Sexually Transmitted Infections and Children: What the PNP Should Know CE

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ABSTRACT

Sexual abuse is a problem of epidemic proportions in the United States. In their practice, pediatric nurse practitioners will likely encounter children who have experienced sexual abuse—both those who have and have not previously been identified as victims. Sexually transmitted infections (STIs) are rare in sexually abused children and adolescents. However, when present, they can be crucial to making the diagnosis of sexual abuse and protecting children. This continuing education article will assist the pediatric nurse practitioner in interpreting the relationship between STIs and sexual abuse, correctly testing for STIs, and treating STIs in children and adolescents. J Pediatr Health Care. (2017) *31*, 222-229.

KEY WORDS

Sexually transmitted infections, sexual abuse

OBJECTIVES

1. The learner will be able to order the most sensitive and specific laboratory tests for sexually transmitted infections in children and adolescents.
2. The learner will understand when testing for sexually transmitted infections is indicated.
3. The learner will understand the relationship between specific sexually transmitted infections and child sexual abuse/assault.

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Sexual abuse is a problem of epidemic proportions in the United States. According to the U.S. Department of Health & Human Services (2015), 62,000 children were victims of sexual abuse in 2014. This number represents only a fraction of American children who actually experience sexual abuse. Based on retrospective studies of adults, only about 1 in 20 victims of sexual abuse disclose in childhood (Kellogg, 2005). In their practice, pediatric nurse practitioners (PNPs) will likely encounter children who have experienced sexual abuse, both those who have and have not previously been identified as victims. It is vital that PNPs possess an understanding of sexual abuse and when it is reasonable to have a concern that a child may be a victim of sexual abuse. A history of sexual abuse given by the child is the strongest indicator of sexual abuse (Hornor, 2011). Physical findings that raise concern for sexual abuse are uncommon. Only between 4% to 10% of children who give a history of sexual abuse will have an abnormal finding on anogenital examination (Eg, Hansen, Sabroe, & Charles, 2015). Fewer than 5% of sexually abused children will have a sexually transmitted infection (STI; Rahman, Ocampo, Rubinstein, & Risso, 2015). However, the presence of an abnormal anogenital finding on examination and/or the presence of an STI can be crucial to making the diagnosis of sexual abuse and protecting children from further abuse. This continuing educational article will assist the PNP in interpreting the relationship between STIs and sexual abuse, correctly testing for STIs, and treating STIs in adolescents and children.

INDICATIONS FOR STI TESTING

STI testing may be indicated in children who have already disclosed sexual abuse and in those who have not yet disclosed (see Box 1). A positive STI result may be the first indicator or at times the only indicator of sexual abuse. When children give a history of experiencing sexual abuse, their histories of abuse can be used to

BOX 1. Indications for sexually transmitted infection testing

- Child disclosure of sexual abuse
  - Genital-genital contact
  - Anal-genital contact
  - Oral-genital contact
  - Oral- anal contact
- Genital and/or anal discharge
- Unexplained genital and/or anal injury (acute or chronic)
- Known or suspected sexual contact with a perpetrator or partner known to have a sexually transmitted infection
- Sibling with a sexually transmitted infection and sexual abuse is a concern

guide STI testing (see Table 1). Children or adolescents with unexplained acute or chronic genital and/or anal trauma should be tested for STIs. An unexplained genital and/or anal injury can be an indicator of sexual abuse, and therefore the possibility of sexual abuse must be explored. Genital or anal discharge is also an indicator for STI testing (Bechtel, 2010). Gonorrhea (GC) and chlamydia trachomatis (CT) in prepubertal children often result in symptoms such as discharge (Bechtel, 2010). Certainly genital/anal discharge is not diagnostic of either sexual abuse or an STI; however, when it is present, testing for CT, GC, and trichomonas vaginalis (TV) is indicated. Other nonsexual causative factors for genital discharge may be present, such as a vaginal foreign body, microorganisms, and hygiene concerns (Cemek, Odabas, Senel, & Kocaman, 2015). Pubertal females with an STI may or not have a vaginal discharge; CT often presents asymptomatically (Bechtel, 2010). Children or adolescents known or suspected to have had sexual contact with a perpetrator known to have an STI should be tested for STIs. Understanding that children are often reluctant to disclose sexual abuse, this testing should be completed regardless of whether the child or adolescent is disclosing sexual abuse. If a child/adolescent tests positive for GC, CT, or TV from any orifice, they should also have testing completed for human immunodeficiency virus (HIV), syphilis, hepatitis B (HBV), and hepatitis C (HCV). Children/adolescents testing positive for genital herpes or diagnosed with genital/anal warts should also be tested for GC, CT, TV, HIV, syphilis, HBV, and HCV. See Box 2 for additional sexually transmitted infection testing indicated for all children and adolescents with the diagnosis of another sexually transmitted infection.

