

How to Interpret Laboratory Test Results for Sexually Transmitted Diseases

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Definition: Infectious diseases that are transmitted through sexual contact are referred to as sexually transmitted diseases, or STDs.

Prevalence of STDs in sexually abused children: Abuse victims are more likely to have an STD if they were abused by multiple perpetrators, abused multiple times, live in a community with a high prevalence of STDs, or were abused by a perpetrator who has high risk behaviors. High-risk behaviors include IV drug use, crack use, prostitution, or multiple sexual partners. In addition, sexually active adolescents have the highest rates of STDs of all age groups. However, relatively few abused children have an STD, usually under 5%.

Sexual transmission and non-sexual transmission: Some STDs are caused by microorganisms that live exclusively in, or around, the genitalia or rectum of an infected person. These STDs are almost always transmitted through sexual contact. Other microorganisms, in addition to living in or around the genitalia or rectum, also live in non-sexual areas of the body. Infections by these microorganisms can be transmitted by sexual or non-sexual contact. Table 1 summarizes the likelihood of sexual transmission of specific STDs.

Certain STDs are transmitted to children in the perinatal period, during or before birth. A physician can differentiate most perinatal infections from infections due to sexual abuse. Some infections, such as those from chlamydia or warts, are more difficult to differentiate. Table 2 lists specifics about perinatal infection.

Table One: The likelihood of sexual transmission of specific STDs.

STD	Likelihood of Sexual Transmission
Gonorrhea (GC)	Very High*
Chlamydia	Very High*
Syphilis	Very High*
Condyloma acuminata (Venereal warts)	Possible
Trichomonas	Very High*
Herpes	Possible
HIV/AIDS	Very High*
Bacterial vaginosis (BV)	Low
Molluscom	Low
Pubic Lice	Possible
Hepatitis B	Possible

* the physician should consider other ways of transmission (birth process, blood transfusion, etc.)

Symptoms of STDs: The symptoms and illnesses caused by STDs vary depending upon the specific infection, the age of the child/adolescent and the site of the infection. Adolescent girls are often asymptomatic (without symptoms). Table 2 describes the most common manifestations of STD infections from sexual abuse.

Which children should be tested for STDs: The majority of abuse victims will not have an STD. However, because many STDs cause no symptoms, tests are often done during the medical evaluation to exclude a silent infection. Some examiners will test all alleged victims for STDs, while others limit testing to those whom they believe are at increased risk for infection, such as those with:

- Vaginal or urethral discharge
- Rectal pain or discharge
- Genital ulcers, sores or warts
- A history of abuse by multiple perpetrators or by a perpetrator with high risk behaviors (IV or crack drug use, prostitution, multiple partners, a history of STDs)
- A history of prostitution
- A sibling or household contact who was diagnosed with an STD

- A history of, or physical indications of, vaginal or rectal penetration
- A diagnosis of any other STD
- An age of 13 or older
- An inability to follow-up at a later time if symptoms develop

Testing the alleged perpetrator for STDs: If the sexual abuse victim has been diagnosed with an STD, the alleged perpetrator should be tested to determine if they also have the infection. Interpret this information cautiously. If the alleged perpetrator has already received treatment, the tests may be negative. If the tests are positive, the information will support the allegations of sexual abuse, although a definitive connection linking the alleged perpetrator to the victim cannot be made. Tests for *HIV, syphilis and hepatitis* will remain positive even after the alleged perpetrator has received medical treatment.

Tests used to diagnose STDs: In cases of suspected sexual abuse or assault, it is critical that the tests used to diagnose STDs are recognized as “gold standards”. Only those tests listed in the Table 2 should be used.

Treatment of STDs: In all cases of alleged abuse, appropriate diagnostic tests must be obtained before treatment is given. Treatment may be given, however, before a definitive diagnosis is made. In other situations, no presumptive treatment should be given.

- Pre-pubertal children without symptoms should not be treated unless an STD is diagnosed using a “gold standard”.
- Adolescents have a greater risk of infection and complications. Presumptive treatment may be indicated.
- A physician should evaluate within 72 hours of assault, any victim who has been abused by an HIV positive perpetrator to ascertain whether HIV prophylaxis is indicated.
- Hepatitis B vaccination should be provided to all victims who are not already immunized.

Follow-up for children diagnosed or tested for STDs

- If an STD has been diagnosed, some physicians will request a follow-up evaluation in 2 weeks. If testing for syphilis, HIV or hepatitis, the physician may order repeat testing over a 6-month period.
- Children who develop symptoms of an STD after the initial evaluation should be seen for follow-up.
- Victims who are evaluated within 1 week of an assault and who have an increased risk for an STD may require follow-up testing.
- Victims immunized for Hepatitis B may require follow-up doses of vaccine.

