Factors Associated With Hepatitis B Vaccination Among Men Having Sexual Relations With Men in Montreal, Quebec, Canada

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Abstract

Objective: To determine factors associated with hepatitis B virus (HBV) vaccination status among HIV-uninfected men who have affective and sexual relations with men (MASM) in Montreal, Quebec, Canada.

Methods: The Omega Cohort is a study of the incidence and psychosocial determinants of HIV infection among MASM in Montreal. Participants complete a questionnaire and are HIV-tested every 6 months. At baseline, we also performed testing for HBV markers and collected data on HBV vaccination history.

Results: Forty-six percent of 653 participants had received at least one dose of HBV vaccination, whereas 28% were completely vaccinated. Lack of vaccination was associated with injection drug use, having >=20 regular lifetime partners, living outside Montreal, not having sex in bathhouses, and not having consulted a physician aware of the participant's sexual orientation. Among vaccinated MASM, incomplete vaccination was associated with having <20 lifetime casual partners, trading sex for drugs, having given goods for sex, having had unprotected anal sex with regular partners, and having no history of a previous sexually transmitted disease.

Conclusion: A significant proportion of Montreal's MASM, some of whom are at risk of contracting HBV through sexual and parenteral transmission, have not been vaccinated for HBV. Men who have affective and sexual relations with men should be educated about the risk of HBV transmission and the seriousness of the disease.

HEPATITIS B VIRUS (HBV) infection is one of the most important sexually transmitted diseases (STDs) among gay men.1,2 Prevalence of HBV markers in this population may be high, varying between 5% and 81%.3-23 Prevalence of HBV surface antigen (HBsAg) may vary from 1% to 11%.1,3-5,7,9,17,19,22 An effective and safe vaccine against HBV has been licensed since 1982, and HBV could be controlled by effective immunization. Some public health departments in Western countries have implemented HBV vaccination programs among high-risk groups.22-26 Despite these efforts, the HBV vaccine remains underused among gay men.22,23,27-32 One reason for this seems to be that some physicians fail to offer HBV screening and immunization to susceptible gay men.27-29
According to several studies that aimed to assess the awareness and use of the HBV vaccine by gay men, vaccination coverage varies from 3% to 47%.\textsuperscript{22,23,27,30-32} Few studies have been published about HBV vaccination coverage in gay men recruited outside clinical settings, and little is known about the sociodemographic characteristics, STD history, and behaviors of unvaccinated men, or, among men reporting vaccination, the characteristics of men who fail to complete the full three-dose course. Such information may help public health authorities plan HBV vaccination campaigns.

The objectives of this study were to (1) determine the prevalence of HBV markers and HBV vaccination coverage among men having affective and sexual relations with men (MASM) participating in the Omega Cohort study in Montreal, Quebec, Canada (in the Omega Cohort, the acronym MASM is used to reflect the importance of the affective component of sexual relations between men; however, participants must have had sex with at least one man during the year preceding participation in the Cohort to be eligible); (2) evaluate sociodemographic factors, STD history, and risk behaviors related to lack of vaccination; and (3) among MASM who reported a history of HBV vaccination, assess sociodemographic factors, STD history, and risk behaviors related to failure to complete a full course of vaccination.

**Methods**

**Background**

The Omega Cohort project is an ongoing prospective study of the incidence and psychosocial determinants of HIV infection among MASM living in the Montreal region (Quebec, Canada). The study population consists of MASM aged 16 years and older who have had sex with another man at least once in the preceding year and are HIV negative or do not know their serostatus. Most participants (78%) heard about the Omega Cohort through newspapers (mainly gay newspapers); 23% heard about it on television, 23% from a friend, 12% through a poster, 12% through flyers, and only 1% from a physician (categories not mutually exclusive). Subjects are recruited primarily at the Centre des Gais et Lesbiennes de Montréal. Interviews are also carried out at three private medical clinics and a community health clinic.

**Data and Specimen Collection**

The first contact potential participants have with the study staff is by telephone. After verification of eligibility, an appointment is scheduled. At the first interview, participants provide an informed written consent and complete a questionnaire (consisting of both an interviewer-administered and a self-administered component). Blood is collected for HIV, HBV, and syphilis testing.

