

Meningococcal Vaccination in Men Who Have Sex with Men

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ABSTRACT Recent outbreaks of meningitis in men who have sex with men (MSM) in Los Angeles, Chicago, New York City, and other locations across the United States have heightened public health concerns regarding the increasing incidence of meningococcal infections in this vulnerable population. MSM have unique risk factors that result in greater threat from certain infectious diseases, including meningococcal infection. Men who have sex with men who are infected with HIV are at even higher risk. This article explores the increased risks among MSM in contracting and communicating meningococcal infection, use of vaccination as primary prevention, and outreach strategies that may help address this issue and lessen the disease burden associated with meningococcal infection in these sexual minorities.

Key words: AIDS, bisexual, gay, HIV, homosexual, infectious disease, meningitis, meningococcal, vaccination, vaccine.

Meningococcal infection, which causes meningitis, is rare. However, the morbidities associated with the disease can be devastating and include hearing loss, central nervous system, and renal damage, and extremity loss (National Meningitis Association [NMA], 2016). The case-fatality ratio of meningococcal infection is 10–15%, even with proper antimicrobial treatment (Centers for Disease Control and Prevention [CDC], 2015c). Bacterial meningococcal infection is communicated through person-to-person exchange of respiratory or oropharyngeal secretions (saliva) during close contact (CDC, 2016a). Specific modes of transmission include coughing, kissing, or lengthy contact with an infected individual, particularly when living in the same household (CDC, 2016a).

Recent outbreaks of meningitis in men who have sex with men (MSM) in Los Angeles (2016), Chicago (2015, 2016), and New York City (2014, 2010) have caused increasing awareness of risk for meningococcal infection in these sexual minorities. Identification of the precise etiologic factors that

place MSM at greater risk of communication of meningococcal infection remains unclear; very little research has been conducted assessing the prevalence, incidence, and causality of meningococcal infection in this population (Los Angeles Gay, Lesbian, Bisexual, and Transgender Center, 2014).

Instead, data are limited to those collected mostly during outbreaks, with little focus on specific risk behaviors in MSM. The California Department of Health (CDPH) asserts that MSM men are at an increased risk:

If they have close or intimate contact with multiple partners, regularly visit crowded venues such as bars and parties, or smoke cigarettes, marijuana or illegal drugs. (California Department of Health [CDPH], 2016, para 6)

Although there are five subgroups of *Neisseria meningitidis* (A, B, C, W, and Y), all cases of meningococcal infection outbreaks among MSM in the United States have been associated with serogroup C (CDPH, 2016; NMA, 2016; Weiss et al., 2013). Isolation of infection from serogroup C was

also found by researchers assessing invasive meningococcal disease among men who have sex with men in Paris, France between July 2013 and December 2014 (Aubert et al., 2015). Those infected with HIV are at greater risk of contracting meningococcal disease (CDPH, 2016). As of August 30, 2016, there were 15 confirmed cases of invasive meningococcal disease in Los Angeles County diagnosed in 2016 (County of Los Angeles Public Health, 2016). Eight of these cases were in MSM, with seven of those eight diagnosed in June and July 2016 (County of Los Angeles Public Health, 2016). As recent as July 26, 2016, the Los Angeles County Department of Public Health in partnership with the County of Orange Health Care Agency and City of Long Beach Department of Health and Human Services expanded meningococcal vaccination recommendations to include all MSM and all HIV-infected persons (Los Angeles County Department of Public Health, 2016).

As of April 2016, a meningococcal outbreak in Chicago included nine confirmed cases, including one death (NMA, 2016). The last case of an outbreak in MSM in New York City was between 2010 and 2014. That outbreak included at least 22 cases and seven deaths (NMA, 2016). The Centers for Disease Control and Prevention (CDC) calculated an incidence rate of 12.6 per 100,000 in men who have sex with men in New York City (NYC) between the ages of 18 and 64. These data were based on specific NYC outbreak data through December 31, 2012 (Weiss et al., 2013). Clusters of isolated cases among MSM have been reported in other parts of the country as well, including Minnesota (NMA, 2016).

Data from meningococcal outbreaks in MSM in the United States between 2012 and 2015 indicated the majority of infections in this population occurred in those who were HIV-infected (Hajime et al., 2015). About 65%, 42%, 50%, and 67% of meningococcal infections among MSM in NYC, Los Angeles County, Chicago, and other areas, respectively, occurred in those who were HIV-infected (Hajime et al., 2015). The nationwide mean of meningococcal infection in gay/bi men who were co-infected with HIV was 59% during that same time period (Hajime et al., 2015). These data also show that just 15% of the MSM infected had previously received vaccination; however, vaccination status was only reported in 41 of the 74 cases. In

addition, because gay/bisexual men continue to be at highest risk for HIV infection (CDC, 2015b), comorbidity with meningococcal infection remains a major concern for this population.

