Control of sexually transmitted disease: The Canadian perspective

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The ability to control a disease depends on knowledge of its epidemiology. Such information on sexually transmitted diseases (STDs) can be ascertained by surveillance data involving the analysis of notification reports, as well as laboratory reports, hospital discharge data, and data from sentinel clinics and health units. In the case of sexually transmitted hepatitis B, notification data will probably have to be corroborated by data from sentinel clinics, health units or physicians. A vigorous attempt must be made to elucidate the mode of transmission in acute cases and newly discovered carriers. Appropriate treatment, contact tracing and primary prevention strategies appear to have had some success in controlling gonorrhea and syphilis. Rates of genital chlamydial infection may also be reduced by the same methods. These diseases will, however, persist in certain 'core groups'. Control of sexually transmitted hepatitis B will require a primary prevention strategy of risk reduction, sexual health promotion and immunization. Targeted immunization programs on their own are not likely to work. Thus, universal immunization will probably be required along with public acceptance of immunization against STDs and appropriate human and financial resources. Reliable surveillance data will be required for program evaluation.

Key Words: Control, Hepatitis B, Sexually transmitted diseases, Surveillance

Le contrôle des maladies transmises sexuellement: Perspective canadienne

RESUME: La capacité de contrôler une maladie dépend des connaissances épidémiologiques que l'on détient à son sujet. Les données relatives aux maladies transmises sexuellement (MTS) peuvent être obtenues auprès des Centres de surveillance et unités sanitaires. Elles sont extraites des analyses de déclarations, des résultats de laboratoire et des bilans de sortie des services hospitaliers. Dans le cas de l'hépérrose B d'origine venèreenne, les données continues dans les déclarations devront probablement être corroborées par les Centres de surveillance, les unités sanitaires ou les médecins. Il faut tout mettre en œuvre pour élucider le mode de transmission de la maladie dans ces cas aigus et chez les porteurs récemment identifiés. Un traitement approprié, le dépistage des sujets contacts et les stratégies de prévention primaire
In the past, programs to control sexually transmitted diseases (STDs) in Canada were directed at gonorrhea and syphilis. During the 1980s, genital chlamydial infections became important for their long and short term consequences. In addition, human immunodeficiency virus (HIV) infection and the acquired immune deficiency syndrome (AIDS) became the predominant STD in the public's eye. Only a small number of cases of chancroid, another "traditional" STD, exist today. Hepatitis B, on the other hand, has yet to be widely recognized as a "mainstream" STD.

Although the control of communicable diseases in Canada is primarily a provincial and territorial responsibility, the federal government also plays an important role. For example, the mandate of the Laboratory Centre for Disease Control (LCDC) - a directorate of the Health Protection Branch (HPB) of Health and Welfare Canada - is to be the national centre for preserving and improving public health through the identification, investigation, control and prevention of disease in humans. The data and information produced by the LCDC are used for improving disease control both communicable and chronic, planning and policy development, and educating the public. The quality of these data are important when used to assist national, provincial and territorial strategy formulation, e.g., in the area of immunization.

The LCDC includes the Bureau of Communicable Disease Epidemiology, and the Bureau of Microbiology.

The Division of STD Control, under the Bureau of Communicable Disease Epidemiology, is responsible for national surveillance of STDs (excluding HIV/AIDS), epidemiological research related to STDs, and the provision of support for control programs. To achieve the latter, guidelines are being developed for the management of STDs and interprovincial liaison is being promoted. Furthermore, the National Laboratory for Sexually Transmitted Disease (Bureau of Microbiology) has a close relationship with the Division of STD Control. The Federal Centre for AIDS is a separate directorate within the HPB.

**SURVEILLANCE**

Knowledge of the epidemiology of diseases is vital to the development and evaluation of disease control strategies. Surveillance, the object of which is to produce accurate epidemiological data, is as important in controlling STDs as it is in controlling other communicable diseases. Surveillance data are derived from notifiable communicable disease reports by physicians to medical officers of health and then to provincial/territorial authorities who forward data nationally. In addition, laboratory reports, hospital discharge data and, to some extent, data from sentinel clinics and health units have been used.

**NOTIFICATION REPORTS**

Up until the mid 1940s, the reported rates of syphilis and gonorrhea were similar (Figure 1). Although gonorrhea rates outstripped those of syphilis at the end of World War II, the rates of both diseases dropped with the advent of antimicrobial therapy and better control. Rates of syphilis have remained comparatively low since the early 1950s. Rates of gonorrhea, on the other hand, plateaued in the 1950s, rose sharply in the late 1960s and fell markedly during the 1980s. In recent years, it appears that gonorrhea and syphilis have become the predominant STD in Canada.

Figure 1) Trends in syphilis and gonorrhea cases reported in Canada, 1924-89. (Source: Division of STD Control, LCDC, Health and Welfare Canada)
syphilis have been controlled for a variety of reasons. These include adequate treatment and contact tracing as well as primary prevention efforts in groups with high risk behaviours – the latter being spurred by the AIDS epidemic. Despite the marked decline in reports of gonorrhea in persons aged 15 to 24 years, there has been an overall increase in the percentage of cases occurring in this age group. The increased threat of antimicrobial-resistant Neisseria gonorrhoeae has been masked by the continued fall in overall numbers of cases.

Genital chlamydia reporting rates have only recently become available nationally and are therefore somewhat difficult to interpret. Reported rates in certain provinces and territories such as Manitoba and Alberta, and the Yukon, however, may be quite accurate. Rates appear to be plateauing and even starting to drop in provinces with the highest rates initially. This may be due to better control of genital chlamydial infection with appropriate treatment, contact tracing and screening.