Three weeks after the first appointment, participants receive their HIV, HBV, and syphilis test results and posttest counseling. Participants who are HIV positive are excluded from the study and referred to appropriate services. Men who have affective and sexual relations with men who are negative for HBV markers are offered free vaccination in three doses (since 1995, vaccination is available free of charge for all MASM in any medical clinic in the Montreal area). Participants return every 6 months to complete a follow-up questionnaire and be tested for HIV and syphilis.
Laboratory Procedures

Microparticulate enzyme immunoassay (MEIA) (Axsym HIV-1/HIV-2, Abbott Diagnostics, Missisauga, Ontario, Canada) for the detection of anti-HIV and enzyme immunoassay (EIA) (Cobas Core anti-HBc, Roche Diagnostic Systems, Missisauga, Ontario, Canada) for the detection of anti-HBc are performed at the Department of Microbiology, Centre Hospitalier de l’Université de Montréal (CHUM), Campus Saint-Luc. Before April 1997, all sera were submitted for HBsAg and anti-HBs testing; after this date, only specimens reactive for anti-HBc were tested for HBsAg and anti-HBs. Sera reactive to HIV by EIA are retested in duplicate and, when two of three EIAs are reactive, a Western Blot is performed at the Laboratoire de Santé Publique du Québec (LSPQ). For syphilis testing, rapid plasma reagin (RPR) (RPR Card test, NCS Diagnostics Inc., Mississauga, Ontario) is performed at the CHUM, Campus St-Luc and MHA-TP (when the RPR is positive) at LSPQ.

Statistical Analysis

Dependent variables on HBV vaccination were created using self-reported vaccination status and the number of doses received. We used the prevalence odds ratio (POR) as the measure of association between HBV vaccination and the independent variables. Chi-square and Fisher's exact tests were used for univariate analyses. We performed logistic regression analyses to identify variables independently associated with vaccination (SAS version 6.11, SAS Institute, Cary, NC, USA). All variables with p-values of less than 0.05 on univariate analysis were entered into a multivariate logistic regression model. Variables with p-values of less than 0.05 and variables that were confounders (i.e., affecting any of the other odds ratios by 10% or more) were retained in the final model. Adjusted odds ratio with 95% confidence intervals were computed for variables that remained in the final models.

Results

Sociodemographic Characteristics and Recent Sexual and Health-Seeking Behaviors

As of July 1997, 653 MASM with a mean age of 34 years (range, 16-73 years) completed their first interview in the Omega Cohort. Table 1 shows the sociodemographic characteristics as well as the sexual behaviors of the participants during the previous 6 months.

Ninety-four (36%) of 261 participants without HBV markers reported unprotected anal sex. Moreover, 464 MASM, of whom 171 had no HBV markers, consulted a physician during the 6 months before entry in the Omega Cohort. For 102 of these MASM, their physician knew they had had sex with other men. Thirty-eight percent of the 327 MASM without prior HBV vaccination, 31% of the 166 MASM without HBV markers and without history of prior vaccination, and 51% of 124 MASM not completely vaccinated and without HBV markers consulted a physician aware of their sexual orientation during the 6 months preceding participation in Omega.
Among participants tested for the three markers, 54% had at least one marker, whereas 3% tested positive for HBsAg. Seven (1%) of the 653 participants tested positive for HIV, and 3 (0.5%) were RPR/MHA-TP positive at baseline interview. Two hundred ninety-nine participants reported that they were vaccinated against HBV infection, whereas 26 did not know and 1 participant did not answer the question (Table 2). Excluding these 27 subjects, the proportion of participants who had received at least one dose of HBV vaccine was 48% (final sample for the analyses on vaccination: 626). Fourteen percent of the 299 vaccinated men reported one dose of HBV vaccine, 26% two doses, and 59% had completed a full three-dose course of vaccination. Therefore, overall, 28% of the men reported a complete course of immunization. Among the 38 MASM who reported one dose of HBV vaccine for whom anti-HBs and HBsAg tests were available, 81% had no evidence of HBV markers, whereas, among MASM who reported two doses and three doses of vaccine, 34% and 23%, respectively, had no HBV markers.

*This proportion was calculated only among 181 participants because this question was added to the questionnaire after the beginning of the study.

MASM = men who have affective and sexual relations with men.

