



## OUTBREAK OF INFECTIOUS SYPHILIS IN THE WINNIPEG HEALTH REGION FINAL REPORT SUMMARY- MARCH 2004

### I. Introduction

The purpose of this final summary report is to describe the outbreak of infectious syphilis occurring within the Winnipeg Health Region for the period January 2003 to March 2004, with an emphasis on *three* key areas:

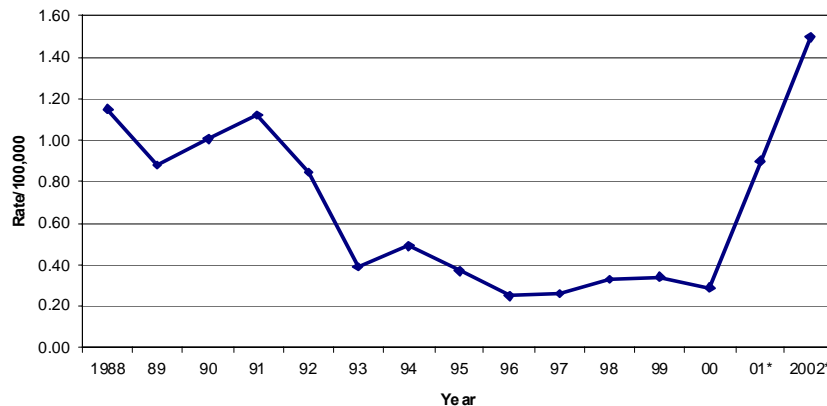
- Public Health Outbreak Response and Management
- Challenges and Successes
- Next Steps

### II. Background

#### National

Since the late 1980s, the rate of infectious syphilis had declined substantially in Canada, reaching a low of 0.25 per 100,000 population in 1996 (Figure 1). Elimination of endemic syphilis seemed a realistic national goal. However, beginning in 1997, infectious syphilis re-emerged with outbreaks occurring primarily among sex trade workers (STW) and men having sex with men (MSM) in Vancouver, Yukon Territory, Calgary, Toronto, Ottawa and Montreal. In 2002 (preliminary data), the rate of infection increased 6-fold from 1996 to 1.5 per 100,000 population.

FIGURE 1. Incidence of Infectious Syphilis in Canada, 1988-2002



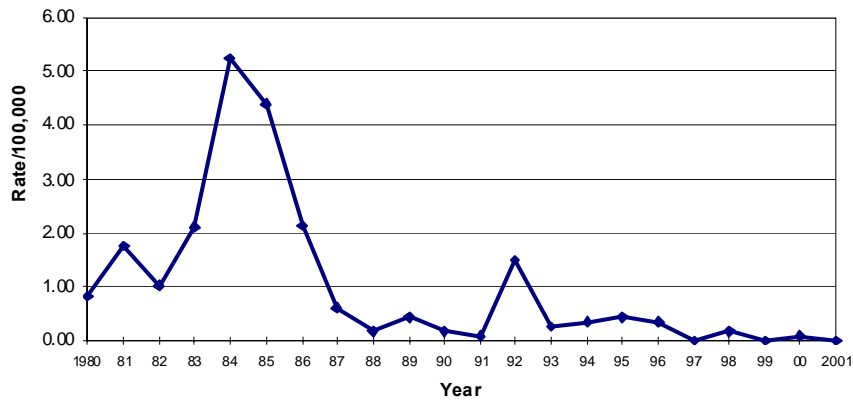
Source: Notifiable Diseases On-Line (1988 – 2000), Health Canada; Sexual Health and Sexually Transmitted Infections Section (\*2001 and 2002 preliminary data), Centre for Infectious Disease Prevention and Control, Health Canada, 2003.



**Manitoba**

In Manitoba, a large outbreak of infectious syphilis occurred during 1983/1984. With the exception of 1992, the rate of infection then declined substantially and remained stable since 1987 at less than 1 case per 100,000 population (Figure 2). The last reported case of locally acquired infectious syphilis had occurred in 1995.