> A positive STI result may be the first indicator or at times the only indicator of sexual abuse.

TABLE 1. Type of sexually transmitted testing indicated

Type of sexual contact	Type of testing
Genital-genital contact	NAAT for CT/GC/TV (urine or genital swab)[a]
Unexplained genital injury	Or genital culture in prepubertal males[b]
Genital discharge	HIV/RPR/HCV antibody/HBV surface antigen
Anal-genital contact	NAAT for CT/GC (anal swab)
Unexplained genital injury	Or anal culture for CTG/GC[b]
Anal discharge	HIV/RPR/HCV antibody/HBV surface antigen
Oral-genital contact	NAAT for GC (pharyngeal swab)
Child to perpetrator's genitals	Or pharyngeal culture for GC[b]
Oral-genital contact	NAAT for chlamydia/GC (urine or genital swab)[a]
Perpetrator to child's genitals	
Oral-anal contact	NAAT for GC/chlamydia (anal swab)
Perpetrator to child's anus	Or anal culture[a]

Note. *CT, chlamydia trachomatis; GC, gonorrhea; HIV, human immunodeficiency virus; HBV, hepatitis B; HCV, hepatitis C; HIV, human immunodeficiency virus; NAAT, nucleic acid amplification; RPR, rapid plasma reagin; TV, trichomonas vaginalis.*
[a]*Urine specimen for girls of all ages and pubertal males/genital swab may provide increased sensitivity in pubertal females. Consider in prepubertal males.*
[b]*CDC recommendation, however, may result in false-negative testing; if laboratory meets regulatory specifications for off-label testing, NAAT testing may be indicated.*
Data from Centers for Disease Control & Prevention, 2015.

METHODS OF TESTING FOR STIs

Some controversy exists regarding the preferred method for STI testing, specifically CT, GC, and TV, especially when sexual abuse is a concern. The gold standard for CT, GC, and TV testing historically has been a genital, anal, or pharyngeal culture (American Academy of Pediatrics [AAP], 2009). Concerns exist with regard to the sensitivity but not the specificity of the method. A test with good sensitivity is good at identifying persons who have the disease, but some people who do not have the disease may test positive for the disease. A test with good specificity is good at identifying persons who do not have the disease but may fail to identify some persons who actually have the disease. The culture method offers 100% specificity; it will test negative when no disease is present. A culture, however, does not offer 100% sensitivity; some persons who have the disease may test negative via a culture. Obtaining a genital culture can be uncomfortable and intrusive, especially in prepubertal girls (Leder, Leber, Marcon, & Scribano, 2013). Also, the efficacy of culture method is dependent on the skill of the examiner. Culture specimens require special attention in transport. When screening for STIs, especially in the context of child sexual abuse, a laboratory test offering ease of specimen collection and handling, as well as good sensitivity and specificity, is needed.

BOX 2. Additional sexually transmitted infection testing indicated in children/adolescents with diagnosis of another sexually transmitted infection

- Urine for chlamydia/gonorrhea/trichomonas
- HIV antibody 1 and 2
- RPR
- Hepatitis B surface antigen
- Hepatitis C antibody

Note. *HIV, human immunodeficiency virus; RPR, rapid plasma reagin.*
Data from Hornor, 2011.

