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1989 Canadian Guidelines for Health Care Providers for the Examination of Children Suspected to Have Been Sexually Abused

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Canadian Guidelines for Health Care Providers for the Examination of Children Suspected to Have Been Sexually Abused

Bureau of Communicable Disease Epidemiology, Laboratory Centre for Disease Control, Health Protection Branch, Department of National Health and Welfare, Ottawa, in collaboration with the Canadian Paediatric Society and the Society of Obstetricians and Gynaecologists of Canada

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PREFACE

These guidelines were developed on the advice of the Expert Interdisciplinary Advisory Committee on Sexually Transmitted Diseases in Children and Youths.

The establishment of this committee arose from a recommendation of the report of the Committee on Sexual Offences Against Children and Youths (*Sexual Offences Against Children* [cat no J 2-50/1984E], Dept of Supply and Services, Ottawa, 1984). This committee was appointed by the Minister of Justice and Attorney-General of Canada and the Minister of National Health and Welfare in December 1980 and was charged with "inquiring into the incidence and prevalence in Canada of sexual offences against children and youths and recommending improvements in laws for the protection of young persons from sexual abuse and exploitation".

Accordingly, these guidelines are dedicated to the children of Canada who are victims of sexual offences and whose dignity and worth must be preserved.

These guidelines should be used in conjunction with examination and forensic protocols. Attention to the guidelines should make the examination more humane, more appropriate to the situation and more therapeutic, as should be all contact with the victim and family.

These guidelines are for primary health care providers. They should be considered complementary to forthcoming departmental publications directed to community workers and institutions.

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GENERAL PRINCIPLES

High index of suspicion

Health care providers should improve their ability to diagnose cases of sexual abuse of children early. Sexual abuse should be suspected more often when young people present with behavioural or emotional problems. People whose sexual abuse has never been disclosed or diagnosed may suffer long-term social and psychiatric sequelae.

Each case is unique

Although sexual abuse of children is an important community concern, perspective for each individual case should be maintained.

The health care provider — the child's advocate

The health care provider should advocate for the child. Management of cases may lead to situations in which the interests of the child and the interests of the family may not coincide.

The adolescent abuser

Many adult abusers begin as adolescents,[1,2] whether through experimentation, coercion or the use of force. The importance of early treatment of the youthful abuser must therefore be recognized.

Multidisciplinary approach

The experience of most people involved in cases of child abuse has led to the belief that the best approach is with a multidisciplinary team, which should include professionals from medicine, child protection services and law enforcement.

Needs of the child take precedence

In the assessment every attempt should be made to reconcile the needs of the child to the requirements of the legal system and the need to obtain evidence. The needs of the child must take precedence.

THE INTERVIEW

What and by whom

- A complete diagnostic interview (validation) with the child should be carried out by a member of a child protection team or designate who has been specifically trained. Such a person is knowledgeable by virtue of professional training and qualifications, or further training obtained through various programs and courses, or specialization and experience in the field even without professional training. A list of hospital-based child protection teams is given in Appendix 1.
- The interviewer should be aware of cultural norms and be fluent in the child's language.

When

- The interview should be planned and scheduled. If a police investigation is under way, the interview should be coordinated with it.

Where

- The interview should take place in comfortable, nonthreatening surroundings. A person supportive to the child should be present.
- The interviewer should be prepared to travel to the child's locale, if necessary.

How

- The interviewer should be knowledgeable about interview methods appropriate for various ages, backgrounds and cultures.
- Complete documentation should be obtained. The interview(s) may be videotaped. The Criminal Code of Canada permits videotaped interviews to be shown in court provided that the statutory requirements have been met (when considering whether to videotape the interview, one should seek the advice of a crown attorney).
- The interviewer's urgent need for full disclosure should not supersede the needs of the child. It should be recognized that the process of disclosure may require a lengthy period.

The child's safety should be assessed immediately and appropriate measures taken.

THE MEDICAL EXAMINATION

Who

- The health care provider should have training or experience or both in assessing abused children. In lieu of this expertise, consultation by a child protection team or suitable consultant should be available.

When

- The timing of the medical examination should be adjusted to the child's clinical and emotional state, ensuring that the child is prepared and ready.
- When the abuse has occurred more than 72 hours previously (a nonacute case), the physical assessment should be planned and scheduled as soon as possible after the initial diagnostic interview.
- In cases of abuse that has occurred within 72 hours (acute cases), the examination should be scheduled expeditiously, but the child must be prepared and ready before proceeding. Consultants should be available, or, at least, their advice should have been sought; however, if there is concern about acute trauma or collection of forensic evidence, consultations should be arranged promptly so as not to endanger the child's health or lose important evidence.

What

- A thorough physical, developmental and behavioural/emotional assessment should be done. Signs of chronic abuse, neglect or abnormalities in the parent–child relationship should be looked for.
- The child should be reassured repeatedly. The child should know that he or she is believed, is not responsible for the abuse and will be protected from further harm. In addition, the medical procedures should be explained in terms the child can understand.
- In acute cases the examination should include collection of appropriate specimens for forensic analysis, prevention of sexually transmitted disease (STD) and discussion of pregnancy concerns and prevention. With a single incident of acute abuse culture for STD should be deferred because false-negative results may occur (see the section on collection and transport of specimens for evaluation for STD, starting on page 7).
- In cases of chronic abuse protocols to evaluate the presence of STD, pregnancy, emotional crises and other long-term complications of sexual abuse should be followed.