**FIGURE 2. Incidence of of Infectious Syphilis in Manitoba, 1980-2001**



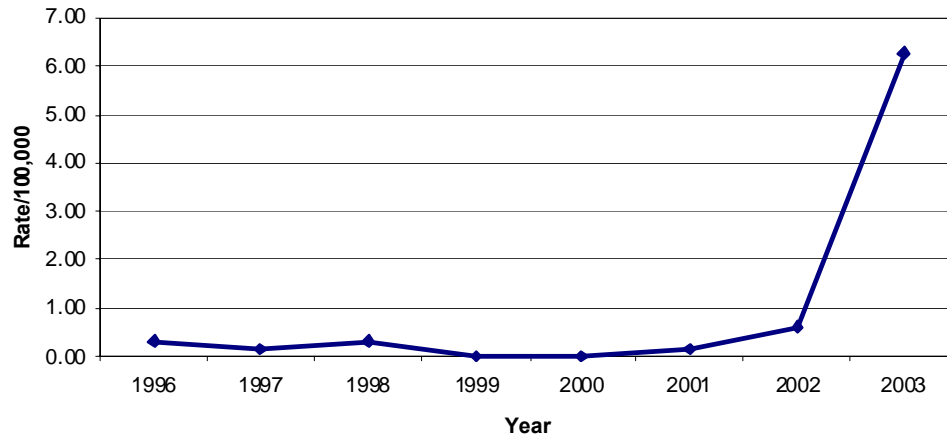
Source: Reportable Diseases Manitoba. CDC Unit Annual Review. Calendar Year 2001.

**Winnipeg Health Region (WHR)**

In the WHR, the annual number of reported cases of infectious syphilis has been less than five since 1996 and all have been imported cases. In 2003, an outbreak of locally acquired infectious syphilis began early in February (diagnosis of three cases) and by the end of December, 41 cases were reported, a rate of 6.3 cases per 100,000 population (Figure 3). Additionally, 4 cases were subsequently diagnosed; 2 cases in January 2004 and 2 cases in February 2004, bringing the total number of reported cases to 45 since January 2003. Concurrent with this outbreak are substantial increases in the incidence of chlamydia, gonorrhoea and HIV.



FIGURE 3. Incidence of Infectious Syphilis in Winnipeg, 1996-2003



### III. Public Health Outbreak Response and Management

#### Outbreak Response Teams

The Winnipeg Regional Health Authority (WRHA) is responsible for investigating and managing disease outbreaks within the WHR. Since a number of recent syphilis outbreaks had been reported in other Canadian jurisdictions requiring timely and coordinated communication with provinces and territories, the WRHA requested assistance and expertise from the Province of Manitoba and Health Canada. As a result, a provincial outbreak response team (ORT) was convened early in February 2003 following notification of three cases of locally acquired infectious syphilis. Team membership included public health professionals from the following organizations:

- WRHA Population and Public Health Program
- WRHA Communications
- Manitoba Health (Caham Provincial Public Health Laboratory; Communicable Disease Control Unit)
- Health Canada (Centre for Infectious Disease Prevention and Control)

In addition, a WRHA Outbreak Response Team was convened to oversee day-to-day management and coordination of the outbreak. Included within this team were Public Health Nurses (PHN) from the WRHA STD Team who were responsible for delivery of public health services and front-line investigation and management of cases and contacts. Two team nurses assumed full-time responsibility for the public health management of all syphilis cases and contacts. The remaining eight nurses, including two term PHNs, assumed the full caseload of all other reportable sexually transmitted infections (STI) and blood-borne pathogens (BBP) in the Region.



Weekly or as-needed STD PHN team meetings were convened to exchange information and to facilitate public health management of all reportable STIs and BBPs. For example, PHNs managing cases and contacts of other reportable STIs and BBPs emphasized (with both clients and physicians) the importance of syphilis testing as part of routine management. When a client's signs and symptoms were suspected to be consistent with syphilis, immediate consultation and linkage with one of the PHNs with specific responsibilities for syphilis occurred. As well, these PHNs would complete outreach visits for non-syphilis clients when they were known to be frequenting "at-risk" establishments.

**Goals and Objectives**

A number of goals and objectives were established at the onset to guide the outbreak response (Table 1). An evaluation framework was developed to monitor progress towards the stated goals.