Nucleic acid amplification (NAAT) testing offers a highly sensitive and specific method of testing for CT, GC, and TV (Esernio-Jenssen & Barnes, 2011). NAAT offers increased ease of specimen collection and management. A dirty urine specimen can be used to test for genital CT, GC, and TV. Manufacturing laboratories often supply their own testing materials and will answer clinical questions regarding their specific system. Leder and colleagues (2013), in a study of girls being evaluated for sexual abuse concerns, found that the APTIMA Combo 2 Assay (Hologic, Inc., Marlborough, MA), an NAAT with a second target confirmation of the same testing platform, had excellent sensitivity and specificity for detection of CT and GC on both urine and genital swabs. The Centers for Disease Control and Prevention (CDC), in a multicenter study evaluating the use of NAAT versus culture for identifying CT and GC in children, found the use of NAAT increased the detection of CT and GC by 33% (Black et al., 2009). The CDC (2015) recommends the use of NAAT to detect CT and GC in prepubertal girls and in pubertal girls and boys. The CDC (2015) does not recommend NAAT for CT and GC in prepubescent boys or for extragenital sites (pharyngeal or anal) in prepubescent girls or boys. These recommendations are based on the study by Black and colleagues (2009) that did not include any boys who tested positive for an STI; in addition, extragenital site comparison testing was not included in the study. When extragenital site testing is indicated, consider the aforementioned limitations to the culture method. Testing by culture only may result in false-negative results. NAAT has been studied in adults and has been found to have superior sensitivity when compared with culture and specificity that is acceptable in clinical practice when testing for pharyngeal or anal CT or GC (Adams et al., 2015). NAAT testing for TV in adults, both by urine and vaginal swab, has been found to have good specificity an offers improved sensitivity compared with wet mount and culture (Esernio-Jenssen & Barnes, 2011). TV NAAT has not been studied in children. The extreme low numbers of any STIs in prepubertal boys, genital TV in prepubertal girls and boys, and extragenital CT or GC in children make studying the population difficult. This can lead to confusion for the practitioner. Understanding the process of confirming a positive NAAT result regardless of organism or specimen site can aid the practitioner in feeling confident of positive test results (see Box 3). A second specimen should be collected for repeat NAAT testing, and a culture specimen also can be collected at that time. Confirmatory testing should be completed prior to treating the infection. A referral to a child advocacy center or a child abuse specialist is appropriate upon receiving the initial positive STI result to ensure correct intervention regarding confirmatory testing and treatment. Test of cure 3 weeks after every positive result can eliminate the possibility of treatment failure and explore the possibility of repeat abuse (Rao & Canter, 2015). From a forensic perspective, for the purposes of court testimony, the PNP must be able to describe, in basic terms, how the specimen was collected, processed, and confirmed (Esernio-Jenssen & Barnes, 2011). The CDC (2015), recognizing potential limitations to testing via culture method, has offered this caveat regarding NAAT testing for CT, GC, and TV: laboratories that have met all regulatory requirements for off-label procedures (extragenital or urine in boys) may utilize NAAT testing.

Serologic testing for HIV, syphilis, HBV, and HCV requires collecting a blood specimen for testing of the serum. Sera can be tested for antibodies to *Treponema pallidum* (syphilis), HIV, HBV, and HCV (CDC, 2015). HIV antibody 1 and 2 is an adequate screening test with repeat confirmatory testing if positive. Hepatitis B surface antigen can screen for exposure to the virus; HBV antibody will react positive in persons who have been immunized against hepatitis B. HCV antibody is the appropriate screening test for HCV. A quantitative HCV ribonucleic acid is used to confirm a positive HCV antibody result. A presumptive diagnosis of

BOX 3. Confirmation of positive nucleic acid amplification specimens in prepubertal children

- Positive urine or site specific NAAT for CT/GC/TV[a]
- Repeat urine or site-specific NAAT for the positive organism
- Site-specific culture for the organism also may be completed
- Treat for the organism
- Test of cure for the organism in 3 weeks; repeat the original NAAT testing completed

Note. *CT, chlamydia trachomatis; GC, gonorrhea; NAAT, nucleic acid amplification; TV, trichomonas vaginalis.*
[a]*Referral to/consultation with a child advocacy center or child abuse specialist would be appropriate.*

syphilis requires use of two tests: a nontreponemal test (venereal disease research laboratory [VDRL] or rapid plasma reagin [RPR]) and a treponemal test (fluorescent treponemal antibody absorption [FTA-ABS]). Testing with only one type of serologic test for syphilis is insufficient for diagnosis and can result in false-negative results in persons tested during primary syphilis and false-positive results in persons without syphilis (CDC, 2015). If a child's RPR (nontreponemal test) is positive, an FTA-ABS (treponemal test) should be completed to confirm the diagnosis of syphilis. Serologic testing for HIV, RPR, HBV, and HCV can remain negative for several months after exposure, and therefore serologic testing should be repeated 6 weeks, 3 months, and 6 months after an incident of acute sexual abuse/assault, acute anogenital injury, or testing positive for CT, GC, or TV (CDC, 2015).