How

- To avoid any repetition of procedures, the health care provider should ensure that he or she has obtained all the relevant information before performing the examination.
- The child has the right to be adequately informed about any procedures performed in the course of the examination. The health care provider should use terminology appropriate to the developmental stage and emotional state of the child. A written explanation about the procedures may help answer some questions, especially in the older child or teenager.
- Informed consent should be obtained after the procedures and treatment have been explained to the child and guardian. At common law a child has the capacity to give informed consent provided that he or she is able to understand the nature and consequences of the act involved. It is unlikely that younger children (e.g., those under 12 years of age) will meet this requirement. In such cases consent must be obtained from the parent or guardian, which may be a child protection agency. However, children who do have the capacity to give informed consent must be allowed to decide for themselves whether to undergo a given procedure.
- In all cases a person supportive to the child should be present during the medical examination. This could be a person chosen by the child.
- In acute cases a witness should be present to corroborate the collection of forensic evidence. In nonacute cases forensic specimens are rarely helpful; therefore, a description of the genitalia is particularly important. It is recommended that another person be present during the examination.
- If the status of the child does not permit adequate examination, consideration should be given to carrying out the procedure under anesthesia.

Important considerations

- During the physical examination the child's behaviour should be noted, taking into consideration the cultural norms of the child.
- Lack of physical findings per se does not invalidate an allegation of sexual abuse.
- Follow-up appointments should be made at appropriate intervals to reassess the child for physical, psychologic and emotional signs and symptoms, to take further specimens for evaluation for STD, to communicate the results of the previous examination and to answer questions that may have arisen.
- The health care provider who performed the medical examination should continue to be actively involved in the ongoing management of the case in concert with child protection and therapeutic services.
- The various services should keep each other up to date at all times.
- All information should be kept confidential.

Physical examination protocol

The medical component of the assessment of a child suspected to have been sexually abused requires skill and experience.[3] Health care providers who are inexperienced or uncomfortable with these assessments should refer the case to a more experienced and skilled colleague whenever possible.

The following is an example of a physical examination protocol. Most of it is based on or excerpted from reference 4, with permission from the author. It is only a prototype and must be adapted to the individual situation and updated with appropriate new techniques as they are proven beneficial.

The physical examination has five components: the general physical examination, thorough examination of the anogenital area, collection of specimens and items for forensic evaluation, screening for evidence of sexual activity such as STD and pregnancy, and reassurance.

General physical examination

In addition to the usual features evaluated, the examiner should focus on the child's height, weight, and general physical and sexual development; sexual development should be recorded according to the Tanner scale (Appendix 2).

The child should be completely undressed so that any signs of recent or past trauma or any other marks or injuries compatible with the child's allegation may be noted. If the event has been very recent (i.e., within hours) it may be advisable to re-examine the child 24 to 48 hours later, at which time previously unapparent marks may be detectable.

Genital examination

Specific attention is paid to the areas usually involved in sexual activity: the mouth, breasts, vulva, vagina, buttocks, rectum and penis. All these areas should be carefully examined for signs of trauma such as erythema, abrasions and inflammation, and positive findings should be recorded no matter how minor they may appear.

Lesions to the penis are fairly obvious; it is unusual for trauma to the penis or foreskin to occur as a natural event.

The anus should be examined in both sexes. The buttocks should be separated and the anal sphincter inspected for abrasions, bruises or tears. The sphincter will usually contract quite tightly; a patulous orifice should be specifically noted. This finding is sometimes present in children with chronic fecal retention but is otherwise unusual.[5] Its significance will be determined by the history as well as culture and forensic laboratory results.

Examination of the vulva and vagina in younger children can usually be carried out with the child held on the parent's or attendant's lap and the child's legs held apart in the frog position. A standard examining table may be required for older children. It is rarely necessary to use gynecologic stirrups. The vulvar area is closely inspected, and the labia are separated so that the vaginal introitus can be examined. In prepubescent children, as the labia majora are separated the labia minora can be seen shielding the vaginal opening. The hymen should be intact, but this may be hard to verify in detail.

Normally, firm separation of the labia majora to expose the vaginal introitus does not result in spontaneous opening of the vaginal orifice. If manipulation and dilation of the vaginal introitus or canal has occurred, the labia minora may separate spontaneously, exposing the open vaginal orifice. A transverse hymenal opening of more than 4 mm in a child under 6 years of age or more than 7 mm in a child aged 6 to 9 years increases the probability that some interference or manipulation has occurred.[6] A technique that is easily incorporated into the collection of specimens and that may demonstrate abnormal patency of the vagina is to press down gently on the inferior rim of the vaginal opening with a moist cotton swab.

There has been increasing documentation of minor changes to the hymen in sexually abused children. These changes can be seen more clearly by using some form of magnification. The use of a skin lamp, otoscope, magnification lens or colposcope should be considered.[7] It is advisable to describe carefully the appearance of the hymen, as bumps, scars or irregularities may be evidence of trauma.[8]

During the examination the child can be asked to further confirm events alluded to in the history. This can be done by asking the child to indicate the area(s) where any interference or pain was experienced.

Genital trauma

Occasionally, obvious trauma to the genitalia or anus will be seen. When other essential or more extensive examinations are required in such cases, particularly in young children, they should be carried out under general anesthesia. This enables all appropriate specimens to be collected, a thorough examination done and surgical repairs performed. An experienced gynecologic or pediatric surgeon should be consulted.

Speculum examination

In women and sexually mature girls a speculum examination is necessary to visualize the vaginal walls for signs of trauma and to obtain endocervical specimens. These procedures are inappropriate in prepubescent children whose vaginal canal has not been traumatized or is too small to accommodate a penis. Thus, a pediatric speculum is rarely, if ever, needed in the examination of prepubescent sexual assault victims. Skill and experience are more essential than the specially developed speculae for children and young girls.

In a young child with a vaginal discharge and an enlarged vaginal orifice, the presence of a foreign body must be considered. Adequate visualization of the vagina can be achieved with an otoscope and a standard disposable aural or nasal speculum.

Forensic evidence

Although children who report sexual molestation are rarely lying, forensic evidence is invaluable in supporting their testimony, as with adults. The purpose of forensic analysis of specimens is to establish that sexual contact occurred and, when possible, to strengthen the case against an accused perpetrator. This is done by confirming the presence of seminal fluid or saliva or both and demonstrating that the antigenicity of any secretions (e.g., seminal fluid, saliva and blood) is compatible with the antigenic profile of the accused person.