**TABLE 1. Goals and Objectives**

Goals	
1	To eliminate locally acquired infectious syphilis in Winnipeg
2	To establish trust between the target client population and public health team to improve the facilitation of and referral to primary care and/or infectious disease physician
Objectives	
1	To expand syphilis testing to those clients at risk for syphilis utilizing a mobile clinic (van) during the day
2	To increase case finding for syphilis for early case detection, contact follow-up, and access to treatment
3	To provide services in alternative venues in collaboration with existing inner-city support services
4	To increase awareness of the syphilis outbreak
5	To provide risk-reduction education to those at risk for acquiring syphilis

**Public Health Response and Management Plan**

A public health response and management plan was developed to ensure timely and coordinated intervention. Central to this plan were key activities required to decrease the reproductive rate ( $R_o$ ) of the organism (*Treponema pallidum*):

<p><b><math>R_o = \beta cD</math></b></p> <p><b><math>\beta</math></b> = (Biological) probability of transmission (Example of intervention: use of azithromycin as interim treatment)</p> <p><b>c</b> = Number of sexual partners (Example of intervention: outreach, education, and distribution of condoms)</p> <p><b>D</b> = Duration of infectivity (Example of intervention: testing and treatment of cases and partners)</p>
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Four key components comprised the response and management plan and included communication and public awareness; case management and partner notification; outreach and enhanced surveillance; and epidemiological analysis, evaluation and monitoring (Table 2). Manitoba Health provided funding in support of these activities, including two term PHNs and printing of promotional materials.

**TABLE 2. Public Health Response and Management Plan**

#	Component	Activity
1	Communication and Public Awareness	Physician letters Press release and media coverage Infectious disease news brief (e.g., Health Canada) Newsletters (e.g., Street News) Infectious Disease rounds Internet Chat Rooms Education of affected and nonaffected communities (i.e., venues) Education/communication with community health clinics and agencies Syphilis posters Coasters/Condoms
2	Case Management and Partner Notification	Aggressive case finding Aggressive contact tracing/partner notification Case management (testing, treatment and referral) Partnership/collaboration with primary care and infectious disease
3	Outreach and Enhanced Surveillance	Bars Hotels/Motels Community health centres Street-based sites Mobile van Community health agencies Youth Centre Targeted screening
4	Epidemiological Analysis/Evaluation and Monitoring	Person, place, time Sexual and social network analysis

**Communication and Public Awareness [c, D]**

Physician communication and public awareness have been key activities throughout the outbreak. In early February 2003, Manitoba Health sent a letter to all physicians in the province alerting them to the outbreak. This letter also reminded physicians of the signs and symptoms of syphilis infection, advised them to order appropriate laboratory tests and reminded them of the recommended treatment guidelines. A number of subsequent communications were distributed throughout the year by both Manitoba Health and the WRHA to physicians to provide timely updates, including presentation(s) at Infectious Disease Rounds.

Media releases and targeted communications (e.g., Health Canada Infectious Disease News Brief, Street News) were distributed as required throughout the year. In March 2003, Public Health Nurses distributed posters to well over 50 “at-risk”<sup>1</sup> venues and other establishments (e.g., community billboards, 7-Eleven light posts etc.) within the inner-core area of the WHR. Education and distribution of print materials, including condoms and posters, continued throughout the year and throughout the Region. As well, education about syphilis and information about the outbreak was posted on two Internet chat rooms. In August 2003, the “Stop Syphilis” campaign - involving specially designed posters, condom books and coasters - was launched to “step-up” public awareness. In November, a presentation on the outbreak was

<sup>1</sup> “At-risk” is defined as establishments or locations identified as (or known to facilitate) sex partner meeting locations.



delivered to participants of the “Sex Matters” conference in Winnipeg, a forum convened and hosted by the Sexuality Education and Resource Centre (SERC).

### **Case Management and Partner Notification [β and D]**

Public health intervention included aggressive case finding, management and partner notification as outlined in the provincial Communicable Disease Control Management Protocol. Partnerships with Infectious Disease Specialists, community-based agencies, “at-risk” venues and “at-risk” clients were sought and/or strengthened to facilitate referrals, clinical consultations and risk reduction counselling. Physician delegation of function was introduced in March 2003, allowing Public Health Nurses to test (urine: chlamydia, gonorrhea; blood: **syphilis**, HIV, hepatitis B, hepatitis C), communicate results and provide antibiotic treatment (chlamydia, gonorrhea and syphilis). In August, Manitoba Health approved the use of azithromycin for interim treatment of syphilis.

