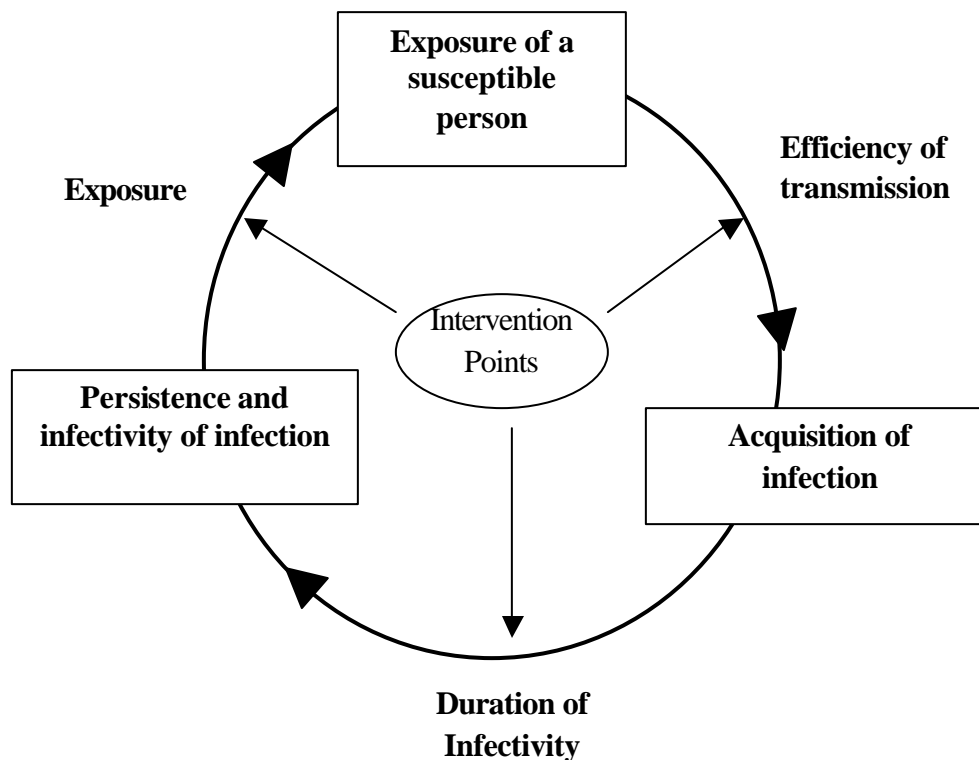


STD PREVENTION AND MANAGEMENT

The prevention and control of sexually transmitted disease (STD) involves many different levels of healthcare providers. Individual physicians' attitudes and actions can impact either on an individual, core groups with high-risk behaviors or the population as a whole. Older concepts such as primary and secondary prevention interventions are being retooled into schemes that recognize strategies that impact at many levels to reduce the ultimate burden of STD.

The determinants of STD transmission can be thought of as a continuum^{1,2} as shown in Figure 1. Opportunities exist at each of these steps to prevent and control sexually transmitted infection. For the primary care physician, many interventions are directly applicable to daily practice.

Figure 1. The continuum of STD (from ref. 1, 2)



Exposure of susceptibles to infected individuals can be influenced through counseling of patients to reduce early sexual debut and concurrent sexual partners, and to promote the selection of safer sexual partners and healthy sexual hygiene. Physicians should also inquire actively into their patients' sexual/social history and practices. This allows an opportunity to address risk behaviors that impact on exposures to STD. Individuals who have exposures to high-risk behaviors such as injection drug use or the commercial sex trade, and those with high-risk sexual practices such as unprotected anal intercourse should be identified for intensive screening for STD. Finally, advising patients to avoid sexual contact if any symptoms exist and to avoid unprotected sex with a regular partner soon after sex with a risky partner are examples of active interventions that can influence this step in STD transmission¹.

