TECHNICAL REPORT

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This report was commissioned by the European Centre for Disease Prevention and Control (ECDC), coordinated by Otilia Sfetcu and Marita van de Laar, Programme for sexually transmitted infections, including HIV/AIDS and blood-borne infections, and produced by Aryanti Radyowijati, Sara Brewer and Maaike Esselink (Results in Health, the Netherlands), Eline Op de Coul and Femke Koedijk (National Institute of Public Health and the Environment, the Netherlands) and Wim Zuilhof (Schorer, the Netherlands), under contract ECD 2409/2010.

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Errata

The following changes were made on 12 March 2013 at the request of the Istituto Superiore di Sanità (ISS) in Italy:

Page 28: Under Trends based on literature, a change was made to reflect the different levels of increased HIV incidence.
Page 30: Under Trends in surveillance data, changes were made in two places to explain contribution of more countries reporting surveillance data and of improved coverage in surveillance systems, to the increased reporting of HIV diagnoses.

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Contents

Abbreviations

AI	Anal intercourse
AIDS	Acquired immune deficiency syndrome
ART	Antiretroviral treatment
ARV	Antiretroviral
cART	Combination antiretroviral therapy
CDC	US Centers for Disease Control and Prevention
CCEE	Countries of Central and Eastern Europe
CD4	Cluster differentiation 4
ECDC	European Centre for Disease Prevention and Control
EEA	European Economic Area
EPIS	Epidemic intelligence information system
EU	European Union
GHB	Gamma-Hydroxybutyric acid
GUM	Genital urinary medicine
HBV	Hepatitis B virus
HCV	Hepatitis C virus
HIV	Human immunodeficiency virus
IDU	Injecting drug use(r)
LGV	Lymphogranuloma venereum
LWC	Longitudinal study with control
NA	not available; not applicable
NS	not specified
MSM	Men who have sex with men
PEP	Post-exposure prophylaxis
PrEP	Pre-exposure prophylaxis
PHI	Primary HIV infection
RCT	Randomised controlled clinical trial
RITA	Recent infections testing algorithm
STI	Sexually transmitted infection(s)
TESSy	The European Surveillance System
UAI	Unprotected anal intercourse
UOI	Unprotected oral intercourse
UK	United Kingdom
USA	United States of America
VCT	Voluntary testing and counselling

Executive summary

The human immunodeficiency virus (HIV) epidemic has caused extensive human suffering and loss across the globe. Although populations most at risk vary across countries, it is recognised that in the countries of the European Union and the European Economic Area (EU/EEA) men who have sex with men (MSM) are disproportionately affected by HIV and other sexually transmitted infections (STI). Despite numerous interventions which targeted behaviour, knowledge and attitudes of MSM, increases of STI and HIV have been recently observed. Outbreaks of syphilis, lymphogranuloma venereum (LGV), hepatitis C virus infection (HCV) and other STI have been reported in multiple European cities suggesting high-risk sexual behaviour and extensive sexual networking. In addition, overall deficit of outcome evaluation has been observed in HIV/STI prevention interventions targeted at MSM.

The objective of this project was to review the current status of STI and HIV among MSM in EU/EEA countries, to review prevention interventions targeted at MSM, and to review the evaluation of HIV and STI interventions. A literature review was conducted to compile data with respect to outbreaks and increasing trends of STI and HIV among MSM in EU/EEA, and was supplemented with STI and HIV surveillance data and specific additional country reports. Another review was conducted to update current knowledge of prevention intervention studies including a review of literature, databases and websites, and contact with key informants. Evaluation of intervention studies, level of evidence produced, and intervention characteristics associated with efficacy were also analysed.

Outbreaks of syphilis, LGV and HCV among MSM were reported by 13 countries. Syphilis was the first STI that increased sharply after the introduction of combination antiretroviral therapy (cART) followed by LGV and HCV. Since 2003, the sharp increases in STI seemed to have levelled off and remained at a new high endemic level. HIV reporting rates in MSM increased between 2004 and 2009 in the EU/EEA from 3.5 to 4.1 per 100 000 males. Reporting rates in non-EU countries were lower, between 0.1 and 0.3 per 100 000 males and are likely to reflect the lack of information on the mode of transmission. The proportion of HIV co-infections is highest among MSM with HCV (95–100%) and LGV (35–100%) and is lower for syphilis (20–60%) and gonorrhoea (20–35%). Behavioural and social determinants that may explain changing STI trends include sexual risk behaviour, increasing HIV trends, biological interactions between STI, HIV and HCV, and age and ethnic background.

The number of HIV/STI prevention interventions for MSM has increased over time and it is expected that more effective combinations of behavioural and biomedical preventive strategies will emerge. The majority of HIV/STI intervention studies included in this review come from the United States of America. European-based prevention interventions do exist but were not widely available in peer-reviewed literature. Most interventions were developed as part of the programme response except for the syphilis interventions which followed the emerging outbreaks. The majority of the interventions were aimed at affecting knowledge, attitudes and beliefs and influencing psychological and social risk correlates, followed by interventions that aimed at harm reduction.

Although the main target group of HIV/STI prevention intervention studies were adult MSM (with unspecified serostatus), prevention interventions should target sub-groups since STI and HIV reporting rates differ between age groups (young, adult and senior), ethnic groups (minority), HIV serostatus, and specific risk groups (substance abuse, lower socio-economic status, lower education). Education-based interventions were the most frequent prevention intervention activity followed by counselling and testing. Modes of delivery included trained counsellor, mass media and health care providers. Besides the classical settings of interventions, (e.g. health care, mass media, gay venues), internet-based interventions have become increasingly popular including social media and mobile technology.

HIV and STI prevention interventions were more often designed as observational studies than as experimental studies reflecting challenges in study design such as randomisation, sample size, length of follow up and retention rate. Most of the studies associated with intervention efficacy and positive outcomes made use of a theoretical model, addressed interpersonal skills training, and operate complex exposures. There were a number of HIV and STI interventions that lacked substantial elements in study designs, and therefore could not be classified in the evidence framework. This could be due to limited capacity in the design or implementation phase. Some of them were not designed to include a control group or suffered from difficulties in keeping a large sample size, or sufficient length of follow up and retention. How guiding base theories are translated into intervention activities should be explored, as well as to what extent interventions must follow the principles of these theories to achieve successful risk reduction. A number of well-designed prevention interventions were identified with a negative and/or insignificant result in their intervention outcome. Although many lessons can be learned from interventions without positive outcomes, within current frameworks on effectiveness or grading systems of evidence, a negative outcome is considered as not effective, and therefore is usually excluded. This is even though there is wide acknowledgement that producing high level evidence for behavioural interventions is difficult. 'Alternative' grading systems which are more inclusive and feasible in practice need to be explored.

The focus of HIV and STI prevention intervention for MSM may be disease-specific, like for syphilis, but the integration of prevention intervention into a comprehensive approach for disease prevention in the context of sexual health for MSM should be considered. This integration would create synergy and could address specific needs and participation of MSM particularly in areas where homophobia and stigmatisation occur. European initiatives in combining prevention strategies in the context of sexual health among MSM could be developed strategically, acknowledging the heterogeneity within the MSM community, the heterogeneity across Member States, and addressing controversial aspects, and where possible, cultural values and potential misconceptions. Recognising there is no single solution to HIV and STI prevention, a comprehensive approach of combination prevention strategies will continue to be essential in the future.

Introduction

In Europe, men who have sex with men (MSM) continue to be disproportionately affected by sexually transmitted infections (STI), including HIV. The declining trends of STI among MSM in the early 1980s, due to behaviour changes in response to the HIV epidemic, have been reversed since the late 1990s after the introduction of combination antiretroviral therapy (cART) in 1996. Several reports on STI outbreaks followed e.g. outbreaks of syphilis, lymphogranuloma venereum (LGV) and hepatitis C virus infection (HCV). The outbreaks indicated high-risk behaviour and extensive sexual networking across Europe. In Western Europe, sex between men remained the predominant mode of transmission of HIV infection, followed by heterosexual contact. At present, MSM account for almost 50% of all syphilis cases reported in Europe, with a wide variation across Member States including countries reporting almost 80% of all cases in MSM. Likewise for HIV and gonorrhoea, 35% and respectively 24% of diagnoses are being reported in MSM [1, 2]. The on-going outbreaks and rising trends suggest the need for reinforced prevention initiatives.

The increase of risky behaviour was reported to be associated with treatment optimism and cART fatigue, as well as improved quality of life of HIV-infected MSM. Negotiated safety trends such as strategic positioning, serosorting, and withdrawal are increasingly reported, but these are not necessarily effective risk reduction strategies. This trend poses new challenges for HIV and STI prevention, requiring an evolution of interventions to remain effective. Moreover, barriers to services still exist in many places, including homophobia, stigma, policy barriers, insensitivity or lack of awareness among health care providers [3]. Men who have sex with men who engage in drug use further put themselves at risk, through sharing of needles or compromised judgement leading to risky sexual behaviour. These factors pose challenges for behavioural and psychosocial interventions and highlight the need for innovative solutions. Public health initiatives grounded in epidemiological trends that focus on behavioural prevention are considered central to efforts to reduce STI and HIV transmission.

As MSM overwhelmingly represent Europe's key population for STI and HIV infection, a review on the effectiveness of behavioural and psychosocial HIV/STI prevention interventions for MSM in Europe was published in 2009 [4]. This report identified an overall deficit in outcome evaluations of interventions aimed at reducing HIV/STI risk behaviour among MSM in Europe. As a result, a comprehensive review of the current status with respect to increased trends and outbreaks of STI and HIV in MSM in Europe was carried out and prevention interventions targeted at MSM were reviewed.

This report contains a compilation and summary of publications regarding outbreaks and increasing trends of HIV and STI among MSM, and an evaluation of prevention interventions targeted at MSM as part of programme responses to STI and HIV epidemics or as part of interventions following outbreaks. It includes a review of the evaluation of prevention interventions as well as a synopsis of knowledge gaps in outcome evaluations. The report is organised in three parts. The first part provides an updated inventory of STI and HIV trends among MSM in Europe from 1995–2010 (literature review, trend analyses of the available data in The European Surveillance System[1], a survey among EU Member States). The second part is a literature review of behavioural and psychosocial STI and HIV prevention interventions among MSM from 1995–2010 (timing, target group, focus of interventions, intervention characteristics, utilisation of theoretical framework). The third part is a review of evaluation of prevention interventions with respect to study design, outcomes, level of evidence produced and analysis of intervention elements associated with efficacy. The main findings of this work were discussed during a multidisciplinary expert meeting in 2011 with the aim of discussing the future of key prevention interventions among MSM at the European level.

[1] The European Surveillance System (TESSy) http://ecdc.europa.eu/en/activities/surveillance/TESSy/Pages/TESSy.aspx.

1. Outbreaks and trends of STI and HIV among MSM

1.1 Data and methods

Literature review

To understand the dynamics of the observed STI and HIV outbreaks and trends with the contribution to prevention interventions in mind, two literature searches were conducted and three research questions were formulated (see below). The first review focused on the STI and HIV figures, and the second on the social determinants and epidemiological context of these outbreaks and trends (e.g. age, ethnicity, risk behaviour, and the response of the STI and HIV prevention and treatment services).

Research questions for the literature reviews

- Q1. What are the frequency, size and duration of outbreaks of STI and HIV among MSM in Europe in 1995–2010? (literature review completed by a survey in Member States)
- Q2. Which EU countries show increasing trends in STI and HIV among MSM in 1995–2010? (literature review and analysis of the European Surveillance System data)
- Q3. What are the main characteristics of MSM (HIV serostatus, age and country of birth) in EU countries which experience outbreaks or increasing trends of STI and HIV? [literature review (age, serostatus, country of birth, region of origin)] and additional analysis of the European Surveillance System data (age, serostatus)

Medline, Embase and Scopus were systematically searched to identify studies in which outbreaks and increasing trends of STI and HIV could be established among MSM in Europe (search 1 annex 1). Thirty four countries (27 EU, three EEA and the former Yugoslav Republic of Macedonia, Croatia, Turkey and Switzerland) were included in the literature review. Studies on basic characteristics of MSM in countries with outbreaks and increasing trends were also collated (search 2 annex 1). For details see annex 1.

An outbreak is defined as the occurrence of disease greater than would otherwise be expected in a given area or among a specific group of persons during a specific period. Usually cases are related or there is a common course[2] . However, terms such as 'outbreaks' and 'increasing trends' are not fully objective and may overlap. It was therefore decided to use the following working definitions for this report: if the cited original publication used the word 'outbreak' in its title or text, the event was classified as an outbreak; if the word 'outbreak' was not used, the event was defined as an 'increasing trend'.

Reference lists of the identified papers were included in the review. A Microsoft Access database was developed in which absolute numbers, prevalence and incidence rates of STI/HIV among MSM could be entered, along with characteristics such as age groups, country of origin, HIV status and key indicators on sexual risk behaviour. Where articles described the same outbreaks, data were combined to obtain a representation as complete as possible of the outbreak in that country. Yearly proportional increases were calculated using published figures on absolute numbers. Due to restrictions in languages, the inclusion of national surveillance reports was limited. Although the inventory included trend analyses of the European Surveillance System data, country overviews may be incomplete.

The literature search for the research questions one and two (see box above) identified 1 737 citations: 1 083 through Medline, and 654 through Scopus. For 328 citations, the full text paper was retrieved and reviewed using the data extraction form in Access. Based on the full text, 194 papers were considered not relevant and were excluded. In addition, another 14 potentially relevant citations were identified from the reference lists of included studies. The numbers of papers found and excluded are presented in a flow chart in Figure 1.1.

The search for research question three identified 1 763 citations: 957 through Medline and 807 through Scopus. Finally, for 261 citations the full text paper was retrieved and reviewed. Based on the full text, 159 papers were excluded. From the reference lists of the included studies another eight potentially relevant citations were identified. All papers identified and excluded are presented in figure 1.2. Since many papers were relevant for all three research questions, the searches overlapped. In the end, 162 papers were included in the review.

[2] Source: www.ecdc.europa.eu/EPIS

Virtually no publication on increasing chlamydia trends (except for LGV) among MSM was found. It must be acknowledged that increases in genital chlamydia could exist among MSM, however, they might be more difficult to detect since information on transmission mode is missing for 90% of the cases and chlamydia is not a reportable disease in many countries. Furthermore, no publications on increasing hepatitis B virus (HBV) trends among MSM were identified, although MSM remain at high risk of HBV infection. It is possible that numbers of acute HBV are declining due to vaccination programs. Many countries offer HBV immunisation universally or routinely to MSM visiting STI clinics or through outreach programs [5]. Also, data on HBV infections are often limited to laboratory and case reports, which may have lacked detailed information on transmission modes.

Figure 1.1. Flowchart of papers included in the review of outbreaks and increasing trends of STI in MSM in Europe (Q1 and Q2)

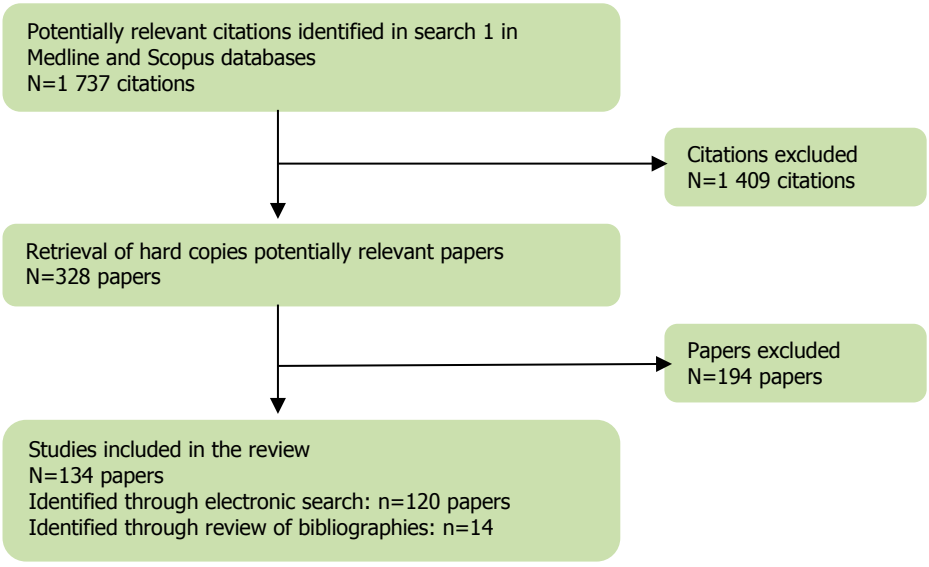
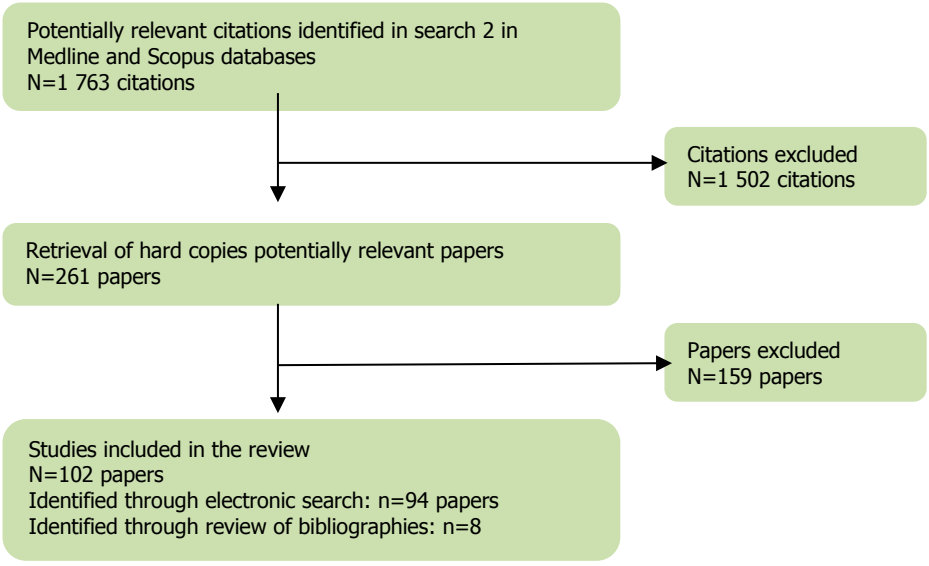


Figure1.2. Flowchart of papers included in the review of characteristics of MSM populations in European countries with outbreaks and increasing trends of STI (Q3)



Survey among Member States

All nominated contact points for STI, HIV and hepatitis in the 30 EU/EEA Member States were asked to complete a short questionnaire on unpublished data and 'grey' literature on outbreaks among MSM in their country. The questionnaire (see annex 1) was supplemented with published information on outbreaks in those countries as well as outbreaks reported in the Epidemic Intelligence Information System for Sexually Transmitted Infections (EPIS-STI)[3]. The countries were asked to validate the collated information on outbreaks or report on outbreaks that have not (yet) been reported in EPIS-STI. When necessary, contact points were contacted for additional information after receiving the questionnaires. Of the 30 countries, 21 returned the questionnaire (70%). The questionnaire data were analysed together with published data on outbreaks. Of these, 14 reported new outbreaks or additional information. Furthermore, 13 EPIS-STI reports were included; 10 on LGV, two on syphilis and one on gonorrhoea.

Thirteen countries, mainly in Western Europe, additionally reported outbreaks of LGV, syphilis or HCV among MSM in recent years. The UK, the Netherlands and France reported outbreaks of all three STIs (LGV, syphilis and HCV) in various geographic locations. Five countries (Belgium, Italy, Sweden, Spain and Denmark) reported outbreaks of LGV and syphilis. Five countries reported only one outbreak: Ireland and Norway (LGV); Germany, and Austria and Portugal (syphilis). Cyprus, Estonia, Greece, Latvia, Lithuania, Malta, and Slovakia reported that no STI outbreaks occurred among MSM between 1995 and 2010 through the survey form.

