

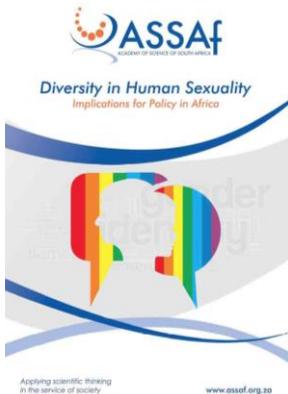
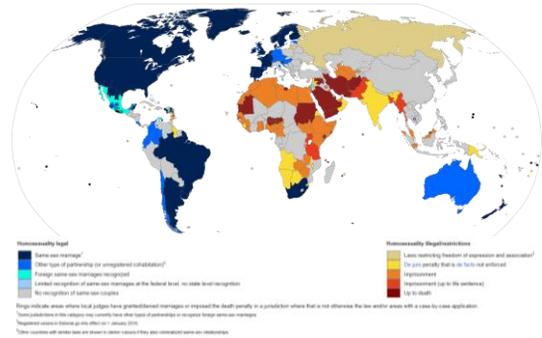
Sexually Transmitted Infections in Men Who Have Sex with Men

Henry J.C. de Vries

STI outpatient clinic Municipal Health Service (GGD) Amsterdam
 Dermatology, Academic Medical Centre, University of Amsterdam
 Centre for Infectious Diseases Control, National Institute for Public Health and the Environment (CIb/RIVM), The Netherlands



Gay rights globally



NEWS IN FOCUS

African academics challenge homophobic laws

Scientific report demolishes assertions used to back criminalization of homosexuality.

SOME HOMOGENEOUS ARE GAY

Sexual orientation choice or immutable?

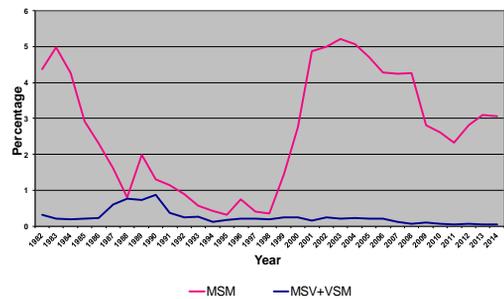
- Justifications of laws against same-sex relationships:
 - Unlike sex or race, same-sex orientation is chosen rather than biological
 - Same-sex orientation is forced onto people by homosexual 'recruiters', (e.g. by molestation)
- 5% of gay men and 16% of lesbians felt they had a fair amount or a good deal of choice (Herek et al., 2010).
- Most heterosexuals also feel they have no choice, and also report having 'noticed' or discovered their opposite-sex attraction at a relatively early age (McClintock and Herdt, 1996).



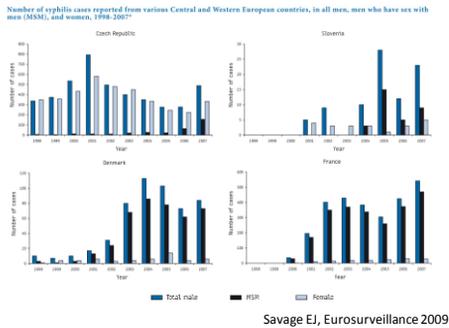
MSM and STI an overview

- Epidemiology and identity
 - STI prevalence and risk behaviour
 - STI networks
 - Gender, identity and orientation
- Disease specific topics
 - Lymphogranuloma venereum
 - Hepatitis C
 - Anal carcinoma
 - Meningitis C
 - HIV
- Concluding remarks

Early syphilis positivity, STI outpatient clinic Amsterdam, 1982-2014



Syphilis epidemics in Europe, 1998-2007



STD prevalence among asymptomatic HIV+ patients at academic HIV outpatient settings

Screened on chlamydia, gonorrhoea, syphilis, HBV and HCV during a routine visit

heterosexual patients

- n = 245
 - 58% women; median age 41
- Low STI positivity (1,6%)
 - 1,2% chlamydia
 - 0,4% syphilis
- High-risk behaviour was rare