### **Outreach and Enhanced Surveillance [β, c, D]**

A number of activities were carried out to enhance case finding for early detection of syphilis, follow-up of contacts and access to treatment for both cases and contacts. Public Health Nurses visited (and continue to visit) “at-risk” establishments and community-based agencies to communicate and educate both the public and stakeholders on the signs and symptoms of infectious syphilis. Included in this education was the provision of risk reduction information and supplies (e.g., condoms). Public Health Nurses test (urine: chlamydia, gonorrhea; blood: **syphilis**, HIV, hepatitis B, hepatitis C), communicate results and provide antibiotic treatment (chlamydia, gonorrhea and syphilis). The “Stop Syphilis” campaign, launched in August, included the distribution of coasters and condoms; a mechanism intended to increase public awareness, and to engage “at-risk” clients to “connect” with Public Health Nurses. Public Health Nurses have reported that these resources have been instrumental in initiating dialogue with clients and facilitating relationship building.

### **Epidemiological Analysis, Evaluation and Monitoring**

Infectious syphilis was defined as incubating, primary, secondary or early latent. The first case of locally acquired infectious syphilis was diagnosed on January 25, 2003. As of March 15, 2004, a total of 45 cases have been reported with peaks occurring in March, August, September and December 2003 (Figure 4). Of note, four cases reported between December 2003 and February 2004 have known links to an outbreak in Vancouver among men having sex with men (MSM).

Selected demographic and clinical information is presented in Table 3<sup>2</sup>. Sixty percent of cases were reported in males and more than half of all cases were between the ages of 30 and 49 years. The majority of cases resided within the Downtown and Point Douglas Community Areas (78%), areas characterized by high mobility, low-income, high unemployment, sex trade activity and illicit drug use. Sixty-two percent of cases were among Aboriginal clients. Predominant risk markers among cases include patronage at inner-city bars, significant alcohol consumption, mental health issues, and anonymous and unprotected sex, including participation in sex trade. Heterosexual transmission has been predominant (91%), although MSM transmission was reported late in December, and a link to an MSM outbreak in Vancouver was established for all 4 cases. With the exception of one case that relocated to Vancouver, all 45 cases have been treated.

In total, index cases reported 113 sex contacts. Inner-city bars and hotels were the most common venues

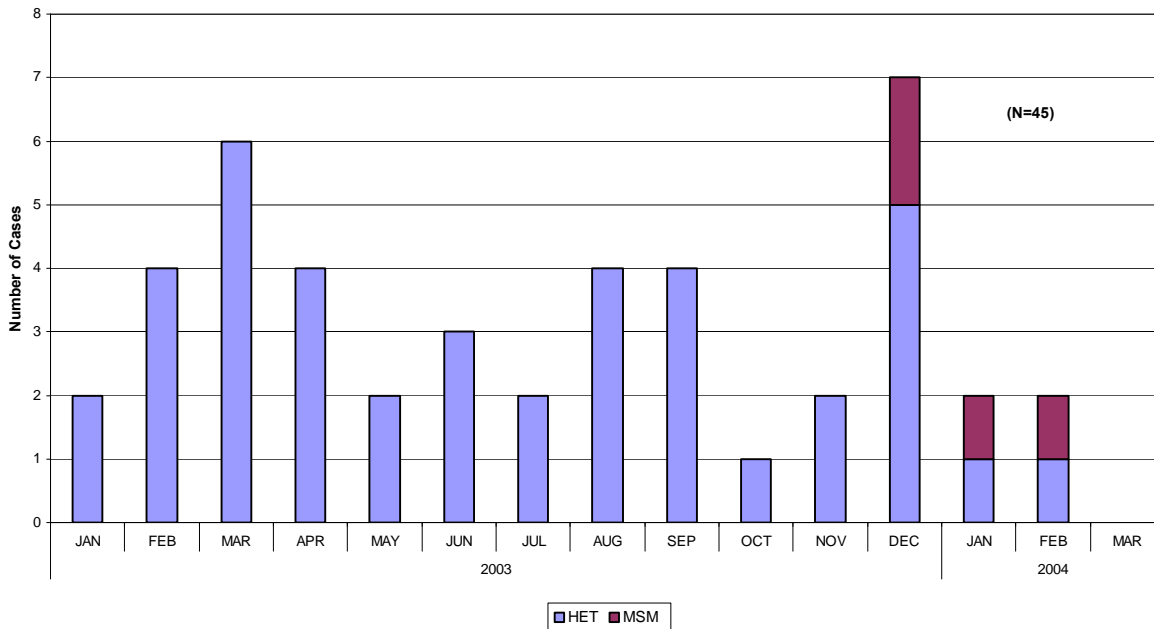
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<sup>2</sup> Preliminary data.



