

# Incidence of and Risk Factors for Sexual Orientation–Related Physical Assault Among Young Men Who Have Sex With Men

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Hate and bias crimes have been recognized legislatively in Canada and in the United States as distinct from other crimes because their adverse effects extend beyond victims, including to the communities with which the victim identifies. Various statutes have recognized targeted groups, including those based on race, national or ethnic origin, language, religion, and mental or physical disability, some of which also extend to include sexual orientation.<sup>1–5</sup>

The disproportionate psychological harm to both individuals and communities as a consequence of violence targeting sexual minorities (i.e., men who have sex with men [MSM], lesbians, and transgender persons) is widely acknowledged.<sup>6–16</sup> Victims of physical assault, including victims of hate and bias crimes, can experience postevent depression, anger, anxiety, panic, and posttraumatic stress, or even commit suicide.<sup>6–25</sup> Furthermore, among sexual minorities, persistence of such conditions may be greater for victims of hate or bias than for victims of other crimes.<sup>12,26</sup>

The growing literature pertaining to psychological sequelae has not been matched by an increase in our understanding of the incidence of or risk factors for physical assault based on sexual orientation. In part, studies are constrained by methodological issues: variation in definitions, substantial underreporting to law enforcement, and lack of population-based survey data.<sup>6,7,12,13,15,21,27,28</sup> In the United States, the Federal Bureau of Investigation is mandated under the Federal Hate Crime Statistics Act to collect national data on hate crimes. However, the legal definition of such crimes varies, and states are not required to report them. In Canada, the lack of a national definition of hate and bias crimes complicates the interpretation of sparse regional statistics.<sup>4,29</sup>

Previous studies have been limited to special settings (psychiatric clinics, social service agencies, and emergency departments) or

**Objectives.** We sought to determine incidence of, prevalence of, and risk factors for sexual orientation–related physical assault in young men who have sex with men (MSM).

**Methods.** We completed a prospective open cohort study of young MSM in Vancouver, British Columbia, surveyed annually between 1995 and 2004. Correlates of sexual orientation–related physical assault before enrollment were identified with logistic regression. Risk factors for incident assaults were determined with Cox regression.

**Results.** At enrollment, 84 (16%) of 521 MSM reported ever experiencing assault related to actual or perceived sexual orientation. Incidence was 2.3 per 100 person-years; cumulative incidence at 6-year follow-up was 10.8 per 100 person-years. Increased risk of incident sexual orientation–related physical assault was observed among MSM 23 years or younger (relative hazard=3.1; 95% confidence interval [CI]= 1.6, 5.8), Canadian Aboriginal people (relative hazard=3.0; 95% CI= 1.4, 6.2), and those who previously experienced such assault (relative hazard=2.5; 95% CI= 1.3, 4.8).

**Conclusions.** These data underscore the need for increased public awareness, surveillance, and support to reduce assault against young MSM. Such efforts should be coordinated at the community level to ensure that social norms dictate that such acts are unacceptable. (*Am J Public Health.* 2008;98:1028–1035. doi:10.2105/AJPH.2007.122705)

have failed to distinguish between physical and verbal assault. Only 2 studies have reported sexual orientation and physical assault among sexual minority youths. A survey of 12 000 students in grades 7 to 12 found that adolescents who reported homosexual or bisexual romantic attachments were at greater risk for experiencing, witnessing, and perpetrating violence; 12% reported receiving threats, and 5.4% reported having been violently attacked.<sup>27</sup> Among 500 predominantly African American and Latino lesbian, gay, and bisexual youths, 41% of those aged 14 to 21 years had experienced violence, nearly half of which was related to sexual orientation.<sup>30</sup>

Design of evidence-based preventive interventions, targeting of services capable of mitigating the effects of sexual orientation–related assault, and appropriate allocation of resources rely on ongoing surveillance of these assault rates and risk factors. We hypothesized that the prevalence of, incidence of, and risk factors for such assaults would vary by identifiable sociodemographic and behavioral char-

acteristics, which we studied in a convenience sample of young MSM aged 15 to 30 years recruited from a large, urban Canadian city.