MSM patients

- n = 659
- High STI positivity (16%)
 - 7,5% anal chlamydia
 - 3,1% anal gonorrhoea
 - 5,2% gonorrhoea (any location)
 - 5,0% infectious syphilis
 - 1 new hepatitis B
 - 3 new hepatitis C infections
- STI associated with use of enema prior to sex, recreational drug use and fisting

Heiligenberg M et al. AIDS 2012

Heiligenberg STD Journal 2012

Male-male homosexual activity is a strong risk factor for STI

- Biological explanations ($R_0=b.c.D$)
 - higher number of sex partners (casual sex)
 - exposure of highly receptive tissues for pathogen transmission like anorectal mucosa
- Sociological explanations
 - ignorance and myths around (the danger of) male-male sexual contact;
 - barrier protection not required for contraceptive reasons might lower condom use;
 - illegality, homophobia and stigmatization discourages stable relationships, and encourages, casual, fleeting, anonymous and opportunistic contacts;
 - increased use of disinhibiting substances.

Owen WF Jr: Sexually transmitted diseases and traumatic problems in homosexual men. Ann Intern Med. 1980
Weller IV: The gay bowel. Gut. 1985;26:869-75

Polydrug use (especially with methamphetamine) in HIV+ MSM is strongly associated with condomless sex

The ASTRA study

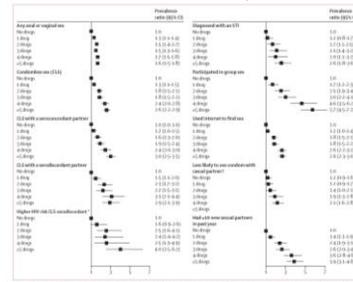


Figure 2. Adjusted prevalence ratios for the association of polydrug use in the past 3 months with measures of sexual behavior in 2348 HIV diagnosed men who have sex with men. Values are adjusted for age group, education, religious beliefs, antiretroviral treatment use and adherence, and HIV-1 load. Behavioral outcomes have 3 months recall period unless otherwise specified. *Covariates are not in the condomless partner, and not in behavioral treatment in a condom partner. Non-significant results are displayed with a grey background. The null point is 1.0. Horizontal lines represent 95% confidence intervals.

Daskalopoulou, Lancet HIV 2014

Internet dating among MSM

- Mc Fairlane, JAMA 2000
 - STI clinic visitors Denver
 - Sex partners via internet
 - “Online seekers”
 - Overrepresentation of MSM
 - Multiple sex partners
- New generation tools
 - mobile apps
 - geo spatial dating
 - “We don’t view this as a security flaw. It’s not a bug, it’s a feature!”

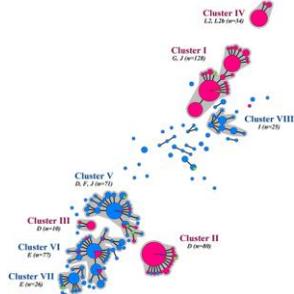
<https://grindmap.neocities.org>



MSM, travel purposes & destinations



Minimum spanning tree showing the sexual orientation of the host of 526 Chlamydia trachomatis-positive samples from MSM and heterosexuals in Amsterdam using Multi Locus Sequence Typing (MLST)



Bom RIM, van der Helm JJ, Schim van der Loeff MF, van Rooijen MS, et al. (2013) District Transmission Networks of Chlamydia trachomatis in Men Who Have Sex with Men and Heterosexual Adults in Amsterdam, The Netherlands. PLOS ONE 8(1): e53869. doi:10.1371/journal.pone.0053869 <http://www.plosone.org/article/info:doi/10.1371/journal.pone.0053869>



Homosexual male-male activity is common and as old as mankind

- Kinsey report 1970: at least 20.3% of adult men in the US had sexual contact to orgasm with another man at some time in their life
 - 6.7% over 19 years old
 - 1.6-2.0% within the previous year
- Approximately half the men with homosexual contacts were currently or previously married.