Anogenital warts are caused by the human papilloma virus (HPV) and are typically diagnosed by detection of the lesion on physical examination. Anogenital HPV can be sexually and nonsexually transmitted. The mode of transmission cannot be determined by clinical appearance of the warts or by HPV typing; HPV culture or typing is not indicated for diagnosis or treatment (Bechtel, 2010). Children should be referred to a dermatologist, pediatric gynecologist, or child abuse specialist for confirmation of the diagnosis.

A clinical diagnosis of anogenital herpes simplex virus (HSV) infection must be confirmed with laboratory testing. The sensitivity of viral culture is low and is dependent upon examiner skill, handling of the specimen, and the evolution of the lesion in the healing process (CDC, 2015). Polymerase chain reaction (PCR) assays for HSV DNA are more sensitive than culture, and PCR assay also allows for differentiation of HSV-1 and HSV-2. HSV viral culture or HSV PCR are indicated only when active anogenital lesions are present (CDC, 2015). HSV serologies are rarely if ever indicated in cases of suspected child sexual abuse because of difficulties interpreting the significance of a positive result.

STI PROPHYLAXIS AND TREATMENT

Because of the potential forensic value and the lack of concern regarding ascending infection, prepubertal children should always have confirmatory testing completed for all STIs prior to treatment. The only STI for which prophylaxis after sexual exposure is considered in both the prepubertal and adolescent population is HIV. The risk of contracting HIV from sexual abuse is relatively low. Gellert, Durfee, Berkowitz, Higgins, and Tubiolo (1993) examined 5,622 children with a history of sexual abuse and found that 28 (0.4%) were HIV positive. When contemplating whether HIV postexposure prophylaxis (PEP) is indicated, there are certain factors to consider to aid in determining potential risk to the child (see Box 4). The risk of HIV transmission from oral-genital contact is extremely low because saliva inhibits HIV infectivity and HIV is rarely isolated from saliva (Gellert et al., 1993). However, saliva contaminated with HIV-infected blood poses a substantial risk of transmission (CDC, 2016). Adolescents engaging in high-risk consensual sex also may meet criteria for HIV PEP if they are presenting within 72 hours of having sex. HIV PEP must be taken for 28 days and can be toxic to bone marrow and the liver; therefore, baseline laboratory test results must be obtained prior to initiating PEP (see Box 5). The HIV PEP medications prescribed to adolescents (12 years or older and weighing 35 kg or more) are typically Truvada (emtricitabine, 200 mg/tenofovir, 300 mg) with Isentress (raltegravir,

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BOX 4. Factors to consider when contemplating human immunodeficiency virus postexposure prophylaxis administration

- Time since potential exposure
  - 72 hours or less since latest incident of sexual abuse/assault/contact
- Types of sexual exposure resulting in increased risk of HIV transmission
  - Unprotected anal intercourse (recipient): 0.5%-3.2% risk
  - Unprotected vaginal intercourse (female): 0.05%-0.15% risk
  - Unprotected vaginal intercourse (male): 0.03%-0.09% risk
- Perpetrator factors resulting in increased risk of HIV transmission
  - Known perpetrator
    - HIV positive
    - Known to engage in male-to-male sex
  - Unknown perpetrator
    - Risk increases because of possibility of perpetrator risk factors
- Anogenital examination findings that increase the risk of HIV transmission
  - Acute anogenital injury
    - Bleeding
    - Transections/lacerations
    - Bruising
    - Swelling
    - Unexplained injury

Note. *HIV, human immunodeficiency virus.*
Data from New York State Department of Health AIDS Institute, 2014, and Havens & the Committee on Pediatric AIDS, 2003.