TABLE 1. Sociodemographic Characteristics and Risk Behaviors of 653 MASM Participating in the Omega Cohort

Hepatitis B Virus Markers and Vaccination Coverage

Among participants tested for the three markers, 54% had at least one marker, whereas 3% tested positive for HBsAg. Seven (1%) of the 653 participants tested positive for HIV, and 3 (0.5%) were RPR/MHA-TP positive at baseline interview. Two hundred ninety-nine participants reported that they were vaccinated against HBV infection, whereas 26 did not know and 1 participant did not answer the question (Table 2). Excluding these 27 subjects, the proportion of participants who had received at least one dose of HBV vaccine was 48% (final sample for the analyses on vaccination: 626). Fourteen percent of the 299 vaccinated men reported one dose of HBV vaccine, 26% two doses, and 59% had completed a full three-dose course of vaccination. Therefore, overall, 28% of the men reported a complete course of immunization. Among the 38 MASM who reported one dose of HBV vaccine for whom anti-HBs and HBsAg tests were available, 81% had no evidence of HBV markers, whereas, among MASM who reported two doses and three doses of vaccine, 34% and 23%, respectively, had no HBV markers.
TABLE 2. Prevalence of HBV Markers (Anti-HBc and Anti-HBs) Among Omega Participants, by Self-Reported HBV Vaccination Status

Among the 248 participants who had been previously tested for HBV markers, 102 (41%) reported a positive test result (Table 3). Among the 73 men who stated that they were immunized, 15% had no evidence of HBV markers, 18% were anti-HBs positive only, and 61% were anti-HBc and anti-HBs positive. Among 19 MASM who reported they were chronic carriers, 9 were HBsAg-positive. Among 114 MASM who reported a negative test result, 54% were positive for at least one of the HBV markers and 23% were not vaccinated.

<table>
<thead>
<tr>
<th>Self-Reported Doses of HBV Vaccine</th>
<th>Both Tests</th>
<th>Anti-HBc Only</th>
<th>Anti-HBs Only</th>
<th>Neither Test</th>
<th>Test Missing</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 dose (not vaccinated)</td>
<td>103*</td>
<td>23*</td>
<td>7</td>
<td>167^1</td>
<td>26</td>
<td>327^a</td>
</tr>
<tr>
<td>Vaccinated</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>One dose</td>
<td>4</td>
<td>1</td>
<td>2</td>
<td>31</td>
<td>5</td>
<td>43</td>
</tr>
<tr>
<td>Two doses</td>
<td>14^1</td>
<td>1</td>
<td>32</td>
<td>24</td>
<td>7</td>
<td>78</td>
</tr>
<tr>
<td>Three doses</td>
<td>17</td>
<td>3</td>
<td>90</td>
<td>33</td>
<td>31</td>
<td>175^b</td>
</tr>
<tr>
<td>Unspecified number of doses</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Total vaccinated</td>
<td>35</td>
<td>5</td>
<td>125</td>
<td>91</td>
<td>43</td>
<td>299^c</td>
</tr>
<tr>
<td>Do not know if vaccinated</td>
<td>10</td>
<td>2</td>
<td>4</td>
<td>5</td>
<td>5</td>
<td>26^d</td>
</tr>
<tr>
<td>Total</td>
<td>148</td>
<td>30</td>
<td>136</td>
<td>262^1</td>
<td>74</td>
<td>653</td>
</tr>
</tbody>
</table>

*Including 2 HBsAg-positive participants.
^Including 11 HBsAg-positive participants.
\*Including 1 HBsAg-positive participant.
\*Including 1 indeterminate anti-HBc test result.
\*One participant without HBV markers did not answer the question on vaccination.

HBV = hepatitis B virus.

TABLE 3. Prevalence of HBV Markers (Anti-HBc and Anti-HBs) Among Omega Participants According to Self-Reported Results of HBV Testing History