1. Gebhard, PH: Incidence of overt homosexuality in the United States and Western Europe <http://www.kinseyinstitute.org/resource.s/bib-homoprev.html>

2. Fay RE: Prevalence and patterns of same-gender sexual contact among men. Science. 1989.

orientation vs behaviour

- Attraction by the sex of one's partners
- Romantic, emotional, affectionate and/or sexual
- Does not have to lead to behaviour or activity
- Many religions condemn homosexual activity, not the desire itself resulting in secrecy and in fear of rejection
- Refers to participation in sexual acts
- Under same-sex physical locations (mine compounds, military, incarceration)
- May have no impact on presumed heterosexual orientation
- Explicitly vulnerable and hard to reach (in the closet) population



Diamond, 2014; Feinstein et al., 2014; Seto, 2012

Behaviour accounting for increased risk for STI not preference, desire or identity

- Direct enquiries into a persons' sexual desires, orientation or identity can lead to (incorrect) socially acceptable responses.
- More appropriate in STI consultation to ask for sex partners: "Do you have sex with men and/or women?"
- Term MSM debated
 - obscures social dimensions of sexuality;
 - undermines self-labelling and empowerment of lesbian, gay, and bisexual people;
 - does not sufficiently describe variations in sexual behaviour.

Young RM, Meyer IH: The trouble with "MSM" and "WSW": erasure of the sexual-minority person in public health discourse. Am J Public Health. 2005

Identity as dimension of sexual orientation

- **Personal identity**
 - self-defined
- **Social (or collective) identity** is a sense of membership in a social group based on a shared sexual orientation.
 - being "gay" as a Western construct,
 - Can be less relevant elsewhere
 - other sexual identities:
 - India: Hijras, Kothis and Panthis,
 - Thailand and Laos: the Katoey
 - Cambodia the Sray sros and Pros saat



Photos: International HIV/AIDS Alliance



Victor et al., 2014

Bradford, D: Homosexuality, Bisexuality and Sexual Orientation. In Gupta S and Kumar B: Sexually Transmitted Infections. Haryana, India: Elseviers. 2012:1174-8

LGBTI poor access to healthcare and decreased help seeking behaviour

- patient related factors:
 - shame, guilt, low self-esteem
 - fear of disapproval upon self-disclosure.
- clinician related factors:
 - discomfort with male-male sex,
 - homophobia, judgemental and moralistic approach,
 - irrational fear for contamination,
 - ignorance about specific conditions in MSM,
 - not obtaining swabs from correct body orifices.

Bradford, D: Homosexuality, Bisexuality and Sexual Orientation. In Gupta S and Kumar B: Sexually Transmitted Infections. Haryana, India: Elseviers. 2012:1174-8

MSM and STI an overview

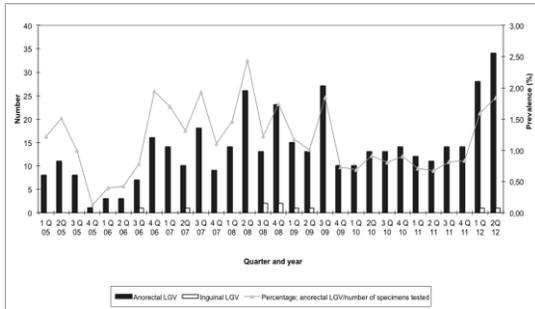
- Epidemiology and identity
 - STI prevalence and risk behaviour
 - STI networks
 - Gender, identity and orientation
- Disease specific topics
 - Lymphogranuloma venereum
 - Hepatitis C
 - Anal carcinoma
 - Meningitis C
 - HIV
- Concluding remarks

Lymphogranuloma venereum

- *C. trachomatis* L1, L2, L3 (LGV genovar)
 - invasive organism
 - severe inflammation
 - usually symptomatic
- Endemic in equatorial regions
- Since 2003 among HIV+ MSM Western world
 - clonal outbreak L2b (Amsterdam variant)
 - Vast majority ano-rectal infections
 - Mode of transmission?