Efficiency of transmission during exposure between susceptible and infectious partners can be influenced by a number of primary care physician interventions. Advising patients to use "safe sex" practices such as condom use in non-monogamous relationships and the avoidance of unprotected vaginal or anal intercourse can substantially reduce the transmission of some STD pathogens. It is important to point out, however, that some viral pathogens such as HSV and HPV are not as effectively controlled as chlamydia or HIV with barrier methods such as condoms. Immunizations for HBV can very effectively prevent transmission of infection in both individuals and the general population if universal immunization is reasonably applied. The application of epidemiologic treatment to patients who have had a known exposure to a STD can reduce transmission presumably by treating patients either before symptoms develop or during the incubation

period of the infection. Other forms of post-exposure prophylaxis have been also been used to prevent HIV infection following needle-stick exposure. Finally, physicians can reduce the infectivity of some infected individuals by the use of suppressive antimicrobial therapy. An example of the latter is the use of acyclovir in genital herpes and AZT in HIV-infected pregnant women¹.

Duration of infection is the area where medical care by physicians has the largest impact. This involves monitoring their patient population for the prevalence of varying STDs and developing a patient encounter-based strategy for screening individuals for asymptomatic or latent infection and new infections. (see table 1).

Table 1. Trends in the epidemiology of STD in Canada (from ref. 4)

Disease	Prevalence
Chlamydia (CT)	Common
Pelvic Inflammatory Disease (PID)	Common
Genital Herpes	Common
HPV/Genital Warts/Cervical CA	Common
Gonorrhea (GC)	No longer common
Hepatitis A (HAV)	Moderate
Hepatitis B (HBV)	Low to moderate
HIV	Low to moderate
Syphilis	Now rare
Chancroid	Exceedingly rare
Granuloma inguinale	Exceedingly rare

This then allows for timely interventions to treat and manage infected individuals to reduce or eliminate transmission of STDs. Incorporating these strategies into daily practice are essential if a physician hopes to have a lasting effect on controlling STD in their patients and community. Active case finding through routine screening of sexually

active patients and especially those identified with high-risk core groups is an essential first step. Physicians should be aware that patients in the 16-24 year old age group have the highest incidence of STD. A number of key sexual behaviors have been associated with STD/HIV transmission as listed in Table 2³. The impact of preventive measures and the treatment of infected individuals in these groups are likely to have the greatest impact on STD prevention and control in the community.

Table 2. Key Sexual Behaviors in STD Transmission

Partner Variables
Number of sexual partners
Frequency of acquiring sexual partners
Concurrence of sexual partners
Types of partners i.e. commercial, unknown
Sexual act variables
Age at first sexual intercourse
Type of sex i.e. oral, vaginal, anal
Other variables
Frequency of sex
Non-penetrative sex

The 1998 Canadian STD Guidelines identify seven key practice points for primary care providers that should be part of all physicians' routine care⁴.

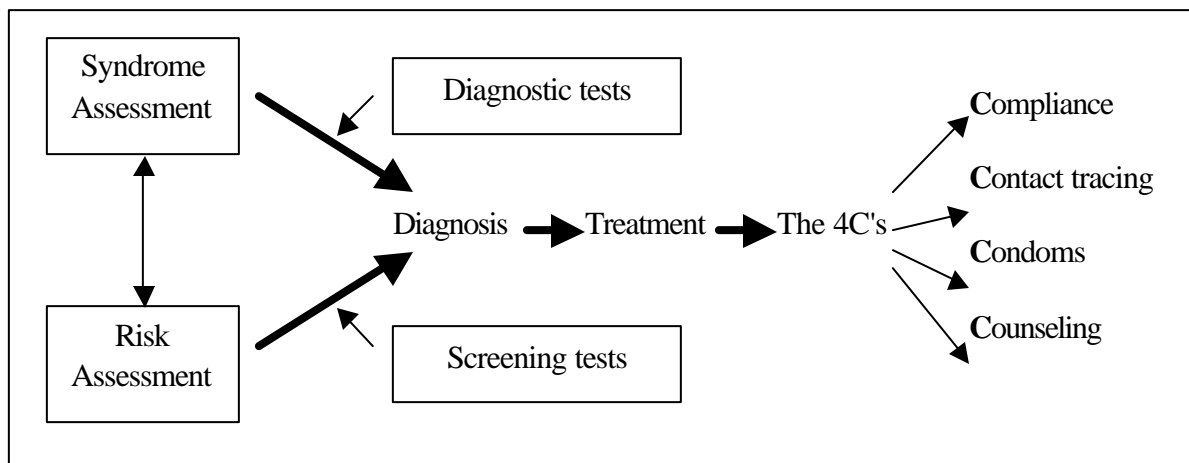
1. **Routinely communicate awareness of STD and sexual health concerns** e.g. pamphlets in the office, discuss with each patient as appropriate
2. **Provide appropriate information** on STDs
3. **Plan and motivate prevention** as a laudable and healthy behavior
4. **Provide appropriate STD prevention medical services** e.g. routinely offer HBV vaccination, cervical cancer screening, STD/HIV testing to all pregnant women

