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Medical Evaluation of Suspected Child Sexual Abuse: 2011 Update

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The medical evaluation of children with suspected sexual abuse includes more than just the physical examination of the child. The importance of taking a detailed medical history from the parents and a history from the child about physical sensations following sexual contact has been emphasized in other articles in the medical literature. The examination is important, however, and medical providers who examine children need to be aware of published research on findings in nonabused children, studies of healing of injuries, and studies documenting the association between sexual contact and the diagnosis of sexually transmissible infections in children. This article reviews the current approach to interpreting findings in children who may have been sexually abused and why additional research is needed.

KEYWORDS *child sexual abuse, medical findings, interpretation of significance*

When child sexual abuse is suspected, a medical examination is often one part of the overall evaluation. A suspicion of sexual abuse may result when a child has disclosed such abuse, has developed behaviors suggestive of sexual abuse, is diagnosed with a sexually transmissible infection, is found to have suggestive medical or laboratory findings, or because the abuse has been witnessed by others or documented by photographs or videotapes.

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Healthcare providers responsible for performing medical examinations in these situations are often asked by parents, caregivers, social service workers, or law enforcement officers whether or not any “evidence” of sexual abuse was found.

During the past 20 years, many changes have occurred in the way medical professionals perform evaluations of children suspected of having been sexually abused and in how physical and laboratory findings are interpreted (Adams, 2011). During the early 1990s, research studies documented genital and anal findings in children who were not suspected of having been sexually abused, which provided medical practitioners with a better understanding of the range of normal variations in the appearance of these tissues (Berenson, Heger, & Andrews, 1991; Berenson, Heger, Hayes, Bailey, & Emans, 1992; McCann, Voris, Simon, & Wells, 1989; McCann, Wells, Simon, & Voris, 1990).

A comprehensive listing of findings in nonabused children and medical and laboratory findings associated with suspected child sexual abuse was first published as a table in an article by Adams, Harper, and Knudson (1992). This listing of findings, sometimes referred to as the Adams Classification System, had been developed using published data on both abused and nonabused children. It was intended to assist team members to arrive at sound conclusions from medical evaluations of children suspected of having been sexually abused and to help achieve some consistency among these providers in interpreting their medical findings.

The table, listing physical and laboratory findings, has been modified multiple times since 1992 in response to newly published research findings in order to refine the characterization of listed medical findings not supported by research data. The most recent set of revisions was begun in January 2003, when groups of interested physicians were convened at the San Diego Child Maltreatment Conference and at annual meetings of the Ray Helfer Society. Participating physicians were asked to review the most recently published version of the document, to reassess the listings of medical and laboratory findings and to attempt to reach consensus on how to define and interpret those medical findings. In January 2004, under the sponsorship of the American Professional Society on the Abuse of Children, a group of 18 physicians, met to further discuss proposed changes.

These physicians achieved consensus on most of the findings to be included in the document, including those findings that should be listed for newborns and nonabused children as well as findings thought to be diagnostic of trauma or sexual contact. The document was then circulated via e-mail to 46 physicians in the United States and Canada who had expressed interest in being involved in the revision process.

The document produced as a result of these reviews is included in Appendix A. It has received support from the majority of physicians who participated in the review process. The publications used to develop

this list of medical findings include: (a) studies of children selected for nonabuse (Berenson et al., 1991, 1992, 2002; Berenson & Grady, 2002; Berenson, Somma-Garcia, & Barnet, 1993; Gardner, 1992; Heger et al., 2002; Kellogg & Parra, 1991; McCann et al., 1989; McCann et al., 1990; Myhre, Berntzen, & Bratlid, 2001; Myhre, Berntzen, & Bratlid, 2003), (b) case series (Adams, Botash, & Kellogg, 2004; Adams, Harper, Knudson, & Revilla, 1994; Emans, Woods, Allred, & Grace, 1994; Heger, Ticson, Velasquez, & Bernier, 2002; Jones et al., 2003; Kellogg, Menard, & Santos, 2004), and (c) studies describing injuries from sexual abuse or accidental trauma (Boos, 1999; Boos, Rossas, Boyle, & McCann, 2003; Dowel, Fitzmaurice, Knapp, & Mooney, 1994; Finkel, 1989; Heppenstall-Heger et al., 2003; Hermann & Crawford, 2002; McCann & Voris, 1993; McCann, Voris, & Simon, 1992; McCann, Miyamoto, Boyle, & Rogers, 2007a; McCann, Miyamoto, Boyle, & Rogers, 2007b).

