Testing for HIV following a Needlestick Case Study

While attempting to start an intravenous line on an AIDS patient, a registered nurse punctured her finger with a visibly bloody needle. She was observing proper universal precautions, including wearing two layers of gloves and having proper needle disposal equipment nearby. Despite these precautions, the needlestick injury occurred. Fearing that she would receive a poor performance evaluation for making such a mistake, she did not report the incident to her supervisor, rather electing to simply scrub the wound with soap. Had she reported the incident, she would have been given postexposure prophylaxis consisting of two reverse transcriptase inhibitors and a protease inhibitor for approximately 1 month to prevent an HIV infection. Three months after the incident, fear of becoming HIV positive led her to consult with her family physician. The family physician drew a blood sample from the nurse and sent it to a qualified testing facility.

The testing facility employed a test called an enzyme-linked immunosorbent assay (ELISA) commonly used to screen blood for exposure to HIV by detecting antibodies to the virus. This screening test yielded a positive result—therefore, the test was repeated with the same result. As a confirmatory step, Western blot analysis of the nurse’s blood demonstrated an indeterminate result. Based on the Western blot results, a second confirmatory test, called the p24 antigen capture assay, was used to test the blood. This test utilizes an antibody sandwich ELISA method to detect HIV p24 protein in the blood specimen. The p24 antigen capture assay yielded negative results, confirming that the nurse was not HIV infected.

* *Why might the nurse test positive by the ELISA screening test but negative by the p24 antigen capture assay confirmatory test? What is another term for this ELISA test result?*
* *How common are “sharps” injuries among health care workers?*
* *How likely is it that a person would become HIV positive after being punctured by an HIV-contaminated needle?*