In some situations it is impossible to collect certain specimens for forensic analysis. The availability of specimens depends on the sex of the perpetrator, the nature of the molestation (fondling vs. penetration) and the

time between the event and the examination. An interval of more than 48 hours or cleansing the sexually abused areas will reduce the availability of specimens and the strength of forensic evidence.

When specimens are being collected as forensic evidence with the objective of establishing the identification of the perpetrator, certain strict guidelines must be followed. This is essential if the information gathered is to be unequivocally accepted in court. Particular attention must be paid to the manner of collection, the labelling and identification of individual specimens, and obtaining signed specific consent forms. For details on the collection of specimens for forensic analysis, local police authorities should be consulted (see Appendix 3).

Collection of specimens

An attempt should be made to obtain specimens of seminal fluid ("pristine material") from all possible sites with sterile cotton swabs. The swabs are then allowed to air dry. The forensic laboratory will use these specimens for sperm counts, acid phosphatase tests, identification of ABO antigens, and protein 30 and gene tracing. An accompanying blood sample from the child (2 ml in a Vacutainer tube [Becton–Dickinson, Mountainview, California] containing heparin) is necessary to identify his or her ABO antigens.

Any residual fluids from affected areas such as the vaginal vestibule should be collected by aspiration. A sterile eyedropper is ideal for this purpose in children. Before aspiration, the area is moistened with 1 or 2 ml of sterile saline for specimens that are to be cultured or 1 or 2 ml of sterile nonbactericidal distilled water for antigen tests. If saline is used, the specimens can be examined for motile sperm by means of the hanging-drop method. A positive finding suggests that the sexual activity occurred less than 6 hours previously. Sterile distilled water may make the sperm nonmotile.

A smear of the material obtained, stained with eosin–fuchsin or the Christmas tree stain, can identify any spermatozoa present when examined under ×1000 magnification. Confirmation by the forensic laboratory is essential to ensure acceptability of the evidence in court.

Demonstration of saliva on the child's body or clothing may provide further confirmatory evidence. Salivary amylase may be detectable days or even weeks after deposition. Samples can be collected with any clean cotton swab. The swab is moistened slightly with distilled water and rubbed over the affected area of the body or clothing. The specimen is allowed to dry and is then packaged and labelled. If the child is unclear about which area(s) is affected, the common target areas (the neck, breast, belly, genital area, penis, thighs and buttocks) could be swabbed; a separate swab should be used for each area and labelled accordingly. Adjacent areas should be swabbed for control samples.

Judgement is required in deciding whether these investigations are sensible, It is pointless to collect such samples if weeks have elapsed since the incident or if the critical areas have since been bathed.

The child's body and the clothing worn at the time of the incident should be carefully inspected for trace evidence (foreign material left by the perpetrator). Items commonly sought include hair from any part of the body, clothing fibres, lubricants, petroleum jelly and lipstick. Any suspicious material should be removed with forceps, folded in a piece of clean paper and put in a separate, properly labelled envelope.

If the victim has reached puberty, the pubic hair should be combed and any free hair collected, folded in a piece of paper or tissue and put in a labelled envelope.

Hairs can be used as evidence only if compared with samples from the suspected perpetrator. It is necessary to have several sample hairs not only from the suspect but also from the victim. To be absolutely reliable the victim's hairs (usually pubic) have to be plucked individually and must include the root. Between 8 and 12 hairs are necessary. Because this is a painful procedure, sample hairs from the victim need not be obtained until a suspect has been identified and sample hairs have been obtained from that person.

Collecting nail scrapings and screening clothing and body parts with ultraviolet light are no longer considered of forensic value.

Collection and transport of specimens for evaluation for STD

Since the risk of acquiring STD as a result of sexual abuse or assault is uncertain, it is recommended that the child be screened for STD if there was any documented or suspected genital–genital or oral–genital contact. To minimize upset for the patient, appropriate specimens should be obtained during a single visit. If the incident occurred less than 72 hours before the initial assessment, culture should be deferred until 72 hours has elapsed to avoid false-negative results. Ideally, if the timing is satisfactory, specimens should be obtained at the time of the physical examination.

All specimens must be carefully and clearly labelled with the patient's name and site of collection so that there is no confusion about the source of the specimen. The site and type of specimen collected should be documented in the medical chart.

The laboratory must be alerted that the specimens are from a patient suspected to have been sexually abused or assaulted so that every effort is made to handle the specimen optimally. It is crucial for medicolegal purposes that the laboratory methods for organism detection and the results be carefully documented. All isolates should be saved so that they are available if further testing is necessary.

The swabs, types of test and transport systems used will vary depending on the techniques offered by the laboratory. The techniques of specimen collection are relatively independent of the test used, but minimal changes in technique are required depending on the organism sought (e.g., *Neisseria gonorrhoeae*, *Chlamydia trachomatis*, *Treponema pallidum* or herpes simplex virus [HSV]) and the sexual maturity of the patient. When in doubt, saline-moistened swabs may be used and transported by hand to the laboratory.

Although bacterial vaginosis may be an indicator of sexual activity, it is insufficient to support an allegation of sexual abuse.

The presence of anogenital warts in a child should alert the physician to seek other indicators of sexual abuse. In the absence of other evidence, however, the finding of anogenital warts per se is insufficient to support an allegation of sexual abuse. No culture techniques are currently available for human papillomavirus.

There is no consensus in the literature about which laboratory tests for STD should be included. However, owing to medicolegal considerations, culture for *N. gonorrhoeae* and *C. trachomatis* is strongly recommended over antigen detection methods (see Appendix 4).

Specimens for culture of *N. gonorrhoeae* should be kept at ambient temperature en route to the laboratory. Those for *C. trachomatis* should be transported in ice or another cooling system but not frozen.