The tables in the article published by the author in 2001 continued to incorporate a section titled "Overall Assessment of the Likelihood of Sexual Abuse." The rating categories in the overall assessment table were *no evidence of abuse*, *possible abuse*, *probable abuse*, and *definitive evidence of penetrating injury or sexual contact*. Rating of the the first three categories required heavy reliance on historical information from the child and other professionals, behavior changes observed in the child, and direct observations from witnesses, in addition to medical and laboratory findings. It became clear that the overall assessment section was being inappropriately used by some programs as a checklist approach to the diagnosis of child sexual abuse, a use for which it was never intended. It was also believed that inexperienced medical providers were using the tables as a substitute for a more thorough clinical assessment and determination of the likelihood of sexual abuse.

In response, the author solicited input from medical colleagues to refine and clarify the instrument's purpose and content and to redesign it accordingly. All participants agreed that the revised document should be used solely as a tool to assist medical providers in making clinical determinations of the possible significance of medical findings in children they evaluated for suspected sexual abuse. The tool was also intended to provide guidelines for teaching physicians and nurses to demonstrate what is known and what is not known about physical findings in abused and nonabused children. Subsequent to these decisions, the overall assessment table, which was present in previous versions, was removed.

There is not complete agreement regarding this listing of findings and its guidelines for interpretation among physicians with expertise in the medical evaluation of suspected child sexual abuse. Several contributors still believe strongly that findings such as deep notches in the hymen and a marked narrowing of the rim of the hymen should be listed as more significant than "indeterminate." The majority of participants, however, do agree that these findings should not be considered diagnostic of trauma,

because at present, data from published research are insufficient to justify that conclusion. Pragmatically, it is also problematic to rely on measurements as small as one millimeter or to determine whether a notch is through 50% or more than 50% of the width of the hymen. Medical or laboratory findings of indeterminate significance could raise the suspicion of sexual abuse, even in the absence of a history from the child. In those cases, a report to child protective services for further investigation is appropriate.

Other participants are skeptical of an approach that does not emphasize the importance of the child's statement in the overall medical evaluation, which of necessity must include more than just a physical examination. It is clear that the history from the child is the most important part of any evaluation for suspected child sexual abuse. Furthermore, unless the physical examination is performed within a very short time after an assault that causes injury, the physical exam will likely show no signs of either acute or healed trauma.

We also know that injuries to the genital and anal tissues heal rapidly and often completely, and that many types of sexual contact do not cause apparent physical injury (see Berkowitz, this issue, for a review of how anogenital injuries heal). As reported in studies since 2000, the percentage of children giving a history of abuse who have abnormal physical examination findings is about 4% to 5% (Berenson et al., 2000; Heger et al., 2002) in most clinical settings.

An article providing guidelines on medical evaluation, including a table describing an approach to interpretation of medical findings, was published in 2007 after a process of consensus development (Adams et al., 2007). Another article (Adams, 2008) describes new studies published since the 2007 paper was submitted, describes recently completed systematic reviews of older studies and makes suggestions for updating the approach-to-interpretation table. The following review is adapted from an article that was published in 2010 in the APSAC Advisor (Adams, 2010).

HEALING OF ACUTE TRAUMA IN PREPUBERTAL GIRLS

McCann, Miyamoto, Boyle, and Rogers (2007a) reported on a review of 113 cases of prepubertal girls who had photo documentation of acute trauma to the genital tissues and who had at least one follow-up examination to determine healing. The cases were gathered from multiple sites in a retrospective manner, preventing any standardization of examination method, photo-documentation methods, or the number and timing of follow-up examinations.

In the review of photographs, the authors identified and classified 40 lacerations of the hymen among the prepubertal girls, and 35 (88%) were in the posterior/inferior location below the 3 o'clock–9 o'clock line. At the time of the follow-up examination, it was found that 75% of the acute, partial

tears through more than 50% of the width of the hymen had healed to be notches extending through 50% or more of the width of the hymen.