<table>
<thead>
<tr>
<th>Self-Reported Result of HBV Testing History</th>
<th>Both Tests</th>
<th>Anti-HBc Only</th>
<th>Anti-HBs Only</th>
<th>Neither Test</th>
<th>Test Missing</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tested</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Positive test (immunized)</td>
<td>44</td>
<td>3^e</td>
<td>13</td>
<td>11</td>
<td>1</td>
<td>73^f</td>
</tr>
<tr>
<td>Positive test (chronic carrier)</td>
<td>8^g</td>
<td>6^h</td>
<td>0</td>
<td>2</td>
<td>1</td>
<td>19</td>
</tr>
<tr>
<td>Positive test (status unspecified)</td>
<td>6^i</td>
<td>4^j</td>
<td>2</td>
<td>1</td>
<td>0</td>
<td>10</td>
</tr>
<tr>
<td>Negative test</td>
<td>13</td>
<td>5</td>
<td>44</td>
<td>37</td>
<td>15</td>
<td>114</td>
</tr>
<tr>
<td>Do not know</td>
<td>10^k</td>
<td>6</td>
<td>3</td>
<td>8</td>
<td>3</td>
<td>25^l</td>
</tr>
<tr>
<td>Total tested</td>
<td>85</td>
<td>17</td>
<td>163</td>
<td>59</td>
<td>21</td>
<td>248^m</td>
</tr>
<tr>
<td>Not tested</td>
<td>47^n</td>
<td>12^o</td>
<td>48</td>
<td>180^p</td>
<td>45</td>
<td>332</td>
</tr>
<tr>
<td>Do not know if tested</td>
<td>16</td>
<td>1</td>
<td>24</td>
<td>23</td>
<td>8</td>
<td>73^q</td>
</tr>
<tr>
<td>Total</td>
<td>148</td>
<td>30</td>
<td>136</td>
<td>262^1</td>
<td>74</td>
<td>653</td>
</tr>
</tbody>
</table>

*Including 1 HBsAg-positive participant.
\*Including 1 indeterminate anti-HBc test result.
^Including 8 HBsAg-positive participants.
\*Including 3 indeterminate anti-HBc test result.
HBV = hepatitis B virus.
Characteristics Associated With Lack of HBV Vaccination

In the univariate analysis, there were no significant differences between unvaccinated (n = 327) and vaccinated (n = 299) MASM with respect to age (mean = 34 versus 33 years), number of years living in Montreal (>5 years; 61% versus 65%), education (university degree; 48% versus 48%), or annual income (>=$CDN15,000 [$US10,000]; 56% versus 51%). Unvaccinated MASM were less likely to live on Montreal Island and had consulted a physician who was aware of their sexual orientation in the previous 6 months less often than vaccinated MASM (Table 4).

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Number*</th>
<th>Lack of HBV Vaccination [n (%)]</th>
<th>POR 1</th>
<th>p-Value (Chi-square Test)</th>
<th>Adjusted POR 2</th>
<th>Adjusted 95% CI 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health-seeking behaviors during previous 6 months</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Have consulted a physician aware of one's sexual orientation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>334</td>
<td>206 (62)</td>
<td>0.5</td>
<td>0.001</td>
<td>0.4</td>
<td>[0.3-0.6]</td>
</tr>
<tr>
<td>Yes</td>
<td>291</td>
<td>122 (42)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Socio-demographic characteristics</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Living in the urban community of Montreal</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>61</td>
<td>43 (70)</td>
<td></td>
<td></td>
<td>0.4</td>
<td>[0.2-0.8]</td>
</tr>
<tr>
<td>Yes</td>
<td>560</td>
<td>281 (50)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lifetime risk behaviors</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of regular partners</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;20</td>
<td>519</td>
<td>266 (51)</td>
<td>1.7</td>
<td>0.023</td>
<td>2</td>
<td>[1.3-3.7]</td>
</tr>
<tr>
<td>≥20</td>
<td>89</td>
<td>57 (64)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Injection drug use</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Never</td>
<td>580</td>
<td>302 (52)</td>
<td>2</td>
<td>0.066</td>
<td>2.4</td>
<td>[1.1-5.8]</td>
</tr>
<tr>
<td>Ever</td>
<td>32</td>
<td>22 (69)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Risk behaviors during previous 6 months</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sex in bathhouses</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>334</td>
<td>191 (57)</td>
<td>0.7</td>
<td>0.008</td>
<td>0.7</td>
<td>[1.0-2.0]</td>
</tr>
<tr>
<td>Yes</td>
<td>277</td>
<td>130 (47)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Numbers do not sum up to 626 because of missing values.

1Prevalence odds ratio.

2Using logistic regression.

395% confidence interval.

STDs = sexually transmitted diseases; HBV = hepatitis B virus.

TABLE 4. Self-Reported Prevalence of Lack of HBV Vaccination Among Omega Cohort Participants According to Socio-demographic Characteristics, Self-Reported STDs, and Risky Behaviors

Unvaccinated participants reported nonulcerative STDs (29% versus 24%) and ulcerative STDs (10% versus 8%) as often as vaccinated participants. There was also no significant difference in HIV prevalence between the two groups (1.2% versus 0.7%).