BOX 5. Recommended baseline laboratory testing when initiating human immunodeficiency virus postexposure prophylaxis

- HIV antibody 1 and 2 (repeat at 6 weeks, 3 months, and 6 months)
- HBV surface antigen
- HCV antibody
- CBC with differential
- ALT
- AST
- Alkaline phosphatase
- BUN
- Creatinine

Note. *ALT, alanine aminotransferase; AST, aspartate aminotransferase; BUN, blood urea nitrogen; CBC, complete blood cell count; HBV, hepatitis B virus; HCV, hepatitis C virus; HIV, human immunodeficiency virus.*
Data from Centers for Disease Control & Prevention, 2015.

400 mg) or Tivicay (dolutegravir, 50 mg). Medications prescribed to children (younger than 12 years or weighing less than 35 kg) are Kaletra (lopinavir/ritonavir) or Isentress (raltegravir) with lamivudine (Epivir), and zidovudine (Retovir; CDC, 2016; New York State Department of Health AIDS Institute, 2014). HIV PEP medications, especially those taken by children younger than 12 years, can result in nausea and general malaise; therefore, provision of an antiemetic agent is often necessary.

Postexposure prophylaxis for CT, GC, or TV is never indicated in the prepubertal population regardless of the timing of the latest incident of sexual abuse, the history of sexual abuse given by the child, the presence of acute anogenital injury, or the knowledge that the alleged perpetrator of the abuse has CT, GC, or TV. However, CT, GC, or TV prophylaxis is indicated in adolescents who give history of sexual abuse/assault involving genital-genital, anal-genital, or oral-genital contact that has occurred within 72 hours. Prophylaxis is indicated in adolescents because of the risk of ascending infection and also to prevent potential further transmission of the infection in adolescents who have been sexually abused or assaulted but are also engaging in consensual sex. Prophylaxis also may be indicated in adolescents who have engaged in high-risk consensual sex if partner is known to have CT, GC, or TV or if the adolescent is at risk not to follow up for treatment if positive. See Table 2 for CDC recommendations for CT, GC, or TV prophylaxis and treatment in adolescents. See Table 3 for treatment recommendations for CT, GC, or TV in children. Again, STI treatment in the prepubertal population should not occur until confirmatory testing has been obtained.

TABLE 2. Chlamydia, gonorrhea, and trichomonas prophylaxis and treatment in adolescents[a]

Organism	Medication	Type of sexual contact
Chlamydia	Azithromycin, 1 g by mouth × 1	Genital-genital
		Anal-genital
Gonorrhea	Ceftriaxone, 250 mg intramuscular × 1 and azithromycin, 1 g by mouth × 1	Genital-genital
		Anal-genital
		Oral-genital
Trichomonas	Metronidazole, 2 g by mouth × 1	Genital-genital

Note. [a]*Treatment is indicated in adolescents with a positive nucleic acid amplification or culture result who have not previously received prophylaxis regardless of history of sexual contact given.*
Data from Centers for Disease Control & Prevention, 2015.

The CDC (2015) and the AAP (2009) both recommend the HPV vaccination for all 11- to 12-year-olds, both boys and girls, to prevent cancers and genital warts. The HPV vaccine has been proven to be effective in preventing cervical, vaginal, vulvar, anal, penile, and oropharyngeal cancers (Bailey et al., 2016). The CDC (2015) recommends that children who have been sexually abused receive the HPV vaccination at age 9 years.

TABLE 3. Chlamydia, gonorrhea, and trichomonas treatment in prepubertal children

Organism	Age/weight	Medication
Chlamydia	< 45 kg	Erythromycin base or ethylsuccinate 50 mg/kg/day divided 4 times daily Orally × 14 days
	> 8 years or > 45 kg	Azithromycin, 1 g by mouth × 1
Gonorrhea	< 45 kg	Ceftriaxone, 25-50 mg/kg intramuscular × 1 (not greater than 125 mg intramuscular)
	> 45 kg	Ceftriaxone, 250 mg intramuscular × 1 and Azithromycin, 1 g by mouth × 1
Trichomonas	< 45 kg	Metronidazole, 15 mg/kg/day divided 3 times daily × 7 days orally Maximum dose 2,000 mg/day
	> 45 kg	Metronidazole, 2 g by mouth × 1

Data from American Academy of Pediatrics, 2009, and Centers for Disease Control & Prevention, 2015.

