Don't wait to test for HIV

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Understanding when an HIV test will be positive after infection is key to recommending when to get an HIV test and to providing accurate information to patients concerned about a possible exposure to HIV. Waiting 3 months to get tested after a possible exposure to HIV is often recommended because a negative test before 3 months could be a false negative and waiting yields a definitive result. However, advances in the technology of HIV testing have made waiting for 3 months unnecessary.

Improvements in HIV test window periods

Recent improvements in HIV tests have significantly shortened the window periods of the tests (the time from infection to detection of HIV).[1] The average window periods for the following tests are:

- 20 to 22 days for third-generation enzyme immunoassay (EIA) tests, which detect HIV antibodies.
- 16 to 18 days for fourth-generation EIA tests, which detect p24 antigen *and* HIV antibodies.

On HIV test result reports from PHSA Laboratory, third-generation EIA tests are labeled "Anti HIV 1 and 2 EIA" and fourth-generation EIA tests are labeled "HIV 1 and 2 Ab/Ag EIA." Fourth-generation EIA testing is currently used as a screening test for specimens tested for HIV at Victoria General Hospital; this test is also available at PHSA Laboratories on request.

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Point-of-care (or rapid) HIV antibody tests are reactive at the same time or up to 1 week after third-generation EIA tests. (The bioLytical INSTI HIV-1/HIV-2 Antibody Test is the only licensed POC HIV test in Canada. Details on test performance are available at www.biolytical.com.) If any of these tests are reactive, HIV infection is confirmed through a Western Blot, or through nucleic acid amplification testing (NAAT, or PCR), which detects viral RNA.

Most patients can be tested at 6 weeks following a possible exposure to HIV, with testing repeated at 3 months if negative.

Window periods for HIV tests are estimates and are not absolute. There is substantial individual variation and tests may take a shorter or longer time to detect HIV infection in different people. Clinical judgment remains important, and a negative result in a client you think has a high likelihood of being HIV positive can be reviewed with a medical microbiologist at PHSA Laboratory at 1 877 747-2522.

Implications for practice

Most patients can be tested at 6 weeks following a possible exposure to HIV, with testing repeated at 3 months if negative. We estimate > 95% of individuals have detectable HIV antibodies by 4 to 6 weeks after infection (with > 99% by 3 months).

Patients who are more likely to be infected with HIV can be tested at the time of presentation—regardless of the timing of the possible exposure. This includes patients having a known HIV positive partner, an exposure that is at high risk for HIV, or who have symptoms of seroconversion illness (an early influenza-like illness in 50% to 90% of newly infected people, including fever and myalgia, fatigue, nausea/vomiting, pharyngitis, headache, or lymphadenopathy).

If the HIV test at presentation is negative, baseline HIV status has been established. Another HIV test can be performed 2 to 3 weeks after the exposure, as by this time many individuals infected with HIV will have detectable HIV antibodies. For these patients, writing "fourth-generation HIV EIA" or "p24 antigen" on the laboratory requisition form will ensure a test is performed that has the best capacity to detect early HIV infections.

Benefits of early testing

The benefits of testing earlier after a possible exposure to HIV are:

- Waiting to test may miss opportunities to diagnose patients who are infected with HIV who may not come back to test at 3 months or may wait even longer to get tested.
- Infection with HIV may have occurred during an earlier exposure to HIV.
- Knowledge of HIV status can lead to behavior change that reduces the risk of transmission of HIV to others.

A large proportion of new HIV infections are acquired from individuals in the acute phase of infection (a

period of high infectiousness that lasts for 4 to 6 weeks after infection). Testing earlier may diagnose acute HIV infection, and if diagnosis leads to behavior change, new HIV infections may be prevented during this period of increased transmission risk.[2]

Earlier testing can help if patients are anxious about their HIV status following a potential exposure to HIV. An early negative result at 6 weeks, which is likely to remain HIV negative at 3 months, may help to reduce anxiety.

Staying informed

As HIV tests continue to improve, these recommendations may change. Up-to-date resources for providers on HIV tests in use in BC and their characteristics can be found at www.bccdc.ca.

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Antibiotic use in our livestock

Should doctors be concerned about antimicrobial resistance in animals, particularly food animals? The Environmental Health Committee thinks so. Doctors are increasingly aware that viral infections in our patients are unphased by the prescription of antibiotics. We are made more aware by campaigns such as Do Bugs Need Drugs? that educate the public and hopefully help doctors limit antibiotic prescriptions if there is little objective evidence that they will be curative.

In our offices we see resistance to antibiotics that in the recent past were effective at killing disease-causing organisms. Farmers and veterinarians have watched as antibiotics have become much less effective at treating diseases in their cattle, sheep, pigs, and chickens. Physicians, veterinarians, farmers, and patients all share the threat of increasing bacterial resistance in the community and hospitals because of antibiotic overuse. Few replacement drugs are being developed.

Low levels of antibiotics and antibiotic resistant organisms are being found in diverse sampling sites around North America. Antibiotic resistant organisms can be spread to the environment through human and animal waste streams and manure ponds. This deserves more investigation! Transfer of resistance between bacteria through "resistance genes" can occur even though the bacteria are not directly exposed to the antibiotic.

Antibiotics are sold as "growth promoters" to the livestock industry. There is limited regulation of what can be imported and used in livestock, and where there is needed regulation, enforcement isn't effective. Federal and provincial efforts to control this may work at cross purposes. A provision called "own use" enables certain exemptions and provides a loophole for those importing any amount of antibiotic. This makes accurate research into outcomes invalid.

A decade ago the Advisory Committee on Animal Uses of Antimicrobials and Impact on Resistance and Human Health made 38 recommendations to the Canadian government in an effort to change the ways that antimicrobials are regulated, distributed, and used in animals. Few of these have been adopted. They should be reexamined in light of the fact that costs of treating human infections increases as more resistance develops. Further, investment in systematic monitoring and appropriate action is critical to ensure we are using our antibiotics in the most responsible way.

Doctors should indeed be concerned about antibiotic use throughout our shared environment. The Environmental Health Committee will be bringing a resolution to the Canadian Medical Association's general council meeting in August. It recommends the CMA call upon the federal and provincial agricultural and environmental ministries to investigate the release of antibiotic resistant organisms and residual antibiotics from agricultural operations into the earth and water ecosystems and the role they play in the emergence of antibiotic resistant organisms in humans. A second resolution recommends the CMA call upon the Ministry of Agriculture to investigate animal husbandry techniques that decrease the need for antibiotics in animals and support those techniques proven to be effective.

Modern medicine needs effective antibiotics. We hope the doctors of Canada will support these important resolutions.

—Bill Mackie, MD, Chair, Environmental Health Committee