Analysis of surveillance data

Available surveillance data in the European Surveillance System for EU/EEA countries were analysed to determine increasing trends of STI and HIV by age, country of birth and HIV serostatus. STI under EU surveillance are syphilis, gonorrhoea, chlamydia, LGV, and HIV [1]. The availability of surveillance data for MSM with completed socio-determinants varied considerably between countries. As a number of countries in the central/eastern part of the EU did not report on MSM transmission, trends in male-to-female ratios and overall male rates were taken into account, assuming that a high or increasing proportion of male cases could refer to male to male transmission.

For details on the coverage, quality and completeness of STI and HIV reporting, two ECDC surveillance reports were consulted [1] . [2] The analysis on STI and HIV in MSM focuses on EU/EEA countries and for HIV an occasional comparison between EU/EEA and non-EU countries was made. STI and HIV data are presented by 'Date of Diagnosis' and if not available by 'Date of Statistics'. With respect to age, trends were studied for the categories 16–24, 25–34, and ≥ 35. As most countries did not distinguish between a new HIV diagnosis or a known HIV case when reporting co-infections with HIV at the time of STI diagnosis, 'HIV positive' used in this report refers to both.

Reporting rates of gonorrhoea and syphilis in MSM for 2009 were calculated per 100 000 male population for countries with comprehensive surveillance systems (Denmark, Finland, Cyprus, Czech Republic, Estonia, Finland, France, Germany, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands[4], Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, and the United Kingdom). Trend analysis was conducted for countries with longitudinal data, including both countries with comprehensive and sentinel surveillance systems. Due to variations in the coverage, completeness and representativeness of the data, direct comparisons of absolute numbers must be done with caution.

[3] Hosted by ECDC, the Epidemic Intelligence Information System for Sexually Transmitted Infections (EPIS STI) is a surveillance system implemented to facilitate rapid reporting and dissemination of unusual events related to STI transmission across Europe and is based on the monthly notification of unusual STI transmission events by the nominated contact points for STI surveillance in the EU/EEA countries.

[4] Although implementing a sentinel surveillance system with STI clinics only, the Netherlands was included in the analysis since STI in MSM are commonly diagnosed at STI clinics compared with general practitioners.

Data presentation

Outbreaks

In literature, outbreaks among MSM were predominantly restricted to three STIs: infectious syphilis, LGV and hepatitis C. Outbreaks are presented in tables in chronological order per country, starting with local data, followed by national data and the characteristics of MSM. If papers included the exact same data, the paper describing the longest time span is presented. In the last paragraph, factors that have been associated with outbreaks are summarised.

Trends in literature

Gonorrhoea and HIV were more often reported as rising trends. Figures were studied in relation to age, country of origin, HIV serostatus and sexual risk behaviour. Although data on STI and HIV prevalence and incidence among MSM were available for various countries, the methodologies varied considerably between countries and settings. HIV case reporting was often the basis of HIV surveillance, but the completeness varied greatly. Most countries reported STI data from diagnostic testing, (mandatory) notifications or convenience sampling. Therefore, the comparison of trends and rates across countries needs to be done with caution.

To standardise the presentation of results, annual proportional increases in absolute numbers, positivity rates, number per 100 000 population, prevalence and incidence were compared between countries. Trends were not presented for countries with less than three data points of observation. High risk sexual behaviour was defined as unprotected anal intercourse (UAI) with a partner of unknown or discordant HIV status.

Trends in surveillance data

In countries of Central and Eastern Europe (CCEE), data on epidemiology of STI and HIV among MSM were less often available. Cases of STI and HIV among MSM in the CCEE region were reported in Slovenia, the Czech Republic, Croatia, Slovakia, and Hungary. Lowest numbers of cases were reported in the Eastern European countries. STI data were often not reported by transmission mode and information on sexual orientation was missing. For those countries, trends were studied in all men or by using male-to-female sex ratios.

1.2 Syphilis

Reported outbreaks

Syphilis was among the first reported STI outbreaks in Europe since the mid-1990s (Table 1.1). The very first outbreak among MSM was reported in 1997 in Hamburg, Germany, followed by an increase of syphilis cases in Berlin [6]. In Bristol, UK, a syphilis outbreak was reported in 1997 mainly among heterosexuals. The first UK outbreak among MSM occurred in 1999 in Brighton and Manchester [7]. Since then, syphilis rates among MSM have gone up not only in the UK but in many countries. The largest outbreaks of syphilis have been reported in England, especially in London (n=1,261, 2001–2004), Manchester (n=598, 1999–2004) and Brighton (n=181, 1999–2004). Outbreaks are mainly ongoing in major cities in several countries since 2000; in Scotland, most cases were reported in Glasgow and Edinburgh, and in Ireland large numbers were reported in Dublin. In Denmark, 67 cases were reported in 2003, as compared to 24 in 2002, mainly in the capital area [8]. Other countries reporting syphilis outbreaks included Belgium, Italy, Sweden, Netherlands, Norway, Spain, and France.

Syphilis outbreaks affected mostly white MSM of whom most men acquired the infection within their own country or within Europe. A significant proportion had co-infections with other STI including HIV. The proportions of MSM co-infected with HIV ranged from 20% in Northern Ireland, 26–53% in England, to nearly 60% in Belgium. Median ages of MSM at time of diagnosis varied between 31 and 41 years. In general, HIV positive MSM with syphilis were older than HIV negative MSM. Also, HIV positive MSM were more likely to present with secondary syphilis rather than primary or early latent syphilis [7] [9]. Strong associations were found between the incidence of syphilis and sex venues (e.g. saunas, sex clubs) and sex with casual partners. Co-infections with gonorrhoea were reported in 3–25% of the syphilis cases and between 6–15% were infected with chlamydia. Oral sex was identified as the most likely route of transmission in 41–67% of the MSM with known information.

Table 1.1. Syphilis outbreaks among MSM in Europe, in chronological order by country

Country	City/region	Period	Cases (n)	HIV-infected	Other STI	Age (yrs.)	Ethnicity	Other population characteristics	Reference
UK	Manchester	Jan 1999–Mar 2001	39	54%	8% GO, 15% CT	Median: 33	NA	# partners < 6 mnts: 21,5 (mean); UAI: 49%; oral sex: 97% (49% oral sex only)	[10]; Case report; MSM population general/ns
UK	Greater Manchester	Jan 1999–Nov 2002	330	35%	NA	67% < 35	90% white, 93% nation. born	UAI: 67%; UOI: 67%	[11]; MSM population general/ns
UK	Manchester	Jan 1999–Sept 2004	598	NA	NA	NA	NA	NA	[7]; MSM attending STI clinics
UK	Greater Manchester	May 1999–Aug 2000	38	NA	NA	NA	NA	Case-control: More risky sex and drug use	[12]; MSM attending STI clinics
UK	Brighton and Greater Manchester	Jun 1999–Aug 2000	68	26%	12% other STI	Median: 31	NA	NA	[13]; MSM attending STI clinics
UK	Brighton	Jul 1999–Jul 2001	28	36%	10% GO, 6% CT	Median: 32	100% white	# partners < 6 mnts: 3 (median)	[14]; MSM attending STI clinics
UK	Brighton	Jul 1999–Sept 2004	181	NA	NA	NA	NA	NA	[7]; MSM attending STI clinics
UK	London	Apr 2001–Dec 2002	103	34%	NA	Median: 36	93% white	NA	[15]; MSM population general/ns
UK	London	Apr 2001–Sept 2004	1,261	53%	NA	7%<25, 40% 25–34, 40% 35–44, 13% 45+	89% white, 63% nation. born	# partners < 3 mnts: 3 (median); UOI:44%; CSW: 3%	[7]; MSM population general/ns
UK	London	May 2002–Apr 2003	38	100%	NA	Mean: 40	88% white	NA	[16]; HIV+ MSM population general/ns
UK	Sheffield	2003–2005	10	10%	20% GO, 10% CT	Mean: 34	90% nation. born	NA	[17]; MSM population general/ns
UK	Walsall	Sep 2003–Aug 2004	12	42%	25% GO	NA	91% C	# partners < 1 mnts: 83% >3	[18]; MSM population general/ns
UK	Gloucestershire	Jan–Oct 2004	15	40%	NA	NA	100% white	NA	[19]; MSM attending STI clinics
UK	Birmingham	Jan–Dec 2005	30	NA	NA	16% <25,46% <35	83% nation. born	# casual partners < 12 mnts: 40% > 3 partners	[20]; MSM attending STI clinics
UK	Northern Ireland	Jun 2000–Jun 2005	121	10%	3% GO, 11% CT	Median: 35	93% white	# partners < 3 mnts: 88% 1 or 2; UAI: 15%; 49% infected by oral sex; sauna related	[21]; MSM attending STI clinics
UK	Northern Ireland	Jan 2001–Mar 2003	44	NA	NA	NA	NA	41% orally infected;	[22]; MSM attending STI clinics
UK	Glasgow, Scotland	End 2001–Sept 2004	99	NA	NA	NA	NA	NA	[7]

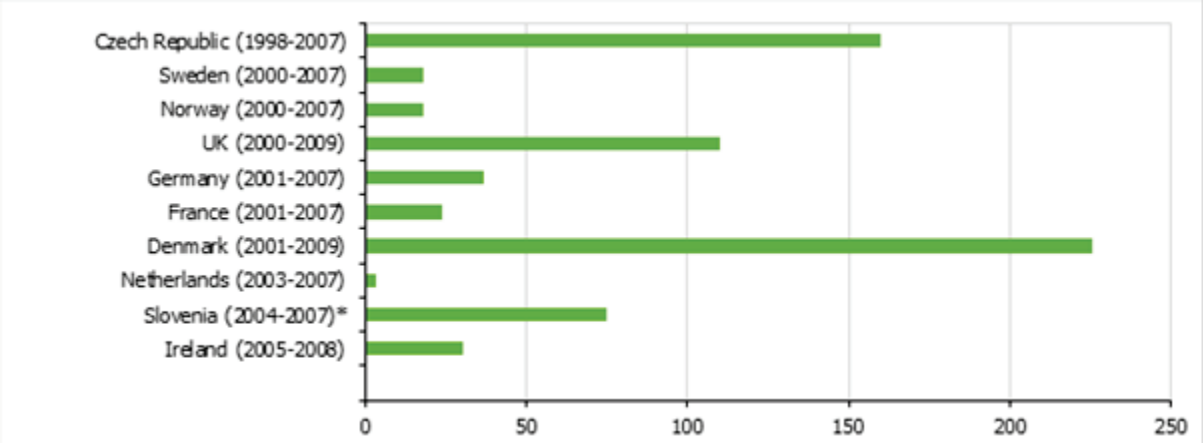
Country	City/region	Period	Cases (n)	HIV-infected	Other STI	Age (yrs.)	Ethnicity	Other population characteristics	Reference
UK	Edinburgh, Scotland	Jan 2002–Sept 2004	69	NA	NA	NA	NA	NA	[7]
Ireland	Dublin region	1998–2003	300	NA	NA	Mean: 35	84% nation. born	Partners from clubs, saunas, Internet chat rooms	[23]; MSM attending STI clinics
Ireland	Dublin	Jan 2000–Jun 2001	111	23%	17% GO, 8% CT, 1% HBV	Mean: 35	NA	# partners < 3 mnts: 6.5 (mean); alcohol and drug use common	[24]; MSM population general/ns
Ireland	Country	2000–2002	348	18%	NA	NA	75% nation. born	NA	[25]; MSM population general/ns
Ireland	Country	Jan 2000–Dec 2003	315	27%	NA	NA	NA	# partners< 3 mnts: 6 (mean); UAI: 16%, UOI: 31%; 17% sex contacts abroad	[26]; MSM population general/ns
Belgium	Country	Oct 2000–Mar 2004	147	59%	NA	Median: 37	NA	# partners < 6 mnts: 34% >1	[27]; MSM population general/ns
Belgium	Antwerp	Jan 2001–Mar 2001	32	22%	NA	Median: 41	NA	NA	[28]; MSM population general/ns
Netherlands	Rotterdam	Jul–Dec 2001	14	36%	NA	NA	NA	UAI: 57%	[29]; MSM attending STI clinics
Italy	Rome	2000–2003	169	48% (2001), 28% (2002), 22% (2003)	NA	NA	NA	Most known HIV+, 79% on cART	[30]; MSM attending STI clinics
Italy	Milan	2001–2002	261	25%	NA	NA	NA	NA	[31]; MSM attending STI clinics
Sweden, Norway	Country	1998–2002	174	16%	NA	Median: 38	63% acquired nationally	NA	[32]; MSM attending STI clinics
Norway	Oslo	1999–2000	61	NA	NA	NA	NA	48% sex in bath houses Oslo; # partners < 6 m: 35% ≥ 5; 54% never condoms for oral sex	[33]; MSM population general/ns
Norway	Oslo	Apr–Nov 1999	23	26%	NA	Median: 40	NA	probable route of transmission: oral sex in gay sauna	[34]; MSM population general/ns
Spain	Barcelona	2002–2003	83	39%	NA	Median: 34	68% nation. born	NA	[35]; MSM attending STI clinics
Spain	Madrid	2002–2005	53	100%	3,7% HCV	NA	NA	Annual incidence: 1,6	[36]; HIV+ MSM attending STI clinics
Denmark	Copenhagen (75%)	2003–2004	166	37%	NA	NA	70% acquired nationally	Anal and oral chancres reported suggesting oral and anal transmission	[8]; MSM attending STI clinics
France	Paris	Jan 2000–Dec 2002	71	100%	NA	Median: 36	NA	Known HIV+: 92%	[37]; HIV+ MSM
France	Dupin	Mar 2000–Nov 2000	9	55%	NA	NA	NA	NA	[38]; MSM population general/ns

GO: gonorrhoea, CT: Chlamydia trachomatis, NA: not available; ns: not specified

Trends (based on published literature)

The sharp increase in syphilis among MSM in England and Wales between 1999 and 2008, (+399% per year, figure 1.3) was precipitated by a number of outbreaks throughout the UK since 1997, but mainly in Manchester, Brighton, and London (table 1.1). The proportional annual increase in syphilis was higher in the UK compared to other countries. In the Netherlands, the first increasing trend of syphilis among MSM was observed in the early 1990s in Amsterdam followed by reports from Rotterdam. In the Czech Republic, syphilis among MSM increased from ten cases in 1998 to 170 cases in 2007 (+160% yearly) and has continued since then, as well as in other populations throughout the country. In Germany, an increase of syphilis among MSM has been observed since 2000–2001, increasing from 2.0 per 100 000 men to 6.3 in 2005. In Sweden, a rise in reported syphilis cases was observed mainly in Stockholm in 2010 with 28 cases in the first four months as compared to 19 cases in the same period in 2009 (+47%). Despite the overall increasing trend, a decline in syphilis rates was observed in the Netherlands from 2005 among MSM visiting STI clinics [39]. Positivity rates dropped from 6.5% in 2004 to 2.9% in 2009.

Figure 1.3. Yearly proportional increases in syphilis cases in MSM per country, based on table 1.2 (one bar per country including the longest time frame and larger number of cases at starting point)



**small numbers at starting point (three cases)*

Sharp increases in syphilis, as in the UK, were characterised by MSM with high rates of partner change, travel or migration to high incidence areas, and a high proportion of HIV co-infections (varying from 24–60%). In the Netherlands, almost 6% of MSM newly diagnosed with syphilis at the STI clinic were also newly diagnosed with HIV [39]. In Denmark, MSM with syphilis were more often men who had a syphilis diagnosis before. In 2009, the number of HIV positive MSM diagnosed with syphilis increased by 25% relative to 2008. Also in Ireland, yearly proportional increases of syphilis were highest among HIV positive MSM (64%). The median age at diagnosis of syphilis was not often reported; in three studies median ages were 37, 39 and 40 years [16, 40, 41].

Table 1.2. Yearly proportional increases of syphilis among MSM in Europe, in chronological order by country

Country	City/region	Period	Measurement	Start	End	Yearly prop. increase	Characteristics	Reference
Netherlands	Amsterdam	1991–2001	Absolute nrs	20	150	59	NA	[42]; MSM attending STI clinics
Netherlands	Amsterdam	1992–2006	Per 1,000 MSM	0.54	7.54	*	NA	[43]; MSM attending STI clinics
Netherlands	Amsterdam	1994–1999	Positivity rate	0.4	1.4	58	OR 2,5 (GO yes vs. no)	[44]; MSM attending STI clinics
Netherlands	Rotterdam	1996–2000	Positivity rate	3.6	8.5	10	NA	[45]; MSM attending STI clinics
Netherlands	Amsterdam	2000–2002	Incidence per 100 PY	0.8	1.4	*	CSW: RR: 7,9	[46]; MSM population general/ns
Netherlands	Country	2003–2007	Absolute nrs	405	417	3	NA	[47]; MSM population general/ns
Norway	Country	1993–2004	Absolute nrs	2	20	75	NA	[48]; MSM population general/ns
Norway	Country	1995–2008	Absolute nrs	1	42	293	24% HIV+; Median: 37; 83% white; 5% CT, 1% GO, 1% HBV; 73% infected by casual partner	[40]; MSM population general/ns
Norway	Country	2000–2007	Absolute nrs	22	54	18	NA	[47]; MSM population general/ns
UK	England and Wales	1995–2000	Absolute nrs	38	112	33	NA	[49]; [50]; MSM population general/ns
UK	England and Wales	1997–2002	Per 100,000 MSM	7	225	*	NA	[51]; MSM population general/ns
UK	England and Wales	1999–2008	Absolute nrs	32	1309	399	35% HIV+; 2% <19 y, 11% 20-24 y, 31% 25-34 y, 35% 35-44 y, 18% 45+ y; 89% white; 33% infected by oral sex	[52]; MSM attending STI clinics
UK	Country	1996–2005	per 100,000 men	0.5	4.9	*	NA	[53]; MSM population general/ns
UK	Country	1998–2003	Absolute nrs	43	1028	382	NA	[7]; MSM population general/ns
UK	Country	1999–2002	Per 100,000 MSM	28	200	*	NA	[54]; MSM attending STI clinics
UK	Country	2000–2009	Absolute nrs	150	1 600	110	NA	[55]; MSM attending STI clinics
UK	Country	2001–2007	Absolute nrs	300	1 500	57	NA	[47]; MSM population general/ns
UK	London	2001–2003	Incidence per 1000 PY	2.8	7.3	*	Mean age 40; 88% white	[16]; HIV+ MSM
Czech Republic	Country	1998–2007	Absolute nrs	10	170	160	NA	[47]; MSM population general/ns
Germany	Country	1999–2005	Absolute nrs	13	59	51	NA	[56]; HIV+ MSM
Germany	Country	2001–2005	per 100,000 men	2.0	6.3	*	NA	[53]; MSM population general/ns

Country	City/region	Period	Measurement	Start	End	Yearly prop. increase	Characteristics	Reference
Germany	Country	2001–2007	Absolute nrs	450	1 500	37	NA	[47]; MSM population general/ns
Belgium	Antwerp	2000–2003	Absolute nrs	2	26	300	60% HIV+	[57]; MSM population general/ns
Spain	Country	2000–2005	per 100,000 population	1.5	3.0	*	NA	[53]; MSM population general/ns
Sweden	Country	2000–2007	Absolute nrs	45	110	18	NA	[47]; MSM population general/ns
Sweden	Country	2000–2007	Absolute nrs.	39	100	20	Median: 39	[41]; MSM population general/ns
Sweden	Stockholm county	2009–2010	Absolute nrs	19	28	24	The majority with domestic transmission	EPIS
Denmark	Country	2001–2007	Absolute nrs	15	75	57	NA	[47]; MSM population general/ns
Denmark	Country	2001–2009	Absolute nrs	10	213	226	Yearly prop incr in HIV+: 239%	[58]; MSM population general/ns
France	Country	2001–2007	Absolute nrs	180	480	24	NA	[47]; MSM population general/ns
Slovenia	Country	2004–2007	Absolute nrs	3	9	75	NA	[47]; MSM population general/ns
Ireland	Country	2005–2008	Absolute nrs	45	99	30	Yearly prop incr in HIV+: 64%	[59]; MSM population general/ns

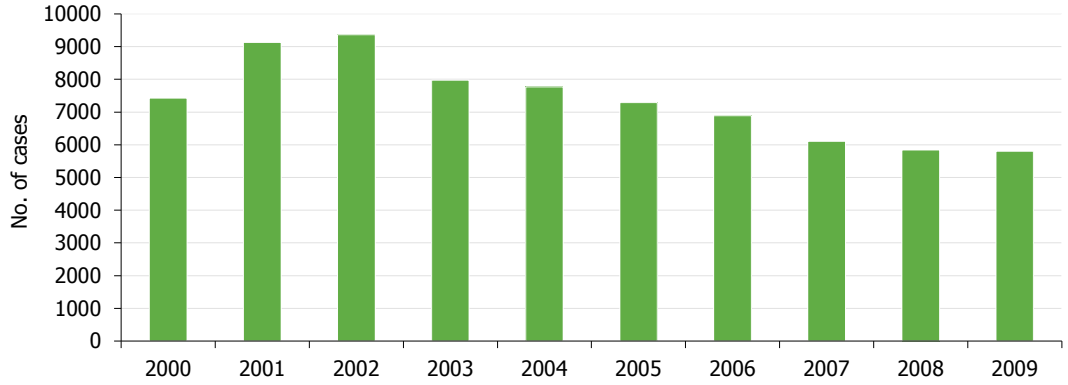
NA: not available; ns: not specified

**Yearly proportional increases were only calculated for absolute numbers*

Trends in surveillance data

In 2000–2009, 15 countries consistently reported data on syphilis cases (Austria, Czech Republic, Denmark, Estonia, Finland, France, Greece, Hungary, Iceland, Ireland, Italy, Portugal, Romania, Sweden, and the UK). The total number of syphilis cases in men increased before 2002 with a peak of 9 369 cases and decreased afterwards to 5 806 cases in 2009 (figure 1.4). It must be noted that the overall decreasing trend is highly affected by a sharp declining trend in Romania [58].