This article explores the increased risks among MSM in contracting and communicating meningococcal infection, use of vaccination as primary prevention, and outreach strategies that may help address this issue and lessen the disease burden associated with meningococcal infection in these sexual minorities.

Meningococcal Vaccination

In the United States, three types of meningococcal vaccines are available (CDC, 2015e). Conjugate vaccines include Menactra, MenHibrix, and Menveo; Menomune is the meningococcal polysaccharide vaccine; and the serogroup B meningococcal vaccines are Bexsero and Trumenba (CDC, 2015e). Unfortunately, data suggest overall vaccination rates among adolescents is low; and data from the CDC's 2013 National Immunization Survey-Teen (NIS-Teen) indicated second-dose completion of meningococcal conjugate vaccine was just 29.6% in 17-year olds (compared to single-dose completion of 77.8% in 13- to 17-year olds) (Sanofi Pasteur, 2014).

Nonetheless, all 11- to 12-year olds should be vaccinated through a single injection of quadrivalent meningococcal conjugate vaccine (CDC, 2015e), which include protection against serogroups A, C, W, and Y. A booster is recommended for adolescents at age 16 because of the occurrence of a decreasing immune response coupled with increasing risk during the teen years (CDC, 2015e). Preferably at ages 16–18, teenagers and younger adults aged 16–23 may be vaccinated with a serogroup B meningococcal vaccine (CDC, 2015e). Two to three doses are administered, varying by brand (CDC, 2015d).

Quadrivalent meningococcal conjugate vaccine is recommended for adults with a complement component deficiency, who are taking the immunosuppressant drug eculizumab (Soliris), are asplenic, traveling to or residing in countries where the disease is common, first-year college students living in residence halls, military personnel, or microbiologists with routine exposure to *Neisseria meningitidis* (CDC, 2015e). Meningococcal polysaccharide

vaccine is recommended for adults over the age of 56 who are traveling to or residing in countries where the disease is common (CDC, 2015e).

While there are no specific recommendations for meningococcal vaccination in MSM by the CDC, the agency does recommend vaccination to control outbreaks (NMA, 2016). It is important to note that information regarding type and schedule of meningococcal immunization is available from the CDC. Immunization type and schedule recommendations also may change; and the provider should be advised to refer to the CDC (2015d) Web site *Meningococcal Vaccination: Information for Health Care Providers* at: <http://www.cdc.gov/vaccines/vpd-vac/mening/hcp/index.html>.

In addition, specific health agencies also have recommendations for MSM living within their services areas. The Chicago Department of Health, New York City Department of Health, Los Angeles County Department of Public Health, and Minnesota Department of Health all recommend vaccination for MSM, regardless of their HIV serostatus (NMA, 2016). The recommendations for meningococcal vaccination in MSM can evolve as case definitions in outbreaks also evolve. For example, in NYC, recommendations were broadened after certain risk characteristics were discovered:

On October 4, 2012, DOHMH recommended administration of meningococcal vaccine to HIV-infected male NYC residents who had intimate contact with any man met online, through a smartphone application, or at a bar or party since September 1, 2012. On November 29, DOHMH expanded its recommendation to HIV-uninfected men with the same high-risk behaviors who reside in areas of Brooklyn where recent cases have clustered. In addition, DOHMH publicized this outbreak among the population at risk through advertising, mass e-mail messages on MSM websites, posters distributed at MSM bars and clubs, and outreach to community leaders and physician's groups. (Weiss et al., 2013, para. 3)

Consequently, clinicians should contact their local health department to determine their most recent recommendations for meningococcal vaccination for MSM based on surveillance data derived from their region. Because community outbreaks of meningococcal disease in MSM have all been associated with serogroup C, the meningococcal quadrivalent vaccination, which includes serogroup C, is recommended through age 55 (CDC, 2016b). Those

older than 55 should receive the polysaccharide meningococcal vaccine (CDC, 2016b). A single, intramuscular injection is acceptable during outbreaks (CDC, 2015a). Adverse effects of the vaccines include fever, headache, injection site erythema, dizziness, and syncope (CDC, 2015a; Immunization Action Coalition, 2011).

Improving Vaccination Rates in Gay Communities

Public health outreach to stigmatized populations and groups can be challenging. A literature review conducted by Blackwell (2014) identified four major barriers to vaccination in MSM:

- (1) low level of general knowledge about vaccine preventable diseases (including transmission and sequelae of infection);
- (2) lack of information about the vaccination process (including locations of sites for vaccination administration and costs);
- (3) limited access to healthcare; and
- (4) limited provider communication regarding stigmatized behavior with patient. (Blackwell, 2014, p. 37)

This indicates a need for effective public health outreach efforts aimed at educating gay and bisexual men about vaccine preventable conditions, increased access to vaccines, and the delivery of culturally sensitive care to this population (Blackwell, 2014).