5. **Secondary prevention** e.g. screen all sexually active patients for common STDs such as chlamydia, genital herpes and HPV when the opportunity arises at annual examinations and during the assessment of genital and non-genital tract symptoms compatible with a STD.
6. **Establish a referral network** of "user-friendly" specialist colleagues experienced in STD for assistance in addressing STD and sexual health issues.
7. **Self-evaluation** e.g. look at areas that require improvement in office practice, do you prescribe oral contraceptives without discussing the need for barrier methods to reduce the risk of STD? Are you aware of the common atypical presentations of genital herpes? Are you up to date on treatment recommendations for common STDs?

STD Management

STD care involves managing both symptomatic and asymptomatic patients. Figure 2 demonstrates the essential steps of this process of medical care⁵. For practical reasons let us now separate the two main clinical assessment strategies and examine suggestions for incorporating these into clinical practice.

Figure 2. Essential steps in STD care management (From ref.5)



Risk Assessment

Routine screening in Canada is currently recommended for groups or asymptomatic individuals with high-risk behaviors due to the prohibitive cost of screening the general population. The following individuals are identified frequently as core groups or transmitters with high-risk behaviors that contribute significantly to the prevalence of STDs.

1. Commercial sex workers and their clients.
2. Street youth
3. Injection drug users
4. Inner city poor

Physicians should learn to identify these individuals in their practice to ensure that appropriate screening and education are an integral part of all clinical encounters.

For patients not apparently falling into these groups a strategy to include inquiries regarding sexual or drug-related risk behaviors should be a routine part of most patient encounters relevant to general health or specific issues related to reproductive health. The following clinical problems can be clues suggesting the presence of STDs.

1. Urinary and/or genital tract complaints
2. Problems with interpersonal relationships
3. Psychosocial problems
4. Depression
5. Anxiety or mood disorders

Many studies have shown that less than a third of physicians obtain an adequate sexual history from their patients. It has been proposed⁶ that if time during a patient-physician encounter allows for only a single question, a reasonable choice is the following:

What do you do to protect yourself from HIV/AIDS?

Schemes for brief sexual history taking also exist and should be employed if a positive response is engendered by the screening question. An example is shown in Figure 3.

Figure 3. Example of a Short Sexual History Assessing Risk for STDs

- | |
|---|
| <ol style="list-style-type: none">1. Are you sexually active at present?2. If not, how long has it been since you had sexual contact with someone?3. When you were/are sexually active, was/is it with men, women or both?4. How many lifetime sexual partners have you had? (Estimate only, if > 10)5. What percentage of these partners was "casual"?6. What kind of sexual activity do/did you engage in?7. Do you always practice "safe sex"?8. Have you ever had a sexually transmitted disease? |
|---|

*Source: Gabel and Pearsol Taking an Effective Sexual and Drug History
Journal of Family Practice 1993; 37:185*