## METHODS

### Study Population

Between May 1995 and May 2004, a convenience sample of MSM who were HIV seronegative participated in a prospective open cohort study of HIV incidence and risk behaviors (the Vanguard Project), as previously described.<sup>31,32</sup> Briefly, eligible participants were aged 15 to 30 years at study enrollment, lived in the greater Vancouver region in British Columbia, had not previously received an HIV-seropositive test result, and self-identified as gay or bisexual or as ever having had sex with other men. Participants were recruited through outreach at gay community events, community health clinics or local physicians, and gay and mainstream media. At enrollment and at annual follow-up study visits, participants underwent HIV

serological testing with pretest and posttest counseling and completed a confidential questionnaire that was returned by mail. Written informed consent for both the questionnaire and the HIV testing was obtained from participants according to a protocol approved by the University of British Columbia Research Ethics Board. Participants were compensated Can\$20 per visit. A total of 863 participants were recruited.

We restricted our analysis to only those 521 (60%) men who had at least 1 follow-up study visit ( $n=614$ ) and complete data for the variables of greatest interest (race/ethnicity, sexual identity, subjection to childhood physical or sexual abuse, history of psychiatric institutionalization or incarceration, the age at which the patient “came out,” involvement in the sex trade, injection drug use before enrollment, and whether gay bashing was experienced before enrollment). The 521 men in our analysis were not significantly different from the 342 men excluded with respect to previous sexual orientation–related physical assault, forced or coerced sexual intercourse (including childhood sexual abuse), or HIV seroprevalence ( $P<.05$ ). However, the men we included were significantly older; were more likely to report their sexual identity as gay or homosexual; were less likely to be aboriginal; were less likely to report histories of sex trade, injection drug use, physical abuse, psychiatric institutionalization and incarceration, and problem drinking; and had higher self-esteem scores and fewer depressive symptoms. For these analyses, linkage with the British of Columbia vital statistics electronic database indicated 6 deaths among men included and excluded from the current analysis, 5 of which were overdose related; none was attributed to assault or injury.

### Study Instrument

We used structured, self-administered questionnaires to assess participants’ sociodemographic characteristics (i.e., income, occupation, education); sexual identity specified as gay, homosexual, queer, bisexual, or other; sexual abuse before age 18 years; age at sexual debut with men; age at disclosure of sexual orientation to others (“coming out”); sex trade involvement, defined as exchange of sex for either drugs or money; and unstable housing, defined

a priori as living in a single-room-occupancy hotel, boarding room, hostel, transition house, or jail or on the street; and histories of incarceration and psychiatric institutionalization. Participants were asked to describe their ethnicity as White; Aboriginal, Native, or First Nations; Asian; Hispanic or Latino; Black; Jewish; Middle Eastern; or other. We asked at each visit about injection drug use and problematic alcohol consumption (CAGE [Cut, Annoyed, Guilty, Eye-opener] score  $\geq 3$ ),<sup>33</sup> and we administered the Rosenberg Self-Esteem Scale<sup>34</sup> and an abbreviated 7-item version of the Center for Epidemiological Studies Depression Scale.<sup>35,36</sup>

At every study visit, participants also were asked whether they had been “queer bashed,” defined in the survey as “physical abuse—including being hit, punched or beaten up—directed at you because you are gay, bi[sexual] or transgendered or because someone thought you were.” Men reporting such experiences were asked how long it had been since the last such assault (within the last year, 1–2 years ago, 3–5 years ago, or more than 5 years ago). These questions had been previously refined during piloting of the survey and through feedback from the project’s community advisory board at the start of the cohort study in 1995.