Pitfalls to avoid in the diagnosis of STDs in children.

- Some tests for STDs are inaccurate. These tests will be positive when in fact no infection exists. Only those tests listed in Table Two, or other “gold standard tests”, should be used.
- Identification of an STD requires an adequate sample, careful specimen handling and a qualified laboratory. False negative and false positive cultures and tests can occur if errors are made.
- Decisions regarding the likelihood of abuse should not be made based upon preliminary or presumptive STD diagnoses. Wait for the final diagnosis.
- Some STDs cannot be diagnosed immediately after sexual assault/abuse. Table 2 specifies incubation time for each STD.
- Adolescents who are sexually active may have an STD which they acquired through consensual sex.

Table Two

STD & Sites of infection	Incubation period and symptoms	Transmission	Diagnostic Tests
Gonorrhea (GC)	Vaginal infection in prepubertal girls usually causes discharge within 2-7 days.	During delivery, an infant may be infected. Eye infections are most common and result in eye discharge within a few days of life. Vaginal and rectal infections are also possible.	The <u>only</u> acceptable testing method is bacterial CULTURE.
<i>Neisseria gonorrhoea</i>			A positive culture must be confirmed by two other identification tests before the diagnosis is made.
-vagina	Rectal and throat	Vaginal infections beyond the	

<ul style="list-style-type: none"> -cervix -urethra -rectum -throat -pelvis (PID) -systemic 	infections in all ages, as well as cervical infections in adolescents, are often asymptomatic.	newborn period should be presumed to be from sexual abuse. There is little known about the persistence of asymptomatic rectal and pharyngeal infections	Misidentification will occur if these methods are not followed.
<p>Chlamydia</p> <p><i>Chlamydia trachomatis</i></p> <ul style="list-style-type: none"> -vagina -cervix -urethra -rectum 	<p>Most chlamydia infections do not cause symptoms.</p> <p>Tissue culture tests should be positive 5-7 days after contact. Identification earlier than this is very unlikely.</p>	<p>Perinatal infection may be unrecognized for years. Asymptomatic vaginal and rectal perinatal infections have been documented for up to 3 years.</p> <p>A chlamydia infection should be presumed to be from sexual abuse if perinatal infection has been excluded.</p>	<p>The <u>only</u> acceptable method is positive bacterial tissue CULTURE.</p> <p>Misidentification will occur if other methods are used.</p>
<p>Syphilis</p> <p><i>Treponema pallidum</i></p> <p>Primary infection causes a painless ulcer at the site of contact.</p>	<p>Primary infection usually occurs about 3 weeks after infection (range from 10 to 90 days).</p> <p>Secondary syphilis causes rash, fever, and other symptoms 1 – 2 months later. Condyloma latum, a wart like rash, may be seen around the anus and vagina.</p>	<p>Perinatal infection often occurs. It is routine practice in newborn nurseries to screen for maternal syphilis at the time of delivery.</p> <p>Infection is almost always spread by direct sexual contact. Non-sexual transmission, other than perinatal infection, would be extremely unusual. Infection should be presumed to be through sexual abuse unless acquired by perinatal (congenital) infection.</p>	<p>Although definitive diagnosis can be made by microscopic identification, adequate specimens are usually not available for this type of testing.</p> <p>Most cases of syphilis are diagnosed through serologic blood tests. A presumptive diagnosis of syphilis can be made if there is a positive non-treponemal test (RPR, VDRL, or ART) and a positive treponemal tests (FTA-ABS or MHA-TP).</p>
<p>Condyloma acuminata (Venereal warts)</p> <p>Human papilloma virus (HPV)</p> <ul style="list-style-type: none"> -vagina -penis -anus 	<p>Infection may cause skin-colored growths that vary in size from a few millimeters to many centimeters. Infections may cause no visible warts.</p> <p>The incubation period may be 2 years or longer.</p>	<p>Infection may be transmitted during birth, through sexual contact or by non-sexual contact.</p> <p>Sexual abuse should be considered in any child with anal or genital warts.</p>	<p>The diagnosis is usually made by their appearance on physical examination.</p> <p>The wart can be surgically removed and, in some centers, the virus type can be determined. Over 70 types of wart viruses have been identified. It is unclear if determination of the wart type is of any value when evaluating alleged sexual abuse.</p>
<p>Trichomonas</p> <p><i>Trichomonas vaginalis</i></p> <ul style="list-style-type: none"> -vagina -urethra 	<p>Many infections are asymptomatic. Male urethral infection is often asymptomatic.</p> <p>Vaginal discharge may develop between 4 – 28 days after contact.</p>	<p>Perinatal vaginal infection may persist for many months following birth.</p> <p>Infection is usually by sexual contact.</p> <p>Non-sexual transmission is very unlikely, although possible.</p>	<p>Microscopic identification or bacterial culture of vaginal secretions.</p> <p>Must be differentiated from other types of trichomonas if identified in analysis of urine or stool.</p>
Herpes	Painful ulcers occur	The most common infection in	The diagnosis can be made