Unvaccinated participants reported more lifetime regular partners and injected drugs more often than vaccinated participants. The latter difference was only borderline significant; however, only a small number of participants (n = 32) injected drugs. There were no other significant differences between these two groups regarding any other risk behaviors, such as lifetime unprotected anal sex with regular partners (56% versus 58%), casual partners (41% versus 39%), clients (4% versus 3%), or male prostitutes (6% versus 3%).

Concerning sexual behaviors during the previous 6 months, there were no significant differences between unvaccinated and vaccinated participants regarding the number of regular (>1; 40% versus 40%) or casual (>5; 37% versus 40%) partners or regarding unprotected anal sex with regular (31% versus 33%) and casual partners (13% versus 14%). However, unvaccinated participants had had sex in bathhouses less often than vaccinated participants (Table 4).
In the logistic regression analysis (Table 4), variables that remained predictive of a lack of HBV vaccination among Omega participants were a high lifetime number of regular partners and injection drug use. Variables predictive of HBV vaccination (i.e., negative association with a lack of vaccination) were living on Montreal Island, sex in bathhouses, and having consulted a physician aware of the participant’s sexual orientation during the previous 6 months.

Characteristics Associated With Incomplete HBV Vaccination

Among the 296 Omega participants who reported a history of HBV vaccination (at least one dose) and specified the number of doses received, 41% (121) had not completed a full course of vaccination. Among those participants who reported one or two doses of HBV vaccine, 75 men had apparently failed to complete their vaccination course because they had received their first or second dose of HBV vaccine more than 3 months or 7 months, respectively, preceding entry in the Omega Cohort. In the univariate analysis (Table 4), MASM who failed to complete HBV vaccination (n = 75) were less often college graduates, aged 30 years and older, working full-time and earning at least $CDN15,000 annually ($US10,000), and they reported a history of STD less often than MASM who had completed vaccination (n = 175).

Regarding lifetime risk behaviors, compared with MASM who completed HBV vaccination, MASM who failed to complete vaccination reported less often: alcohol use before sex, a large lifetime number of casual partners (≥20), and an HIV-infected casual partner (Table 5). Conversely, MASM who had had sex for drugs or for money or had given goods or services for sex failed to complete HBV vaccination more often than MASM without these characteristics. Concerning risky sexual behaviors during the previous 6 months, there were no significant differences between MASM who failed to complete vaccination and men who completed vaccination regarding the number of regular partners (>1; 35% versus 41%), unprotected anal sex with casual partners (13% versus 9%), or sexual contacts in bathhouses (49% versus 51%). However, MASM who had received one or two doses of HBV vaccine reported unprotected anal sex more often with their regular partners than MASM who reported three doses of vaccine (Table 5).

In the logistic regression analysis (Table 5), the variables that remained predictive of failure to complete HBV vaccination were: having had sex for drugs, ever having given goods or services for sex, unprotected anal sex with regular partners during the previous 6 months, annual income of less than $CDN15,000 ($US10,000), less than 20 casual partners lifetime, no history of STD, and no alcohol use before sex.
Discussion

In a cohort of MASM in Montreal, a substantial proportion of participants (52%) had never been vaccinated against HBV infection. Among 144 MASM who self-reported three doses of HBV vaccination and for whom anti-HBs and HBsAg tests were performed, 23% had no HBV markers. Some of these MASM may have had a level of anti-HBs too low to be detectable. According to Goilav and Piot,\textsuperscript{33} seroconversion rates after complete immunization in MASM vary between 85% and 98% and,
more than 5 years after the last dose, 15% of MASM have no detectable anti-HBs. Among the 109 men who reported one or two doses of vaccine and for whom anti-HBs and HBsAg test were performed, 50% had no HBV markers.

Overall, 36% of the 261 participants who had not been immunized against HBV infection reported unprotected anal sex during the 6 months preceding entry in the Omega Cohort and were therefore at risk of exposure to HBV infection. One reason why many high-risk MASM are not immunized against HBV infection may be that health care providers fail to offer HBV screening and vaccination to susceptible MASM.27-29 Among Omega participants, this is supported by the fact that a proportion of susceptible men had consulted a physician during the 6 months preceding participation and by the fact that more than 97% of men without HBV markers agreed to be vaccinated in the Omega study.

Some of these MASM may have been offered vaccination and refused or delayed their course of vaccination. They may not consider themselves at risk of HBV infection because of monogamy or “safer” sexual practices.31 Some of these men may underestimate their true risk of HBV infection.