### Statistical Analysis

We used the Pearson  $\chi^2$  test and the Fisher exact test to compare men with a history of sexual orientation–related physical assault before enrollment and those without a history; we categorized continuous variables on the basis of medians and quartiles. We identified correlates of assault prior to study enrollment with odds ratios (ORs), and 95% confidence intervals (CIs) were computed within logistic regression models. Incidents of sexual orientation–related physical assault during follow-up, including recurrences, were assumed to occur at the midpoint date between study visits because specific dates were not assessed. Person-time accrued for all participants through the date of their last study visit. We computed CIs around incidence rates with robust estimates of standard errors that accounted for nonindependence of repeated assaults of some individuals.<sup>37</sup> To determine risk factors for incident cases of sexual

orientation–related physical assault, we determined unadjusted and adjusted relative hazards with Cox proportional hazards models with annually updated measures of sex-trade involvement, unstable housing, and injection drug use.

For multivariate analyses, we manually selected variables in the final models using a stepwise selection procedure considering variables of greatest interest and variables found to be significant in univariate analyses ( $P\leq.05$ ). Stable housing at time of enrollment, height, weight, body mass index, depressive symptoms score, and self-esteem were excluded from the logistic regression modeling because of numerous missing data. None of the variables with missing data were statistically significant in the univariate analyses for incidence rates of sexual orientation–related physical assault. Hence 516 individuals were included in the logistic regression model, and 521 individuals were examined in the Cox proportional hazards model. Interactions between race/ethnicity and age at enrollment and race/ethnicity and age at which the participant came out also were considered.

## RESULTS

### Correlates of Sexual Orientation–Related Physical Assault Before Enrollment

Table 1 compares the enrollment characteristics of 521 young MSM, by self-reported history of previous sexual orientation–related assault. At enrollment, 84 (16%) reported ever having experienced assault related to actual or perceived sexual orientation. These assaults occurred less than 1 year (21%), 1 to 2 years (21%), 2 to 5 years (34%), or more than 5 years (24%) before study entry. Compared with men who did not report such an assault, men who experienced sexual orientation–related assault before study enrollment were more likely to have come out at age 15 years or younger; to report physical or sexual abuse during childhood, previous involvement in sex trade, forced or coerced sexual relations, and psychiatric institutionalization or incarceration; to have not graduated from college or university; to be HIV positive; to not have current stable housing; and to have had problem drinking. Men who reported being in the youngest quartile of age at coming out had a

**TABLE 1—Enrollment Characteristics of Young Men Who Have Sex With Men (n = 521), by Self-Reported History of Previous Sexual Orientation–Related Assault: Vancouver, British Columbia, 1995–2004**

	Previously Assaulted (n = 84), No. (%)	Not Previously Assaulted (n = 437), No. (%)	OR (95% CI)	P
<b>Race/ethnicity</b>				
Aboriginal	11 (13.1)	36 (8.2)	1.55 (0.75, 3.20)	.240
White (Ref)	63 (75.0)	319 (73.0)	1.00	
Other	10 (11.9)	82 (18.8)	0.62 (0.30, 1.26)	.183
<b>Age at enrollment, y</b>				
16–23 (Ref)	24 (28.6)	107 (24.5)	1.00	
24–25	11 (13.1)	80 (18.3)	0.61 (0.28, 1.32)	.213
26–28	22 (26.2)	108 (24.7)	0.91 (0.48, 1.72)	.767
29–30	27 (32.1)	142 (32.5)	0.85 (0.46, 1.55)	.592
<b>Sexual identity</b>				
Gay/homosexual (Ref)	66 (78.6)	371 (84.9)	1.00	
Bisexual	6 (7.1)	39 (8.9)	0.87 (0.35, 2.12)	.751
Queer	3 (3.6)	5 (1.1)	3.37 (0.79, 14.50)	.101
Other	9 (10.7)	22 (5.0)	2.30 (1.01, 5.21)	.046
<b>Age “came out,” y</b>				
≤15	30 (35.7)	53 (12.1)	5.34 (2.70, 10.57)	<.001
16–18	24 (28.6)	133 (30.4)	1.70 (0.87, 3.34)	.122
19–20	14 (16.7)	100 (22.9)	1.32 (0.62, 2.83)	.473
≥21 (Ref)	16 (19.0)	151 (34.6)	1.00	
<b>No. of years “out”</b>				
≤4 (Ref)	8 (9.5)	96 (22.0)	1.00	
5–6	15 (17.9)	101 (23.1)	1.78 (0.72, 4.39)	.210
7–9	25 (29.8)	139 (31.8)	2.16 (0.93, 4.99)	.072
≥10	36 (42.9)	101 (23.1)	4.28 (1.89, 9.67)	.001
<b>Previous sex-trade involvement</b>				
Yes	37 (44.0)	92 (21.1)	2.95 (1.81, 4.81)	<.001
No (Ref)	47 (56.0)	345 (78.9)	1.00	
<b>Previous injection drug use</b>				
Yes	11 (13.1)	35 (8.0)	1.73 (0.84, 3.56)	.132
No (Ref)	73 (86.9)	402 (92.0)	1.00	
<b>Childhood physical abuse</b>				
Yes	27 (32.1)	74 (16.9)	2.32 (1.38, 3.92)	.001
No (Ref)	57 (67.9)	363 (83.1)	1.00	
<b>Sexual abuse before age 18 y</b>				
Yes	32 (38.1)	57 (13.0)	4.10 (2.44, 6.91)	<.001
No (Ref)	52 (61.9)	380 (87.0)	1.00	
<b>Psychiatric institutionalization or incarceration</b>				
Yes	16 (19.0)	54 (12.4)	1.67 (0.90, 3.09)	.100
No (Ref)	68 (81.0)	383 (87.6)	1.00	
<b>College graduate<sup>a</sup></b>				
Yes	28 (33.7)	204 (46.9)	0.58 (0.35, 0.94)	.028
No (Ref)	55 (66.3)	231 (53.1)	1.00	