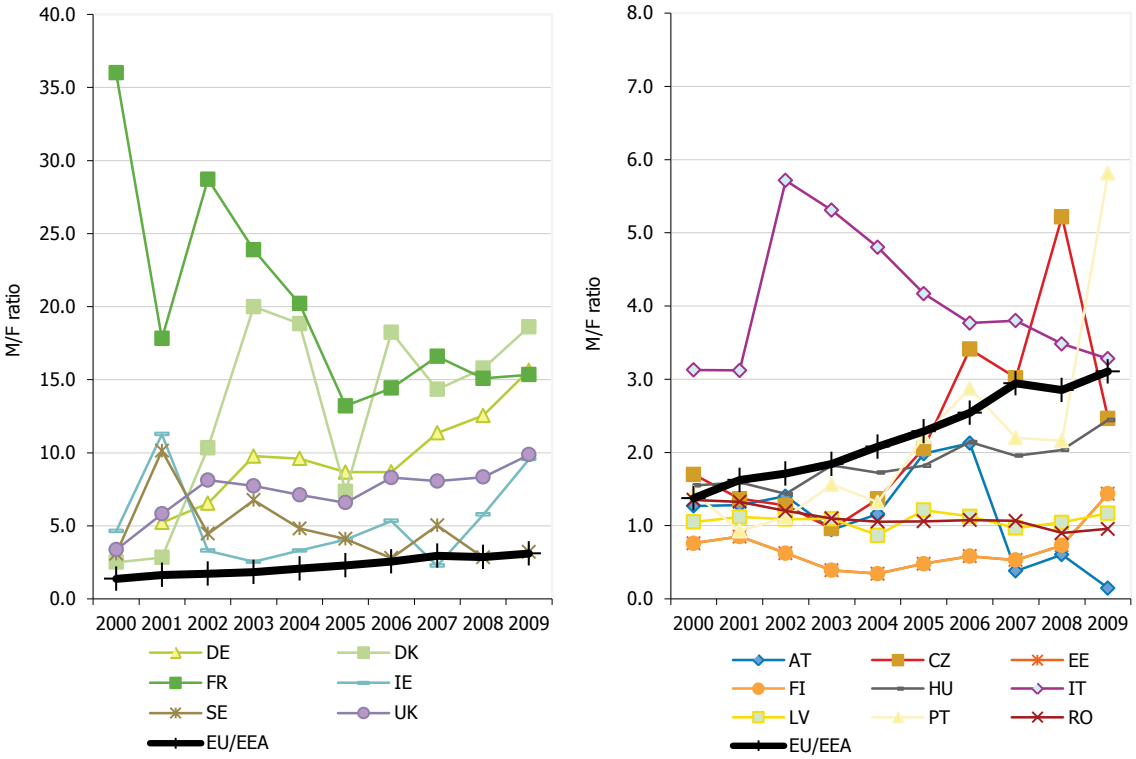
Figure 1.4. Reported number of syphilis cases in men, 2000–2009, 15 EU/EEA countries*



**Austria, Czech Republic, Denmark, Estonia, Finland, France, Greece, Hungary, Iceland, Ireland, Italy, Portugal, Romania, Sweden, and the UK*

The overall male-to-female ratio in the EU/EEA increased from 1.4 in 2000 to 3.1 in 2009, with the sharpest increases in Germany and Denmark (figure 1.5). In East and Central EU countries, the male-to-female ratio was stable over time with similar numbers of syphilis cases in men and women.

Figure 1.5. Male-to-female ratio in reported syphilis cases in selected countries and in the overall EU/EEA, 2000–2009*

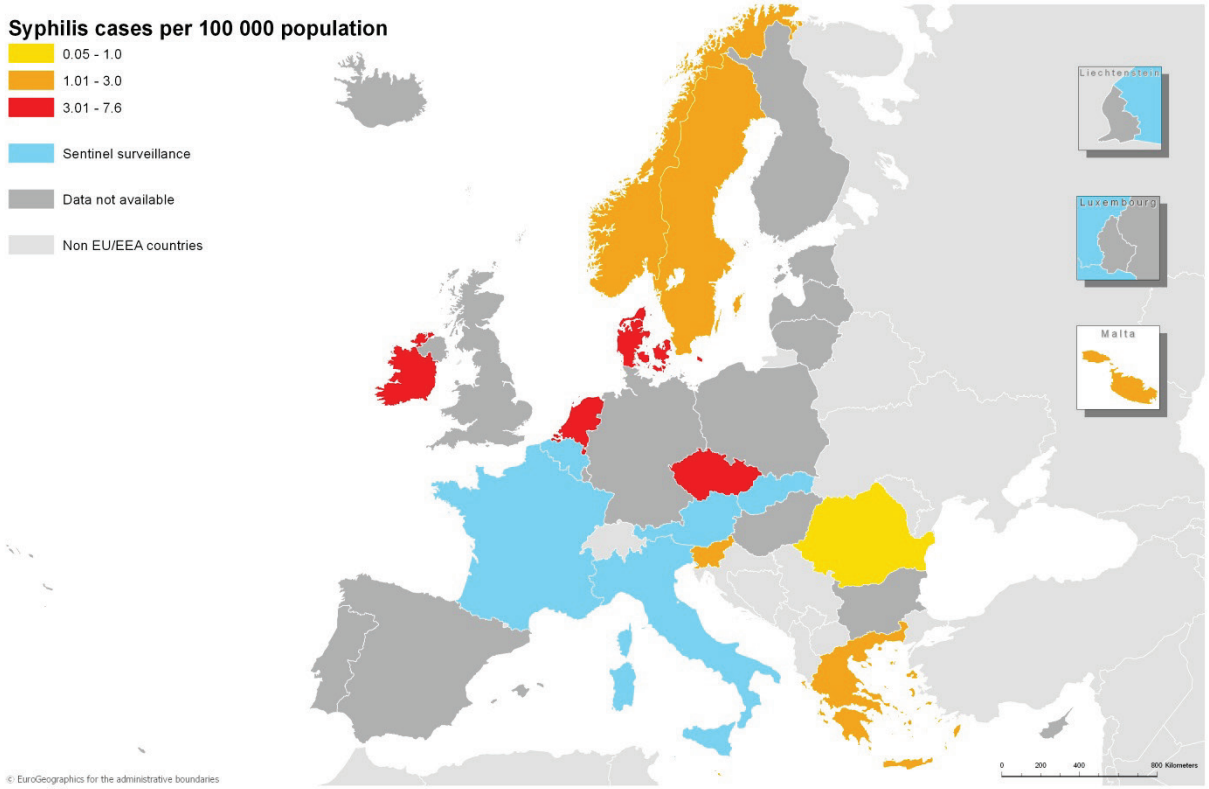


Data available from 15 countries: Austria (AT), Czech Republic (CZ), Denmark (DK), Estonia (EE), Finland (FI), France (FR), , Hungary(HU), Ireland (IE), Italy (IT), Portugal (PT), Romania (RO), Sweden (SE), and the United Kingdom (UK)

In 2009, information on sexual orientation in men was available for nine countries with a comprehensive surveillance system (Czech Republic, Denmark, Greece, Ireland, Malta, Norway, Romania, Slovenia, Sweden), and the Netherlands. The highest syphilis rates among MSM in 2009 were reported by Denmark (7.6 per 100 000 males), followed by the Netherlands (6.5/100 000) (figure 1.6). Other countries reported rates between 0.05 (Romania) and 4.6 (Czech Republic).

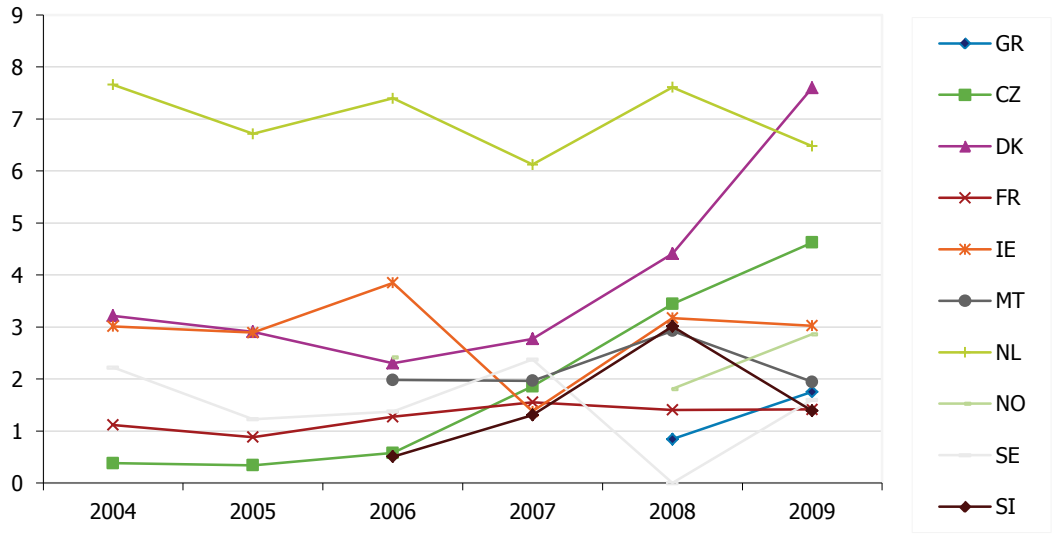
Trends in syphilis cases among MSM were available for ten countries for 2004–2009 (figure 1.7). Denmark and the Czech Republic reported increasing numbers of cases in MSM since 2006.

Figure 1.6. Number of reported syphilis cases in MSM per 100 000 male population in countries with comprehensive surveillance systems, 2009*



**Data available from: Czech Republic, Denmark, Greece, Ireland, Malta, Norway, Romania, Slovenia, Sweden, the Netherlands*

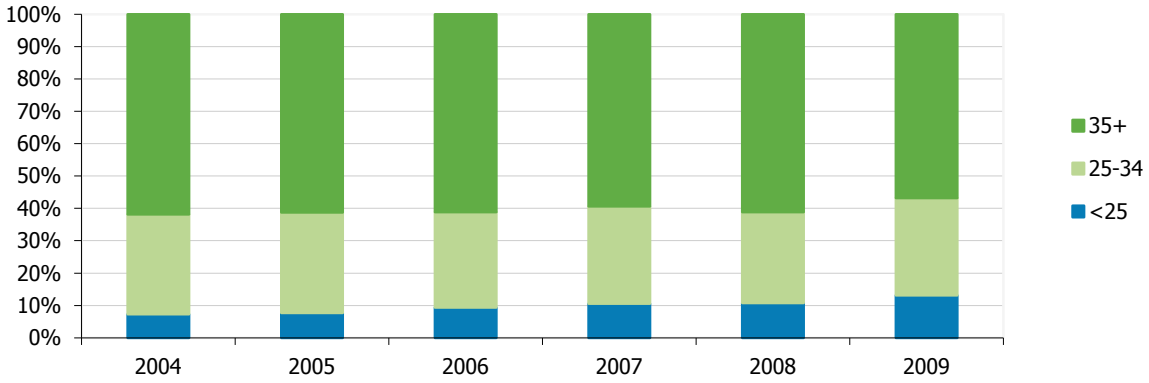
Figure 1.7. Number of reported syphilis cases in MSM per 100 000 male population in countries with comprehensive surveillance systems, 2004–2009*



**Data available from: Czech Republic (CZ), Denmark (DK), Greece (GR), Ireland (IE), Malta (MT), Norway (NO), Romania (RO), Slovenia(SI), Sweden (SE), the Netherlands (NL)*

Figure 1.8 shows the age distribution of reported cases in MSM with syphilis for 2004–2009 (n=8,131). The majority (60%) of MSM were 35 years or older. Overall, only 10% of MSM were younger than 25 years. This proportion increased slightly from 7% in 2004 to 13% in 2009. Thirty percent were aged 25–34 years; these proportions remained stable over time.

Figure 1.8. Age distribution in reported syphilis cases in MSM, 2004–2009

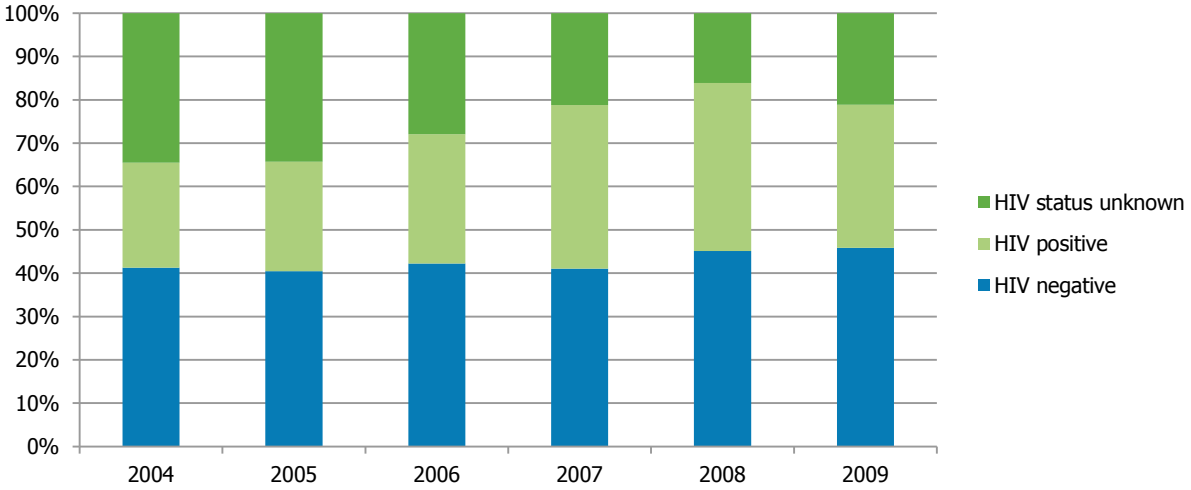


Data available from: Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Sweden and the United Kingdom

Information on 'country of birth' was available for only five countries for 2004–2009 (Czech Republic, Denmark, France, the Netherlands, and Norway). For MSM with known information on 'country of birth', 85% were born in the reporting country and 15% were foreign born. No trend over time could be noted.

Seven countries (Czech Republic, Denmark, France, Ireland, the Netherlands, Norway, and Slovakia) reported information on HIV serostatus in 2004–2009 (n=9,947). As shown in figure 1.9, the proportion of MSM with known HIV serostatus increased from 65% in 2004 to 80% in 2009. The proportion of HIV co-infection among MSM with syphilis increased from 26% in 2004 to 37% in 2009. This increase was probably caused by the decrease in the proportion of MSM with an unknown HIV serostatus (due to either improved reporting or increased testing).

Figure 1.9. HIV status in MSM diagnosed with syphilis, 2004–2009



Data available from: Czech Republic, Denmark, France, Ireland, the Netherlands, Norway, and Slovakia

Conclusion

Since the late 1990s, outbreaks and increasing trends in syphilis among MSM have been reported simultaneously in several EU/EEA countries, mainly concentrated in the major cities. In general, the ongoing syphilis transmission can no longer be characterised as an 'outbreak'. The notification rate seems to have reached new higher endemic levels as compared to those 12–15 years ago and trends in several countries seem to have stabilised. Among syphilis, the proportion of MSM is significant as well as the proportion of HIV co-infection.

1.3 Gonorrhoea

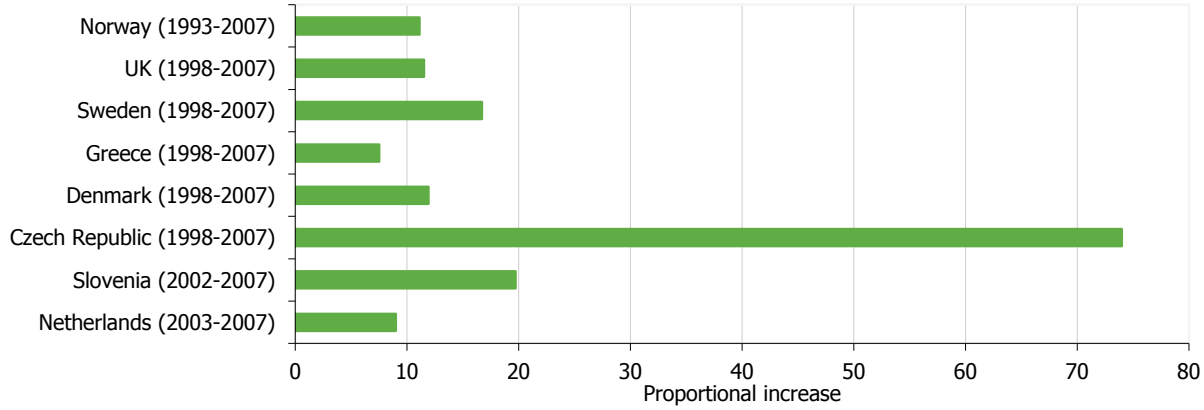
Trends (based on published literature)

During the late 1990s and early 2000s, an increase in the incidence of gonorrhoea among MSM was reported in the UK, Sweden, Norway, the Netherlands, Denmark and Greece, but also in the Czech Republic and Slovenia (figure 1.8, table 1.3). The highest proportional increase in gonorrhoea among MSM was observed in the Czech Republic (1998–2007; +74% per year), which was much higher compared to other countries (UK, Greece, Denmark, Norway and Sweden with less than 25% yearly increase). In England and Wales, the yearly proportional increase varied between 5–10% in studies covering 3–9 year trends. In the earlier period (<2002), proportional increases in the UK seem slightly higher compared to more recent years. Between 1999 and 2002, gonorrhoea rates increased from 612 per 100 000 to 1 242 per 100 000 MSM [54]. An opposite trend was seen in Denmark, where the increase was higher in a later period (1994–1999: +5%; 1998–2007: +13%). In the Netherlands and Sweden, sharp increases were observed in Amsterdam and Stockholm, respectively. The incidence increased from 1.1 (1995) to 6.0 (2002) per 100 person years in the Amsterdam MSM cohort study. In Stockholm, absolute numbers increased from 15 in 1990 to 102 in 2004. During 2010 another increase in reported gonorrhoea cases was observed in Sweden, mainly among MSM in the Stockholm county and Skåne[5] . In the first six months in 2009 there were 78 cases reported and in the same period in 2010 there were 113 (+45%). In France, increasing gonorrhoea rates were observed mostly among MSM in Paris, but also in Toulouse [60], [61].