Vaginal specimens

Infants and prepubescent children

Vaginal secretions should be cultured for *N. gonorrhoeae* and *C. trachomatis*. If the vaginal orifice is open, specimens of pooled vaginal secretions can be collected on swabs moistened with nonbacteriostatic sterile saline, without the use of a vaginal speculum. If necessary, a disposable aural or nasal speculum can be used to facilitate collection.

If the vaginal orifice is not open, gentle vaginal lavage with sterile saline through a soft Silastic feeding tube may be used. The saline is reaspirated and any overflow collected by pressing moistened swabs against the vaginal orifice or with an eyedropper. The aspirate is sent to the laboratory, and the swabs are inoculated onto appropriate culture or transport media.

Adolescents

Vaginal specimens for culture of *N. gonorrhoeae* and *C. trachomatis* are inappropriate. In more sexually mature patients endocervical specimens are required for culture of these two organisms.

Endocervical specimens

Infants and prepubescent children

Endocervical specimens are *not* indicated in infants and prepubescent children, as infection with *N. gonorrhoeae* and *C. trachomatis* is limited to the vulva and vagina in this age group.

Adolescents

Before specimens are taken, vaginal secretions and cervical mucus should be swabbed away so that the cervical os is seen clearly. Swabs for culture of *N. gonorrhoeae* should be taken before those for *C. trachomatis*. The swab is inserted 1 to 2 cm into the endocervical canal and rotated for 10 to 20 seconds to collect cells. (Pus alone is insufficient.) It is then removed and inoculated directly onto culture medium or placed in transport medium.

Rectal specimens

In children of all ages specimens may be obtained blindly or through an anoscope. The latter is preferred for symptomatic patients. For blind swabbing the swab is inserted 2 to 3 cm into the anal canal and pressed laterally to avoid fecal matter and to obtain epithelial cells. If there is visible fecal contamination of the specimen it should be discarded and another swab used. Fecal contamination can be avoided and epithelial cells more easily obtained with an anoscope.

Urethral specimens

Infants and prepubescent children

Specimens for culture of *N. gonorrhoeae* and *C. trachomatis* are obtained by pressing the swab against the urethral meatus for 10 seconds and then rotating the swab slowly to collect any secretions. Specimens should be placed directly on culture media or inserted into transport media.

Endourethral swabs are not taken in young children, as the procedure is painful and there is insufficient evidence of its usefulness.

Adolescents

If urethral discharge is present at the meatus, specimens for culture of *N. gonorrhoeae* can be obtained with a meatal swab as described for infants and prepubescent children. For isolation of *C. trachomatis*, however, an endourethral specimen is needed. A swab on a thin metal shaft is inserted 3 to 4 cm into the urethra in boys or 1 to 2 cm in girls, rotated gently for 10 seconds, withdrawn and placed directly in the culture or transport medium.

Pharyngeal specimens

In children of all ages, for culture of *N. gonorrhoeae* and *C. trachomatis* the posterior pharynx and tonsillar crypts are swabbed and the specimens inoculated onto culture media or placed in transport media. Isolation of *C. trachomatis* in neonates is more probably related to acquisition during birth than to sexual abuse.

Lesions

In children of all ages specimens are usually taken from vesicles or ulcers. HSV is grown in tissue culture. To obtain material for culture, fluid from a vesicle is collected in a capillary tube, or, if the vesicle has already broken, the capillary tube is scraped across the bed of the ulcer. Material from the base of the ulcer may be collected on a cotton or Dacron (not calcium alginate) swab and placed in viral transport media.

For dark-field microscopy or direct fluorescent antibody testing for *T. pallidum*, serous fluid should be obtained from a thoroughly cleaned and gently abraded ulcer. The fluid should contain as few erythrocytes as possible. For dark-field microscopy the fluid is transferred to a slide and overlaid with a coverslip. For direct fluorescence the slide is allowed to dry.

Serologic study

Serologic testing for syphilis and infection with HIV (human immunodeficiency virus) is unnecessary unless the abuser is from a high-risk group.

Pregnancy testing

Testing for pregnancy should be done in sexually mature (Tanner stages 3 to 5) girls. A β-human chorionic gonadotropin test will give a positive result within 48 hours after a missed period.

Management of possible pregnancy

In sexually mature girls the possibility of pregnancy should be considered, although the risk of pregnancy as a result of a single assault is not known. If there is any possibility that intercourse or attempted intercourse

occurred, with possible deposition of semen in the vagina or vaginal introitus, immediate pregnancy prophylaxis with high-dose estrogens should be considered. This is strongly indicated if intercourse occurred at midcycle without contraception. The risks and side effects of estrogen therapy should be explained to the patient.[9,10]

Reassurance

From the first contact with the health care provider, the child should be reassured and comforted at all times. The essential elements to be communicated to the child are as follows.

- That the child is believed.
- That the child's statements are taken seriously and are understood. If they are not understood, every effort should be made to communicate with the child at his or her level.
- That the child is not guilty of any crime and is not responsible for anything that happened.
- That every effort will be made to protect the child from similar events in the future.

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Appendix 1 — Hospital-based child protection teams

This list of child abuse treatment centres in Canada is not inclusive; however, it can be used as a reference for obtaining more specific local information.