Continued

5-times increased risk of previous assault, compared with men who reported being in the oldest quartile of age at coming out.

Table 2 highlights the independent predictors of self-reported sexual orientation–related physical assault prior to study enrollment among the 516 young MSM. Independent risk factors included histories of forced or coerced sexual relations, sex trade involvement, and being in the youngest quartile of age at coming out.

### Incidence of and Risk Factors for Assault During Follow-Up

The incidence of sexual orientation–related physical assault in the cohort was 2.3 (95% CI=1.5, 3.2) per 100 person-years; cumulative incidence at 6 years of follow-up was 10.8 (95% CI=7.1, 14.5) per 100 person-years among the 521 MSM completing a median of 38 (interquartile range=22–65) months of follow-up (total=2144 study visits during 1932 person-years).

Table 3 presents the crude incidence rates of sexual orientation–related assault among the 521 young MSM. Men in the youngest age quartile at enrollment experienced an incidence of assault during follow-up that was nearly 3-times greater than that among MSM in the oldest age quartile. High rates of assault also were observed among MSM who were aboriginal, had not graduated from college, lacked stable housing, had been involved in the sex trade, injected drugs, had been institutionalized or incarcerated, had been sexually or physically abused during childhood, had more depressive symptoms, or had forced or coerced sexual relations.

Table 4 presents the independent predictors of incident sexual orientation–related physical assault among the 521 young MSM during the follow-up period. In the final Cox proportional hazards regression models, we identified 3 significant independent predictors of sexual orientation–related physical assault during follow-up: Canadian Aboriginal ethnicity, younger age, and a history of experiencing such assault. The adjusted relative hazard for assault among Canadian Aboriginal MSM was about 3 times that of White MSM. Men in the youngest age quartile at enrollment had an adjusted relative hazard for sexual orientation–related physical assault 3-times