In France, the UK and Denmark, 20–30% of gonorrhoea cases were seen in HIV positive MSM. A Swedish study [62] found that the proportion of gonorrhoea cases diagnosed with previously unknown HIV infections had increased significantly over time. An increase of gonorrhoea had been seen in both HIV positive and HIV negative MSM, with reported annual incidences of gonorrhoea six times greater in HIV positive than among HIV negative men [63]. In the Netherlands, 4.2% of the MSM with gonorrhoea were newly diagnosed with HIV [39].

The median age of MSM with gonorrhoea in most countries was around 30–32 years and the majority were white (86–88%). There were indications that the frequency of oral sex had increased over time, as reported in the Netherlands and Germany [46, 64], and that the majority of MSM were infected by a casual partner (Denmark, Norway, and France) [60] [65] [66].

Figure 1.10. Yearly proportional increases in gonorrhoea cases in MSM*



**Based on table 1.3 and with one bar per country reflecting the longest time period*

[5] *Source: ECDC, Epidemic Intelligence Information System (EPIS)*

Table 1.3. Yearly proportional increases of gonorrhoea among MSM in Europe, in chronological order by country

Country	City/region	Period	Measurement	Start	End	Yearly prop. increase	Characteristics	Reference
UK	Coventry	1991–1994	Absolute nrs	8	13	16	8% CT	[67]; MSM population general/ns
UK	England and Wales	1992–1997	Absolute nrs	1 158	1 805	9	NA	[68]; MSM attending STI clinics
UK	England and Wales	1994–2000	Absolute nrs	1 200	2 693	18	NA	[69]; MSM attending STI clinics
UK	England and Wales	1997–2002	per 100 000 MSM	661	1 210	*	NA	[51]; MSM attending STI clinics
UK	England and Wales	2001–2006	Absolute nrs	515	603	3	31% HIV+; Median age 31; 88% white; #P: median 2; Sex abroad: 14%; 21% concurrent STI	[70]; MSM attending STI clinics
UK	Country	1998–2007	Absolute nrs	1 799	3 868	12	NA	[47]; MSM population general/ns
UK	Country	1999–2002	Per 100 000 MSM	612	1 242	*	NA	[54]; MSM attending STI clinics
UK	Country	2000–2009	Absolute nrs	3 000	4 500	5	NA	[55]; MSM attending STI clinics
Netherlands	Amsterdam	1991–2001	Absolute nrs	130	250	7	NA	[42]; MSM attending STI clinics
Netherlands	Amsterdam	1992–2006	per 1 000 MSM	10	25.5	*	NA	[43]; MSM attending STI clinics
Netherlands	Amsterdam	1994–1999	Positivity rate	4.0	6.8	*	OR: 2,3 (SYF yes vs. no); 0,7 (36-40 vs. <31 yrs.) 0,37 (>40 vs. < 31 yrs.); 1.6 Western vs. non Western	[44]; MSM attending STI clinics
Netherlands	Amsterdam	1995–2002	Incidence per 100 PY	1.1	6.0	*	UAI-CP: RR: 1,8 ; UOI: RR 2,4	[46]; MSM population general/ns
Netherlands	Country	2003–2007	Absolute nrs	690	1 000	9	NA	[47]; MSM attending STI clinics
Sweden	Stockholm	1990–2004	Absolute nrs	15	102	39	Prop increase in HIV+: 433% (3 to 16 cases)	[62]; MSM attending STI clinics
Sweden	Country	1997–1998	Absolute nrs	52	88	35	Median age at start 30, end 32; 65% domestic in 1997, 77% domestic in 1998	[62]; MSM population general/ns
Sweden	Country	1998–2007	Absolute nrs	73	195	17	NA	[47]; MSM population general/ns
Sweden	Country	2001–2008	Absolute nrs	180	240	4	Median age: 32	[71]; MSM population general/ns
Sweden	Stockholm county and Skåne	2009–2010	Absolute nrs	78	113	23	The majority with domestic transmission	EPIS
Norway	Country	1993–2004	Absolute nrs	30	105	21	NA	[48]; MSM population general/ns
Norway	Country	1993–2007	Absolute nrs	30	80	11	Median age: 31; 86% white; 69% infected by casual partner	[65]; MSM population general/ns

Country	City/region	Period	Measurement	Start	End	Yearly prop. increase	Characteristics	Reference
Norway	Country	1998–2007	Absolute nrs	42	77	8	NA	[47]; MSM population general/ns
Denmark	Country	1994–1999	Absolute nrs	46	60	5	22% HIV+; Mean: 31; 88% white; 58% infected by casual partner	[66]; MSM population general/ns
Denmark	Country	1998–2007	Absolute nrs	58	127	12	NA	[47]; MSM population general/ns
Greece	Country	1998–2007	Absolute nrs	20	35	8	NA	[47]; MSM population general/ns
France	Toulouse	1999–2000	Absolute nrs	8	25	107	20% HIV+; UOI-CP: 84%	[61]; MSM attending STI clinics
Czech Republic	Country	1998–2007	Absolute nrs	25	210	74	NA	[47]; MSM population general/ns
Slovenia	Country	2002–2007	Absolute nrs	13	24	20	NA	[47]; MSM population general/ns

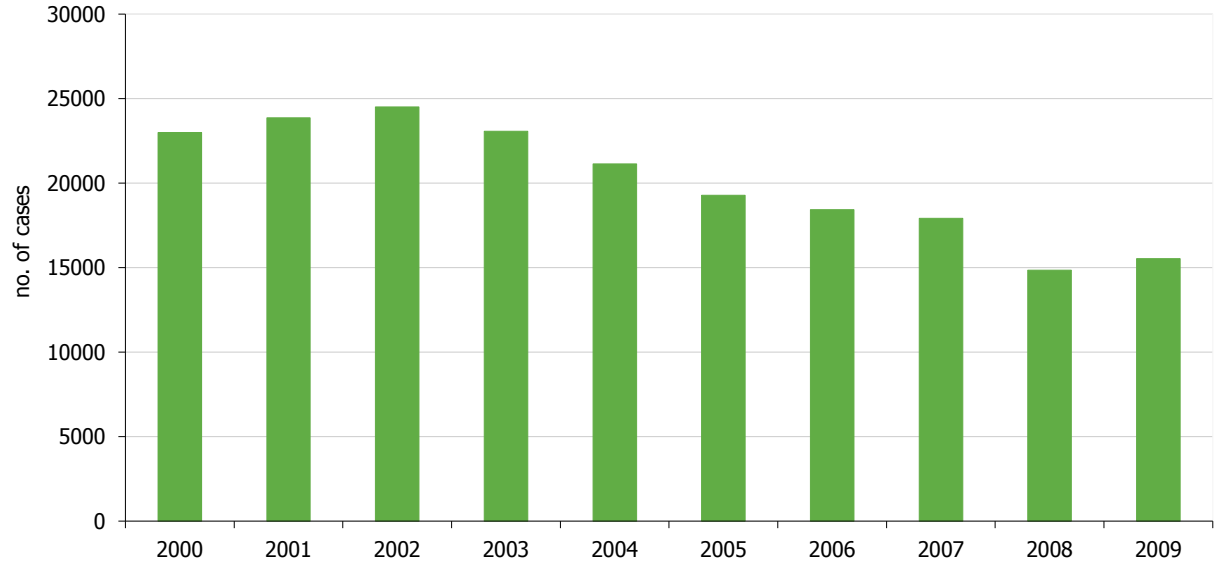
NA: not available; ns: not specified

[*]Yearly proportional increases were only calculated for absolute numbers

Trends in surveillance data

In 2000–2009, 15 countries (Austria, Czech Republic, Denmark, Estonia, Finland, France, Greece, Hungary, Iceland, Ireland, Latvia, Portugal, Romania, Sweden, and the UK) reported gonorrhoea consistently in comprehensive and sentinel surveillance systems. The overall trend of gonorrhoea in men seemed to decrease over time.

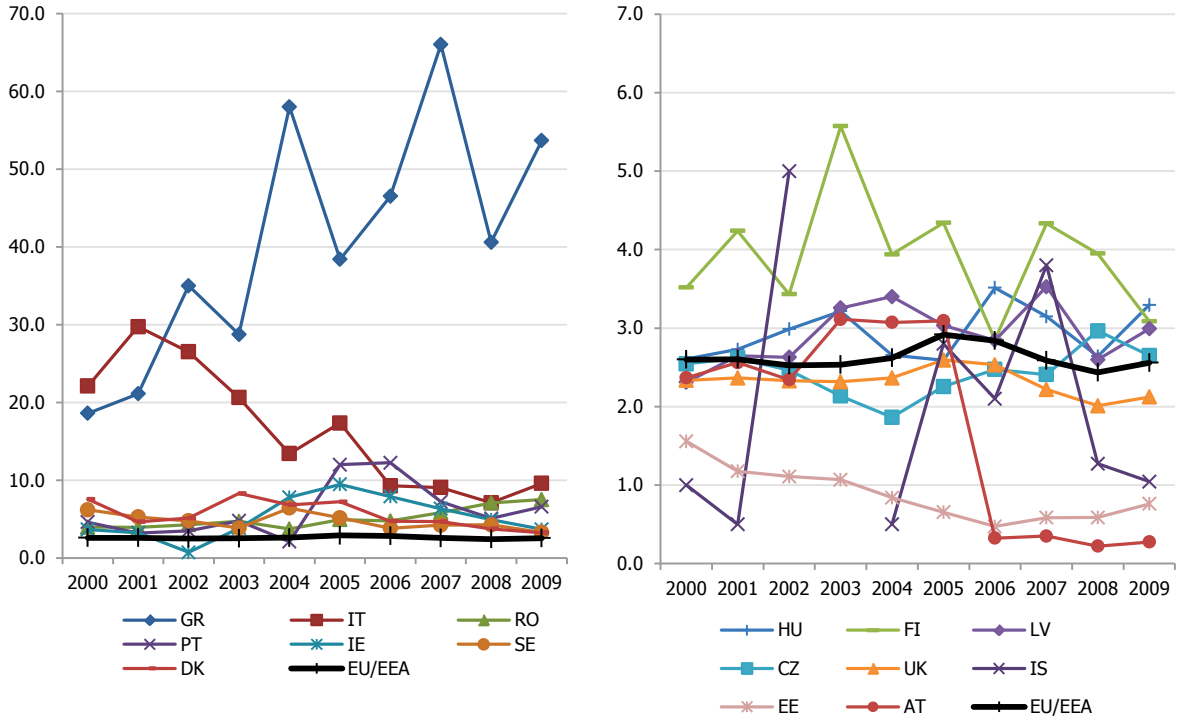
Figure 1.11. Reported number of gonorrhoea cases in men, 2000–2009



Data available from: Austria, Czech Republic, Denmark, Estonia, Finland, France, Greece, Hungary, Iceland, Ireland, Latvia, Portugal, Romania, Sweden, and the UK

The male-to-female ratio was calculated for all countries providing information on gender consistently since 2000 (n=16, figure 1.12). The ratio was highest and increasing in Greece and a significant reduction was noted in Italy. Overall, the trend in EU/EEA countries remained more or less stable at around 2.5.

Figure 1.12. Male-to-female ratio in reported gonorrhoea cases by country in EU/EEA, 2000–2009 *

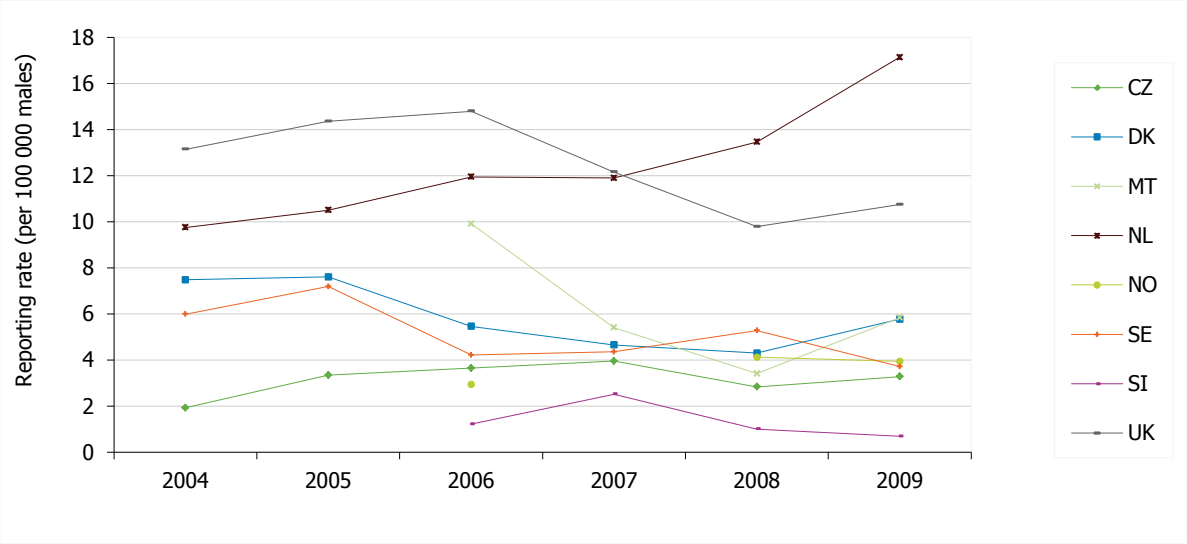


Data available from 15 countries: Austria (AT), Czech Republic (CZ), Denmark (DK), Estonia (EE), Finland (FI), Greece (GR), Hungary(HU), Ireland (IE), Iceland (IS), Italy (IT), Latvia (LV), Portugal (PT), Romania (RO), Sweden (SE), and the United Kingdom (UK)

In 2009, information on sexual orientation in men was available for eight countries with a comprehensive surveillance system (Czech Republic, Denmark, Greece, Malta, Norway, Slovenia, Sweden, UK), and for the Netherlands, representing 28% of the total number of male cases (~ 5 500 cases). The highest gonorrhoea rates among MSM in 2009 were reported by the Netherlands (17 per 100 000 males), followed by the UK (11 per 100 000). Rates ranging between six and three per 100 000 males were reported by Malta, Denmark Norway, Sweden, and Czech Republic; rates less than one per 100 000 males were reported by Greece, Slovenia, France and Austria.

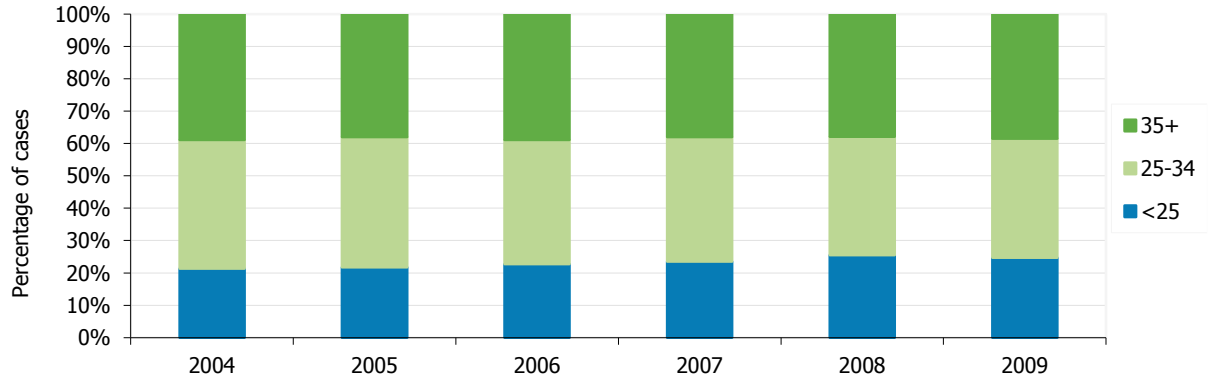
Trends in gonorrhoea among MSM could be presented for eight countries reporting consistently for 2004–2009, of which 88% of the cases in MSM were reported by the UK. The number of gonorrhoea cases was also high for the Netherlands and six countries reported less than 500 cases in MSM per year. The sharpest increase in MSM per 100 000 males was observed in the Netherlands, while a decreasing trend was observed in other countries (see figure 1.13).

Figure 1.13. Number of reported gonorrhoea cases in MSM per 100 000 males by country for countries with comprehensive surveillance system 2004–2009*



**Data available from: Czech Republic (CZ), Denmark (DK), Malta (MT), Norway (NO), Slovenia (SI), Sweden (SE), the United Kingdom (UK), and the Netherlands (NL)*

Figure 1.14. Age distribution of MSM diagnosed with gonorrhoea, 2004–2009*

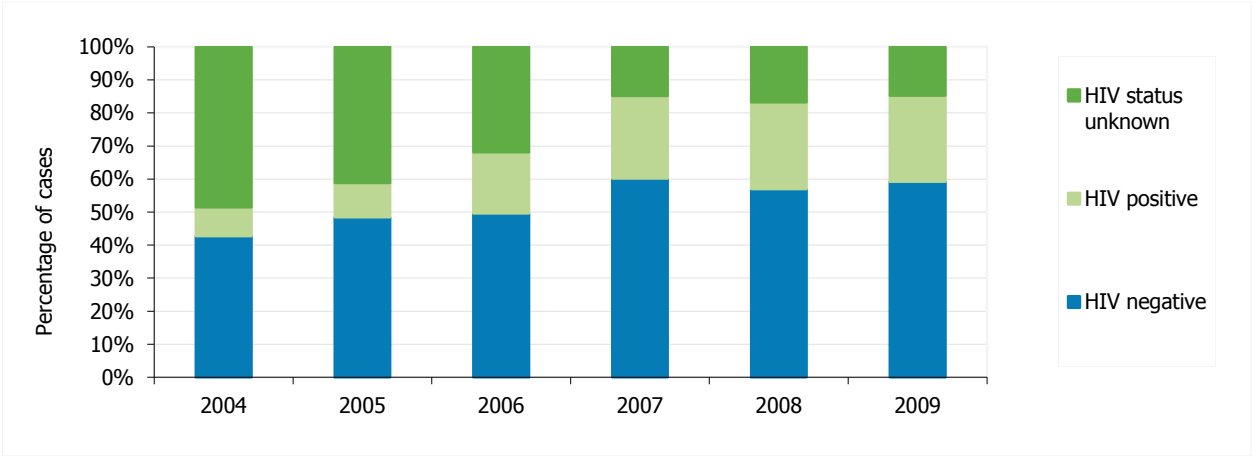


**Data available from: Czech Republic, Denmark, Malta, Norway, Sweden, Slovenia, UK, and the Netherlands*

Figure 1.14 presents the age distribution of all gonorrhoea cases in MSM for 2004–2009 (n=32 809) reported by countries with consistent data. Overall, 23% of the MSM were younger than 25 years, 38% were 25–34 years and 38% were 35 years or older. No changing trend in age groups over time was observed.

Information on country of birth was available for six countries (Czech Republic, Denmark, France, the Netherlands, Norway, and Slovenia). The majority (90%) of MSM, for whom the information was available, were born in the reporting country.