or meeting places for cases and contacts. Sex trade activity, current or former partners and meeting on the street (but not sex trade-related) was also reported. Social network analysis clearly illustrated the significance of bars and hotels as significant venues linking cases and contacts (i.e., “at-risk” establishments), although less so amongst recently diagnosed cases. The majority of contacts were known to reside within the WHR, although a number of contacts resided outside of Winnipeg. Aggressive partner notification, facilitated by Public Health Nurses, played a key role in identifying 30 (of the 45) cases.

**FIGURE 4: Epidemic Curve: Infectious Syphilis, Winnipeg Health Region, Jan 2003 - March 2004**





**TABLE 3. Selected demographic and clinical information, Jan 2003 to Mar 2004**

Demographic and Clinical Characteristic	Cases (n=45)	
	(no.)	(%)
<b>Gender</b>		
Male	27	60.0%
Female	18	40.0%
<b>Age-Group</b>		
<20 years	0	0.0%
20-29 years	8	17.8%
30-39 years	17	37.8%
40-49 years	13	28.9%
50-59 years	5	11.1%
60+ years	2	4.4%
<b>Residence</b>		
Winnipeg – Downtown	20	44.4%
Winnipeg – Point Douglas	15	33.3%
Winnipeg – Other	8	17.8%
British Columbia	1	2.2%
No Fixed Address/Unknown	1	2.2%
<b>Ethnicity</b>		
Aboriginal	28	62.2%
Non-Aboriginal	11	24.4%
Unknown	6	13.3%
<b>Signs and Symptoms*</b>		
Genital ulcerative lesions	22	48.9%
Oral ulcerative lesions	4	8.9%
Rash	13	28.9%
Inguinal lymphadenopathy	5	11.1%
No signs/symptoms	13	28.9%
<b>Stage***</b>		
Incubating <sup>#</sup>	8	17.8%
Incubating/Early Latent	4	8.9%
Primary	18	40.0%
Secondary	11	24.4%
Early Latent	1	2.2%
Unstaged	3	6.7%
<b>Mode of Transmission</b>		
Heterosexual	41	91.1%
MSM	4	8.9%



**TABLE 3. Selected demographic and clinical information, Jan 2003 to Mar 2004 (cont'd)**

Demographic and Clinical Characteristic	Cases (n=45)	
	(no.)	(%)
<b>Risk Factor**</b>		
Prenatal	1	2.2%
Sex Trade Worker	4	8.9%
Patron of Sex Trade Worker	5	11.1%
Injection Drug Use	2	4.4%
Alcohol Use	26	57.8%
Repeat STD	14	31.1%
Mental Health Issue	5	11.1%
<b>Treatment</b>		
Bicillin	38	84.4%
Azithromycin and Bicillin	5	11.1%
Doxycycline	1	2.2%
Unknown	1	2.2%

\* Presented with one or more symptoms.

\*\* Presented with one or more risk factors.

\*\*\* Refer to Manitoba Health Communicable Disease Control Protocol Manual for all case definitions, excluding incubating syphilis.