**TABLE 1—Continued**

HIV serostatus				
Positive	6 (7.1)	10 (2.3)	3.28 (1.16, 9.30)	.018
Negative (Ref)	78 (92.9)	427 (97.1)	1.00	
Current stable housing <sup>b</sup>				
Yes	70 (89.7)	401 (93.9)	0.57 (0.25, 1.30)	.215
No (Ref)	8 (10.3)	26 (6.09)	1.00	
Previous forced or coerced sex				
Yes	43 (51.2)	95 (21.7)	3.78 (2.33, 6.13)	<.001
No (Ref)	41 (48.8)	342 (78.3)	1.00	
Problem drinking <sup>c</sup>				
Yes	33 (39.8)	98 (22.5)	2.28 (1.39, 3.73)	<.001
No (Ref)	50 (60.2)	338 (77.5)	1.00	
Height, <sup>d,e</sup> cm				
≤173 (Ref)	8 (17.4)	38 (15.8)	1.00	
174–177	10 (21.7)	51 (21.2)	0.93 (0.34, 2.58)	.891
178–183	16 (34.8)	71 (29.5)	1.07 (0.42, 2.73)	.887
>183	12 (26.1)	81 (33.6)	0.70 (0.27, 1.86)	.480
Weight, <sup>e,f</sup> kg				
≤67 (Ref)	11 (24.4)	54 (22.5)	1.00	
68–74	14 (31.1)	51 (21.3)	1.35 (0.56, 3.24)	.505
75–81	9 (20.0)	59 (24.6)	0.75 (0.29, 1.95)	.553
≥82	11 (24.4)	76 (31.7)	0.71 (0.29, 1.76)	.460
Body mass index, <sup>e,f</sup> kg/m <sup>2</sup>				
≤21.7 (Ref)	13 (28.9)	52 (21.7)	1.00	
21.8–23.0	11 (24.4)	63 (26.3)	0.70 (0.29, 1.69)	.426
23.1–25.0	9 (20.0)	64 (26.7)	0.56 (0.22, 1.42)	.223
≥25.1	12 (26.7)	61 (25.4)	0.79 (0.33, 1.87)	.588
Depressive symptoms score <sup>g</sup>				
Above median (high)	39 (49.4)	174 (41.0)	1.40 (0.87, 2.27)	.169
Median or below (Ref)	40 (50.6)	250 (59.0)	1.00	
Self-esteem score <sup>h</sup>				
Below median (low)	34 (47.2)	181 (45.5)	0.93 (0.56, 1.54)	.784
Above median (Ref)	38 (52.8)	217 (54.5)	1.00	

Note. OR = odds ratio; CI = confidence interval.

<sup>a</sup>Missing observations, n = 3.

<sup>b</sup>Missing observations, n = 16.

<sup>c</sup>CAGE score ≥ 3. Missing observations, n = 2.

<sup>d</sup>Missing observations, n = 234.

<sup>e</sup>Quartiles, measured during 2002 to 2003 study visits only.

<sup>f</sup>Missing observations, n = 236.

<sup>g</sup>Missing observations, n = 18.

<sup>h</sup>Missing observations, n = 51.

**TABLE 2—Independent Predictors of Self-Reported Sexual Orientation–Related Physical Assault Among Young Men Who Have Sex With Men (n = 516): Vancouver, British Columbia, 1995–2004**

	AOR (95% CI)
Self-report of previous forced or coerced sexual relations	3.00 (1.80, 4.99)
Involvement in sex trade	1.77 (1.03, 3.03)
Age of “coming out” quartile, y	
≤15	3.72 (1.80, 7.71)
16–18	1.53 (0.76, 3.08)
19–20	1.22 (0.56, 2.67)
≥21 (Ref)	1.00

Note. AOR = adjusted odds ratio; CI = confidence interval.

100 person-years. This rate is more than twice as high as the reported rate in British Columbia of all forms of violent crime combined (1.2% per annum in 2004).<sup>38</sup> Prevalence of these assaults was independently associated with younger age and age at which MSM came out. Over 3 years of follow-up, MSM who were young and aboriginal were at highest risk for sexual orientation–related physical assault.