When the hymen tear was classified as being a tear all the way through the hymen and into the fossa (transection with extension), 74% of these tears at the follow-up examinations were complete clefts/transections after healing. Of note, none of the hymen injuries resulted in scars at the follow-up examinations.

In another paper, McCann, Miyamoto, Boyle, and Rogers (2007b) reported that deep lacerations of the posterior fourchette or perineum in prepubertal girls took two to three weeks to heal, but the majority of abrasions, contusions, and submucosal hemorrhages of the genital tissues healed within days.

An important finding, reported in both of the previously referenced papers, is that many injuries to the hymen and to other genital tissues had healed completely at the time of follow-up examination, leaving no sign of the previous injury. In a few cases, even significant hymen lacerations healed to leave no clear sign of injury. Therefore, in cases where an examination is conducted several days, weeks, or months after the suspected episode of sexual abuse and no clear sign of injury to the genital tissues is evident, the possibility of previous injury cannot be ruled out (see Stewart, this issue).

Therefore, if a child describes an incident of abuse that caused pain, bleeding, or both, an examination done weeks later could very well be normal. However, the fact that injuries can heal completely, or heal as superficial or deep notches in the hymen, does not allow one to conclude that all notches in the hymen were caused by penetration.

IMPORTANCE OF CHILD'S HISTORY

Although the approach-to-interpretation table focuses on medical examination findings and laboratory test results, it is widely accepted that in most cases of suspected sexual abuse, there will not be signs of significant injury, healed trauma, or sexually transmitted infections. The child's medical history is key in helping to determine if a child had specific symptoms around the time of the episode of alleged abuse that could help validate the child's description of the abuse experience.

DeLago, Deblinger, Shroeder, and Finkel (2008) reviewed the medical records of 161 girls ages three to 18 years who were evaluated for suspected abuse and who had disclosed specific types of genital contact. All patients were asked open-ended, nonleading questions about body sensations during the history obtained by the medical provider. If a child disclosed genital contact, she was asked, "How did that feel?" If necessary, the doctor would ask follow-up questions such as, "Did it bother your body, your feelings, or both?"

Genital symptoms were reported by 60% of the girls, and the symptoms of dysuria and genital pain were significantly more common in girls reporting genital-to-genital contact compared with other types of genital contact, when controlling for age. This study highlights the importance of a complete medical history and review of systems when children are evaluated for suspected sexual abuse (see Finkel & Alexander, this issue). Even if someone else takes the detailed history of the episode of possible abuse, the medical provider needs to ask the child directly about how his or her body felt during and after the abusive episode. Although there may not be any signs of injury on examination, the medical provider can correlate the child's description of symptoms to the description of the acts the child experienced and can testify to that in court.

EVALUATING THE DATA FROM RESEARCH STUDIES

A systematic review by Berkoff and colleagues (2008) of more than 1,500 published articles and book chapters identified 10 research studies of prepubertal children selected for nonabuse and one case control study of girls ages three to eight years with and without a history of vaginal penetration. The review was conducted as an attempt to determine the utility of the genital examination in prepubertal girls in identifying nonacute sexual abuse. The criteria for inclusion in the systematic review were that studies had to contain data on pubertal status or age or both, have sufficient data for statistical analysis, use a well-described or reproducible examination technique, and include a reference standard to determine whether the child had or had not been sexually abused.

The findings of a deep notch in the inferior hymen, transection of the hymen, and perforation of the hymen were not found in the studies of nonabused children and were specific for a history of sexual abuse in the case-control study. None of these findings had high sensitivity to detect abuse, however, because they were rare in children who gave a history of penetration. The authors concluded that these three findings "suggest genital trauma from sexual abuse" (p. 2790).

Comparable systematic reviews are needed of published research studies reporting medical examination findings in other types of patients. What is the positive predictive value of the finding of a deep hymen notch in an adolescent, or the finding of anal dilation in a child examined acutely or nonacutely following alleged anal penetration? Additional research is needed to answer both of these questions, but a careful review of published papers could help provide a more evidence-based approach to interpreting medical examination findings. The results of such a systematic review might indicate that the approach to interpreting some of the findings cited in the table should be reassessed.