#Incubating syphilis: Positive screening and confirmatory serology (i.e., reactive reactive) regardless of titre; No signs/symptoms of syphilis; Recent contact with known syphilis case within the last 90 days

Information from a number of sources was (and continues to be) utilized to monitor the status of the outbreak and to evaluate, where possible, the effectiveness of a number of interventions, including outreach and enhanced surveillance. Sources of data include public health investigations, client charts and nursing notes, Provincial Public Health Statistics System (PPHSS), and laboratory data. To facilitate evaluation, a Community Medicine Resident completed a chart review of all syphilis cases diagnosed between January and October 2003. The chart review was later expanded to include case and contact information for all 45 cases diagnosed between January 2003 and February 2004. These data were entered into an Epi Info database (version 6.4) to facilitate data management and analysis.

#### IV. Challenges and Successes

A number of challenges and successes have been encountered. Each is summarized in Table 4 and Table 5 respectively. For challenges, short-term and longer-term modifiers have been included and/or proposed, where possible.



**TABLE 4. Challenges**

#	Challenge	Description	Modifier
1	Difficulty in obtaining reliable information from clients	<ul style="list-style-type: none"> <li>- Poor historians due to known or self-described mental health issues and/or excessive alcohol consumption on the part of clients has resulted in difficulty in following cases/contacts</li> <li>- Initial client perception of PHN as “sex police”</li> </ul>	<ul style="list-style-type: none"> <li>- Re-interviewing of cases has often been required to identify and/or clarify information on reported sex contacts</li> <li>- Engaged in supportive counseling that is solution-focussed</li> </ul>
2	Primary Care provider lack of knowledge and/or familiarity with syphilis testing and treatment	<ul style="list-style-type: none"> <li>- Knowledge of infectious syphilis and recommended testing and treatment guidelines is limited due to long absence of disease</li> </ul>	<ul style="list-style-type: none"> <li>- Plan to deliver syphilis education session to health care and social service professionals, including an update on provincial STD treatment guidelines and drug program</li> </ul>
3	Timely referral of cases and contacts for medical management	<ul style="list-style-type: none"> <li>- Initial challenge experienced with respect to timely referral of cases and contacts for medical management</li> </ul>	<ul style="list-style-type: none"> <li>- Established partnerships with Infectious Disease and community health clinics to “fast track” syphilis cases and contacts</li> </ul>
4	Contacts that cannot be identified and/or located	<ul style="list-style-type: none"> <li>- Anonymous sex partners and/or lack of locating information</li> <li>- Transient nature of clients</li> </ul>	
5	Staff safety concerns	<ul style="list-style-type: none"> <li>- Mental health issues for some clients, alcohol/drug consumption and the added issue of a diagnosis of syphilis has resulted in a number of clients responding unpredictably during home visits and/or in other venues</li> </ul>	<ul style="list-style-type: none"> <li>- Public Health Nurses have completed non-violent crisis intervention training</li> <li>- Public Health Nurses work in pairs, and are “street smart”, knowing when to attempt a home visit/outreach, or when to avoid same altogether</li> <li>- Work safety policies are routinely followed and adhered to</li> </ul>



#	Challenge	Description	Modifier
6	Mobile street unit (i.e., van) not utilized for day-time outreach	- The current mobile street unit (i.e., van) does not provide an adequate clinical work place (e.g., drawing of blood) and was not utilized for day-time outreach	- Seek funding for an upgraded mobile unit to support enhanced surveillance
7	Outreach and Enhanced Surveillance	- Initial learning curve for PHNs with the introduction of delegation of function - Initial learning curve for PHNs with respect to expanded outreach - Delegation of function has expanded case finding beyond the syphilis outbreak (for chlamydia, gonorrhoea and hepatitis C) resulting in increased Public Health work load	- Complete a comprehensive review of Public Health STI/BBP management and operations