Our finding that Canadian Aboriginal ethnicity was associated with an increased risk for incident sexual orientation–related assault among MSM extends previous research that found that visible minority youths are at greater risk for violence and discrimination than are their White counterparts.<sup>39</sup> In the United States, American Indians have double the risk of being victims of violent crimes.<sup>40</sup> In Canada, members of aboriginal bands and reserves are also more likely to be the victims of violent crime<sup>41</sup>; aboriginal women aged between 25 and 44 years are 5 times more likely than are other Canadian women of similar age to die as the result of violence.<sup>42</sup> In one US study, 70% of the assailants in violent crimes against American Indians were members of other racial/ethnic groups.<sup>40</sup> A recent study of American Indians in New York City found that men who reported being gay, bisexual, or two-spirited were more likely to report

greater than the hazard among older men. Men assaulted at any time before enrollment had a more than triple hazard for assault during follow-up. No significant interactions were observed. Repeating the analyses to include variables with missing data did not appreciably alter the result.

## DISCUSSION

In this prospective study of young MSM in a large Canadian city, one sixth reported having been the victim of sexual orientation–related physical assault at enrollment, and the overall incidence of such assaults was 2.6 per

**TABLE 3—Crude Incidence Rates of Sexual Orientation–Related Assault Among Young Men Who Have Sex With Men (n = 521): Vancouver, British Columbia, 1995–2004**

	No. of Men	No. of Events	Person-Years	Rate <sup>a</sup> (95% CI)
<b>Race/ethnicity</b>				
Aboriginal	47	11	137.2	8.02 (2.45, 13.59)
White	382	29	1473.1	1.97 (1.13, 2.81)
Other	92	5	322.1	1.55 (0.00, 3.48)
<b>Age at enrollment, y</b>				
16–23	131	23	433.6	5.31 (2.57, 8.04)
24–25	91	8	309.6	2.58 (0.69, 4.48)
26–28	130	10	500.2	2.00 (0.60, 3.40)
29–30	169	4	689.0	0.58 (0.00, 1.19)
<b>Sexual identity</b>				
Gay/homosexual	437	33	1696.8	1.95 (1.17, 2.72)
Bisexual	45	4	136.4	2.93 (0.00, 6.92)
Queer	8	1	14.2	7.02 (0.00, 25.20)
Other	31	7	85.0	8.23 (1.05, 15.40)
<b>Age “came out,” y</b>				
≤15	83	12	294.7	4.11 (1.12, 7.10)
16–18	157	14	587.5	2.38 (0.68, 4.08)
19–20	114	10	434.4	2.30 (0.68, 3.93)
≥21	167	9	618.9	1.45 (0.45, 2.46)
<b>No. of years “out”</b>				
≤4	104	13	382.0	3.40 (1.03, 5.78)
5–6	116	13	416.3	3.12 (1.12, 5.13)
7–9	164	9	573.8	1.57 (0.27, 2.87)
≥10	137	10	560.4	1.78 (0.44, 3.13)
<b>Previous sex trade involvement</b>				
Yes	129	17	446.7	3.81 (1.63, 5.98)
No	392	28	1485.7	1.89 (1.01, 2.76)
<b>Previous injection drug use</b>				
Yes	46	10	135.7	7.37 (2.10, 12.60)
No	475	35	1796.7	1.95 (1.16, 2.74)
<b>Childhood physical abuse</b>				
Yes	101	15	364.0	4.12 (1.50, 6.75)
No	420	30	1568.4	1.91 (1.08, 2.75)
<b>Sexual abuse before age 18 y</b>				
Yes	89	15	354.4	4.23 (1.45, 7.01)
No	432	30	1578.0	1.90 (1.07, 2.73)
<b>Psychiatric institutionalization or incarceration</b>				
Yes	70	11	212.3	5.18 (1.29, 9.07)
No	451	34	1720.1	1.98 (1.18, 2.77)
<b>College graduate<sup>b</sup></b>				
Yes	232	15	939.0	1.60 (0.62, 2.57)
No	286	30	982.8	3.05 (1.71, 4.40)
<b>HIV serostatus</b>				
Positive	16	2	55.1	3.63 (0.00, 9.47)
Negative	505	43	1877.4	2.29 (1.44, 3.14)