Women are more frequently targeted for screening because the frequency of asymptomatic infection is higher and the consequences of untreated infection greater in terms of morbidity and mortality. It should be noted, however, that differences exist between Canada and the US in determining who should be screened and for which infections. As an example, the US currently suggests screening for chlamydia in all the following: sexually active women < 20 years old, women between ages 20-24 years with either 1) a history of inconsistent use of barrier methods or 2) a new sexual partner in the prior 3 months and women > 24 years of age with both of the latter risks. In Canada however, chlamydia screening is recommended only for contacts with a known STD and sub-groups with high STD prevalence rates or "at-risk" for complications of infection i.e.

pregnant women. Despite this, a number of recommendations can be made for screening based on age, risks, test effectiveness and cost and opportunities for testing. These recommendations are summarized in Table 3.

Table 3. Screening Recommendations for Asymptomatic Individuals

Who	Which	When	What
Females	Age = 20 years and sexually active	All visits	CT, PID
	Known contact with STD, multiple partners, new partner or > 2 sexual partners in last 2 months	All visits	CT, PID, GC, HPV, HSV
	Pregnant	Pre-natal assessment	CT, HBV, HIV, GC, Syphilis
	IDU or commercial sex worker	All visits	CT, GC, PID, HPV, HSV, HBV, HIV
	Immigrants or travelers from countries with epidemic STDs	All visits	CT, PID, GC, Consider syphilis, HAV, HBV and HIV
Males	Age = 24 years and sexually active	All visits	Consider 1 st void urine for CT
	Known contact with STD, multiple partners, new partner or > 2 sexual partners in last 2 months	All visits	Urine CT, GC, HSV, HBV
	IDU, street involvement, commercial sex worker or men who have sex with men	All visits	Urine CT, GC, HIV, HBV
	Immigrants or travelers from countries with epidemic STDs	All visits	Urine CT, GC, Consider syphilis, HAV, HBV and HIV

Chlamydia screening is recommended for most groups because the infection is highly prevalent and commonly sub-clinical or asymptomatic (females 60-80%, males 50-60%), sequelae are serious and frequent (particularly in women) and nucleic acid amplification tests such as LCR (ligase chain reaction) are now widely available, sensitive and simple to perform. Although chlamydia screening in males is not widely proposed, nucleic acid amplification testing on first-voided urines is now well accepted and simple to carry out. Screening for gonorrhea is less widely recommended due to its declining incidence and a

less frequent asymptomatic presentation. Screening for other STDs requires phlebotomy for serology (syphilis, HBV, HIV) or the presence of active lesions to sample (HSV, HPV). HPV screening with colposcopy and aceto-whitening should only be carried out by those with experience in these techniques.

Syndrome Assessment

Most patients with symptomatic disease will present to physicians with a recognizable STD syndrome that helps to define the appropriate investigation and empiric management. It is important to note however that the presentation of a patient with an STD represents a unique opportunity to assess them for other STDs and to initiate counseling interventions to educate them on means to reduce their risk for future STDs. Remember, STDs are like wolves; they travel in packs. A patient who has developed one STD has also placed him/herself at risk to acquire other sexually transmitted infections. The commonest clinical STD syndromes faced by physicians along with the common microbial causes and the appropriate investigations are summarized in Table 4. All patients presenting with an STD should also be offered serologic testing for syphilis, HBV and HIV. Syphilis serology is inexpensive and so worth doing despite its declining incidence. Hepatitis B serology can be precluded if there is a documented response to prior HBV vaccination. HIV serology should be only undertaken with appropriate pre- and post-test counseling. Hepatitis C serology should not be done routinely except for those individuals at-risk for acquiring HCV. These include blood product recipients prior to 1992 and those with a current or past history of injection drug use. Sexual transmission of HCV is infrequent.