CONDITIONS MISTAKEN FOR ABUSE

Many conditions such as labial adhesions, vaginal discharge, genital bumps and ulcers, skin conditions such as lichen sclerosus, unusual conditions such as urethral prolapse, perineal groove/failure of midline fusion, and others can be mistaken for signs of trauma or infection. In a study of pattern recognition (Muram & Simmons, 2008) among residents and faculty in pediatrics, family medicine, emergency medicine, and gynecology at a major teaching hospital, color photographs of common pediatric gynecologic conditions were shown to residents and faculty physicians. The mean correct response rate was 42% for residents and 58% for faculty. Photographs of urethral prolapse, labial adhesion, and uncomplicated vulvovaginitis were often incorrectly identified as being signs of suspected abuse.

It is clear that physicians who are asked to examine a child's genitalia for routine care or to evaluate complaints or symptoms must have basic knowledge of normal anatomy and common and uncommon conditions that may affect the appearance of the genital or anal tissues. A specific category of conditions commonly mistaken for signs of abuse has been added to the approach-to-interpretation table to increase awareness in healthcare professionals who examine children for possible abuse.

HERPES SIMPLEX VIRUS TYPE 1 AND 2 (HSV-1, HSV-2)

In an article published in 2008, the author reviewed studies related to herpes simplex infections in children and the seroprevalence of HSV-1 and HSV-2 in children of different ages. There are no case control studies of genital herpes or positive antibodies for HSV-2 in children with and without concerns for sexual abuse. In the reviewed studies, investigators typically reported histories of sexual abuse most commonly in children who were five years of age or older who had HSV-2 cultured from genital lesions and who did not have oral lesions (Adams, 2008). The suggestions for interpreting genital herpes infections have been changed slightly from the version of the approach-to-interpretation table that was published in 2007 (Adams et al., 2007), as documented in Appendix A.

GENITAL WARTS

Genital warts in children represent infections that could have been transmitted by sexual contact. Multiple studies of newborn infants, mothers and fathers, and children without a concern of abuse have shown evidence of human papilloma virus (HPV) DNA on the skin, mucous membranes, or both (Shapiro & Makoroff, 2006). It likely that the virus itself can be spread

by caretaking activities and perinatal exposure, and this could result in the development of warts in the genital or anal area in infants and young children. Children with anogenital warts who are outside the age range where someone is assisting them with toileting hygiene and who do not have warts on other parts of their bodies deserve a very careful evaluation for suspected sexual abuse. While each case should be evaluated on its own merits, it is reasonable to recommend reporting to child protective services if lesions of HPV are found in an older child, even if the child denies a history of sexual abuse.

THE IMPORTANCE OF ACCURATE INTERPRETATION OF MEDICAL FINDINGS

Most examinations for signs of sexual abuse are done some time after the last incident of abuse, and this is one of the main reasons why abnormal genital findings are rare. Because most examinations are normal or show signs that could have explanations other than abuse, many physicians and nurses who provide sexual abuse medical evaluations may have limited experience with cases of acute trauma. The National Children's Alliance (NCA) has published revised medical standards for members who work in accredited facilities, which recommend photo documentation as the standard of care (National Children's Alliance, 2008). One of the standards listed, on page 23, states: "Photo-documented examinations are reviewed with advanced medical consultants. Review of all exams with positive findings is strongly encouraged." Medical providers at these accredited facilities and in other settings now have the opportunity to obtain timely, anonymous expert review of sexual abuse medical findings via a new Web-based system (TeleHealth Institute for Child Maltreatment [THICM]; www.thicm.org).

Digital images of examination findings in either photographs or video clips can be uploaded to the Web site along with the medical history and the examiner's interpretation of the findings. When a case is posted, a physician from a panel of national experts will be notified to review the case anonymously and will send a response within 48 hours. The expert will provide an opinion as to whether or not he or she agrees with the examiner's interpretation of the medical findings or may recommend that additional photo documentation is necessary in order to provide a review. There is a minimal \$25 per case charge to the examiners who want to take advantage of this resource as part of quality improvement activities for child sexual abuse medical evaluations.

The purpose of the THICM is to make child sexual abuse expert review available to all child advocacy center medical providers and to other providers who perform child sexual abuse medical evaluations throughout the United States, regardless of location. However, it must be cautioned that

the service is designed solely to provide reviews by an expert for educational and quality improvement purposes. It is not intended for initial diagnostic or treatment purposes or to serve as a second opinion for a specific case. This service is not a replacement for a consultation or meant to address issues related to a specific patient.

