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# The Laboratory's Role in Evaluating Sexually Transmitted Diseases as a Result of Sexual Abuse

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## Abstract

The microbiology laboratory is involved in the evaluation of patients for presumed sexual abuse when children are examined for the presence of a sexually transmitted disease (STD). Cultures for *Chlamydia trachomatis* and *Neisseria gonorrhoeae* are currently used as the forensic standard when sexual abuse is suspected. Culture methods for both of these agents are insensitive in this patient population and may require invasive sampling for adequate specimen collection. Until recently, the utility of nucleic acid amplification tests in the evaluation of children who might have been sexually abused has not been adequately evaluated. The sensitivity of these assays also allows them to be performed with non-invasive sample types, such as urine and vaginal specimens. This article reviews the performance of molecular assays for the diagnosis of common sexually transmitted infections associated with child abuse.

## Introduction

Child maltreatment and sexual and physical abuse are pervasive problems that transcend all socioeconomic boundaries. In general, child maltreatment encompasses exploitation and abuse, and it can be defined as acts or failures to act that put a child into the threat of immediate harm or physical, emotional, or sexual abuse (1,2).

Of the 3.5 million children evaluated for evidence of maltreatment and abuse each year, nearly 1 million are known to be victims of maltreatment and abuse, with a rate of 12.1 per 1,000 child population. Child sexual abuse accounted for 8.8% of all abuse evaluated in 2006. While 64.1% of these children were neglected, 16% were physically abused, 6.6% were psychologically maltreated, and another 2.2% were medically neglected. In 2005, nearly 84,000 children were reported as victims of sexual abuse (3). The CDC and the American Academy of Pediatrics recommend that children suspected of being sexually abused be evaluated for sexually transmitted diseases (STDs) (3).

Signs and symptoms of STDs are not often present. Published indications for evaluation for STDs are (i) signs or symptoms of an STD, (ii) evidence of oral or genital penetration, with suspected assailant known to have an STD, or (iii) high community prevalence of STDs (3).

## Patient Examination

A child's examination, history, interview, testing, and other factors play roles in determining the guilt or innocence of a suspected sexual perpetrator. The results of forensic interviews, histories, and laboratory data from a previous study conducted by the authors (4) are presented in Table 1. The child who discloses sexual abuse, voluntarily or involuntarily, requires immediate care by specialized providers. Children's advocacy centers and multidisciplinary teams are available in most areas of the United States for this purpose. These facilities provide a site where a team of specialists works with law enforcement, child protective services, and the prosecution to provide comprehensive

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services for children and their nonoffending family. This evaluation includes interviews of the children, conducted by the agencies, about the details of their abuse experiences; physical examinations; testing for residua of sexual abuse; referral for counseling; ongoing investigation and interventions by the appropriate agencies; and the use of other services to begin the child's healing process.

When indicated by history or physical findings consistent with sexual abuse, genital examination and evaluation for STDs are also performed. Testing is performed for gonorrhea, *Chlamydia*, and, as indicated, other infections, such as herpes and HIV (Table 2). Although children with gonorrhea, like adults, often have genital discharge containing viable organisms, they do not always have discharge. Also, children who have contracted *Chlamydia* infections usually do not have discharge and are not shedding organisms liberally from their genitals. Accordingly, the classical method of obtaining cultures for these infections is by introducing swabs into the vagina and penis using methods known by child abuse specialists. Although testing generally does not cause severe pain, acquisition of these specimens is not pain free for many children, and the introduction of swabs into the genitalia is anxiety provoking for most.

**Table 1. Testing compared with history and physical examination**

| Name | Age (yr) | Pathogen detected | History[a] | Examination[b] |
|---|---|---|---|---|
| ND | 14 | CT[c] | + | + |
| GB | 5 | CT | + | - |
| JS | 13 | GC[c] | + | + |
| CS | 10 | None | + | + |
| CS | 10 | GC | + | + |
| JH | 18 | CT | + | - |
| ST | 4 | CT | + | - |
| JM | 6 | CT | + | - |
| JC | 12 | CT | + | + |
| AJ | 15 | None | + | + |
| AT | 17 | None | + | + |
| SG | 6 | CT & GG | - | + |
| LV | 23 | CT & GC | N/I[c] | - |
| RA | 26 | CT & CG | N/I | - |
| JF | 13 | CT | + | + |
| JS | 16 | None | + | + |
| MB | 6 | CT | - | - |
| DM | 15 | None | + | - |
| TB | 6 | None | + | + |
| MW | 3 | GC | N/I | N/E[c] |
| MW | 3 | GC anal | + | + |
| NT | 14 | CT | + | + |
| AG | 5 | CT | - | - |
| CL | 7 | CT | + | + |
| KR | 7 | CT | - | - |
| MK | 3 | CT | - | - |
| TR | 5 | GC | + | + |
| CJ | 52 | CT & GC | N/I | - |
| AJ | 46 | CT & GC | N/I | - |

[a] A positive history (+) is a disclosure of sexual abuse during an interview performed before physical examination or information from another reliable source. A negative history (-) is no disclosure of sexual abuse during an interview performed before physcal examination.
[b] A positive examination is the finding of an old or recent injury to the hymen or other genital structure consistent with abuse.
[c] CT, *Chlamydia*; GC, gonorrhea; N/I, not interviewed; N/E, not examined.

## Role of the Microbiology Laboratory

The microbiology laboratory is involved in evaluation of patients for presumed sexual abuse when children are examined for the presence of an STD (5). The incidence of an STD in child victims is less than 3%. A recent study showed that 2.8% of patients (39 females and 2 males) had *Nesseria gonorrhoeae* infections, 1.2% had *Chlamydia trachomatis* infections (18 females and 0 males), 0.1% had syphilis, and 0.1% had herpes simplex (6).

These low detection rates may be the consequence of specimen collection and transport issues, as well as the less than optimal performance of the diagnostic tests employed. The most prevalent STDs in child abuse are chlamydial and gonococcal infections. Culture has classically been the gold standard for diagnosing *Chlamydia* infection and gonorrhea in sexually abused or assaulted patients (4,7). Isolation of *C. tracho-*

  