LGV positive specimens 2005-2Q 2012 STI outpatient clinic Amsterdam



de Vrieze, Sex Trans Inf 2013

Strains within the LGV clade are considerably less diverse than those in the trachoma lineage

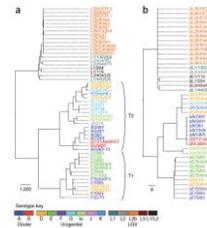


Figure 3. Maximum likelihood reconstruction of the phylogeny of *C. trachomatis* with recombinations removed. (a) *C. trachomatis* specimen phylogeny using the chromosomal sequences of 12 genes after proctid recombinations have been removed using a previously described method²².

“Despite the global distribution, the L2b epidemic is a clonal outbreak that has spread throughout the world.”

Harris, Nat Genet 2012

Retrospective HCV-incidence data

First author	Country	Cohort	Timeframe	HCV-incidence (1000 PY)
van de Laar	Netherlands	MSM-cohort	1984-1999 2000-2003	0.8 8.3
Ghosn	France	HIV-cohort	<2003 >2003	1.2 8.3
Stellbrink	Germany	HIV-cohort	2002-2003 2008-2009	3.6 10.5
Browne Giraudon Richardson	England	HIV-cohort	1997-1999 2000-2003 2004-2006	<1 4.6 – 6.9 11.1 – 17.5
van der Helm	International	HIV-seroconverter cohort	1990 1995 2000 2005	0.9-2.2 5.5-8.1 8.0-13.7 16.8-30.3

Table from Van de Laar (2011) TvI

European HCV network

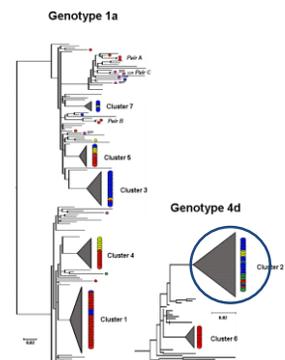
- England
- Netherlands
- Germany
- France

One LARGE European transmission network of HCV genotypes 1 and 4

Similar trees can be made for Hepatitis A and Hepatitis B

Fear: Endemicity of viral hepatitis A, B and C in MSM in Europe.

van de Laar (2009) Gastroenterology



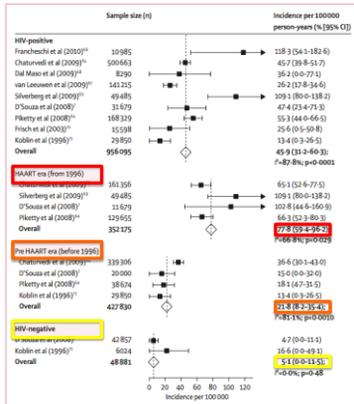
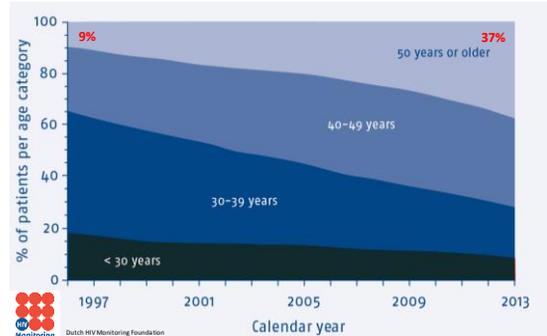
Sexual risk factors for HCV infection

- **Ulcerative STI**
(LGV, syphilis, herpes)
- **Drug use**
(injection, disinhibition)
- **Traumatic sexual practices**
(fisting, toys, groupsex, multiple partners)
- **HIV**
Reduced immunity
Increased HCV viremia
Serosorting
Reflection of risk behaviour