INTERPRETATION OF STI RESULTS

It is crucial for PNPs to understand the relationship between STIs and sexual abuse. Different factors can affect this relationship. The significance of a positive STI result varies by pathogen (see Table 4). Bacterial vaginosis, candida infections, and urinary tract infections do not raise concern for sexual abuse (CDC, 2015). The age of the child and whether an adolescent is reporting consensual sexual activity also affect the significance of a positive STI result. Knowledge of state law regarding age of consent for sexual activity and nuances regarding legally acceptable ages for sexual partners of adolescents is important for the PNP to possess to be able to interpret the significance of a positive STI result. A positive STI result, especially in a prepubertal child, can offer near diagnostic certainty that sexual abuse has occurred. A positive STI result for any organism in a prepubertal child should be confirmed by collection of a second specimen whenever possible. A second specimen should be collected prior to initiation of infection treatment. A slight delay in treating a prepubertal child with an STI does not run the risk for ascending infection and the development of pelvic inflammatory disease as it does in an adolescent. Confirmatory testing should not delay an initial referral to child protective services (CPS). The child can be treated for the STI at the time of confirmatory specimen collection. However, if confirmatory test is negative, CPS should be informed of the conflicting results, and the legal ability to state that the child indeed had a STI is diminished. If confirmatory testing reaffirms the presence of a STI, CPS should be informed, and thus legally the diagnosis of the STI is strengthened.

> A positive STI result, especially in a prepubertal child, can offer near diagnostic certainty that sexual abuse has occurred.

Other factors must be considered when interpreting the relationship between STIs and sexual abuse. Perinatal transmission of all STIs is possible; the significance varies by pathogen. Perinatal transmission of gonorrhea (GC) may persist for the neonatal period; outside of this brief period, the presence of an oral, anal, or genital GC infection makes sexual abuse a near certainty (Spivey, Paschall, Ferret, & Alexander, 2011). CT infection can be perinatally acquired and can persist for as long as 2 to 3 years (CDC, 2015). Keep in mind that perinatal transmission of CT is rare because of prenatal screening and treatment of pregnant women. Genital or anal CT infection is nearly always diagnostic of sexual abuse, and even in a child younger than 3 years it should be reported to CPS and an investigation should be completed. TV infection also can be prenatally acquired; the length of infection persistence is unknown (Trintis, Epie, Boss, & Riedel, 2010). Genital TV infection is also diagnostic of sexual abuse and even in a child younger than 3 years should be reported to CPS. When reporting CT or TV in a child younger than 3 years, report concerns of suspected sexual abuse with the caveat that perinatal transmission is a possibility. CPS and law enforcement will need to consider this fact in their investigation.

TABLE 4. Interpretation of positive sexually transmitted infection results

STI confirmed	Sexual abuse	Action
Neisseria gonorrhea	Diagnostic	Report
Genital		
Rectal/anal		
Pharyngeal		
Chlamydia trachomatis	Diagnostic	Report
Genital		
Rectal/anal		
Trichomonas vaginalis	Diagnostic	Report
Genital		
Syphilis	Diagnostic	Report
HIV	Diagnostic	Report
Anogenital herpes (HSV)	May be concerning	Consider reporting
Anogenital condyloma (warts)	May be concerning	Consider reporting

Note. *HIV, human immunodeficiency virus; HSV, herpes simplex virus; STI, sexually transmitted infection.*
Perinatal transmission must be ruled out for all except HSV.
HIV—also rule out blood transfusion.
HSV—if clear history of auto-inoculation is noted (child with a history of oral HSV lesions) and no other indicators of sexual abuse are present, nonsexual transmission may be most likely.
Condyloma (anal or genital) in the absence of other indicators of sexual abuse is often vertically transmitted; obtain mother's gynecological history; lesions first appearing at age 5 years or older may be more concerning for sexual abuse.
Data from Adams et al., 2015.

Syphilis can also be transmitted vertically from an infected mother (Long, Wang, Jiang, Zhang, & Shang, 2012). Determination of mother's syphilis status is typically required prior to the infant's discharge from the newborn nursery (CDC, 2015). Syphilis can be transmitted after the neonatal period by nonsexual modes such as living in close contact with infected adults and transmission via cutaneous or oral mucous patch exposure (Dalton, Hossler, Maroon, Pride, & Shabanowitz, 2013). However, sexual abuse is the most likely means of transmission for syphilis after the neonatal period. Syphilis is rare in sexually abused children and when present should always be reported to CPS.