Figure 1.15. HIV serostatus of MSM diagnosed with gonorrhoea, 2004–2009 (in five countries that have reported consistently over time: Czech Republic, Denmark, France, the Netherlands, and Norway, n=9006)



Five countries (Czech Republic, Denmark, France, the Netherlands, and Norway) reported information on HIV serostatus among MSM with gonorrhoea for 2004–2009. The proportion of MSM with a known HIV serostatus increased over time, from 50% in 2004 to 85% in 2009 (figure 1.15). The proportion of HIV positive MSM among gonorrhoea increased from 9% in 2004 to 26% in 2009.

Conclusion

Since the late 1990s, countries did not report any outbreak of gonorrhoea among MSM and trends seem to have decreased in a number of countries. Among gonorrhoea, the proportion of MSM is significant as well as the proportion of HIV co-infection, although lower than for syphilis.

1.4 Lymphogranuloma venereum

Reported outbreaks

The first LGV outbreak was identified among HIV positive MSM in Rotterdam in 2004 [72]. An international surveillance alert was launched in October 2004 [73]. After the alert, sentinel and enhanced surveillance systems were implemented in a few countries to monitor LGV. Since then, LGV outbreaks among MSM have been documented in 11 countries (the Netherlands, France, UK, Belgium, Spain, Denmark, Germany, Austria, Italy, Portugal, and Sweden), with the largest outbreaks in the UK, France and the Netherlands [Table 1.4]. Additional cases were reported by Sweden, Portugal, Denmark, Italy and Austria.

The Netherlands reported the first 13 cases of LGV in 2003. Nationwide, 398 LGV cases were reported between 2004 and 2009 [39]. In the UK, 24 cases were reported by January 2005, and by April 2007, 492 cases were confirmed. The largest number of cases (756) was reported between 2004 and 2008. The majority of the cases were diagnosed in genitourinary medicine clinics in London (72%) and Brighton (14%). Diagnoses of LGV increased substantially in the UK in the winter of 2009–2010. Diagnoses were 91% higher from November 2009 to January 2010 (88 cases[6]) than in the previous three months (46 cases), and 115% higher than seen in the same period in 2008/09 (41 cases). The rise in LGV at the end of 2009 has been sustained in 2010; diagnoses were three and a half times higher from January to June 2010 (250 cases) than for the same period in 2009 (71 cases). The cases were geographically dispersed although the epidemic is focused on London and, to a lesser extent, Brighton and Manchester.

From March 2004 to December 2005, 244 LGV strains were diagnosed in France, first in Paris. Up to 2008, 725 LGV cases have been reported in France (no recent data could be found). The number of LGV cases in other countries (Belgium, Spain, Denmark, Germany, Austria and Italy) is much lower. Sporadic cases were reported in Sweden and Portugal. In Portugal, only three cases were reported in 2007–2008, and another two in 2009–2010. Furthermore, three cases in women have been reported in Portugal (result from survey among Member States).

As the syphilis outbreak, the LGV outbreaks affected predominantly white MSM. The level of co-infections with HIV is much higher (between 35% and 100%) compared to syphilis and gonorrhoea, likely reflecting MSM core groups with high sexual risks or due to serosorting (only having UAI with partners of the same HIV status) between HIV positive men.

MSM with LGV are also older than MSM with syphilis; the median age at diagnosis was around or above 40 years in most countries. High levels of gonorrhoea (5–27%) and syphilis (5–21%) co-infections are common among LGV cases. Rates of HCV co-infections varied between 10–15%, while rates of HBV co-infections were much lower: 1-11%. Other chlamydia infections and genital herpes among these LGV cases were less often reported. MSM reported means of 6–11 sexual partners in the previous six months. Levels of unprotected anal intercourse (UAI) with casual partners varied between 41–88%. Group sex, shared sex toys and fisting were reported.

Most cases were seen in HIV positive white MSM presenting with proctitis. The majority of the cases in the UK were thought to have been acquired in the UK, but sexual contacts in the Netherlands, Spain and other Western European countries, were also reported [74]. Similar for LGV cases in the Netherlands, sexual contacts with men in Belgium, France, UK and Germany were reported [72]. For the 2009/2010 cases as reported in EPIS for the UK, there was no change in the characteristics of MSM with LGV.

[6] *Source: ECDC, Epidemic Intelligence Information System (EPIS)*

Table 1.4. Lymphogranuloma venereum outbreaks among MSM in Europe, in chronological order by country

Country	City/region	Period	Cases (n)	HIV+	Other STI	Age (yrs.)	Ethnicity	Other population characteristics	Reference
Netherlands	Rotterdam	2003	14	93%	62% other STI (50% HCV)	Mean: 39	NA	UAI 100%; HCV infected: 100% fisting; recreational drugs: 100%	[75]; MSM attending STI clinics
Netherlands	Rotterdam, Amsterdam	May–Oct 2003	9	89%	11% SYF, 22% GO, 11% HCV, 11% HBV	Median: 39	100% white, 67% nation. Born	# partners < 6 mnts: >10: 62%; UAI 100%	[76]; MSM population general/ns
Netherlands	Amsterdam	2002–2003	87	60%	21% ulcerative STI (SYF, herpes), 26% GO	Mean: 37,6	NA	UAI with casual partners: 41%; 12% hard drug use	[77]; MSM attending STI clinics
Netherlands	Amsterdam	Aug 2004–Apr 2006	32	78%	19% SYF, 13% HCV, 65% HBV	Mean: 40	78% west-European	UAI 98%; total # anonymous partners: 16 (median)	[78]; MSM attending STI clinics
Netherlands	Country	2002–2005	179	67%	21% SYF, 24% GO, 10% HCV	Mean: 40	86% nation. born	# partners < 6 mnts: 11 (mean); UAI 46%; UOI: 75%, 55% group sex; 29% shared toys	[79]; MSM population general/ns
Netherlands	Country	Jan 2003–Sept 2004	92	77%	NA	NA	100% white	Majority visit casual sex gatherings	[73]; MSM attending STI clinics
Netherlands	Country	2004–2007	224	55%	12% SYF, 25% GO, 1% HBV	Mean: 41	NA	NA	[80]; MSM population general/ns
Netherlands	Country	2008–2009	184	71%	8% SYF, 27% GO	Median: 41	75% nation. born	NA	[39]; MSM attending STI clinics
France	Paris (92%)	Apr 2002–Dec 2005	244	85%	NA	Mean: 39	NA	NA	[80]; MSM population general/ns
France	Country	2002–2008	725	90%	NA	Mean: 37	NA	NA	[80]; MSM population general/ns
UK	London	Dec 2003–Jul 2008	13	46%	NA	Median: 36	77% white	# partners < 3 mnts: 4 (median)	[81]; MSM attending STI clinics
UK	Country	Oct 2004–Feb 2006	327	76%	NA	Median: 38	95% white	UAI with casual partners: 88%; # casual partners < 3 mnts: 3 (median)	[74]; MSM population general/ns
UK	Country	Oct 2004–Apr 2007	492	74%	5% SYF, 18% GO, 14% HCV	Median: 40	95% white	UAI 74%; # partners < 3 mnts: 20% >10 partners	[82]; MSM population general/ns
UK	Country	2004–2008	756	74%	6% SYF, 18% GO, 15% HCV, 0,1% HBV	Mean: 38	NA	NA	[80]; MSM population general/ns
UK	Country	Jan 2005	24	89%	21% HCV	NA	NA	33% infected abroad	[83]; MSM population general/ns
UK	Country	Nov 2009–Jan 2010	250	Most cases HIV+	NA	NA	NA	NA	EPIS
Belgium	Antwerp	Jan 2004–Jul 2005	9	92%	NA	NA	100% white	NA	[84]; MSM population general/ns
Belgium	Country	2004–2008	42	95%	14% SYF, 12% GO	Mean: 38	NA	NA	[80]; MSM population general/ns
Spain	Catalonia	2007–June 2008	17	95%	NA	NA	NA	NA	[80]; MSM population general/ns

Country	City/region	Period	Cases (n)	HIV+	Other STI	Age (yrs.)	Ethnicity	Other population characteristics	Reference
Spain	Barcelona	Sept 2007–April 2008	21	90%	NA	NA	100% white, 52% nation. Born	NA	[85]; MSM attending STI clinics
Denmark	Country	2006–2008	42	35%	7% SYF, 5% GO	Mean: 38	NA	NA	[80]; MSM population general/ns
Denmark	Majority Copenhagen	Jan–Dec 2010	25	7 HIV 18 unknow	NA	Mean: 39	NA	NA	EPIS
Germany	Country	May 2004–Nov 2005	61	NA	NA	Mean: 39	NA	NA	[86]; MSM population general/ns
Austria	Vienna	Nov 2005–Nov 2006	15	85%	20% SYF, 27% GO 13% HBV	Mean: 41	100% white	# partners <6 mnts: 5.7 (mean); UAI: 100%	[87]; MSM attending STI clinics
Italy	Milan, Florence	Mar 2006–Mar 2007	13	62%	23% SYF, 15% gen warts	NA	NA	# partners <6 mnts: 7 (mean)	[88]; Case report; MSM attending STI clinics
Portugal	Country	Jan 2007–March 2008	3	100%	40% SYF	Mean: 42	NA	# partners: 100% > 4 partners in < 6 mnts	[80]; MSM population general/ns
Sweden	Stockholm	2004	2	50%	NA	Mean: 39	NA	Most likely infected abroad	[89]; MSM attending STI clinics
Sweden	Country	2007–Aug 2008	9	100%	NA	NA	NA	NA	[80]; MSM population general/ns

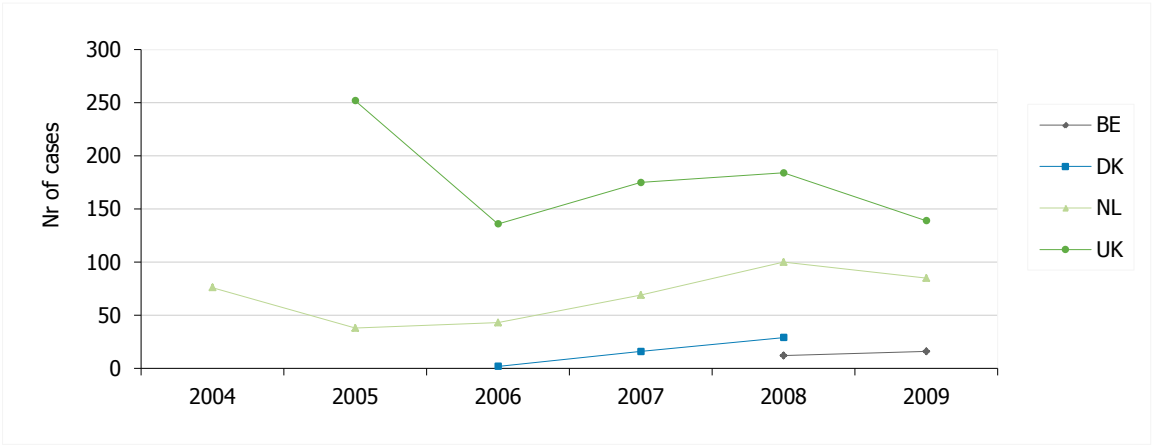
NA: not available; ns: not specified; SYF: syphilis GO: gonorrhoea

Trends in surveillance data

Of the 16 countries which reported LGV between 2004 and 2009, only four reported more than zero cases in MSM (Belgium, Denmark, the Netherlands, and the UK, figure 1.16). Most cases were from the UK (between 136 and 252 cases reported each year), followed by the Netherlands (between 43 and 100 cases each year).

Most MSM with LGV were older than 35 years (69%). Fifty six percent of the LGV cases were HIV positive, 13% were HIV negative, and in 31% of the cases the HIV serostatus was unknown (based on data from the Netherlands, Belgium and Denmark).

Figure 1.16. Number of lymphogranuloma venereum cases in MSM, 2004–2009



Data available from: Belgium (BE), Denmark (DK), the Netherlands (NL) and the United Kingdom (UK)

Conclusion

Since the early 2000s, outbreaks of LGV among MSM have been reported simultaneously in a number of EU/EEA countries, mainly concentrated in the major cities. Among LGV, the proportion of MSM is significant (almost 100%) as well as the highest proportion of HIV co-infection as compared to syphilis and gonorrhoea. International travel and multiple sexual partners were often reported. In the notification to ECDC, there seems to be a substantial underreporting for a number of countries that reported previous and on-going LGV outbreaks.

1.5. Hepatitis C virus infection

Reported outbreaks

Since the early 2000s, reports of outbreaks of sexually acquired HCV among HIV positive MSM were published by the UK, France and the Netherlands [Table 1.5]. The first outbreak in 1999 was described in London. Since then, active case finding has identified many HCV cases among MSM of which the majority were reported in London, Brighton, Paris, Amsterdam, and Rotterdam. More than 389 MSM had been diagnosed with HCV in London and the Southeast region of the UK by June 2006 [90]. Incidence estimates from these data suggested a significant 20% year-on-year increase in incidence in HIV positive MSM over the study period. Only six cases were reported in MSM with negative or unknown HIV status; although less frequent routine HCV testing in MSM with unknown HIV serostatus may have resulted in lower case detection.

In the Netherlands, a sharp increase in notifications of acute HCV among MSM was observed between 2005 (n=7) and 2008 (n=35). In 2009, the number of acute HCV cases in the Netherlands has stabilised [39]. In Paris, 29 cases of acute HCV among HIV positive MSM were identified between 2001 and 2004. More recently, 94 cases of acute HCV infection (defined as a positive HCV test within a year of a negative test) were identified among HIV positive MSM in clinical settings in France [91].

Cases of HCV have been predominantly diagnosed among HIV positive MSM, but active case finding among HIV positive MSM likely contributed to these high numbers. MSM in France were 40 years on average and had had HIV for ten years. Of the 32 patients with clinical data, 20 (62%) had an STI diagnosed at the same time as HCV, of which 14 had syphilis. Of 24 HCV-cases described in the Netherlands in 2007–2008, 93% were HIV positive MSM. A range of proportions of HIV co-infections in HCV infected MSM could not be presented, since most studies describe proportions of HCV in HIV positive MSM.

Levels of sexual risk behaviour were high in the Netherlands as well as in the UK. Turner et al. reported that 55% of this group reported more than 30 sexual partners in the previous year [92]. In the Netherlands, 95% reported more than 80 lifetime partners.

Table 1.5. Hepatitis C outbreaks among MSM in Europe, in chronological order by country

Country	City/region	Period	Cases (n)	HIV-infected	Other STI	Age (yrs.)	Ethnicity	Other characteristics	Reference
UK	London	Jul 1999–Apr 2005	11	100%	NA	Median: 34	91% white	55% > 30 partners < 1 yr.; UAI: 73%; IDU: 9%	[92]; HIV+ MSM attending ST clinics
UK	London, Chelsea, Westminster, Brighton, Sussex	1999–2005	111	100%	Lifetime STI (available for 50% of cases); SYF:42%;GO:73%	Median: 36	NA	Estimated median duration of HIV infection (yrs.): 5.3; Risk behaviour available for 50% cases: Median partners< 12 mnts: 30; 83% private parties; Clubs/saunas: 75%; Internet dating & recreational drug use common	[93]; HIV+ MSM attending ST clinics
UK	London (90%), Brighton (10%)	Jan 2002–Jun 2006	389	100%	NA	NA	NA	Increasing incidence from 6.9/1000 in 2002 to 11.6/1000 in 2006	[90]; HIV+ MSM attending STI clinics
France	Paris	Mar 2001–Oct 2004	29	NA	12% (SYF, GO, genital herpes)	Mean: 40	NA	Median time between HIV and HCV infection: 6,5%; 86% cART; 100% recreational drugs	[94]; HIV+ MSM
Netherlands	Amsterdam	May 2007–May 2008	24	93%	NA	NA	NA	UAI with casual partners: 90%; 95% > 80 lifetime partners; IDU: 20%	[95]; MSM attending STI clinics

NA: not available SYF: syphilis; GO: gonorrhoea

Conclusions

Three EU/EEA countries reported outbreaks of HCV among MSM since the early 2000s. High levels of risky sexual behaviour and active case finding may explain that the majority of HCV diagnoses were found among HIV positive MSM.

1.6 HIV infection

Trends (based on literature)

In Western Europe, around half of the yearly new HIV diagnoses occurred in MSM. In most European countries, increases in the number of HIV diagnoses or in rates by 100 000 men were reported. However, many of them also reported increases in the uptake of HIV testing among this group. The overall annual increase in HIV infection among MSM in the EU/EEA between 2003 and 2007 was 8%. The largest increases were observed in Slovenia (1999–2008: from 7.1 to 46.8/100 000 men) and Belgium (1999–2008:+23% per year). Other countries reported yearly proportional increases (in absolute numbers) lower than 10% (figure 1.17). Some countries reported an increase of HIV diagnosis at national, regional or sub-regional level, including in large cities (Table 1.6). In the UK, an increasing proportion of individuals newly diagnosed with HIV who have been recently infected were observed, supporting the conclusion that the rate of newly diagnosed HIV infections among MSM is at least stable or has increased in recent years [96]. An increase in HIV incidence was also reported among MSM in Amsterdam [42], London [97], and Rome [30].

The majority of HIV infected MSM in Europe were between 25 and 44 years at the time of diagnosis. In London and Amsterdam, the rise in HIV infections was observed among older men (over 35 years old) and not in younger men. Some studies reported proportional increases in men under 25, but this could also reflect smaller numbers in this group. Most papers describing increasing HIV trends did not include information on STI co-infections or ethnicity.