Mucosal and immunological damage

van de Laar TJ, et al.: Increase in HCV incidence among men who have sex with men in Amsterdam most likely caused by sexual transmission. *J Infect Dis*. 2007
Sexual transmission of hepatitis C virus in human immunodeficiency virus-negative men who have sex with men: a series of case reports. van de Laar TJ et al. *Sex Transm Dis*. 2011

Increasing Age in HIV



HPV associated Anal Cancer Incidence In MSM per 100,000 py

Low nadir CD4, alcohol use, and smoking are significantly associated with anal cancer in HIV+ MSM

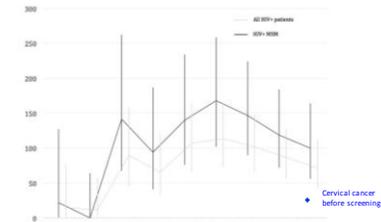


FIGURE 1. Anal cancer incidence per 100,000 person-years (with 95% CIs) for 9 consecutive 2-year blocks in all HIV+ patients and HIV+ MSM separately in the Netherlands (1995-2012).

Figure 6: Incidence of anal cancer in men who have sex with men, by HIV status

Mischalek et al, Lancet Oncology 2012

Richel et al, J AIDS, 2015

Meningitis C in MSM

Notes from the Field

Serogroup C Invasive Meningococcal Disease Among Men Who Have Sex With Men — New York City, 2010–2012

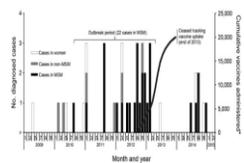
On September 27, 2012, the New York City (NYC) Department of Health and Mental Hygiene (DOHMH) alerted health-care providers and the public about 13 cases of invasive serogroup C *Neisseria meningitidis* (SCMD) occurring in NYC since August 2010 among men who have sex with men (MSM). Cases were identified through routine mandatory notifiable disease reporting and classified according to the Council of State and Territorial Epidemiologists case definition (7). By December 31, 2012, a total of 18 cases had been identified among MSM. For 2012, the incidence rate of invasive meningococcal disease among MSM aged 18–64 years was 17.6 per 100,000 persons, compared with 1.6 among non-MSM males aged 18–64 years. MSM and non-MSM population denominators were obtained from the 2010 NYC Community Health Survey (7), a telephone-based survey of approximately 140,000 NYC residents. All 18 patients were hospitalized, and five deaths occurred.

Recent cases have clustered. In addition, DOHMH published this outbreak among the population at risk through advertising mass e-mail messages on MSM websites, posters distributed on MSM bars and clubs, and outreach in community leaders and physician groups. More information regarding invasive meningococcal disease and this outbreak is available on the CDC and DOHMH websites (8). Public health departments should be alert for cases of SCMD in MSM and should ask SCMD patients about sexual history, travel history (including travel to NYC), and HIV status to help determine if this outbreak is spreading to other jurisdictions.

Reported by: Dawn Weiss, MD, Middle Avenue, MPH, Public Health Bureau, Marie Curie Institute, MPH, Lillian Lee, MD, Ying Liu, PhD, John S. Davidson, PhD, Jay S. Soren, MD, New York City, Dept. of Health and Mental Hygiene; Allison Hahn, MD, FPI Officer, CDC; Corresponding author: Allison Hahn, hahn@doh.ny.gov, 347-386-2869.

Community-Based Outbreak of Neisseria meningitidis Serogroup C Infection in Men who Have Sex with Men, New York City, New York, USA, 2010–2013

- Twenty-two case-patients and 7 deaths during Aug 2010–Feb 2013.
 - 3.9 cases/100,000 persons well below the CDC recommended threshold for mass vaccination (~10/100,000 persons)
- The slow-moving outbreak linked to use of MSM dating sites and apps
 - Complicated the epidemiologic investigation and prevention efforts.
- Steps taken to interrupt transmission
 - direct, internet-based, and media-based communications
 - free vaccination events
 - engagement of community and government partners.