It should be noted, however, that rates of gonorrhea and eventually genital chlamydial infections will most likely stop falling, plateau, and then persist in core groups of "high transmitters". These groups become the main reservoir of disease, including antimicrobial-resistant gonorrhea. Control efforts including prevention strategies for these groups are unfortunately difficult. When used as a means of identifying sexually transmitted hepatitis B, notification reports give rise to a number of problems such as: consistency, especially when increased interest in the disease leads to increased reporting; low sensitivity or underreporting; and low specificity. Specificity becomes an issue particularly with hepatitis B if reports of acute cases and carriers are not separated. Use of the notification process to survey sexually transmitted hepatitis B would require careful assessment of this mode of transmission. The primary care physician or those involved in following up notifications of communicable disease at the local public health authority level, would have to investigate each case with vigor. The traditional notification system, however, is not designed to collect complete data of this kind. Although for such data collection it may become possible with the implementation of national case-by-case reporting, the system still relies on the completeness of data collected at the health unit level.

LABORATORY REPORTS

Most provincial notification systems rely on positive laboratory reports to justify inclusion of a case. The only data available, at least nationally, on non-notifiable STDs (including genital herpes and, until recently, genital chlamydia) have been reports from laboratories which agreed to supply data (1). These data are inevitably biased as they are only based on reports from particular laboratories. Laboratory reports of chlamydial infection give a crude idea of the age distribution of cases and a distorted view of the sex ratio. A review of laboratory reports of hepatitis B markers would be similarly biased. Use of these data would require clinical and epidemiological information, which is unlikely to be available, at least routinely, to laboratories.

HOSPITAL SEPARATIONS

Hospital discharge data have been found to be useful for evaluating STDs with long term consequences – most importantly for genital chlamydial infection. Hospital separation rates for pelvic inflammatory disease (PID) can provide useful information, bearing in mind that data are not available over a long period of time and are complicated by the fact that older cohorts may have suffered PID as a result of other STDs apart from chlamydia. Hospital separation data on ectopic pregnancies (Figure 2), however, confirm a cumulative effect of PID causing tubal scarring, which can be directly linked to the prevalence of genital chlamydial infection. The use of hospital discharge data for hepatitis B surveillance would require admission not only for the disease but also for the long term consequence of disease or for another specific diagnosis suggesting hepatitis B infection.

SENTINEL CLINICS

Reporting from sentinel clinics, health units or physicians will probably be a useful adjunct to surveillance if trends in sexually transmitted hep-

![Figure 2](http://example.com/figure2.png)

*Figure 2* Ectopic pregnancies in Canada, number and rate per total pregnancies, 1971-87. (Source: Division of STD Control, LCDC, Health and Welfare Canada)
attics B are to be followed. Sentinel clinic data have been used by the National Laboratory for STD (2) and the Division of STD Control (unpublished data). However, there are difficulties in extrapolating these kinds of data. For example, STD, student health, adolescent and family planning clinics all see selected populations, each with its own hepatitis B risk. The mode of transmission of hepatitis B would have to be assessed by health care providers participating in sentinel surveillance.

Thus, there are several means of acquiring surveillance data on STDs. However, the use of these alone to ascertain trends in sexual transmission of hepatitis B is problematic, except for perhaps sentinel clinics, health units or sentinel physicians. Furthermore, notification data are useful but should be corroborated by other means.

**CONTROL OF SEXUALLY TRANSMITTED HEPATITIS B**

The control of gonorrhea, syphilis, and perhaps chlamydia in part, has been due to a number of factors: adequate testing, treatment, screening for asymptomatic cases and primary prevention. The thrust for primary prevention, including promotion of sexual health, use of condoms and limitation of the number of sexual partners, was boosted by the advent of HIV infection and AIDS. The drop in rates of gonorrhea and syphilis can undoubtedly be explained in part by the changes in risk behaviour of the male homosexual community. However, influencing the high risk behaviour of adolescents and young adults — especially of those who are poor and living on the street — has been much less successful.

For controlling hepatitis B, one clear advantage is the availability of immunization. Disadvantages are the lack of treatment and the high percentage of asymptomatic cases (3). Immunization would control the disease regardless of its mode of transmission, and programs could be targeted at high risk groups or they could be universal. Evaluation of immunization programs for effectiveness would be required, especially in times of economic restraint.

To control hepatitis B with immunization, several issues need to be addressed. These include the availability of funding for the targeting of specific risk-behaviour groups and even the ability to access these groups. With respect to universal immunization programs, the delivery systems for childhood and adolescent immunizations are already in place. However, public acceptance of such a preventive measure for an STD is uncertain, as most parents identify universal immunization programs with childhood disease only. Furthermore, adequate funding from provincial and territorial governments is an important consideration.

**SUMMARY**

STDs can be controlled using primary prevention strategies, isolation and treatment, contact tracing and screening efforts. Control of hepatitis B depends on the availability of an immunization program for those at risk of hepatitis B as an STD. Such a program must be affordable to the provinces, publicly acceptable and evaluated with surveillance data. Prevalence and incidence data will also be required to make both health care providers and the public aware that hepatitis B is an STD and an important cause of morbidity and perhaps mortality.

These steps must take place prior to, or at least simultaneously with, discussions of scheduling, vaccine dosage and the need for boosting. A good vaccine is useless without the money to deliver it to those at risk.

**REFERENCES**