Figure 1.17. Yearly proportional increases in HIV cases in MSM by country; based on table 1–6 (one bar per country including the longest time frame and number of cases)

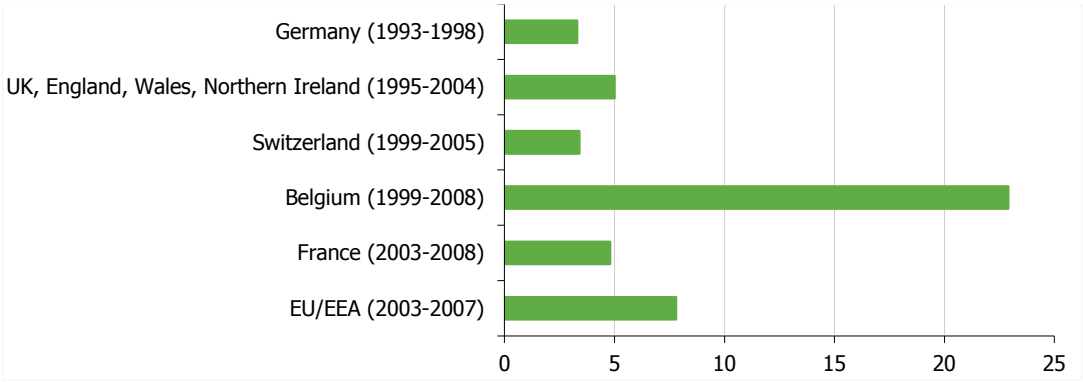


Table 1.6. Yearly proportional increases of HIV among MSM in Europe, in chronological order by country

Country	City/region	Period	Measurement	Start	End	Yearly prop. increase	Characteristics	Reference
Netherlands	Amsterdam	1991–2001	Incidence per 100 PY	3.4	4.4	*	NA	[42]; MSM attending STI clinics
Netherlands	Amsterdam	1991/98–1999/2005	Incidence per 100 PY	1.8	3.8	*	NA	[98]; MSM attending STI clinics
Netherlands	Amsterdam	1991/98–1999/2005	Incidence per 100 PY	1.1	1.2	*	NA	[98]; MSM population general/ns
Netherlands	Country	1998–2005	Per 100,000 men	6.0	10.3	*	NA	[53]; MSM population general/ns
UK	West Midlands	1991–2002	Absolute nrs	75	100	3	67% aged 25-44y	[99]; MSM population general/ns
UK	Brighton, Sussex	1996–2005	Absolute nrs	57	97	7	Median: 36	[96]; MSM population general/ns
UK	England, Wales, Northern Ireland	1995–2004	Absolute nrs	1,500	2,250	5	NA	[100]; MSM population general/ns

Country	City/region	Period	Measurement	Start	End	Yearly prop. increase	Characteristics	Reference
UK	England and Wales	1997–2002	Per 100,000 MSM	478	601	*	NA	[51]; MSM attending STI clinics
UK	England, Wales, Northern Ireland	1997–2002	Absolute nrs	1,328	1,668	4	Yearly prop incr black MSM: 4%, white MSM: 4%	[101]; MSM population general/ns
UK	England, Wales, Northern Ireland	1997–2003	Absolute nrs	9,238	15,652	10	Median: 39	[102]; MSM attending STI clinics
UK	England, Wales, Northern Ireland	1997–2004	Absolute nrs	1382	2124	7	NA	[97]; MSM population general/ns
UK	England	1997–2004	Absolute nrs	8,956	16,536	11	NA	[103]; MSM population general/ns
UK	Country	1999–2002	Per 100,000 MSM	410	500	*	NA	[54]; MSM attending STI clinics
UK	Country	2000–2005	Per 100,000 men	7.9	12.3	*	NA	[53]; MSM population general/ns
Germany	Country	1993–1998	Absolute nrs	650	780	3	NA	[104]; MSM population general/ns
Germany	Country	1996–2005	Per 100,000 men	3.8	7.0	*	Median: 32	[53]; MSM population general/ns
Germany	Country	2001–2004	Absolute nrs	190	280	12	NA	[105]; MSM population general/ns
Norway	Country	1993–2004	Absolute nrs	45	70	5	NA	[48]; MSM population general/ns
Norway	Oslo	2000–2003	Absolute nrs	3	31	233	Median: 37 61% white	[106]; MSM population general/ns
France	Country	2003–2005	Per 100,000 men	6.5	8.1	*	NA	[53]; MSM population general/ns
France	Country	2003–2008	Absolute nrs	1,858	2,393	5	Mean: 37	[107]; MSM population general/ns
Slovenia	Country	1996–2001	Positivity rate	2.4	3.4	*	NA	[108]; MSM population general/ns
Slovenia	Country	1999–2008	Per 1,000,000 men	7.1	46.8	*	NA	[109]; MSM population general/ns
Italy	Rome	1995–2003	Incidence per 100 PY	1.7	11.9	*	NA	[30]; MSM attending STI clinics
Spain	Madrid	1995–2000	Incidence per 100 PY	1.1	2.2	*	NA	[110]; MSM attending STI clinics
Spain	Barcelona	1995–2000	Positivity rate	14.2	17.9	*	NA	[111]; MSM population general/ns
Spain	Catalonia	1995–2004	Positivity rate	14	24	*	NA	[112]; MSM population general/ns
Spain	Valencia	1997–2003	Incidence per 100 PY	0.45	3.3	*	NA	[113]; MSM population general/ns

Country	City/region	Period	Measurement	Start	End	Yearly prop. increase	Characteristics	Reference
Spain	Country	2000–2005	Per 100,000 men	7.9	9.0	*	NA	[53]; MSM population general/ns
Belgium	Country	1999–2008	Absolute nrs	101	332	23	67% SYF, 12% GO, 12% CT, 13% LGV, 6% HCV, 1% HBV; Median: 37y; Yearly prop incr: 20-29y, 35% 30-39y,18% 40-49y,25%;72% white	[114]; MSM population general/ns
Switzerland	Geneva, Bern, Basel, Lausanne, Zurich	2000–2006	Per 1000 tested	14.2	16.9	*	OR 1.7 (35-44 vs. 25-34); OR 1.7 (Europe vs. Swiss), OR 3.3 (US vs. Swiss), OR 6.0 (Asia vs. Swiss); condom use: OR 2.1 (always vs. sometimes)	[115]; MSM population general/ns
Switzerland	Country	1999–2005	Absolute nrs	113	140	3	46% GO 40% SYF	[116]; MSM population general/ns
Croatia	Zagreb	2001–2006	Absolute nrs	54	86	10	In 2004-2006, compared with 2001-2003 MSM were younger at entry to care 32 vs. 36 years	[117]; MSM population general/ns
EU/EFTA	Multiple	2003–2007	Absolute nrs	5,900	8,200	8	NA	[79]; MSM population general/ns

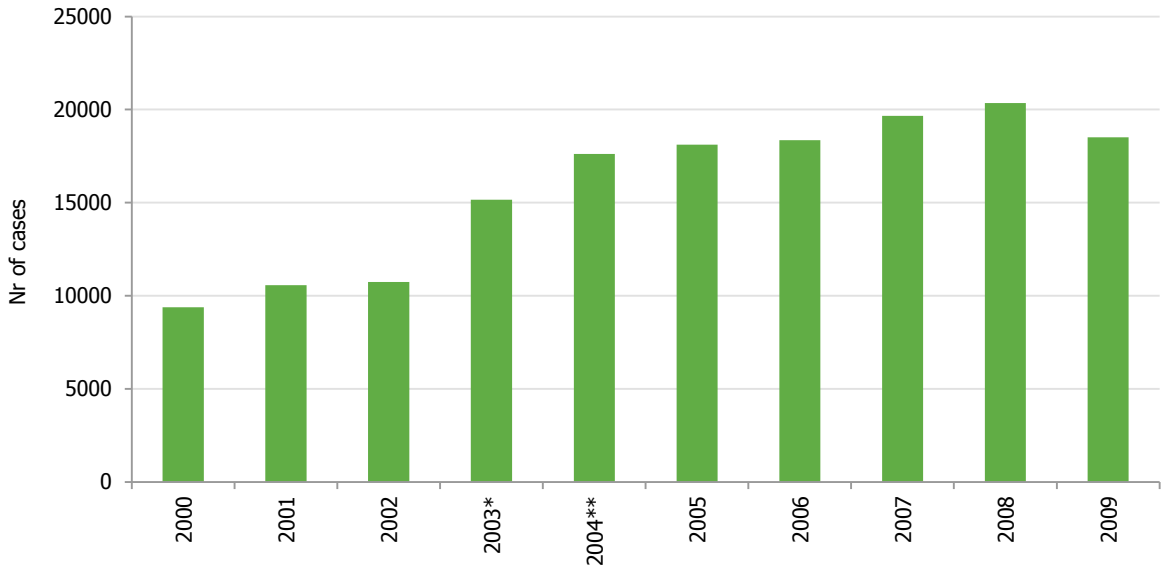
NA: not available, NS: not specified, SYF: syphilis, GO: gonorrhoea, PY: person-years

Trends in surveillance data

HIV cases have been reported by all EU/EEA countries except for Liechtenstein. As shown in figure 1.18, the number of newly diagnosed HIV cases among men increased in EU/EEA. From 2003/2004 this increase was partly due to four more countries contributing surveillance data. After 2007, the number of HIV infections in the EU/EEA stabilised to around 20 000 per year. The decline in the most recent years is due to the delay in reporting in a number of countries.

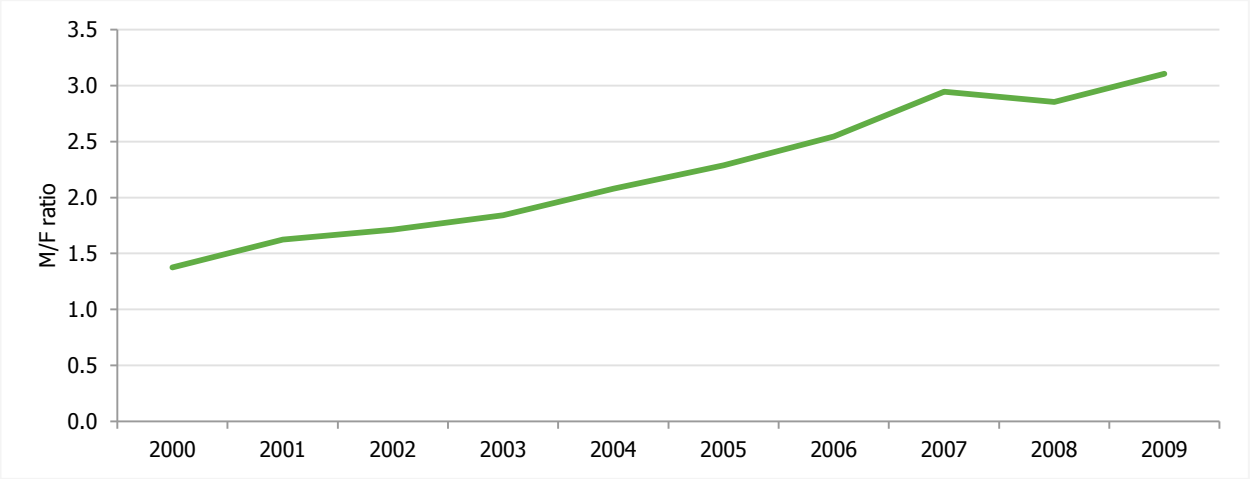
The number of HIV cases among MSM in EU/EEA increased from 7 296 in 2004 to 9 023 in 2009 (+24%). The increases observed in Spain and Italy reflect the improved coverage of surveillance systems, from nine regions reporting in 2004 to 15 regions in 2009 in Spain, and from ten regions reporting in 2004 to 15 regions reporting in 2009 in Italy. However, the increase observed at the regional level does not imply an increase at the national level.

Figure 1.18. Number of HIV infections in men, 2000–2009 (28 countries)



*Spain and France started reporting, ** Malta and Italy started reporting

Figure 1.19. Male-to-female ratio in reported HIV cases in EU/EEA, 2000-2009*

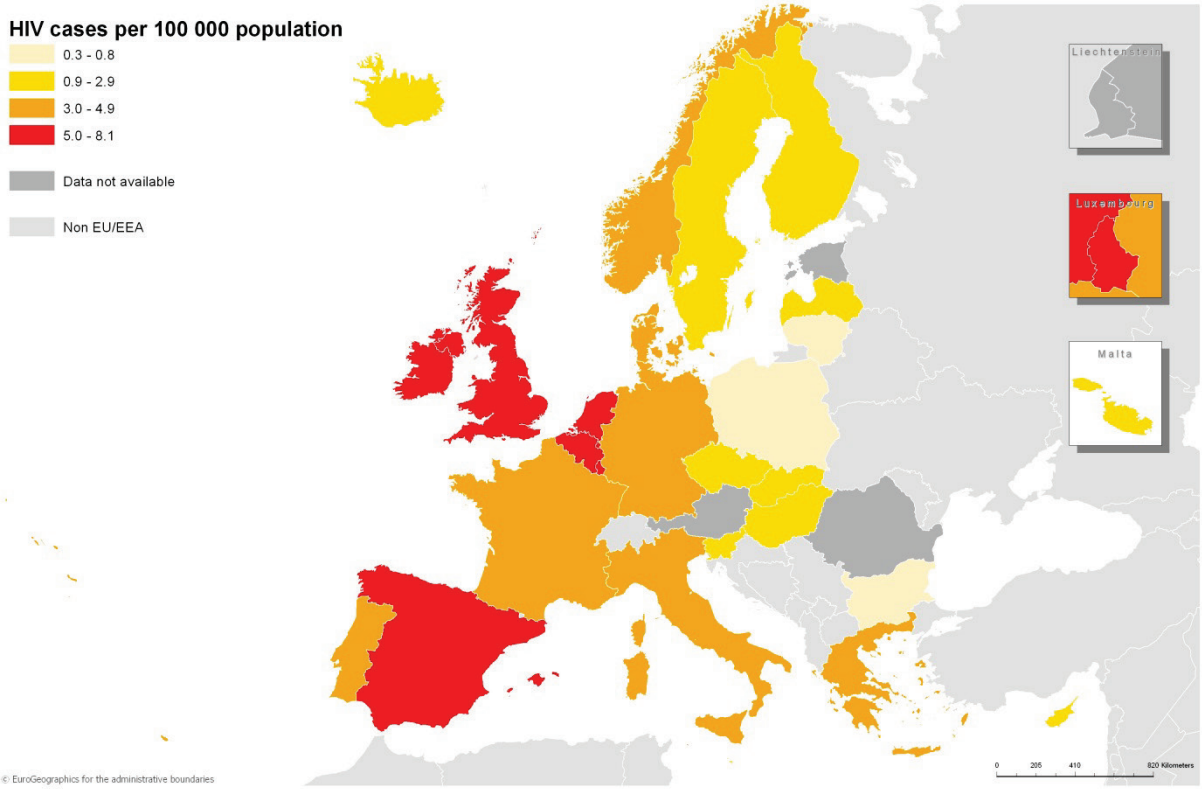


**Data available from 15 countries with consistent reporting: Austria, Czech Republic, Germany, Denmark, Estonia, Finland, France, Hungary, Ireland, Italy, Latvia, Portugal, Romania, Sweden and the United Kingdom)*

Trends in male-to-female ratio have been increasing in the EU/EEA from 1.4 in 2000 to 3.1 in 2009 (figure 1.19). Sharp increases in male-to-female ratio for the period 2004–2009 were reported by Portugal (1.3 to 5.8), Ireland (3.3 to 9.6), Germany (9.6 to 15.6) and Czech Republic (1.4 to 2.5). The ratio remained stable at high levels in Denmark (18.8 in 2004 and 18.6 in 2009) and decreased in France (20.2 in 2004; 15.3 in 2009). In 2009, highest ratios were reported by Denmark (18.6), Germany (15.6), France (15.3), UK (9.9) and Ireland (9.6) and ratios below the EU/EEA average by Czech Republic (2.5), Hungary (2.4), Estonia (1.4), Finland (1.4), Latvia (1.2), Romania (1.0) and Austria (0.1).

Reporting rates in MSM per 100 000 males increased from 3.5 to 4.1 between 2004 and 2009 in the EU/EEA (29 countries). In 2009, the number of new HIV diagnoses per 100 000 males were highest in the UK (8.1), followed by Luxembourg (7.7), Spain (6.8), and the Netherlands (6.5) (figure 1.20).

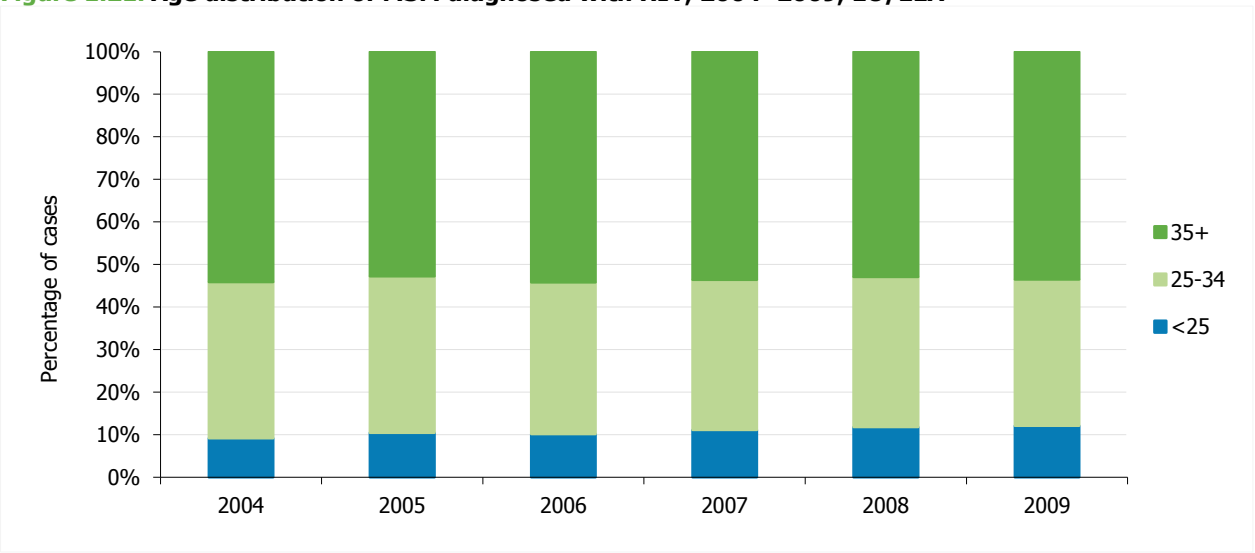
Figure 1.20. Number of reported HIV diagnoses in MSM per 100 000 male population in 2009



As shown in figure 1.21, most MSM were older than 35 at the time of diagnosis and this proportion increased slightly over time. The proportion of young MSM (<25 years) increased to some extent since 2004; from 9% up to 12% in 2009.

Most MSM (>70%) were national born. Among cases for whom the country of birth was reported, the proportion of foreign born MSM remained relatively stable over time.

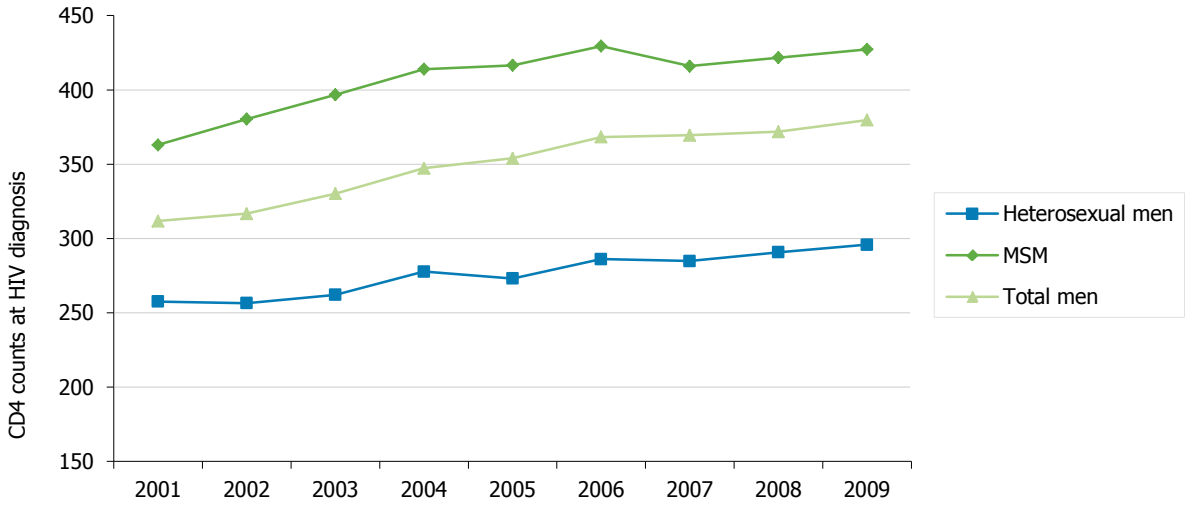
Figure 1.21. Age distribution of MSM diagnosed with HIV, 2004–2009, EU/EEA



CD4 cell count

Twenty-two EU/EEA countries reported on CD4 cell counts at time of diagnosis. The average CD4 cell counts were higher in MSM as compared to heterosexual men. In all subgroups, CD4 cell counts increased over time suggesting earlier diagnoses of HIV. However, this could also reflect a trend to report only advanced cases in earlier years. The average CD4 cell count increased in MSM at the time of diagnosis from 363 cells in 2001 to 427 cells in 2009 (figure 1.22) as compared to 258 and 296, respectively, for heterosexual men. It appeared that CD4 cell counts were lower in older MSM indicating that elder MSM presented later with HIV. MSM born in the EU/EEA showed the highest CD4 cell counts at the time of diagnosis and this has increased over time. There was no clear trend in CD4 cell counts at diagnosis among migrant MSM.