Alberta

Child Abuse Program
Alberta Children's Hospital
1820 Richmond Rd. SW
Calgary, Alta.
T2W 3P1
(403) 229-7886

Department of Paediatrics
University of Alberta Hospital
4th Floor, CSB
University of Alberta
Edmonton, Alta.
T6G 2E2
(403) 432-6370

British Columbia

Child Protection Service
Royal Columbian Hospital
204–250 Keary St.
New Westminster, BC
V3L 5E7
(604) 526-1891

Children's Hospital
4480 Oak St.
Vancouver, BC
V6H 3V4
(604) 875-2345

Sexual Assault Assessment Project
Department of Family Practice
University of British Columbia
5804 Fairview Ave.
Vancouver, BC
V6T 1W5
(604) 228-5431 or 738-4121

Suspected Child Abuse and Neglect Team
Victoria General Hospital
35 Helmcken Rd.
Victoria, BC
V8Z 6R5
(604) 727-4212

Manitoba

Dauphin and St. Rose SCAN Teams
15 1st Ave. SW
Dauphin, Man.
R7N 1R9
(204) 638-7024

Child Protection Centre
Children's Hospital of Winnipeg
Health Sciences Centre
685 William Ave.
Winnipeg, Man.
R3E 0W1
(204) 787-2811

New Brunswick

Child Protection Consultation Team
Moncton Hospital
135 MacBeath Ave.
Moncton, NB
E1C 6Z8
(506) 855-1600, local 292

Child Abuse Team
Saint John Regional Hospital
PO Box 2100
Saint John, NB
E2L 4L2
(506) 648-6811

Newfoundland

Child Protection Team
Dr. Charles A. Janeway Child Health Centre
710 Newfoundland Dr.
St. John's, Nfld.
A1A 1R8
(709) 778-4607

Northwest Territories

Infectious Disease Control
Department of Health
Government of the Northwest Territories
Box 1320
Yellowknife, NWT
X1A 2L9
(403) 920-8646

Nova Scotia

Child Abuse Team
Izaak Walton Killam Hospital for Children
5850 University Ave.
Halifax, NS
B3J 3Y9
(902) 424-3121

Ontario

Child Abuse Committee
Peel Memorial Hospital
20 Lynch St.
Brampton, Ont.
L6W 2Z8
(416) 451-1710

Child Protection Team
McMaster University Medical Centre
PO Box 2000, Stn. A
Hamilton, Ont.
L8N 3Z5
(416) 521-2100

Child Protection Team
Hotel Dieu Hospital
166 Brock St.
Kingston, Ont.
K7L 5G2
(613) 544-3310

Child Abuse Team
Children's Hospital of Western Ontario
800 Commissioners Rd. E
London, Ont.
N6A 4G5
(519) 681-6711

Child Abuse Team
Mississauga Hospital
100 Queensway W
Mississauga, Ont.
L5B 1B8
(416) 279-7330

Child Protection Program
Children's Hospital of Eastern Ontario
401 Smyth Rd.
Ottawa, Ont.
K1H 8L1
(613) 737-2317

Child Abuse Committee
Sarnia General Hospital
483 North East St.
Sarnia, Ont.
N7T 6Y7
(519) 364-3661

Child Abuse Team
Scarborough Centenary Hospital
2867 Ellesmere Rd.
Scarborough, Ont.
M1E 4B9
(416) 284-8131

Chief of pediatrics
St. Joseph's General Hospital
35 N Algoma St.
PO Box 3251
Thunder Bay, Ont.
P7B 5G7
(807) 343-2431

Suspected Child Abuse and Neglect Program
Hospital for Sick Children
555 University Ave.
Toronto, Ont.
M5G 1X8
(416) 598-6275

Child Abuse Team
North York General Hospital
4001 Leslie St.
Willowdale, Ont.
M2K 1E1
(416) 492-4648

Quebec

Centre local de services communautaires centre-sud
1710, rue Amherst
Montréal, PQ
H2L 3L5
(514) 527-2361

Child Protection Clinic
Montreal Children's Hospital
2300 Tupper St.
Montreal, PQ
H3H 1P3
(514) 937-8511

Comité de prévention de l'enfance maltraitée
Hôpital Maisonneuve-Rosemont
5415, boul. de l'Assomption
Montréal, PQ
H1T 2M4
(514) 254-8341

Offenses sexuelles
Hôpital Sainte-Justine
3175, ch. Ste-Catherine
Montréal, PQ
H3T 1C5
(514) 345-4721

Comité de prévention de l'enfance maltraitée
Centre hospitalier de l'université Laval
2705, boul. Laurier
Ste-Foy, PQ
G1V 4G2
(418) 656-4141

Comité de prévention de l'enfance maltraitée
Centre hospitalier universitaire de Sherbrooke
Sherbrooke, PQ
J1H 5N4
(819) 563-5555

Saskatchewan

Child Abuse Team
Regina General Hospital
1440 14th Ave.
Regina, Sask.
S4P 0W5
(306) 359-4444

Child and Youth Service
Department of Psychiatry
University Hospital
Saskatoon, Sask.
S7N 0X0
(306) 244-2323

Yukon Territory

Infectious disease control officer
Yukon Region
Whitehorse General Hospital
5 Hospital Rd.
Whitehorse, Yukon Territory
Y1A 3H7
(403) 668-9444

Appendix 2 — Tanner scale of sexual maturity

Sexual maturity ratings have replaced the traditional indicators of growth status such as height, weight and skinfold thickness. These ratings have proven useful in assessing growth and development during adolescence. Classification of patients may be done as part of a general physical examination and does not require any special procedures.

The scale of development is based on secondary sexual characteristics. The ratings range from stage 1, which represents the prepubertal child, to stage 5, which represents the adult.

Boys: genital development

- Stage 1: preadolescent. Testes, scrotum and penis are about the same size and proportion as in early childhood.
- Stage 2: enlargement of scrotum and testes. Skin of scrotum reddens and changes in texture. Little or no enlargement of penis.
- Stage 3: enlargement of penis, at first mainly in length. Further growth of testes and scrotum.
- Stage 4: increased size of penis, with growth in breadth and development of glans. Testes and scrotum larger. Scrotal skin darkened.
- Stage 5: genitalia are adult in size and shape.

Girls: breast development

- Stage 1: preadolescent. Elevation of papilla only.
- Stage 2: breast bud stage. Elevation of breast and papilla as small mound. Enlargement of diameter of areola.
- Stage 3: further enlargement and elevation of breast and areola, with no separation of their contours.
- Stage 4: projection of areola and papilla to form a secondary mound above the level of the breast.
- Stage 5: mature stage. Projection of papilla only, owing to recession of the areola to the general contour of the breast.