Educating MSM about Vaccine Preventable Conditions

Social media and computer-based education are emerging platforms that may provide effective mechanisms of reaching at-risk populations (Blackwell, 2014). The National Vaccination Information Center (NVIC) has posted thousands of articles and news alerts on their Facebook Web site and currently has 178,400 fans (National Vaccination Information Center [NVIC], 2016a).

Educational video presentations and a number of articles, news reports, and informational postings debunking vaccine misinformation and providing clarification on vaccine-related adverse effects are routinely posted and updated on the organization's Facebook page and Web site (NVIC, 2016a, 2016b). Clinicians can use this web site to link patients to social media-related vaccine sources

and familiarize them with facts about the use of vaccines for infectious disease prevention.

Increasing MSM's Access to Vaccines

Internet and mobile technologies are modern strategies clinicians can employ to not only reach out to gay/bi/MSM populations but also make appropriate clinical decisions regarding their vaccine needs as well (Blackwell, 2014; CDC, 2016c). Clinicians can also strategize with key local lesbian, gay, bisexual, and transgender (LGBT) informants to identify unique approaches to community outreach that could be most beneficial for these higher risk men (Blackwell, 2014).

Providing free vaccines at LGBT social events such as gay pride fairs and parades and LGBT-targeted health fairs is a traditional strategy that provides the benefit of immediate administration of vaccines to a large numbers of readily available and consenting persons (Blackwell, 2014; Storholm et al., 2010). Providing free vaccines in prison clinics, sexually transmitted infection-focused and substance abuse clinics, colleges and universities, and lesbian, gay, bisexual, and transgender (LGBT) community centers is also recommended (Blackwell, 2014; Storholm et al., 2010).

Culturally Sensitive Care

While a sexual history is a vital component of the health risk appraisal of clients, clinicians should never assume anything regarding sexual orientation or behaviors and should always use a nonjudgmental and direct approach (Seidel, Ball, Dains, & Benedict, 2006). The National LGBT Health Education Center (2015), a program of the Fenway Institute, recommends a straightforward approach to ascertaining sexual orientation from patients; specifically, the recommended question is, "Do you have sex with men, women, or both?" (p. 5). If the patient indicates he has sex with both males and females, it is recommended to follow-up with the questions, "How many men have you had sex with in the past year?" and "How many women have you had sex with in the past year?" (p. 5). This will allow more insight into the individual's sexual orientation and help guide care based on sexual health risk (National LGBT Health Education Center, 2015).

Summary and Conclusion

MSM have unique risk factors that result in threats from certain infectious diseases, including meningococcal infection. MSM who are infected with HIV are at even higher risk than those without infection. During meningococcal outbreaks in gay communities, MSM need to be provided with readily available access to vaccination, particularly to those vaccines that provide protection against serogroup C. Use of vaccination as primary prevention coupled with effective public health outreach strategies may help address this issue and lessen the disease burden associated with meningococcal infection in these sexual minorities.

References

- Aubert, L., Taha, M., Boo, N., Le Strat, Y., Deghmane, A. E., Sanna, A., et al. (2015). *Serogroup C meningococcal disease among men who have sex with men in gay-oriented social venues in the Paris region: July 2013 to December 2014*. Euro Surveillance: European Communicable Disease Bulletin 20(3). Sweden: European Centre for Disease Prevention and Control.
- Blackwell, C. W. (2014). Vaccination guidelines for gay and bisexual men. *The Nurse Practitioner: The American Journal of Primary Healthcare*, 39(2), 34-39. doi:10.1097/01.NPR0000441910.01654.2b.
- California Department of Health [CDPH]. (2016). *CDPH issues health advisory for meningococcal disease*. Retrieved from <http://www.cdph.ca.gov/Pages/NR16-037.aspx>
- Centers for Disease Control and Prevention [CDC]. (2015a). *Epidemiology and prevention of vaccine-preventable diseases: Meningococcal disease*. Retrieved from <http://www.cdc.gov/vaccines/pubs/pinkbook/mening.html>
- Centers for Disease Control and Prevention [CDC]. (2015b). *HIV Surveillance Report: Volume 26*. Atlanta, GA: National Center for HIV/AIDS, Viral Hepatitis, STD, and TB Prevention, Division of HIV/AIDS Prevention.
- Centers for Disease Control and Prevention [CDC]. (2015c). *Meningococcal disease*. Retrieved from <http://www.cdc.gov/vaccines/pubs/pinkbook/downloads/mening.pdf>
- Centers for Disease Control and Prevention [CDC]. (2015d). *Meningococcal vaccination: Information for health care providers*. Retrieved from <http://www.cdc.gov/vaccines/vpd-vac/mening/hcp/index.html>
- Centers for Disease Control and Prevention [CDC]. (2015e). *Vaccines & immunizations: Meningococcal*. Retrieved from <http://www.cdc.gov/vaccines/vpd-vac/mening/who-vaccinate.htm>
- Centers for Disease Control and Prevention [CDC]. (2016a). *Menigitis*. Retrieved from <https://www.cdc.gov/meningitis/>
- Centers for Disease Control and Prevention [CDC]. (2016b). *Menigitis ACWY vaccines (MenACWY and MPSV4) VIS*. Retrieved from <http://www.cdc.gov/vaccines/hcp/vis/vis-statements/mening.html>
- Centers for Disease Control and Prevention [CDC]. (2016c). *Vaccine schedules app for clinicians and other immunization providers*. Retrieved from <http://www.cdc.gov/vaccines/schedules/hcp/schedule-app.html>
- County of Los Angeles Public Health. (2016). *Invasive meningococcal disease: Los Angeles County Epidemiology Report*:

- August 30, 2016. Retrieved from <http://publichealth.lacounty.gov/acd/docs/IMD2016.pdf>
- Hajime, K., MacNeil, J., Blain, A., Patel, M., Martin, S., Weiss, D., et al. (2015). Notes from the field: Meningococcal disease among men who have sex with men—United States, January 2012–June 2015. *Morbidity and Mortality Weekly Report*, 64(44), 1256–1257.
- Immunization Action Coalition. (2011). *Medical management of vaccine reactions in adult patients*. Retrieved from <http://www.immunize.org/catg.d/p3082.pdf>
- Los Angeles County Department of Public Health. (2016). *New release: Invasive meningococcal disease vaccination recommendations expanded: All gay/bisexual men or men who have sex with men are urged to get vaccinated*. Retrieved from <http://publichealth.lacounty.gov/phcommon/public/media/mediapubhpdetail.cfm?prid=1526>
- Los Angeles County Gay, Lesbian, Bisexual, and Transgender Center. (2014). *CDC urged to determine why gay men are at greater risk for meningitis infection*. Retrieved from <http://www.projectinform.org/hcr/cdc-urged-to-determine-why-gay-men-are-at-greater-risk-of-meningitis-infection/>
- National LGBT Health Education Center. (2015). *Taking routine histories of sexual health: A system-wide approach for health centers: New Edition, 2015*. Retrieved from http://www.lgbthealtheducation.org/wp-content/uploads/COM-827-sexual-history_toolkit_2015.pdf
- National Meningitis Association [NMA]. (2016). *Meningitis in gay, bisexual, and men who have sex with me (MSM)*. Retrieved from <http://www.nmaus.org/disease-prevention-information/meningitis-in-gay-bisexual-and-men-who-have-sex-with-men-msm/>
- National Vaccination Information Center [NVIC]. (2016a). *National Vaccine Information Center Facebook*. Retrieved from <https://www.facebook.com/national.vaccine.information.center>
- National Vaccination Information Center [NVIC]. (2016b). *National Vaccine Information Center: Your health, your family, your choice*. Retrieved from <http://www.nvic.org>
- Sanofi Pasteur. (2014). *FDA approves Menactra vaccine for booster immunization against potentially deadly disease: Approval aligns with Centers for Disease Control and Prevention's recommendations for meningococcal vaccination*. Retrieved from <http://sanofipasteurus.mediaroom.com/2014-09-08-FDA-Approves-Use-of-Menactra-Vaccine-for-Booster-Immunization-Against-Potentially-Deadly-Disease>
- Seidel, H. M., Ball, J. W., Dains, J. E., & Benedict, G. W. (2006). *Mosby's guide to physical examination*. St Louis, MO: Mosby.
- Storholm, E. D., Fisher, D. G., Reynolds, G. L., Napper, L. E., Morrissey, T. A., & Kochems, L. M. (2010). Hepatitis vaccination of men who have sex with men at gay pride events. *Prevention Science*, 11(2), 219–227. doi:10.1007/s11121-009-0164-7.
- Weiss, D., Antwi, M., Del Rosso, P., Dorsinville, M., Lee, L., Ying, L., et al. (2013). Notes from the field: Serogroup C invasive meningococcal disease among men who have sex with men—New York City, 2010–2012. *Morbidity and Mortality Weekly Report*, 61(51), 1048.