HIV can be transmitted perinatally from mother to child, from sharing contaminated needles, or from blood transfusions with contaminated blood. HIV also can be sexually transmitted. When perinatal or blood

transfusion/contaminated needle transmission can be eliminated and HIV is present in a child, the concern for sexual abuse is very high; a report to CPS is indicated. HIV is also rare in sexually abused children.

Both hepatitis B and hepatitis C can be perinatally transmitted. Hepatitis B is transmitted when blood, semen, or another body fluid from a person infected with HBV enters the body of a person not infected with HBV. HBV can be transmitted through sex and sharing needles. Although HBV can be transmitted via sexual abuse, most children become infected with HBV as a result of household exposure to persons who have chronic HBV infection (CDC, 2015). HCV is a blood-borne infection and can be transmitted through sex. Although most frequently found in intravenous drug users, approximately 10% of persons diagnosed with HCV deny intravenous drug use (Falade-Nwulia et al., 2016). Most children acquire HCV perinatally; if vertical transmission can be ruled out, sexual abuse must be considered.

Genital herpes and anogenital warts can be transmitted via sexual abuse. However, both can be nonsexually transmitted. Genital herpes is caused by HSV. HSV can be innocently transmitted to the genital area via autoinoculation (a child with active oral herpes lesions touching their mouth and then their genitals) or from caregivers during diapering, bathing, and toileting (Hornor, 2006). Typing of HSV does not help determine whether sexual abuse was the mode of transmission for the virus because up to 20% of adult cases of genital herpes are due to type 1 (Bechtel, 2010). Unless a clear history of autoinoculation can be determined, the diagnosis of genital herpes warrants a report to CPS. Anogenital warts are caused by HPV. Anogenital warts in children may be the result of perinatal vertical transmission, indirect transmission through contaminated objects or surfaces (typically multiple family members are infected), autoinoculation (a child or caregiver with other cutaneous warts), or sexual abuse (Varma, Lathrop, & Haddad, 2013). Vertical transmission of anogenital warts is most likely in infants younger than 2 years (Varma et al., 2013), and lesions appearing for the first time in a child older than 5 years may be more likely to be sexually transmitted (Adams et al, 2015). When anogenital warts are present in a child for whom a previous concern for sexual abuse has not been identified, consider a report to CPS, especially if vertical transmission does not seem likely or the child is 5 years or older.

A positive STI result in a child/adolescent already giving a history of sexual abuse can certainly support the statements given by the child/adolescent. A positive STI diagnosis in a child/adolescent not giving a history of sexual abuse may be the factor that reveals a concern for sexual abuse. Every child will need a forensic interview, a thorough anogenital examination by a skilled examiner, and testing for other STIs. When a child or an adolescent not meeting the criteria for legal sexual activity is diagnosed with an STI, a report to CPS is indicated. A referral to a child advocacy center or child abuse specialist also may be initiated depending upon community protocol.

When a child tests positive for an STI, investigative agencies such as CPS and law enforcement often place great effort into testing persons with whom the child has had contact. PNPs also need to know how to interpret the significance of STI testing results of potential sexual abuse perpetrators to assist investigators. For the infections most commonly found in sexually abused children (GC, CT, and TV), a negative STI test in a contact does not eliminate that individual as the child's perpetrator. The following possibilities exist: a person may have naturally cleared the infection at the time the specimen was collected; the person may have already clandestinely been treated for the infection; or the person may have been treated with an antibiotic for other infections, which inadvertently results in a negative test for the STI (Lo, Say, & Healy, 2010).

It is vital for PNPs to understand the relationship between STIs and sexual abuse/sexual assault in children and adolescents. Although rare in the sexually abused population, an accurate STI diagnosis can identify children/adolescents who have been sexually abused and support a disclosure of sexual abuse that has been made. Understanding nuances regarding need for confirmatory testing, timing of infection treatment, and need for test of cure is crucial. PNPs play an important role in the identification of, intervention for, and protection of children and adolescents who have experienced sexual abuse/assault.

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