HOW WELL DO EXPERTS AGREE?

As a follow-up to an online survey assessing agreement on medical findings conducted in 2007, the author recently sent a 12-question survey through the listserv of the Ray Helfer Society, a group of physician experts in child abuse evaluation. One hundred members responded to all items. The results are shown in Appendix B. Since the listing of findings in Appendix A includes those findings for which there is no consensus among experts as to their interpretation with respect to trauma or abuse, it appears that all findings listed there currently should still be considered indeterminate.

The results of the SurveyMonkey survey conducted in 2007 were reported at the Pediatric Academic Societies' annual meeting in Denver, Colorado, on April 30, 2011 (Adams et al., 2011). The survey consisted of questions on identification and interpretation of medical findings in cases with photographic images and case information and questions assessing knowledge of findings from research studies. Correct answers were the consensus answer of at least six of seven expert physicians, with a total possible score of 41.

Among those respondents who self-identified as child abuse pediatricians, the mean score was significantly higher than the mean score of pediatricians, advanced practice nurses and sexual assault nurse examiners. Except for child abuse pediatricians, participants who examined fewer than five children monthly for suspected sexual abuse answered fewer than 70% of the questions correctly. Multiple regression analysis showed that in addition to being a child abuse pediatrician, having cases reviewed at least quarterly by a recognized expert in child sexual abuse evaluation and reading *The Quarterly Update*, a newsletter with summaries and critique of published literature in child abuse medicine, were significantly associated with higher score on the survey. A complete discussion of the study and the results has been submitted for publication elsewhere.

CONCLUSION

A systematic review of published research and expert opinion is still needed to help determine the diagnostic significance of specific acute genital and anal injuries, nonacute findings in adolescents, anal findings in both children and adolescents, and specific sexually transmitted infections. These

reviews may provide evidence suggesting that some of the findings listed in Appendix A should be interpreted differently.

Medical providers and other members of multidisciplinary teams working with children who may have been sexually abused are advised to remember that medical findings are rarely the most important part of an evaluation for suspected sexual abuse. The absence of signs of injury in a child who gives a clear disclosure of sexual abuse, even if the contact involved vaginal or anal penetration and resulted in symptoms of pain, bleeding, or both, does not mean that the child was not abused in the manner he or she described. Studies have documented rapid and complete healing of both major and minor genital and anal injuries following sexual assault (McCann et al., 2007a; McCann et al., 2007b). If medical findings are identified that are felt to be signs of trauma or sexually transmitted infections, it is advisable for providers to either seek a second opinion from an expert consultant or utilize the anonymous expert review services through the Web-based TICM as a method of continuing quality improvement.

Further revisions of the approach-to-interpretation table may be necessary as researchers conduct new studies and publish systematic reviews of previously published literature. Medical providers are invited to contact Dr. Adams with comments and suggestions at jadams@ucsd.edu.

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APPENDIX A

Approach To Interpretation Of Medical Findings In Suspected Child Sexual Abuse: 2009

This table lists medical and laboratory findings; however, most children who are evaluated for suspected sexual abuse will not have signs of injury or infection. The child's description of what happened to him or her and the child's report of specific symptoms in relationship to the events described is an essential part of the full medical evaluation.

Findings Documented in Newborns or Commonly Seen in Nonabused Children

(The presence of these findings generally neither confirms nor discounts a child's clear disclosure of sexual abuse.)

NORMAL VARIANTS

1. Periurethral or vestibular bands
2. Intravaginal ridges or columns
3. Hymenal bumps or mounds
4. Hymenal tags or septal remnants
5. Linea vestibularis (midline avascular area)
6. Hymenal notch/cleft in the anterior (superior) half of the hymenal rim (prepubertal girls), on or above the 3 o'clock–9 o'clock line with patient supine
7. Shallow/superficial notch or cleft in inferior rim of hymen below 3 o'clock–9 o'clock line
8. External hymenal ridge
9. Congenital variants in appearance of hymen, including crescentic, annular, redundant, septate cribiform, microperforate, and imperforate
10. Diastasis ani (smooth area)
11. Perianal skin tag
12. Hyperpigmentation of the skin of labia minora or perianal tissues in children of color, such as Mexican-American and African-American children

13. Dilation of the urethral opening with application of labial traction
14. "Thickened hymen" (May be due to estrogen effect, folded edge of hymen, swelling from infection, or swelling from trauma. The latter is difficult to assess unless follow-up examination is done.)