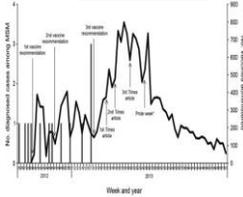
Los Angeles, California; France; and Germany have also reported clusters of MSM case-patients with serogroup C meningococcal disease, many HIV infected.

Emerg Inf Dis Aug 2015 Katz et al.

Emerg Inf Dis Aug 2015 Katz et al.

Neisseria meningitidis Serogroup C Infection in MSM, NYC, 2010–2013
Major spikes in vaccine demand after articles in The New York Times

- email blasts to dating sites visitors
 successful cost-effective method to target the at-risk population.
 - Electronic outreach supplemented but did not substitute for traditional media.
- Used in tandem, traditional and social media can exponentially increase the effect of outreach.
 - Traditional media to penetrate mainstream society with a specific message
 - Social media to expand and target that message to hard-to-reach populations



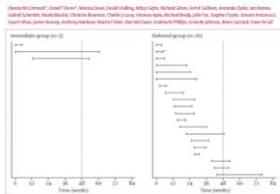
The promise of PrEP
Image and perception

From Truvada Whore

To Truvada Hero



Pre-exposure prophylaxis to prevent the acquisition of HIV-1 infection (PROUD): effectiveness results from the pilot phase of a pragmatic open-label randomised trial



appendix p 8). However, a larger proportion of participants allocated to immediate PrEP than allocated to deferred PrEP reported receptive anal sex with ten or more partners without a condom (21% vs 12%; $p=0.03$, test for trend).

	Immediate PrEP group (n=21)	Deferred PrEP group (n=20)	p-value
Sexual partners	10 (48%)	10 (50%)	0.74
Condom use	18 (86%)	15 (75%)	0.20
Receptive anal sex	14 (67%)	10 (50%)	0.12
Receptive anal sex with 10 or more partners	4 (19%)	2 (10%)	0.29
Receptive anal sex without a condom	3 (14%)	2 (10%)	0.99

Clinical Infectious Diseases Advance Access published September 1, 2015

No New HIV Infections with Increasing Use of HIV Preexposure Prophylaxis in a Clinical Practice Setting

Jonathan E. Volk¹, Julia L. Marcus¹, Tony Phengrasamy¹, Derek Blechinger¹, Dong Phuong Nguyen¹, Stephen Follansbee¹, C. Bradley Hare¹

¹Kaiser Permanente San Francisco Medical Center, Department of Adult and Family Medicine, San Francisco, CA, USA; ²Kaiser Permanente Northern California, Division of Research, Oakland, CA, USA

Referrals for and initiation of preexposure prophylaxis (PrEP) for HIV infection increased dramatically in a large clinical practice setting since 2012. Despite high rates of sexually transmitted infections among PrEP users and reported decreases in condom use in a subset, there were no new HIV infections in this population.

Concluding remarks 1
STI syndemics among MSM

- HIV, Syphilis, HCV, LGV, Men-C, MRSA, resistant gonorrhoea
 - next pathogens?
- Efficient networks:
 - international travel, new media
 - closed and intertwined
- Biological factors:
 - Impaired immunity, mucosal breakdown
- Substance use and disinhibition
- Poor healthcare access
 - criminalization, stigma, homophobia

Concluding remarks 2
Socio-political improvements

- Law and politics
 - Decriminalization of same-sex acts, protection of LGBTI
- Surveillance data
 - Underreporting of homosexual behaviour has led to underestimation of STI burden in MSM.
- Need for evidence based safe sex programs
 - involvement of community partners

Concluding remarks 3 Clinical improvements

- Medical training should provide clinicians with adequate training in STD care and the diversity of sexual orientation of patients.
- Better healthcare access via multidisciplinary care programs dedicated to prevention and treatment
- The effect of PrEP on risk adaptation

Thank you for your attention