**TABLE 5. Successes**

#	Success	Description
1	Established new partnerships/strengthened existing partnerships and increased awareness of the outbreak	- Enhanced working relationship between public health program and infectious disease specialists - Established working relationships with “at-risk” clients - Established working relationships with “at-risk” venues
2	Introduced point-of-contact testing, treatment, immunization, education, counseling, and harm reduction	- Availability of PHN testing (chlamydia, gonorrhoea, HIV, hepatitis C, <b>syphilis</b> ) treatment (chlamydia, gonorrhoea, <b>syphilis</b> ), immunization (e.g., influenza, hepatitis B) and general communicable disease management (e.g., head lice)
3	Established trust with clients and owners/managers of “at-risk” establishments	- Welcomed by a number of “at-risk” establishments - PHN gained access to clients
4	Delivered services in non-traditional venues	- Delivered services in “at-risk” establishments
5	Access to azithromycin	- Introduced azithromycin as interim treatment of syphilis
6	Prevention of congenital syphilis	- <i>Potentially</i> prevented one case of congenital syphilis
7	Reduced the duration of infectivity	- Early detection of cases (i.e., contacts identified with incubating syphilis)



## V. Next Steps

In response to the above-noted challenges and successes, as well as the depth of expertise developed as a result of this outbreak, a number of next steps are proposed (Table 6).

**TABLE 6. Next Steps**

#	Item/Activity	Description	Time Line
1	Bring Syphilis Outbreak Response Team to closure	<ul style="list-style-type: none"> <li>- Case reports have stabilized</li> <li>- Ability to manage cases within existing resources</li> <li>- Progressing towards (new) endemic phase</li> </ul>	April 2004
2	Return to routine surveillance and monitoring of syphilis	<ul style="list-style-type: none"> <li>- Ensure completion of and submission of case-reporting forms for syphilis cases and contacts to Manitoba Health</li> </ul>	April 2004
3	Maintain established outreach and aggressive case management	<ul style="list-style-type: none"> <li>- Maintain outreach established throughout duration of outbreak</li> <li>- Maintain aggressive case and partner management</li> </ul>	April 2004
4	Continue to identify and strengthen partnerships	<ul style="list-style-type: none"> <li>- Identify, define and strengthen working partnerships with Manitoba Health, primary care, acute care and community-based agencies to share and enhance service delivery for all STIs and BBPs</li> </ul>	Ongoing
5	Obtain upgraded mobile street outreach unit (i.e., van)	<ul style="list-style-type: none"> <li>- Explore funding opportunities to acquire a new and/or upgraded mobile unit to support health outreach</li> </ul>	2004
6	Deliver syphilis education session to health care and social service professionals	<ul style="list-style-type: none"> <li>- Prepare and deliver syphilis education session to health care and social service professionals, including an update on provincial STD treatment guidelines and drug program</li> </ul>	June - December 2004
7	Review syphilis testing data before and after outbreak	<ul style="list-style-type: none"> <li>- Review provincial laboratory-testing data before and after outbreak was declared to determine (a) overall syphilis testing patterns; and, (b) change in "testing behaviour" in response to outbreak</li> </ul>	Pending
8	Develop and disseminate syphilis pamphlet	<ul style="list-style-type: none"> <li>- Produce a provincial syphilis pamphlet that includes information to meet the needs of residents of Winnipeg and Manitoba</li> <li>- Model pamphlet after existing provincial chlamydia and gonorrhoea pamphlets</li> </ul>	2004-2005



#	Item/Activity	Description	Time Line
9	Develop and implement public awareness campaign	<ul style="list-style-type: none"><li>- Rates of chlamydia, gonorrhoea and HIV have increased substantially in Winnipeg and Manitoba</li><li>- Use the syphilis outbreak as an introduction to a larger-scale provincial public awareness campaign for prevention of STD and HIV</li></ul>	2004-2005
10	Prepare manuscripts for publication	<ul style="list-style-type: none"><li>- Identify, draft and submit manuscripts for publication</li><li>- Define lead roles</li></ul>	2004

## VI. Acknowledgements

The valued contribution of colleagues and community partners is gratefully acknowledged:

- Business owners and managers
- Centre of Infectious Disease Prevention and Control, Health Canada
- Communications/Media Relations, Winnipeg Regional Health Authority
- Department of Community Health Sciences, Community Medicine Residency Program, University of Manitoba
- First Nations and Inuit Health Branch
- Health and Social Service Agencies, Winnipeg
- Infectious Disease Specialists
- Population Health and Health System Analysis Unit, Winnipeg Regional Health Authority
- Primary Care Physicians/Community Health Clinics
- Public Health Branch, Manitoba Health