Findings Commonly Caused by Other Medical Conditions

15. Erythema (redness) of the genital tissues (May be due to irritants, infection, or dermatitis.)
16. Increased vascularity ("dilatation of existing blood vessels") of vestibule and hymen (May be due to local irritants or normal pattern in the non-estrogenized state.)
17. Labial adhesion (May be due to irritation or rubbing.)
18. Vaginal discharge (There are many infectious and noninfectious causes. Cultures must be taken to confirm if caused by sexually transmitted organisms or other infections.)
19. Friability of the posterior fourchette or commisure (May be due to irritation, infection, or an examiner's traction on the labia majora.)
20. Anal fissures (Usually due to constipation, perianal irritation.)
21. Venous congestion or venous pooling in the perianal area (Usually due to positioning of child. Also seen with constipation.)

Conditions Mistaken for Abuse

22. Urethral prolapse*
23. Lichen sclerosus et atrophicus*
24. Vulvar ulcers (May be caused by many types of viral infections, including Epstein-Barr virus [EBV] and influenza, or by conditions such as Behcet's disease or Crohn's disease.)*
25. Failure of midline fusion, also called perineal groove*
26. Rectal prolapse (Often caused by infection, such as *Shigella* sp.)*
27. Complete dilation of the internal and external anal sphincters, less than 2 centimeters in AP diameter, revealing the pectinate line*
28. Partial dilation of the external anal sphincter, with the internal sphincter closed, causing the appearance of deep folds in the perianal skin that can be mistaken for signs of injury*
29. Marked erythema, inflammation, and fissuring of the perianal or vulvar tissues due to infection with Group A beta hemolytic streptococci*

INDETERMINATE FINDINGS: INSUFFICIENT OR CONFLICTING DATA FROM RESEARCH STUDIES, OR NO EXPERT CONSENSUS

(These physical and laboratory findings may support a child's clear disclosure of sexual abuse, if one is given, but should be interpreted with caution

if the child gives no disclosure. Report to child protective services may be indicated in some cases.)

30. Deep notches or clefts in the posterior/inferior rim of hymen that extend through more than 50% of the width of the hymen
31. Deep notches or complete clefts in the hymen at the 3 o'clock or 9 o'clock location in adolescent girls
32. Marked, immediate anal dilation to an AP diameter of 2 cm or more, in the absence of other predisposing factors such as chronic constipation, sedation, anesthesia, and neuromuscular conditions
33. Genital or anal condyloma accuminata in child, in the absence of other indicators of abuse. Lesions appearing for the first time in a child older than 5–8 years may be more suspicious for sexual transmission.*
34. Herpes Type 1 or 2 in the genital or anal area in a child with no other indicators of sexual abuse. Isolated genital lesions caused by HSV-2 in a child older than 4–5 years may be more suspicious for sexual transmission.*

Findings Diagnostic of Trauma and/or Sexual Contact

(The following findings support a disclosure of sexual abuse, if one is given, and are highly suggestive of abuse even in the absence of a disclosure, unless a clear, timely, plausible description of accidental injury is provided by the child and/or caretaker. Photographs or video recordings of these findings should be reviewed by an expert in sexual abuse evaluation for a second opinion to assure accurate diagnosis.*)

ACUTE TRAUMA TO EXTERNAL GENITAL/ANAL TISSUES

35. Acute lacerations or extensive bruising of labia, penis, scrotum, perianal tissues, or perineum (May be from unwitnessed accidental trauma or from physical or sexual abuse.)
36. Fresh laceration of the posterior fourchette, not involving the hymen (Must be differentiated from dehisced labial adhesion or failure of mid-line fusion; see #25. Posterior fourchette lacerations may also be caused by accidental injury or by consensual sexual intercourse in adolescents.)

RESIDUAL (HEALING) INJURIES

(These rare findings are difficult to assess unless an acute injury was previously documented at the same location.)