Both sexes: pubic hair

- Stage 1: preadolescent. Vellus over pubes is not developed further than that over abdominal wall (i.e., no pubic hair).
- Stage 2: sparse growth of long, slightly pigmented downy hair, straight or slightly curled, chiefly at base of penis and along labia.
- Stage 3: hair is considerably darker, coarser and more curled. It spreads sparsely over junction of pubes.
- Stage 4: hair is adult in type, but area covered is still considerably smaller than in adult. No spread to medial surface of thighs.
- Stage 5: hair is adult in quantity and type, with distribution of horizontal (or classic "feminine") pattern. Spread to medial surface of thighs but not up linea alba or elsewhere above base of inverse triangle (spread up linea alba occurs late and is rated stage 6).

Appendix 3 — Information on forensic services

Investigative and scientific forensic laboratory services to detect evidence of sexual assault are available throughout Canada. These services are supplied by the Royal Canadian Mounted Police and by provincial, regional and local police forces.

Current legislation on child abuse and sexual abuse of children obligates physicians to notify local child protection agencies of such cases. These local agencies maintain close liaison with police force personnel familiar with the investigation of suspected abuse and with the availability of forensic laboratory services.

Physicians should not submit specimens for forensic study directly to laboratories. This should be done through police services.

Each forensic laboratory contains a serology section and can provide advice on forensic examinations. Physicians wishing to consult scientists on forensic matters may do so by contacting the nearest laboratory.

Most forensic evaluations do *not* include tests to detect sexually transmitted diseases (STDs). Refer to Appendix 4 and other sections relevant to the specific case for additional information on evaluation for STD.

Forensic laboratories

Officer in charge
Forensic Laboratory
Royal Canadian Mounted Police
5201 Heather St.
Vancouver, BC
V5Z 3L7
(604) 666-3686

Officer in charge
Forensic Laboratory
Royal Canadian Mounted Police
15707 118th St.
Edmonton, Alta.
T5J 2N1
(403) 451-7400

Officer in charge
Forensic Laboratory
Royal Canadian Mounted Police
Box 6500
Regina, Sask.
S4P 3J7
(306) 780-5810

Officer in charge
Forensic Laboratory
Royal Canadian Mounted Police
621 Academy Rd.
Winnipeg, Man.
R3N 0E7
(204) 983-4280

Director
Centre of Forensic Sciences
25 Grosvenor St.
Toronto, Ont.
M7A 2G8
(416) 965-2561

Officer in charge
Central Forensic Laboratory
Royal Canadian Mounted Police
PO Box 8885
Ottawa, Ont.
K1G 3M8
(613) 993-0986

Director
Laboratoire de police scientifique
1701 Parthenais St.
Montreal, PQ
H2K 3S7
(514) 873-2718

Officer in charge
Forensic Laboratory
Royal Canadian Mounted Police
Box 1320
Sackville, NB
E0A 3C0
(506) 536-1527

Officer in charge
Forensic Laboratory
Royal Canadian Mounted Police
3151 Oxford St.
PO Box 8202
Halifax, NS
B3K 5L9
(902) 426-8886

Many laboratory tests can be used in the diagnosis of STD. The types of tests can be classified into cultures, which require viable organisms for growth, direct microscopy of stained smears or fluids (e.g., Gram's stain, saline preparation and dark-field examination), antigen detection systems involving microscopy (e.g., MicroTrak for *Chlamydia trachomatis* [Syntex Diagnostics, Kanata, Ont.]) or spectrophotometry (e.g., Chlamydiazyme for *C. trachomatis* [Abbott Diagnostics, Montreal]), and serologic tests to detect antibody (e.g., to *Treponema pallidum*).

Culture is the preferable diagnostic method in cases of sexual abuse or assault because a positive result is highly specific, and isolates can be further characterized for epidemiologic, microbiologic and legal purposes. False-negative results are possible, but false-positive results are so rare that all positive results should indicate true infection.

In contrast, nonculture techniques can give both false-positive and false-negative results. The frequencies vary from test to test depending on the sensitivity and specificity, the prevalence of infection in the population being tested and the source of the specimen. Many nonculture methods have not been evaluated in children. Furthermore, their predictive value is limited in this population because the prevalence rate of STD is low (less than 10%). If a nonculture technique is used to determine the presence of infection in a child, its validity may come under attack in legal proceedings. Accordingly, health care providers should be aware of the limitations of nonculture methods and how they affect the interpretation of results.

This appendix should be used in conjunction with the section on collection and transport of specimens for evaluation for STD (starting on page 7), since both collection and transport are critical in obtaining optimal laboratory results.

Gram's stain

Gram's stain allows detection of a polymorphonuclear (PMN) leukocyte response as well as indicating the types of bacteria that may also be present in a specimen (e.g., gram-negative intracellular diplococci suggestive of *Neisseria gonorrhoeae*).

PMN response

Assessing the number of PMNs in specimens is critical for diagnosing certain STD syndromes. Although the finding of increased numbers of PMNs does not establish a specific microbiologic diagnosis, it defines a population with an unacceptably high rate of detection of pathogens. For detection of urethritis in males a mean of four or more PMNs per oil immersion field (×1000) in five fields is considered abnormal if the patient has not voided for at least 1 hour. For evaluation of cervicitis in an endocervical specimen from a nonmenstruating patient, a mean of 10 or more PMNs per oil immersion field in an area of endocervical secretions showing few or no epithelial cells suggests cervical inflammation. Whereas the significance of the number of PMNs in urethral specimens has been reasonably well evaluated, the evidence for cervical secretions is less definitive. In vaginitis there is no critical number of PMNs required to establish a diagnosis, but trichomoniasis may be associated with a PMN response.