Table 4. STD Syndromes

Syndrome	Common Microbial Causes	Investigations
Urethritis (Males)	Chlamydia trachomatis	Nucleic acid amplification test i.e. LCR or PCR on urethral swab or fresh-voided urine
	Neisseria gonorrhoeae	Culture of urethral discharge or swab
Cervicitis (Females)	Chlamydia trachomatis (CT)	Nucleic acid amplification test i.e. LCR or PCR on cervical swab
	Neisseria gonorrhoeae (GC)	Culture of cervical discharge or swab
Pelvic Inflammatory Disease (PID)	CT with other aerobic & anaerobic bacteria from the lower genital tract +/- GC	Nucleic acid amplification test i.e. LCR or PCR on cervical swab Culture of cervical discharge or swab CBC and differential, ESR or C-RP
Genital ulcer Disease	Herpes simplex virus	Viral culture of genital lesions
Genital papular disease	Human papilloma virus Molluscum contagiosum	Pap smear +/- viral culture of lesions for HPV typing
Hepatitis	Hepatitis A virus Hepatitis B virus	Viral serology
Vulvovaginitis	Bacterial vaginosis Yeast	Gram stain of vaginal discharge Vaginal pH Whiff test using 10% KOH

Treating Patients with STDs

All primary care physicians should have access to a copy of the most recent 1998 Canadian STD Guidelines⁴ in their office. This can be ordered on the Internet in print form from Health Canada and is also available in PDF format at the following URL: <http://www.hc-sc.gc.ca/hpb/lcdc/publicat/std98/index.html>. This is a useful reference for managing patients with STDs as it includes information on most aspects of screening, testing and treating patients with STD. Special sections on managing the pregnant patient, sexual assault victims and persons with repeated STDs are also included.

The goals of treatment for STDs⁷ are:

1. Biological cure
2. Amelioration of clinical symptoms
3. Prevention of sequelae
4. Prevention of transmission
5. Community-based prevention

Of particular significance, the concept of "epidemiologic" treatment should be well accepted by physicians in all forms of primary care and consultant practice. This refers to the active treatment of a patient who presents having a history of contact with another individual with a known STD. Such patients should be administered treatment even in the absence of clinical signs or symptoms and laboratory evidence of infection. Failure to do so creates a missed opportunity for intervention and the high likelihood for subsequent transmission to other individuals and the development of disease in the index patient.

Physicians should also be aware of recent developments in common STDs that have had a major impact on treatment or management. Examples of these include:

1. The use of one gram single-dose azithromycin (Zithromax™) for uncomplicated genital tract chlamydial infection. This is now the empiric treatment of choice for all patients presenting with urethritis or cervicitis given concurrently with single-dose therapy for gonococcal infection consisting of either cefixime (Suprax™) or a quinolone such as ciprofloxacin (Cipro™) or ofloxacin (Floxin™).
2. Chronic suppressive antiviral therapy is now the preferred means of managing most patients with recurrent genital herpes. Acyclovir, valacyclovir (Valtrex™) and

famciclovir (Famvir™) have all been proven to be of equal efficacy in this clinical setting.

3. The management of human papilloma virus infection has been improved with the increasing availability of viral typing in the clinical setting. This enables physicians to identify women who are infected with types (16, 18, 31) that are strongly associated with high-grade dysplasia and invasive cervical carcinoma. This then allows for more frequent Pap test screening of these women for cervical dysplasia. For those patients with symptomatic disease in the form of genital warts, a patient-applied topical therapy with a new agent, imiquimod (Aldara™), an immune modifier that stimulates local cytokines and other components of the host immune system, is now available. This offers an alternative to ablative methods that are often painful and require a provider-applied approach. Imiquimod has also been associated with a reduced frequency of recurrence in patients as compared with ablative techniques⁸.

All physicians have a role to play in the prevention and management of STDs.

Thoughtful consideration of patient encounter-based opportunities to assess for and provide education on STDs are particularly important to family physicians and obstetrician/gynecologists in their daily practice. Current knowledge on important advances in treating patients with STDs and access to relevant up-to-date guidelines for STD management round out the clinician resources necessary to manage sexually transmitted diseases in their patients.

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