Figure 1.22. Average CD4 cell counts at time of HIV diagnosis in MSM and heterosexual men, 2001-2009 EU/EEA, (n=22 countries)



Conclusion

Over the last ten years, MSM have been the most vulnerable group to HIV infection in the EU/EEA. Men who have sex with men in Western EU/EEA countries have constantly shown the highest rates of HIV infection, and MSM in Eastern EU/EEA countries the lowest, suggesting different characteristics of the HIV epidemic or different levels of underreporting. The sharpest increase in case reporting of HIV among MSM however, has been in countries in central EU/EEA. Increased testing and improved awareness among MSM can explain the overall higher CD4 cell count at the time of diagnosis in MSM compared to heterosexual men in the EU/EEA.

1.7 Discussion

Thirteen EU/EEA countries reported outbreaks of syphilis, LGV and HCV among MSM. Syphilis has been reported as the first STI that increased sharply after the introduction of cART, followed by LGV and HCV. Since 2003, the sharp increases in trends of syphilis and gonorrhoea seem to have levelled off and remained relatively stable at a new high endemic level.

The majority of syphilis cases were diagnosed and reported among MSM between 25 and 55 years, 50% were HIV positive, and reported high numbers of sexual partners. Although cases of LGV share similar characteristics, HIV co-infection in LGV was higher as compared to syphilis (around 75%). The smaller outbreaks of HCV involved mainly HIV positive MSM. The high proportion of co-infections among MSM seems to suggest that – at least a sub-group of – HIV positive MSM have continued to engage in high risk sexual behaviour, e.g. unprotected anal intercourse, high partner change rate, and have shown a limited awareness of risks of acquiring HCV and LGV. High rates of co-infection in HIV positive MSM may also be the result of increased testing and this could also partially explain the increasing average CD4 cell counts at diagnosis among MSM. HIV reporting rates in MSM increased between 2004 and 2009 in the EU/EEA from 3.5 to 4.1 per 100 000 men. The stabilising STI trends and increasing CD4 cell counts at HIV diagnosis may suggest that prevention interventions, health promotion, improved access and quality, may have become effective.

One of the limitations of this overview is the heterogeneity in the studies and in the STI/HIV health care services and surveillance systems. Proportional increases in STI and HIV obtained from the literature have been greatly influenced by the number of cases, types of studies, sampling techniques and MSM subgroups studied. There were a limited number of community-based studies with probability sampling among MSM; the majority of the papers described STI clinic attendees, which is a selected group of MSM with higher risk behaviour. Furthermore, due to language barriers and the inclusion of the European Surveillance System surveillance data, national surveillance reports could not be accessed. Variations in surveillance systems and inconsistencies in national data collection have limited the comparisons across countries and the ability to interpret EU-wide trends on STI and HIV.

Factors related to outbreaks and increases of STI among MSM

Besides the above methodological limitations, the interpretation of trends in MSM is challenged due to a lack of knowledge on the link between STI and risk behaviour. Although increases in risk behaviour might explain rising trends to a great extent, the social context also needs to be considered. STI transmission is influenced by multiple biological, behavioural, sexual networking, socio-economic and cultural factors that are interconnected and operate at both individual and population levels [118, 119].

Sexual risk behaviour

Risk factors such as multiple sexual partners, high rate of partner change, unprotected anal intercourse and oral sex have been key factors in the accelerating STI and HIV transmission rates among MSM in Europe. Behavioural surveillance data from MSM indicate an increase in the frequency of UAI with casual partners or with partners of HIV discordance or unknown serostatus [120]. Elford et al.[121] found that the proportion of men reporting high sexual risk with a casual partner increased between 1998 and 2003, as did the percentage of HIV positive men reporting UAI. Van Sighem et al. [122] showed in a modeling exercise that increases in HIV and STI in Switzerland could be explained by increasing risk behaviour rather than by increasing testing only.

Increased trends of STI have often been attributed to the availability of ART since 1996 which led to a better quality of life, return to sexual activity, and reduction of morbidity and mortality, which has subsequently resulted in a increasing survival of HIV positive MSM. Treatment optimism may have triggered high risk behaviour, but at population level it is unlikely that this could fully explain the increase in risk behaviour. A systematic review in 2004 indicated that HIV positive MSM taking cART were no more likely to engage in unprotected sex than those not taking cART. Nor were HIV positive MSM with an undetectable viral load more likely to engage in unsafe sex than people with a detectable viral load [123]. The Amsterdam Cohort Study among MSM showed that the probability of UAI before cART was available decreased from 68% one year before HIV diagnosis to 38% one year after diagnosis. With cART available, UAI decreased from 72% to 53%, a significant smaller decrease in the later period [124].

Over time, the internet has become an important risk environment [93] [125]. Social media and internet dating have contributed to the expansion of social and sexual networking and an increasing proportion of MSM have reported the acquisition of new partners through the internet. Men who have sex with men who have found partners through the internet were more likely to engage in high risk behaviour and were more often diagnosed with an STI. The internet facilitates serosorting among MSM as a risk reduction strategy. In London, HIV positive MSM were more likely to meet other HIV positive men online for unprotected sex, rather than offline. [126].

Besides the use of the internet, increasing international low cost travel between European cities may have fuelled the spread of STI through expanding sexual networks. Sex with men from other European countries was reported in several outbreaks, as in the Rotterdam LGV outbreak [72]. Molecular typing studies of HCV have revealed a large international transmission network in Europe, mostly in the larger cities (Paris, Amsterdam, London) but also in the USA and Australia. Genetic distance analyses supported the theory that most clusters had occurred over the last ten years and coincided with the introduction of cART [127]. Recreational drug use has often been reported as another factor contributing to high risk sexual behaviour. High levels of recreational drug use, often taken by intra-nasal and anal routes, have been reported (40%) and could have played a role in STI transmission. The study of Fox et al in 2009 reported that 71% of MSM with a primary HIV infection (PHI) had used recreational drugs including cocaine, ecstasy, ketamine and crystal meth [128].

Oral sex was suggested to be the most likely route of transmission in a number of syphilis outbreaks among MSM in the UK [129].

A range of psychosocial factors may also contribute to engaging in high risk behaviour, such as UAI, with serodiscordant or unknown partners, despite high levels of awareness. Previous negative HIV tests and the adoption of risk reduction strategies could reduce the perceived threat of HIV infection. A qualitative study [120] described that condom use was perceived as a barrier to intimacy, trust and spontaneity. The potential consequences of the loss of these were traded off against the consequences of an HIV infection. Depression and low self-esteem, often combined with alcohol or drugs, led to further risk taking and loss of control over risk reduction strategies [130]. This indicates the need to have a variety of intervention strategies to build confidence and control over safe sex practices [120].

Increasing HIV trends

The increasing trend in HIV among MSM can be due to a variety of factors such as increased transmission (incident infections); improved (earlier) case detection and reporting; increased testing; concurrent STIs; a wider availability of testing facilities and improved access to testing facilities [131]. These factors, however, are difficult to differentiate and reports on newly diagnosed HIV infections often do not distinguish between recently acquired versus longstanding infections.

Many countries in Europe have reported increasing trends of HIV among MSM but only a few have reported an increasing HIV incidence, e.g. recently acquired HIV infection. There are a few cohort studies in Europe that report on HIV incidence in MSM; others include direct measures such as Recent Infections testing Algorithm (RITA) implemented in national HIV surveillance systems (e.g. France, UK, Switzerland and Germany) or indirect measurements such as CD4 counts (late diagnosis < 350 CD4 cells). It should be noted that these indicators may also reflect an increase in HIV testing, e.g. when opt-out HIV testing is implemented, such as in the UK and the Netherlands. In terms of surveillance, more accurate data on newly acquired infections and HIV testing practices are needed to further explain the observed differences across countries.

Information on HIV status in enhanced STI surveillance seems to be increasing over time. Many studies have shown that the HIV prevalence among MSM diagnosed with an STI was substantially higher. Improved survival combined with serosorting among HIV positive MSM were factors mentioned that could account for the high prevalence of HIV among MSM with STI. The average HIV prevalence among MSM with syphilis in 11 countries was 42% (range 14%–59%). As the interaction is mutual it was unclear in some cases whether current STI outbreaks, like syphilis, have facilitated HIV acquisition or whether syphilis has been mostly acquired by MSM who were already HIV positive [8].

Conceptual framework to understand factors related to outbreaks and increases of STI among MSM (adapted from [125])

Individual level

Sexual risk behaviour

- Increases in UAI
- Increases in partner exchange rates
- Increased serosorting

Socio-demographic factors

- Increases in HIV+ MSM population
- Increased survival of MSM using cART
- Lower socio-economic status
- Lower education
- Age

Determinants of sexual risk behaviour

- Recreational drug use
- Mental health (depression, low self-esteem)
- Type of sexual partner (casual partner, steady partner)
- Non-sexual needs (trust, company, affection, emotional connection, being in love)

Infectious agents

- Drug resistance
- Epidemiologic synergy (period of infectiousness, biological interactions between STI including HIV)

Socio-cultural environment

- Internet
- Public sex environments (cruising areas, saunas, darkrooms)
- Sex tourism
- Commercial sex

Changing cultural environment that facilitates high-risk behaviour

- Discrimination and homophobia
- cART optimism
- Barebacking (intentional unprotected anal sex)

Biomedical environment

- Lack of partner notification
- Differences in (quality of) sexual health care
- Access to treatment

Biological interactions between STI, HIV and HCV

HIV seropositivity was most strongly associated with HCV seroconversion as described among MSM attending STI clinics in Italy (Relative Hazard: 5.5) [132] and the Netherlands (OR: 42.8) [95]. Several European studies have shown that HCV prevalence was much higher among HIV positive than negative MSM [132], [133]. The acquisition of HCV often goes without clinical signs or symptoms but if combined with HIV infection it may have an adverse impact on co-morbidity [134]. Also, the mechanism through which HIV infection may facilitate sexual acquisition of HCV is not fully understood. Possibly, the HIV-induced immunosuppression may increase the biological susceptibility of the host. Immune suppression could result in a decreased control of HCV replication. It has been demonstrated that HCV and HIV co-infection has resulted in higher concentrations of HCV in blood and semen compared to HIV negative people [135]. Outbreaks of acute HCV infection among HIV positive MSM have been described since 2000. However, a phylogenetic study, including data from 12 cohorts, suggested that the spread of HCV already started in the 1990s and that the expansion accelerated after 2002 [136]. In 1990, the HCV incidence ranged from 0.9 to 2.2/1 000 person-years and increased substantially to 23.4 and 51.1/1 000 in 2007. A molecular study in the UK also provided strong evidence of increased HCV transmission since the mid-1990s, coinciding with the introduction of cART [93]. The role of sexual transmission of HCV could be explained by sexual risk behaviour resulting in disrupted mucosa through rough sexual practices and when actual transmission is blood-borne. Reviews on HCV concluded that besides rough sex techniques (e.g. fisting) and HIV, the use of recreational drugs and gamma-hydroxybutyrate (GHB) were also independent risk factors for HCV transmission. Furthermore, it is possible that co-infections with STI contributed directly to HCV transmission through percutaneous or mucosal lesions or the presence of infected inflammatory cells.

Geographical location

In Eastern or Central EU/EEA countries, data on mode of transmission are often less available compared to Western Europe. This may partly be attributed to social conditions and stigmatisation of homosexuality in those countries, [137] and official data may underestimate the magnitude of both the MSM population and HIV and STI prevalence. This may create barriers to HIV prevention and treatment resulting in high levels of undiagnosed HIV and STI cases [138].

Country responses and knowledge gaps

The national responses to observed outbreaks and increasing trends were multiple, including strengthening epidemiological surveillance systems (enhanced surveillance); implementing outbreak management teams; raising awareness among health care professionals (STI clinics and other physicians) and among MSM (internet, leaflets and magazines); improved STI prevention and care services; enhanced partner notification services; distribution of free condoms; introduction of free-of-charge testing; vaccination against HBV and HPV; and investigation of sexual networks. At the European level, collaboration and exchange of information across countries were established as these events have appeared simultaneously. Rapid communication on outbreaks, increasing trends and unexpected observations were published in the outbreak alert system The Epidemic Intelligence Information System for Sexually Transmitted Infections (EPIS-STI) and in the journal Eurosurveillance [139, 140].

Several studies suggested that MSM with high risk behaviour (e.g. multiple partners, UAI, rough sex techniques, recreational drugs) should be targeted in enhanced surveillance, screening and behavioural and/or clinical interventions. In a number of countries, targets were indeed set to prioritise (subgroups of) MSM and tailored prevention and testing services were set up in response to the HCV, LGV and syphilis outbreaks. For example, in 2004/2005 the Netherlands and France started active HCV case finding in HIV positive MSM [95, 141]. Furthermore, enhanced surveillance systems were set up to monitor LGV, syphilis and HCV and often included information on HIV serostatus in the UK [142].

As rates of HIV transmission among MSM in Europe has remained high, it is crucial to improve combination HIV prevention intervention strategies. Although HIV testing seems to have improved in MSM as compared to other key populations, the majority of HIV infections are still diagnosed at a late stage and could possibly have resulted in new transmissions during the early phase of HIV infection. Prevention intervention strategies have mainly focused on the promotion of safe sex and of risk reduction behaviour among uninfected individuals. More recently, the focus has changed to testing and earlier diagnosis in health care settings in combination with behaviour change counselling. More focus would be needed on 'positive prevention' to target HIV positive MSM in both STI and HIV prevention interventions. Targeting of primary HIV infection might be highly cost-effective in populations where it accounts for a large proportion of transmission events, [128] and would require more frequent testing among high risk groups. Partner notification may also contribute to the identification of primary HIV infections and is seen as essential in investigating outbreaks, and in particular in the investigation of sexual networks [129]. Early detection and treatment (viral load reduction on individual and community levels) also contributes to reducing primary infection.

Changes in the social environment (e.g. frequent travelling, internet) have to be taken into account in prevention intervention strategies. The internet can offer an opportunity for health promotion services. How social media can be used most effectively to promote sexual health and to prevent STI and HIV transmission needs to be explored. More research is needed on MSM sexual networks and their potential impact on transmission within and between countries. The high prevalence of STI among HIV positive MSM suggests that prevention intervention for STI and HIV, including sexual health and health promotion, could be addressed in medical treatment services for HIV as an opportunity to reach HIV positive MSM.

2. STI and HIV prevention interventions for MSM

2.1 Material and methods

Rates of STI and HIV among MSM are relatively high in the EU/EEA. Factors related to outbreaks of STI and HIV include socio-cultural environment, sexual behaviour, attitude, motivation and disease agents. The impact of prevention intervention needs to be studied against the outcomes in terms of reduced transmission of infection, increased testing, reduced risk behaviour or reduced morbidity. This chapter reviews selected behavioural interventions that have been developed in the past fifteen years, adapting to changing behavioural, technological and epidemiological trends.

The literature review captured different characteristics of prevention intervention studies, including an overview of timing, geographical location, target group characteristics and interventions characteristics, such as scope of intervention, activity, mode of delivery, setting and the use of base theory. This review produced a compilation of different prevention interventions targeted at MSM. It includes interventions carried out within the framework of national programmatic responses as well as interventions following outbreaks or other events.

The following research questions were developed:

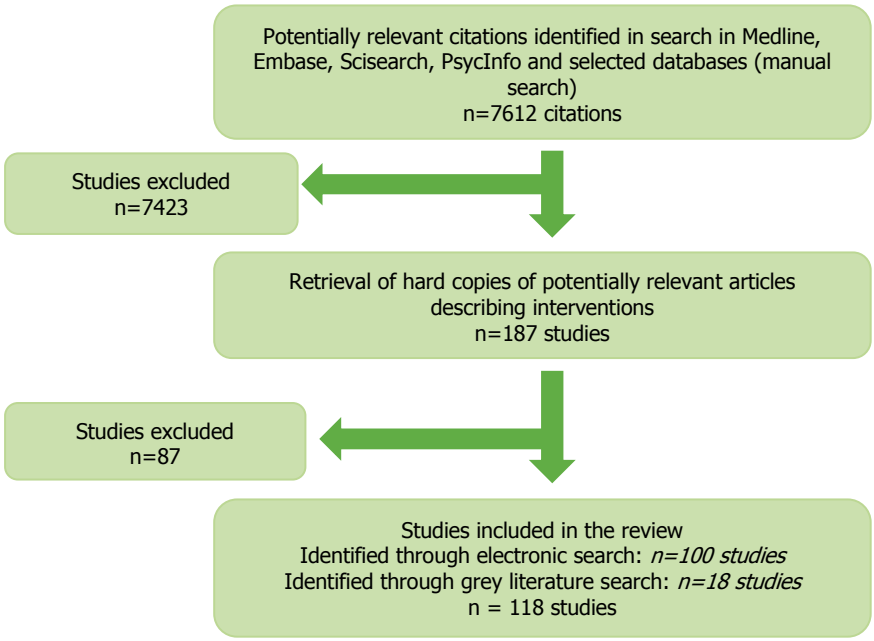
- What were the different STI and HIV prevention interventions targeted at MSM, relevant for Europe, implemented between 1995 and 2010?
- What kinds of interventions were planned within the framework of national programmatic responses?
- What kind of STI and HIV interventions were carried out following outbreaks or other events?
- What are the types and scopes of the studies available and relevant for HIV and STI prevention for MSM?

Four types of searches were conducted: 1) a bibliographic search, using pre-defined search terminologies; 2) search through selected databases and websites; 3) search through reference lists of key publications and websites; and 4) search through direct contact with key informants. A description of search strategies is provided in Annex 2 and of terminology in Annex 3.

Results of each search strategy were divided into primary and secondary results. Primary results were results using pre-defined search terminologies and/or key words. The secondary results were results after manual filter using inclusion and exclusion criteria. The final result was recorded in an EndNote database. Data from included HIV/STI prevention interventions were extracted using a standard form developed for this review, and were entered into a database. They are further analysed to answer the above research questions. An inventory of intervention data was created for each intervention and is provided in Annex 4.

A bibliographic search covering Medline, Embase, Scisearch and PsycInfo, and other selected databases (detailed list in Annex 2) were searched using predefined search terminologies, resulting in 7 612 citations. These citations were further screened based on the title and abstract, resulting in 187 articles. Full texts of those articles were retrieved and further manual screening was performed, resulting in 100 studies. Intervention studies obtained through reference lists, websites and direct contact with key informants (grey articles) were added. In total, 118 studies were included.

Figure 2.1. Flow chart of the review of literature on HIV/STI prevention interventions



2.2 Overview of prevention interventions studies

Timing

Two different indicators of time were recorded: starting year of data collection period, as reported by author, and the year of publication. It was hypothesised that period of data collection would somewhat correspond with epidemiological trends as prevention interventions were a response to public health needs. Theoretically, trends in HIV and STI prevention interventions could be analysed over time but 30 studies did not report the period of data collection. To overcome this deficit and determine the reliability of this indicator, a comparative analysis was done between year of data collection, with and without the missing data, and year of publication. Figure 2.2 was created to illustrate this. It was found that little discrepancy exists in trends in publication year between those studies that did or did not report year of data collection. The number of HIV/STI prevention interventions studies increased over time since 1995 along with an increase in the number of publications with a peak in 2004 (20 studies). This appears to coincide with the increasing number of psycho-social interventions developed as a response to observations of higher risky sexual behaviour in MSM, for instance in the UK [121]. After 2004, the number of HIV/STI prevention intervention studies has declined, while the number of publications continued to increase until reaching a peak in 2009, this being partly explained by delays in publication.

Figure 2.3 illustrates the number of reviewed STI and HIV prevention intervention studies for MSM over time by year of data collection. The chart shows that interventions addressing HIV only commenced shortly after the introduction of cART (1996). More interventions included only HIV as compared to the number including both STI and HIV. Syphilis was addressed separately in a number of interventions following the outbreaks in the early 2000s.