*Continued*

being victimized compared with their heterosexual counterparts.<sup>43</sup>

We could identify no previously published studies reporting incidence of sexual orientation–related assault; therefore, direct comparison of our results with others is not possible. Nonetheless, the inverse relation we observed between age and risk for sexual orientation–related assault of young MSM is consistent with the sparse literature on this topic. Compared with adults, adolescents, particularly those who are sexual minorities, are disproportionately affected by violent crime.<sup>27,30,39</sup>

Recent research has found that sexual minority status is not predictive of psychological maltreatment or physical assault by a partner<sup>44</sup> but is significantly associated with assault perpetrated by strangers, family members, and peers—usually males not acting alone.<sup>21,25,28,30</sup> Efforts to reduce the incidence of sexual orientation–related physical assault therefore may require initiatives that broadly target young men in the general population.<sup>21</sup> Sexual minority youths who are victims of verbal and physical harassment can manifest chronic stress associated with school-related problems, running away from home, conflict with the law, substance abuse, prostitution, and suicide.<sup>19,20,22,45–47</sup> These problems may be more common when the harassment is experienced during adolescence compared with young adulthood.<sup>19</sup>

### Strengths and Limitations

Strengths of our study include its prospective design, community-based recruitment, large sample size, extended period of follow-up, and attempt to distinguish sexual orientation–related physical assault from verbal threat and other types of assault. Despite restricting study eligibility to young MSM, we noted a strong association between risk of physical violence and age.

Our cohort was assembled for the purpose of studying HIV incidence and risk factors among urban-dwelling young MSM. For this reason, and because most of these incidents are not reported to law enforcement, we were unable to verify self-reports of assault. We were unable to collect data on verbal abuse or supplemental data necessary to describe the severity and context of these assaults or

**TABLE 3—Continued**

Current stable housing <sup>c</sup>				
Yes	471	38	1769.1	2.15 (1.29, 3.01)
No	34	4	76.7	5.22 (0.00, 10.63)
Previous forced or coerced sex				
Yes	138	21	525.4	4.00 (1.90, 6.09)
No	383	24	1407.0	1.71 (0.85, 2.56)
Problem drinking <sup>d</sup>				
Yes	131	16	474.8	2.00 (1.08, 2.92)
No	388	29	1450.3	3.37 (1.41, 5.33)
Height, <sup>e</sup> cm				
≤ 173	46	8	197.2	4.06 (0.12, 8.00)
174–177	61	3	282.0	1.06 (0.00, 2.22)
178–183	87	7	416.2	1.68 (0.10, 3.26)
> 183	93	14	413.3	3.39 (0.99, 5.79)
Weight, <sup>f</sup> kg				
≤ 67	65	12	266.6	4.50 (1.30, 7.71)
68–74	65	6	305.3	1.97 (0.00, 4.00)
75–81	68	8	316.0	2.53 (0.00, 5.14)
≥ 82	87	6	410.8	1.46 (0.03, 2.89)
Body mass index, <sup>f</sup> kg/m <sup>2</sup>				
≤ 21.7	65	11	249.4	4.41 (1.31, 7.51)
21.8–23.0	74	12	333.2	3.60 (0.66, 6.54)
23.1–25.0	73	2	355.9	0.56 (0.00, 1.39)
≥ 25.1	73	7	360.2	1.94 (0.12, 3.77)
Depressive symptoms score <sup>g</sup>				
Above median (high)	213	29	761.5	1.44 (0.61, 2.28)
Median or below	290	16	1108.5	
Self-esteem score <sup>h</sup>				
Median or below (low)	215	22	748.6	2.94 (1.53, 4.35)
Above median	255	16	977.3	1.64 (0.67, 2.61)
Experienced prior gay bashing				
Yes	84	16	310.4	5.16 (2.10, 8.21)
No	437	29	1622.0	1.79 (0.98, 2.60)
Current sex-trade involvement				
Yes	69	10	202.6	4.94 (1.18, 8.69)
No	452	35	1729.8	2.02 (1.21, 2.84)
Current injection drug use				
Yes	27	3	65.5	4.58 (0.01, 9.16)
No	494	42	1866.9	2.25 (1.39, 3.11)

Note. CI = confidence interval.