Staining characteristics of flora

A Gram-stained smear provides an indication of the types and relative numbers of organisms (gram-positive cocci, gram-positive rods, gram-negative cocci, gram-negative rods and fungi). This is most often used to determine whether gram-negative intracellular diplococci suggestive of *N. gonorrhoeae* are present.

A Gram-stained smear is also especially useful in evaluating vaginitis. In patients with symptomatic vaginal candidiasis, yeasts or mycelia are usually detected. In bacterial vaginosis the normal pattern of gram-positive rods suggestive of lactobacilli is replaced with large numbers of gram-variable coccobacilli (organisms that stain both gram positive and gram negative) that are especially prominent on epithelial cells ("clue" cells).

Other stains

Other stains (e.g., methylene blue and Pappenheim's stain) are sometimes used for detecting PMNs and organisms with the appearance of intracellular diplococci. They are most useful for genital secretions and are less useful for specimens from other sites.

Detection of *N. gonorrhoeae*

Although Gram's stain results can be highly suggestive of infection due to *N. gonorrhoeae*, confirmation of the infection is best made by culture. Antigen detection or other techniques designed to identify gonococcal components or products can also be used but are not as good as culture.

Culture

Optimally performed culture is the "gold standard" for detection of infection due to *N. gonorrhoeae*. Preferably, specimens are directly inoculated onto a selective medium that inhibits growth of normal flora but not gonococci, and then the medium is immediately incubated. If this method is not feasible, specimens may be placed into one of many transport systems. All transport systems have disadvantages, but in general the shorter the transit time to the laboratory the better.

The laboratory presumptively identifies as *N. gonorrhoeae* colonies that are oxidase positive and have the typical colonial morphologic features and appearance on Gram's stain. However, other bacteria occasionally have these features. For confirmation that an isolate is *N. gonorrhoeae*, further testing is required.

Isolates of *N. gonorrhoeae* should be screened for susceptibility to penicillins and tetracyclines.

Enzyme immunoassay

Gonozyme (Abbott Diagnostics) is an example of a commercially available solid-phase enzyme immunoas-

say used in Canada to detect gonococcal antigens in urogenital specimens. It provides a faster result than culture. Its main advantage is that it does not require viable organisms. Hence it may be an acceptable alternative when culture is not feasible. The main problems with the test are that it is suitable only for urethral and cervical specimens (not rectal or pharyngeal specimens), it gives more false-positive and false-negative results than culture does, and it does not provide an isolate.

Other techniques

There are other techniques used to detect gonococcal antigens, but none are widely used, and all have major limitations.

Detection of *C. trachomatis*

There is no ideal chlamydial diagnostic test. The three main tests used are cell culture, which requires viable organisms, and two antigen detection techniques, fluorescein-conjugated monoclonal antibody and enzyme immunoassay systems, which do not require viable organisms. The relative advantages and disadvantages of the three methods are shown in Table A.

Cell culture

Chlamydiae replicate within cells. Consequently, their growth requires use of cell culture media, as with viruses. Growth in cell culture is the current gold standard test. It is the only method that is useful for specimens from all body sites, it is least likely to give false-positive results, and it provides an isolate. Its use is limited by the need for cell culture facilities and for rapid transport of specimens and by an inability to assess the adequacy of specimens.

Fluorescein-conjugated monoclonal antibody

Specimens on a slide are reacted with monoclonal antibody conjugated with fluorescein. The most widely used commercial test is MicroTrak. Specimens are placed on a well in a slide, which is allowed to air dry and is then fixed with acetone. At the laboratory it is read by fluorescent microscopy. Positive specimens show fluorescent elementary bodies. The main advantages of this technique are flexible transport conditions and ability to assess the adequacy of specimens. It can provide a result within an hour, but this is rarely practical. The main disadvantages are a higher rate of false-positive results than with culture and the need for relatively skilled technicians.

Enzyme immunoassay

The specimen is placed in a special vial that is transported to the laboratory and read using a spectrophotometer. The most widely used commercial test is Chlamydiazyme. The main advantages of this technique are flexible transport conditions and ability to process large numbers of specimens. The disadvantages include an inability to assess the adequacy of specimens, unsuitability for rectal and pharyngeal specimens and relatively more false-negative and false-positive results.

Serologic study

Neither complement fixation nor microimmunofluorescence is useful for routine evaluation of non-LGV (lymphogranuloma venereum) chlamydial genital infections.

Detection of herpes simplex virus

There are two types of herpes simplex virus (HSV): type 1, which mainly causes labial herpes, and type 2, which mainly causes genital herpes; however, both can infect either site. Genital herpes lesions may appear so typical that clinical diagnosis seems reliable. However, in at least 40% of cases the clinical diagnosis is incorrect. In cases of sexual abuse, therefore, virus culture is essential to confirm the clinical impression.

Table A — Attributes of selected laboratory tests for the diagnosis of infection due to *Chlamydia trachomatis*

Feature	Cell culture	Fluorescein-conjugated monoclonal antibody	Enzyme immunoassay
Sites for which it is useful	All	Cervix, urethra, conjunctiva	Cervix, urethra
Sensitivity*	High	Good	Good
Number of false-positive results (specificity)*	Rare	Low†	Low†
Difficulty of specimen transport	High	Low	Moderate
Transport temperature	4°C	Ambient	Ambient
Maximum time to laboratory	24 h	7 d	48 h
Collection kit storage temperature	< 5°C	Ambient	Ambient
Minimum time for test result	48 h	30 min	4 h
Immediate testing possible	No	Yes	No
Verification of specimen adequacy†	No	Yes	No
Suitability for medicolegal purposes	High	Low	Low
Test interpretation	Subjective	Subjective	Objective

*Although the proportion of test results that are falsely positive is low, in situations such as follow-up evaluations where true-positive results should be infrequent, many of the results reported as "positive" will be falsely positive.
†Ability to determine whether the specimen contains columnar epithelial cells and therefore is an adequate specimen.

