Reproductive Tract Infection Affects HIV – Case Study

A women’s clinic in a downtown neighborhood of Detroit, Michigan, served a large population of inner-city residents. The clinic had recently hired a new supervising physician. When Dr. Mott began working at the clinic, she began to systematically study clinic records from the previous few years. She found it surprising that in 2002, the rate of new human immunodeficiency virus (HIV) infections was actually higher than in 1997. She found this troubling because she knew that much progress had been made in educating the public about behaviors that put them at high risk for HIV transmission. Dr. Mott knew that some of the major risk factors for women becoming infected with HIV were (1) illicit use of injected drugs; (2) numerous sexual partners; and (3) infection with other sexually transmitted diseases, which made the reproductive tract more susceptible to transmission of the virus.

Dr. Mott was determined to find out why HIV infection rates were increasing among her patients. She gathered information about risk factors in her own clinic population. First, she looked at the statistics for injecting-drug use among clinic patrons. The number of patients that had been referred for drug treatment or counseling had actually decreased steadily over the past 3 years. Admissions to the local hospital for drug overdoses were also down. She surmised that drug use was not a major factor contributing to the increased HIV infection rate.

In the mid-1990s, Detroit, like other American cities, had experienced a syphilis epidemic. A massive public health campaign had successfully brought down the rate of syphilis infection in the city, and it remained low. Dr. Mott thought this also indicated that partner exchange rates had decreased and that the second risk factor was therefore not a major contributor to the increased HIV infection rate. She turned to the third possibility, that other underlying sexually transmitted diseases (STDs) were making women more susceptible to HIV infection.

Dr. Mott found that in recent years a successful public health campaign in this neighborhood had encouraged women to visit the clinic as soon as they suspected they had a reproductive tract infection. This campaign was designed to prevent pelvic inflammatory disease (PID) and its long-term consequences. The clinic had won a citywide award for this effort, as its rate of PID decreased more than any other clinic in the city. Dr. Mott took this as an indicator that bacterially caused STDs were being treated promptly and probably were not contributing to an increased susceptibility to HIV.

Dr. Mott found this problem puzzling. By initiating an aggressive screening campaign, however, she eventually managed to tease out the answer. She discovered that the increased rate of HIV infection was probably caused by underlying infection with a microorganism that “slips under the radar” by often not causing overt symptoms, not being on the watch list of organisms that might cause PID or other long-term effects, and not being affected by the increased use of antibiotic therapy used to prevent PID. She found high rates of infection with a “mild” pathogen that damages the reproductive tract mucosa enough to make it much more susceptible to penetration by viruses.

* *Which microorganisms are probably ruled out by the facts of this case?*
* *Which microorganism do you think contributed to the increased rates of HIV infection seen among these clinic patients?*