<sup>a</sup>Per 100 person-years.

<sup>b</sup>Missing observations, n = 3.

<sup>c</sup>Missing observations, n = 16.

<sup>d</sup>CAGE score ≥ 3. Missing observations, n = 2.

<sup>e</sup>Missing observations, n = 234.

<sup>f</sup>Missing observations, n = 236.

<sup>g</sup>Missing observations, n = 51.

<sup>h</sup>Quartiles, measured during 2002 to 2003 study visits only.

**TABLE 4—Independent Predictors of Incident Sexual Orientation-Related Physical Assault Among Young Men Who Have Sex With Men (n = 521): Vancouver, British Columbia, 1995–2004**

	Adjusted Relative Hazard (95% CI)
Race/ethnicity	
Canadian Aboriginal	2.95 (1.39, 6.24)
Nonaboriginal, non-White	0.69 (0.24, 2.01)
White (Ref)	1.00
Age, y	
≤ 23	3.07 (1.63, 5.77)
> 23 (Ref)	1.00
Sexual orientation-related assault prior to enrollment	
	2.45 (1.26, 4.77)

Note. CI = confidence interval.

characteristics of the perpetrators; if less severe assaults were not reported because of the length of the recall period (1 year), then the incidence rates we reported are underestimates. Faulty recall likely had limited influence on our results, because these assaults are often traumatic and not easily forgotten. Our estimates of assault rates also may have been affected by the manner in which we measured person-time; however, our midpoint estimate for assault dates was limited to intervals in which assaults were reported, with a maximum error of ±6 months. As with most cohorts of MSM, the generalizability of our results to other young MSM is unknown because our participants were volunteers. Our study eligibility criteria preclude generalizing these results to older MSM and MSM who are HIV positive.

### Recommendations

The high levels of previous abuse and incident assault we observed among young MSM in this study suggest the importance of developing interventions to reduce violence against persons who are both sexual and ethnic minorities. Future research is needed to identify risk and resilience factors for post-traumatic stress disorder and other sequelae that may be related to sexual orientation-related assault.<sup>25,48,49</sup> Mitigation of psychological sequelae in children and adolescents who endure trauma requires careful assessment in

family practice and emergency care settings and, when appropriate, crisis intervention and follow-up referral to mental health specialists.<sup>48,50,51</sup>

Our findings support the need for improved surveillance at the community level. A minority, perhaps as few as 10%, of hate and bias crimes are reported to police.<sup>13,15,21,52</sup> Herek et al.<sup>28</sup> previously reported that among homosexual male victims of violence, assaults perceived to be a result of sexual orientation were significantly less likely to be reported than were others. The apparent disinclination to report such crimes indicates a need for active surveillance (e.g., community-based hotlines) and public education regarding the existence of and need for special reporting systems, particularly when language and cultural barriers may influence reporting.<sup>28,52</sup>

Our study findings indicate a high risk for physical assault among adolescent and young adult MSM and MSM of Canadian Aboriginal descent. These data underscore the need for increased public awareness, improved surveillance, and support for initiatives to reduce assault against young MSM. For example, physicians should routinely assess assault-related service needs among sexual minority youths. Prevention efforts should be coordinated at the community level to ensure that social norms dictate that sexual orientation-related physical assault is unacceptable. Given that we and others have observed sexual orientation-related violence to occur at very young ages, school-based programs to generate tolerance and support for sexual minority youths are warranted. ■

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### Contributors

T.M. Lampinen originated and designed the study, supervised the data collection team (M. Miller and A.J.

Schilder) and analysis of data by K. Chan, drafted the article with A. Anema, and obtained funding. M.T. Schechter contributed to study design and the analysis of data. R.S. Hogg and S.A. Strathdee contributed to study design, supervised collection of data and writing and revision of the article, and obtained funding. All authors revised drafts and approved the final version of the article.

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### Human Participant Protection

Written informed consent was obtained from participants according to a protocol approved by the University of British Columbia Research Ethics Board.

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