Self-reported HBV vaccination coverage (at least one dose) was 48% among Omega participants, an estimate that is substantially higher than that observed among groups of MASM in the United States or the United Kingdom.20,28-32 These differences could be, in part, because some of these studies were carried out soon after the HBV vaccine became available,31 vaccination was not always free of charge,23,31 some studies recruited younger MASM,20,30 or the way in which HBV vaccination was reported was different.

We observed few significant differences in the sociodemographic characteristics of unvaccinated and vaccinated Omega participants. However, 70% of MASM living outside Montreal Island were not vaccinated against HBV infection, compared with 50% of MASM living on Montreal Island. It may be easier for men living in Montreal to learn about and obtain free vaccinations.

Despite the fact that some physicians seem not to offer vaccination to susceptible MASM, fewer unvaccinated than vaccinated men reported a recent visit to a physician who was aware of their sexual orientation. Some vaccinated MASM were probably in the process of HBV vaccination and received a dose of HBV vaccination during their most recent medical visit. This observation may also relate to the fact that MASM who were vaccinated against HBV infection are more concerned about their general health and visited their physician more often.

Unvaccinated MASM were at higher risk of HBV infection than vaccinated MASM with respect to the injection of drugs. Among the 32 MASM who reported ever having injected drugs and who answered the question on HBV vaccination, 69% had not been vaccinated, compared with 52% among participants who were not injection drug users.

Unvaccinated participants reported more regular partners and less frequent sexual intercourse in bathhouses during the previous 6 months than vaccinated participants. Because men in these two groups reported the same proportion of unprotected anal sex with regular and casual partners, the behaviors cited above do not necessarily discriminate in terms of risk between the two groups.

Among the 299 Omega participants who reported HBV vaccination, only 175 (59%) men received three doses and, among 121 men who received one or two doses, 75 could be considered as “drop-outs.” The proportion of subjects completing HBV vaccination in this study is comparable to the proportion observed among MASM in London (United Kingdom) (68%)27 and in Toronto, Ontario (Canada) (47%).22
Men who failed to complete HBV vaccination reported more often having ever been implicated in prostitution and had a lower annual income than men who completed a full course of HBV vaccination. Because MASM in Montreal were offered free vaccination for HBV only since 1995, the cost of the vaccine may partly explain the observed association between income and vaccination.

Participants who failed to complete a full course of HBV vaccination reported less lifetime casual partners and reported alcohol use before sex less often, whereas they were twice as likely to have had unprotected anal sex with regular partners during the previous 6 months than MASM who completed vaccination. These men may have perceived themselves as being less at risk of HBV infection because they are having sex with regular partners and may therefore have failed to complete immunization.

Omega participants who did not have a history of STD other than HBV were four times less likely to complete HBV vaccination than MASM who reported STDs. Men who have affective and sexual relations with men who had ever had an STD may have consulted a physician for their disease and discussed their sexual orientation and, in this context, the physician may have offered HBV vaccination. Men who have affective and sexual relations with men who had an STD may also perceive themselves as being at greater risk of HBV infection and therefore seek vaccination.

A significant proportion of Omega participants remain susceptible to HBV infection. This is particularly striking, because no and incomplete vaccination were statistically associated with a higher risk for sexual and parenteral transmission of HBV infection. A large proportion of unvaccinated and susceptible MASM consulted a physician aware of their sexual orientation during the 6 months preceding participation in the cohort.

To increase the number of vaccinated MASM in Montreal, public health authorities, physicians, and gay community groups should educate MASM about the risks of HBV transmission so that they develop a more accurate perception of their risk, the seriousness of the disease, and the availability of a safe and effective free vaccine, particularly for MASM who live outside Montreal Island or inject drugs.

Special attention should be given to motivating MASM who receive their first dose of HBV vaccine to complete immunization; phone calls and letters for the 1-month and the 6-month dose could serve as reminders. Physicians could offer an accelerated immunization schedule (e.g., 0, 1, and 2 months) to MASM who may be more difficult to follow up, such as those involved in prostitution or injection drug use. It may also be a good strategy to offer the first dose of vaccination without waiting for the screening results, thereby decreasing the number of visits required for a complete course. Although HBV infection may not be as universally fatal as is HIV infection, its sequelae are potentially serious and produce a major burden on the health care system.

References


3. Dietzman DE, Harnisch JP, Ray G, Alexander ER, Holmes KK. Hepatitis B surface antigen (HBsAg) and antibody to HBsAg prevalence in homosexual and heterosexual men. JAMA 1977; 238:2625-2626. Bibliographic Links [Context Link]


