Patient B was gardening in her yard when she noticed a tick on her arm. She carefully removed the tick but has been feeling tired since. Although she does not have a bull's eye rash, she gets tested for Lyme Disease.

Patient C

Patient C has just learned that her best friend from summer camp has Lyme Disease. Although the disease cannot be transferred from person to person, she could have been exposed to other infected ticks in the area.

Patient D

Patient D went on a winter hike on a warm day after a snowfall and has been feeling ill since. The patient feels certain that he has the flu, but his doctor notices a bull's eye rash on his neck.

Patient E

Patient E cleared a large quantity of brush at his home and noticed a solid, red rash on his leg days after. He has also been suffering from headaches and fatigue.

Patient F

Patient F has been feeling ill for quite some time and his doctors cannot figure out why. He is extremely tired and complains of terrible muscle and joint pain. He has not been outdoors much recently and has no rashes on his body.

Patient Profiles for Avian Influenza Testing

Throughout history, influenza (commonly called “the flu”) has plagued society and caused pandemic outbreaks of disease. The flu is caused by the influenza virus. There are many different strains of the influenza virus, which cause different variations of influenza disease. Recombination of influenza virus’s genetic material enables the virus to take on many forms, which poses a significant challenge to vaccination. The seasonal flu that we are familiar with is caused by different human influenza virus strains, such as H3N2, H1N1, and H1N2.

There are also strains of the influenza virus that affect animals, pigs and birds, for example. When influenza viral strains in animals mutate in a way that enables them to infect people, they are particularly virulent because the human immune system has little protection against genetically new viruses derived from animal hosts. The greatest cause for concern is when these lethal viral strains further change to become transmissible from person to person. Such influenza strains become highly contagious and can spread quickly throughout a population.

Avian Influenza (Bird Flu) caused by the H5N1 strain of the influenza virus is highly contagious among birds and can cause domestic poultry such as chickens, ducks, and turkeys to become very sick and die shortly thereafter. News of H5N1 affecting domestic poultry was first reported in Europe and Asia. As of mid-2006, there have been relatively few cases of the virus crossing the species barrier to infect humans who have had contact with infected birds. Thus far, person-to-person transmission has been limited and has not continued beyond one individual.

Instructions

Read the following patient profiles. Perform an ELISA (simulation) to test each individual for antibodies against the H5N1 avian influenza virus.

Patient A

A poultry vendor in Asia has noticed that many of his chickens have been exhibiting ruffled feathers and a decrease in egg production. Patient A is one of the vendor’s sickly chickens.

Patient B

Patient B is an employee of the poultry vendor. His job is to care for and tend to a large number of chickens, including Patient A.

Patient C

Patient C is the wife of Patient B. She does not have any contact with the chickens but she regularly washes her husband’s work clothes and lives in a small house with him.

Patient D

Patient D is a young boy who feeds and cares for the chickens at his home in central Europe. He has suddenly become quite ill. Several of the chickens in his flock are also sick.

Patient E and Patient F

Patient E and Patient F are two chickens from the flock that Patient D tends.