For specific diagnosis HSV can be grown in cell culture or detected by means of one of several direct techniques that identify viral antigens. Other techniques that detect changes consistent with HSV-induced cytopathology are also useful. With all of these techniques rates of detection are highest at the vesicle stage and progressively lower as the lesions evolve.

Culture

Growth in cell culture is the gold standard technique for detecting HSV. Although HSV is relatively hardy, transport conditions are still important. It is a fairly fast-growing virus, with 50% of specimens becoming positive within 2 days. The main advantages of culture are its sensitivity, the virtual absence of false-positive results and the provision of an isolate. The major disadvantages are the need for cell culture facilities and for viable organisms and an inability to assess the adequacy of the specimen.

Cytologic study

Specimens obtained by vigorously swabbing the base of the genital lesion are directly placed on slides (for cytologic study, immunofluorescence and immunoperoxidase techniques) or are placed in an appropriate transport medium (for enzyme immunoassay). Cytologic study of slides permits detection of virus-induced cytopathological changes (multinucleated giant cells). It is inexpensive, rapid and specific for herpesviruses. However, it is not sensitive. Its main use is for rapid diagnosis of genital lesions at the time of labour.

Antigen detection

Specimens obtained by vigorously swabbing the base of the genital lesion are directly placed on slides for immunologic techniques or in a special transport medium for enzyme immunoassay. Detection of antigen on slides by means of immunofluorescence or immunoperoxidase techniques is rapid, allows assessment of the quality of the specimen and is as sensitive as culture for early lesions. It is less useful for cervical lesions or for screening asymptomatic patients. Its main use is for rapid diagnosis of detectable lesions. Enzyme immunoassay is also rapid, but its usefulness has not been fully evaluated.

Electron microscopy

In some institutions electron microscopy is available for rapid detection of viral particles consistent with herpesviruses. It is performed on fluid aspirated from vesicles with a capillary tube. Routine use of this technique for diagnosis of herpes is not recommended. It should be reserved for selected circumstances in which rapid diagnosis is needed (e.g., for evaluation of genital lesions at the time of labour).

Serologic study

Serologic study has no role in the routine diagnosis of genital herpes.

Diagnosis of syphilis

Serologic study and dark-field microscopy are important in the diagnosis of syphilis.

Dark-field microscopy

Dark-field microscopy is performed on serous fluid expressed or vigorously scraped from a lesion. Its advantages are that it provides a rapid result, and it often gives a positive result when serologic test results are still negative. Its disadvantages are the need for immediate evaluation and the expertise required. It is not useful for oral lesions.

Direct fluorescent antibody test

Specimens obtained in the same manner as for dark-field examination are placed on a slide and air dried. A direct fluorescent antibody test is a suitable alternative when dark-field microscopy is not available. It is useful for oral lesions.

Serologic study

Serologic testing is the most important procedure in the diagnosis and follow-up of syphilis, and it is the only method for detecting noninfectious syphilis. There are two general classes of tests: nontreponemal and treponemal.

Nontreponemal tests (e.g., VDRL, rapid plasma reagin test and automated reagin test) detect a reaction to antigens that are not specific to treponemes, but the tests are nevertheless useful. They are rapid and simple and are useful for evaluation of cerebrospinal fluid. The tests are useful in demonstrating reinfection, can quantitate the degree of reactivity and can assess the adequacy of treatment. Disadvantages include a delay of 1 to 4 weeks between time of appearance of a chancre and detection of antibody, as well as false-positive results owing to nonspecific cross-reactivity.

Treponeme-specific tests include microhemagglutination for *T. pallidum* (MHA-TP) and fluorescent treponemal antibody absorption (FTA-Abs). FTA-Abs is the first serologic test to give a positive result in infectious syphilis. Treponeme-specific tests differentiate true-positive results of nontreponemal tests from false-positive results and diagnose latent syphilis, when nontreponemal tests may give negative results. Disadvantages include false-positive results (and hence these tests should not be used for initial screening), cross-reaction with nonvenereal treponematosis, and uncertain benefit in evaluating cerebrospinal fluid, assessing response to treatment and monitoring reinfection. The sensitivity and specificity of the two types of test are shown in Table B.

Detection of *Trichomonas vaginalis*

The most sensitive technique for detecting trichomonads is culture, except in specimens from males.

The wet mount is the easiest method of detecting *T. vaginalis*. Genital secretions are mixed with saline on a slide, which is then immediately observed for motile trichomonads. This technique detects 70% to 80% of

Table B — Sensitivity and specificity of serologic diagnosis of syphilis

Type of test	Sensitivity, %; stage			Specificity, %
	Primary	Secondary	Latent	
Nontreponemal				
VDRL	80	100	96	98
Rapid plasma reagin test	86	100	99	98
Treponemal				
Microhemagglutination for *Treponema pallidum* (MHA-TP)	82	100	100	99
Fluorescent treponemal antibody absorption (FTA-Abs)	98	100	100	98

infections in females with symptomatic vaginitis but is much less sensitive in asymptomatic patients and in specimens from males.

The sensitivity of staining techniques for fixed specimens is no better than that of simultaneously performed wet mounts. They are useful alternatives when wet mounts and culture are not available.

Detection of yeasts

Several techniques can be used to detect yeasts. In symptomatic females yeasts can usually be detected by means of Gram's stain, wet mount or a potassium hydroxide preparation (10% potassium hydroxide added to vaginal secretions on a slide). Yeasts will also grow on many different media. Isolation in the laboratory is not usually required for diagnosis in symptomatic females because the direct tests usually give positive results. Isolation of yeasts is not by itself an indication of disease.

Serologic testing for HIV antibody

Unless the perpetrator belongs to a high-risk group, testing for antibody to HIV (human immunodeficiency virus) is not recommended, owing to the risk of possible false-positive results and their consequences.