<p>Herpes simplex virus, types I and II</p> <p>-vagina -penis -anus -mouth</p>	<p>within 2 weeks following contact.</p> <p>Reactivation of the infection often occurs and results in ulcers at or near the site of primary infection.</p>	<p>children is gingivostomatitis, an infection of the mouth. It is not transmitted sexually.</p> <p>Infection of the genitalia or infection around the anus may be due to sexual contact. Non-sexual transmission is also possible.</p>	<p>based upon the appearance of the ulcers. The virus can be cultured if the diagnosis is in question.</p> <p>Type I and type II both cause genital and peri-anal ulcers. Identification of the virus type does not differentiate sexual from non-sexual transmission.</p>
<p>HIV/AIDS</p> <p>Human immunodeficiency virus</p>	<p>Signs of illness are delayed for up to 6 or more years.</p> <p>Symptoms include swollen lymph nodes, failure to thrive, fungal and other infections.</p>	<p>Infection is spread by contact with infected semen, blood, cervical secretions or human milk.</p> <p>Approximately 1 in 4 infants born to mothers with HIV will be infected.</p> <p>Other methods of infection in children include contaminated blood or blood products during transfusion, IV drug abuse or sexual abuse.</p>	<p>Finding HIV antibodies in the blood makes a presumptive diagnosis. Other tests confirm the diagnosis. In infants under 18 months old, other tests are needed if the infant's mother is HIV positive.</p> <p>Tests are often positive within 6-12 weeks after exposure, but may take as long as 6 months to become positive.</p>
<p>Bacterial vaginosis (BV)</p> <p><i>Gardnerella vaginalis</i> & other bacteria -vagina</p>	<p>May cause vaginal discharge. Some infections are asymptomatic.</p>	<p>This organism is most often seen in sexually active women but has been found in girls and women who have had no sexual contact and have not been sexually abused.</p>	<p>Identification is made by microscopic analysis, bacterial culture and by other methods.</p>
<p>Molluscum contagiosum</p> <p>poxvirus</p> <p>May occur anywhere on the body</p>	<p>Small bumps with a central depression.</p> <p>The incubation period is 2 weeks to 6 months.</p>	<p>This virus is spread by direct contact.</p> <p>It is most often transmitted by non-sexual contact.</p>	<p>Diagnosis is made by the clinical appearance of the rash.</p>
<p>Pubic Lice (crabs)</p> <p><i>Pediculus phthirus</i></p> <p>-eyelashes -eyebrows -genital hair -perianal hair -beard -arm pits -scalp(rarely)</p>	<p>The most common site of infection in young children is the eyelash.</p> <p>Nits (eggs) can be seen as well as the movement of lice.</p>	<p>In adolescents, transmission is usually sexual. Non-sexual transmission through contaminated towels is possible.</p> <p>Sexual abuse should always be considered in children infected with pubic lice.</p>	<p>The diagnosis is made by the clinical appearance of the lice.</p> <p>Head lice do not infect eyelashes. Lice infestations of the eyelashes are pubic lice.</p> <p>Microscopic examination of the louse can be done if there is any doubt about the type of louse causing the infestation.</p>
<p>Hepatitis B</p>	<p>Some children will have no symptoms.</p>	<p>Perinatal transmission occurs if the mother is infectious.</p>	<p>The diagnosis is made from serologic blood tests.</p>

<p>Hepatitis B virus (HBV)</p> <p>Causes systemic illness</p>	<p>Others will have loss of appetite, stomach pain and jaundice. Infection can cause death.</p> <p>The incubation period is 45 – 160 days after contact.</p>	<p>Both sexual and non-sexual transmission occurs. Children who live with HBV carriers are at risk, as are children who live in institutions for the developmentally disabled.</p> <p>Infection is transmitted through infected blood, wound secretions, semen, cervical secretions and saliva.</p>	<p>Vaccination is recommended for all children. It is 90% – 95% effective in preventing infection.</p>
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References:

1. Sexually Transmitted Diseases. *In* Peter, G. ed 1997 *Red Book: Report of the Committee on Infectious Diseases*. 24th edition.. Elk Grove Village, IL.: American Academy of Pediatrics; 1997: 108-116.
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