37. Perianal scar (May be due to other medical conditions such as Crohn's disease, accidental injuries, or previous medical procedures.)

38. Scar of posterior fourchette or fossa (Pale areas in the midline may also be due to linea vestibularis or labial adhesions.)

INJURIES INDICATIVE OF BLUNT FORCE PENETRATING TRAUMA (OR FROM ABDOMINAL/PELVIC COMPRESSION INJURY IF SUCH HISTORY IS GIVEN)

39. Extensive bruising on the hymen
40. Laceration (tear, partial or complete) of the hymen (acute)
41. Perianal lacerations extending deep to the external anal sphincter (Not to be confused with partial failure of midline fusion.)
42. Hymenal transection (healed): An area between 4 o'clock and 8 o'clock on the rim of the hymen, where it appears to have been torn through, to or nearly to the base, so there appears to be virtually no hymenal tissue remaining at that location. This finding has also been referred to as a "complete cleft" in sexually active adolescents and young adult women.
43. Missing segment of hymenal tissue. Area in the posterior (inferior) half of the hymen, wider than a transection, with an absence of hymenal tissue extending to the base of the hymen, which is confirmed using additional positions or methods.

PRESENCE OF INFECTION CONFIRMS MUCOSAL CONTACT WITH INFECTED AND INFECTIVE BODILY SECRETIONS; CONTACT MOST LIKELY TO HAVE BEEN SEXUAL IN NATURE

44. Positive confirmed culture for gonorrhea, from genital area, anus, or throat, in a child outside the neonatal period
45. Confirmed diagnosis of syphilis, if perinatal transmission is ruled out
46. *Trichomonas vaginalis* infection in a child older than 1 year of age, with organisms identified by culture or, in vaginal secretions, by wet mount examination
47. Positive culture from genital or anal tissues for chlamydia, if child is older than 3 years at time of diagnosis and if specimen was tested using cell culture or comparable method approved by the Centers for Disease Control
48. Positive serology for HIV if perinatal transmission, transmission from blood products, and needle contamination have been ruled out

DIAGNOSTIC OF SEXUAL CONTACT

49. Pregnancy
50. Sperm identified in specimens taken directly from a child's body

*Changed from the version published in 2007. Adapted from Adams et al. (2007, pp. 163–172).

APPENDIX B
Results of an Online Survey of 100 Members of the Ray E. Helfer
Society, Spring 2009

Experience level:

a. Conduct more than 20 evaluations per month	32
b. Conduct 10 to 20 evaluations per month	35
c. Conduct less than 10 evaluations per month	25
d. Not currently clinically active	8

Supervise or review others cases?

a. No	13
b. Fewer than 10 cases per month	38
c. Review 10 to 20 cases per month	35
d. Review more than 20 cases per month	14

Familiar with the Approach to Interpretation Table published in 2007?

a. Yes	96
b. No or unsure	4

Should the table be updated based on research findings?

a. Yes	16
b. No	23
c. Possibly	36
d. Unsure	25

Agree with "indeterminate" for deep notch in posterior hymen, prepubertal girl?

a. Yes	53
b. No	40
c. Unsure	7

If you don't agree, how should it be interpreted?

a. I do agree	50
b. Should be considered more normal	3
c. Should be considered suspicious for trauma	32
d. Should be considered suggestive of trauma	11
e. Other	4

Agree with “indeterminate” for deep notch in posterior hymen, adolescent girl?

- a. Yes 66
- b. No 26
- c. Unsure 8

If you don't agree, how should it be interpreted?

- a. I do agree 65
- b. Should be considered more normal 8
- c. Should be considered suspicious for trauma 14
- d. Should be considered suggestive of trauma 8
- e. Other 5

How should condyloma accuminata in a child be interpreted?

- a. Indeterminate for sexual transmission, regardless of age of the child 20
- b. Indeterminate, less worrisome if < 2yrs old 33
- c. Indeterminate, more concerning if child older than 5–8 years 49
- d. Other 6

How should genital herpes simplex infection in a child be interpreted?

- a. Indeterminate for both HSV-1 and HSV-2 41
- b. Genital HSV-2 more suspicious for sexual transmission 18
- c. Both HSV-1 and HSV-2 more suspicious if child is outside age range where caretaker is performing genital hygiene on child 40
- d. Other 7