Figure 2.2. Number of STI/HIV prevention interventions studies for MSM by year of data collection period and year of publication, 1995–2010

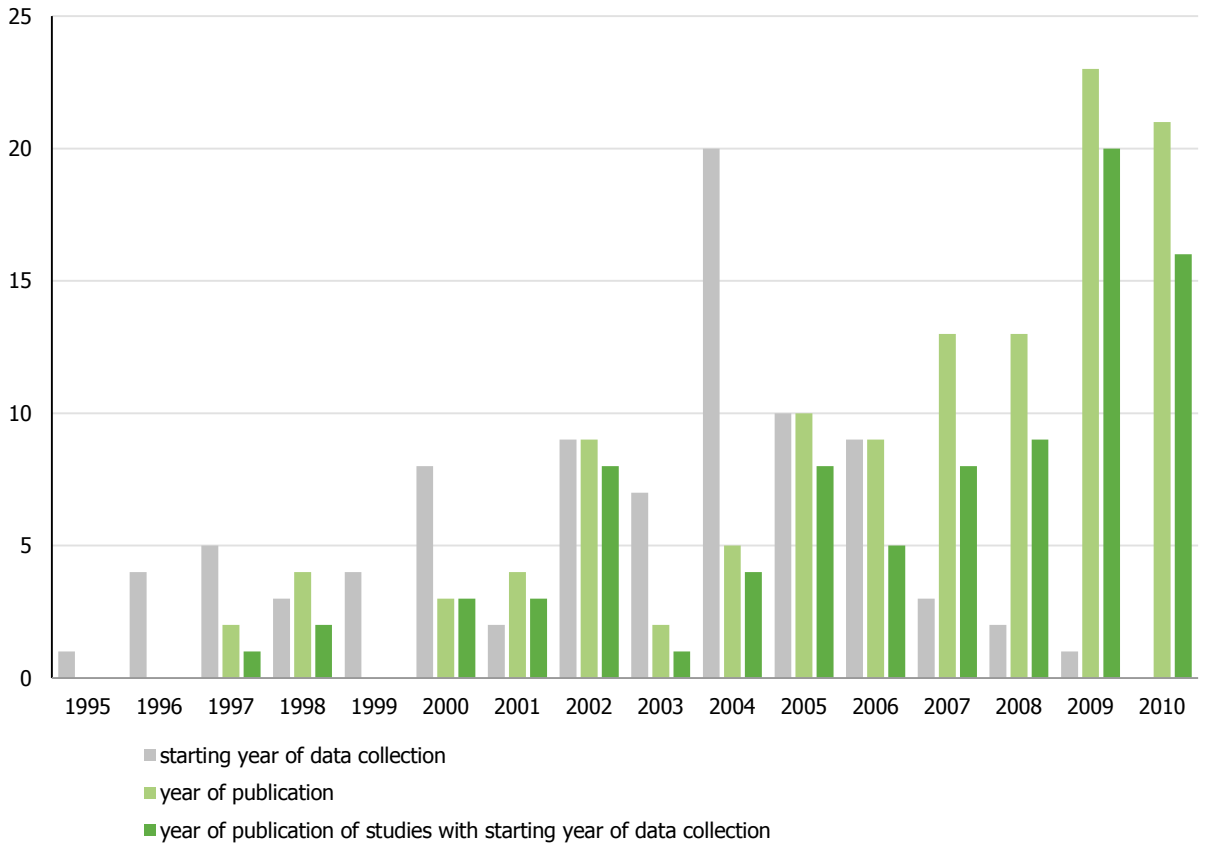
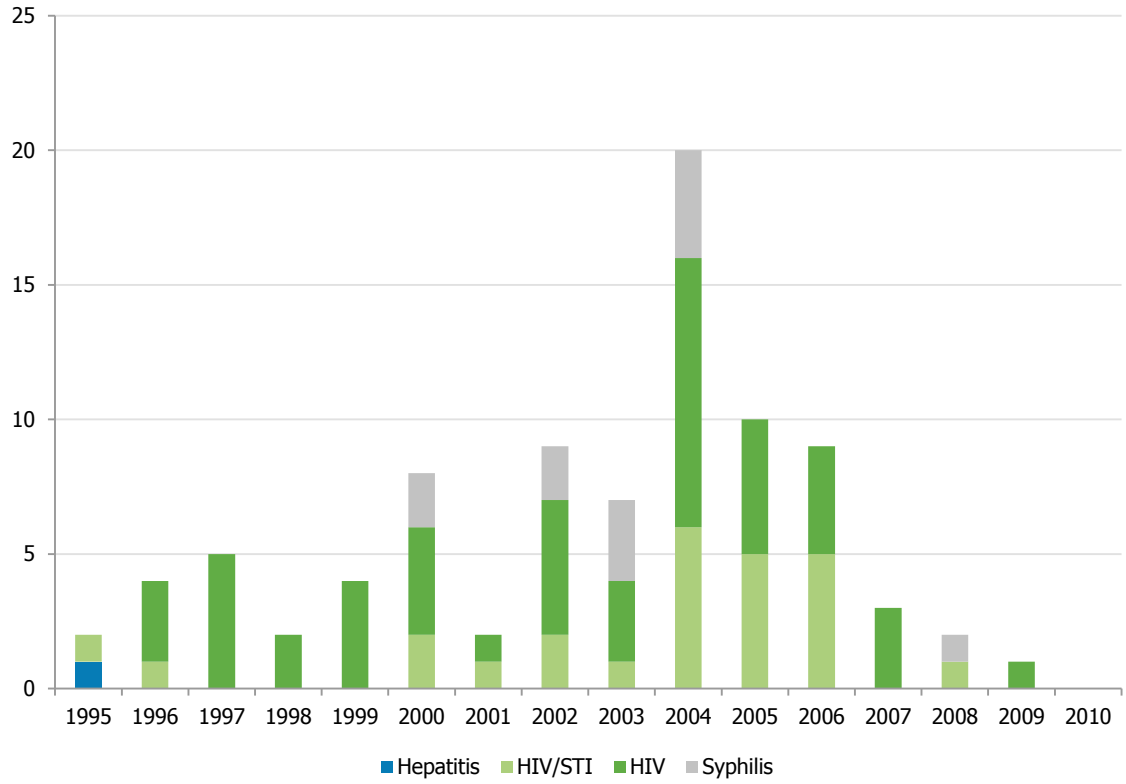


Figure 2.3. Number of STI/HIV prevention interventions studies for MSM by selected STI by year of data collection, 1995–2010



Focus on selected STIs

The focus of intervention studies were categorised using four infections: hepatitis B and C, syphilis, HIV, and HIV/STI. The infection type recorded was as indicated by the authors. The majority of intervention studies (n=73) focused on HIV specifically and an additional 31 studies combined STI and HIV in the intervention. Twelve studies included syphilis specific interventions. Hepatitis specific interventions, consisting of vaccination campaigns for hepatitis B which included increasing knowledge and awareness on hepatitis in general, were presented in two studies.

Geographical distribution

Intervention studies were concentrated in the United States of America (n=78, 66%). Theoretically, US data could dwarf the data provided through studies conducted in other geographical locations. The inclusion of studies published in English may have limited the availability of other available studies for review. Men who have sex with men in Europe and North America represent the risk group predominantly affected by STI and HIV [53], and are seen as the key population in western industrialised countries.

Table 2.1. Number of intervention studies by STIs and by geographical locations, 1995–2010

	Hepatitis	HIV	HIV-STI	Syphilis	Total
Australia		3	2		5
Brazil		1	1		2
Bulgaria/Russia		1			1
Canada		2			2
China		3			3
India		1	1		2
Mexico		1			1
Netherlands		3	5	1	9
Peru		1			1
Switzerland			1		1
Taiwan			1		1
United Kingdom (UK)	1	8	3		12
USA	1	49	17	11	78
Sub- total Per selected STI	2	73	31	12	
Total	118 studies				

Target group characteristics

The target group in HIV and STI prevention intervention studies was classified as MSM only (99 studies), or a mix of MSM with another group (or mixed population, 15 studies), or not specified. It was assumed that MSM referred to the internationally accepted definition of MSM (see Annex 3). When studies included heterosexual men and homo- or heterosexual women, the intervention was considered to have targeted a mixed population (See Table 2.2 below).

Table 2.2. Number of intervention studies by selected STIs and target groups, 1995–2010

		Hepatitis	HIV	HIV and STI	Syphilis	Total
Target population	Only MSM	1	64	25	10	99
	Mixed population	1	7	5	2	15
	Not specified	-	2	1	-	4
Serostatus	HIV (-) MSM	-	11	1	-	12
	HIV (+) MSM	-	10	1	-	11
	HIV (-) and HIV (+) MSM	-	9	5	4	18
	Not specified	2	43	24	8	77
Age	Young MSM	-	10	-	-	11
	Adult MSM (> 18 yrs.)	-	49	21	10	79
	Senior MSM (> 50 yrs)	-	1	-	-	1
	Not specified	2	13	10	2	27
Ethnicity	General	2	58	27	12	99
	Minority	-	15	4	-	19

The majority of prevention intervention studies targeted adult MSM (defined as 18 years or older, unless otherwise specified) across selected STIs. A substantial number of interventions did not specify the age of the target group except for indicating the collection of informed consent. This was only applicable to adults, and therefore considered those interventions as targeting the general adult population. Other studies which did not report the ages(s) of the target population were considered 'not specified'.

Young MSM were specifically targeted in a number of HIV related intervention studies. The definition of youth varied considerably, such as in the USA young MSM were defined as under 18 years [143-145]; in another study it is defined as < 30 years [146]; or younger than 25 years [147]; or simply as university students in China [148]. Only one HIV intervention specifically targeted senior MSM (defined as 50 and over) [149]. It is expected that the latter category of interventions will increase with time as more HIV positive men are ageing.

Studies that indicated participants as HIV positive did not distinguish between self-reported serostatus and lab-confirmed seropositive participants. When specified, a similar number of interventions targeted HIV positive, HIV negative, and both HIV positive and negative MSM.

Sexually transmitted infections and HIV disproportionately affect minority populations (groups that have different national and cultural traditions from the majority of the population) who are often associated with greater risk due

to 'discrimination in employment, housing, earning power, and educational opportunity [150]. This discrimination relegates minorities to lower levels of socioeconomic status and to the associated risks.' [151] Cultural barriers, such as taboos in talking about sex or being homosexual, also put ethnic minorities at greater risk. Only 28 studies focused on minority populations; many of these studies focused on Latino or African American men ([152, 153], although one UK study targeted MSM of black and South European origin [147].

2.3 Characteristics of prevention interventions

Scope of intervention

According to a review of most common HIV prevention programmes, Sweat (2008) suggested using six categories for describing the scope of the intervention [154]. See Table 2.3, adapted after Sweat et al., where a seventh category was added and Annex 3 for a full list of activities included within each category. Category 6 is a summary of popular hybrid interventions that are considered standardised such as VCT or condom social marketing. Category 7 accounts for hybrid interventions that are not standardised, but do serve as a combination of activities from categories 1 and 2. Categories 3, 4, and 5 were not included in the scope of this project.

Table 2.3. Description of interventions studies according to health focus, scope of interventions and triggering events. Adapted after [154]

	Hepatitis	HIV	HIV and STI	Syphilis	Total
Scope of Interventions					
• Interventions affecting knowledge, attitudes and beliefs (KAB) and influencing psychological and social risk correlates	1	46	15	7	69
• Harm reduction (lowering risk of a behaviour, but not eliminating the behaviour)	1	10	2	1	14
• Biological/biomedical interventions that reduce HIV infection and transmission risk	-	-	-	-	-
• Mitigation of barriers to prevention and negative social outcomes of HIV infection	-	-	-	-	-
• Mitigation of biological outcomes of HIV infection	-	-	-	-	-
• Standardised hybrid interventions in common use	-	9	1	-	10
• Combination of 1 and 2	-	8	13	4	25
Triggering event					
• Within framework of programmatic response	2	73	29	7	111
• Following outbreaks or other events	-	-	2	5	7

The majority (n=69, 58%) of the HIV and STI prevention intervention studies were aimed at affecting knowledge, attitudes and beliefs (KAB) and influencing psychological and social risk correlates. Of the other intervention studies, 14 (12%) aimed at harm reduction, ten (9%) were classified as standardised hybrid interventions in common use, and 25 (21%) were classified as a combination (category 7) aiming at both KAB and harm reduction.

Of the prevention intervention studies including only HIV, the majority (63%) were classified in category 1 as compared to the 48% of the interventions including both STI and HIV. Activities focused on HIV varied from education (35%) [155-157] to counselling (28%) [158-160]; activities focused on STI and HIV, 50% focused on education [161-164]. The hepatitis specific intervention used a campaign [165] and the specific HBV intervention used a campaign in combination with condom distribution [166]. Most of the syphilis interventions (7/12) used only awareness campaigns (category 1) [167-169].

Harm reduction strategies have been used in 12% of the intervention studies. The term 'harm reduction' generally refers to policies, programmes, and approaches that seek to reduce the harmful health, social, and economic consequences associated with risky behaviour, including sexual practices and the use of psychoactive substances (see Annex 3). This strategy covers activities such as condom distribution and needle exchange. For the purposes of this review, interventions that only utilised testing were classified as harm reduction under category 2. Although testing is biomedical in nature, studies that utilised testing as behavioural interventions were included in the review. Often these interventions were targeted in non-clinical settings or venues, with the intention of targeting MSM at high risk for HIV and STI transmission [144, 170, 171]. When testing is combined with counselling, it is classified under category 6; when combined with education, it is classified under category 7.

Ten intervention studies (9%) are categorised as standardised hybrid interventions in common use, of which 30% were condom social marketing [172-174] and 70% were counselling and testing [175-178]. Condom social marketing was an early application of social marketing for HIV and STI prevention, making condoms available, acceptable and affordable in many countries. UNAIDS (2000) concluded that these campaigns have contributed to de-stigmatisation of condom use by making them widely available in a variety of outlets.[179]

Of the 118 intervention studies, 21% (25) were non-standardised combinations of KAB and harm reduction (Category 7). Of these, eight (32%) focused on HIV and 13 (52%) focused on both HIV and STI implying that combined prevention interventions were more often used targeting HIV and STI [176, 180, 181]. These interventions included counselling, education and testing (12%) [182-184], education and condom distribution (12%) [185-187] whilst interventions with three or more activities accounted for 93% [181, 188-190].

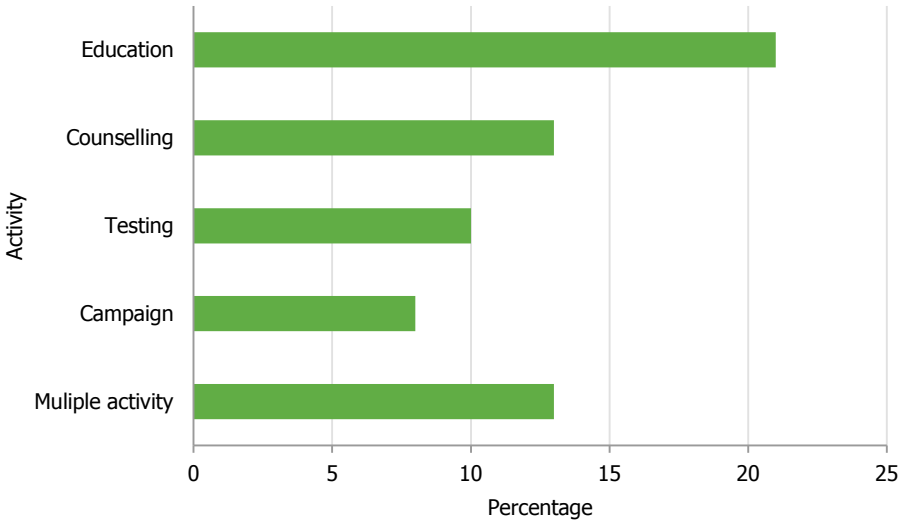
Triggering events

Most prevention intervention studies were carried out within a framework of programmatic response (n=111, 94%) and only 6% (n=7) were done as a follow up of outbreaks. The latter included mostly syphilis and two HIV and STI studies [189, 191] and targeted communities through campaigns and community-based interventions to raise awareness of the syphilis outbreak, knowledge and testing, and safe sex practices. Syphilis prevention intervention studies conducted within a framework of a programmatic response similarly aimed to increase awareness, knowledge and testing but were embedded within a broader health strategy [192].

Activities of HIV/STI prevention intervention

HIV/STI prevention intervention studies for MSM may include one, two, three or more activities (the latter is classified as multi-activity prevention interventions). For HIV/STI intervention with just one single activity, education is the most frequent (21%, n=25), followed by counselling (13%, n=15), testing (10%, n=12), and campaigning (8%, n=9). Nearly 15% (n=15) of the interventions combined three or more activities within a single intervention.

Figure 2.4. Type of activities included in HIV/STI prevention intervention for MSM



Education here is defined as 'processes in acquiring information and forming attitudes and beliefs about HIV and STI'. Within the HIV/STI prevention intervention studies for MSM, education is most commonly conducted through mass media (printed materials, advertisement, television spots, telephone messages, and online messages), with the internet as the most common setting [157, 193-196]. Examples of education-based interventions include a participatory communication and HIV/AIDS prevention communication intervention in China [197], an interactive video [198], peer educators [155, 163, 199], trained counsellor [200] and educational activity to achieve sexual risk reduction among minority MSM [149, 161]. Educational activity was targeted to adult [155, 157, 201, 202], senior [149] and young [203] MSM.

Counselling in a health care setting is the second most frequent HIV/STI prevention intervention for MSM. Counselling is defined here as an interpersonal communication process between a client and a trained counsellor. A trained counsellor, who may be a health care or health-related professional, often provides counselling. In some intervention studies counselling was the only activity [146, 159, 204-207]. Counselling has also been conducted in combination with other activities such as campaign [203], education [153, 208-210], testing [176, 177], and in interventions with multiple activities [184, 211]. Counselling is mostly targeted at adult MSM [158, 204, 205, 212], in two interventions at minorities [152], and in an HIV behavioural intervention at black MSM [146].

HIV testing is pivotal to both prevention and treatment of HIV. Testing may be conducted as a single activity [170, 171, 213, 214]; or in combination with counselling [145, 215], campaign [147, 216], education [180, 217] or as part of a multi-activity prevention intervention [184, 190, 218]. Testing is often provided through health care providers [143, 144, 219, 220], field workers [221], or as a home-based testing [219, 221]. It has also been reported that testing has been conducted in community-based settings such as popular gay venues, bars [144, 222, 223], bath houses [171], and events [220, 224]. Testing is often targeted to adult MSM and mixed populations [171, 214, 225, 226]. Testing has also been specifically included for ethnic minorities [144, 220].

Example of STI/HIV prevention intervention through education

Gay Men's Task Force (GMTF) in Scotland:

Bar-based, peer-led community-level sexual health promotion

The aim of this intervention was to change sexual health amongst gay men by encouraging homosexual men to reduce their sexual risk behaviour for HIV infection and increase their use of health services. It involved education in bars, gay specific genitourinary medicine (GUM) services, and a free-phone hotline. The peer-led sexual health promotion was conducted in five exclusively gay bars in Glasgow. The peer educators were recruited from many sources, including the commercial gay scene and existing voluntary HIV-related organizations. They received two days of training, including communication skills, role-play in approaching men and specified message delivery, and continual support throughout the intervention. The peer educators wore distinctive uniforms (t-shirts, jackets, and bags) and distributed sexual health promotion materials within bars, then engaged in focused interactions with men in relation to a variety of sexual health issues, primarily hepatitis B, HIV testing and HIV risks within relationships. The gay-specific GUM services were provided in both hospital and gay community settings, and were promoted by the peer educators. The free phone hotline provided details of local sexual health services. Higher uptake of hepatitis B vaccination and HIV testing were observed amongst men who had direct contact with the intervention, but no community-wide changes in sexual health behaviours were produced.

Source: Williamson et al, 2001 [163] and Flowers et al., 2002[164]

Mode of deliveries for HIV/STI prevention intervention

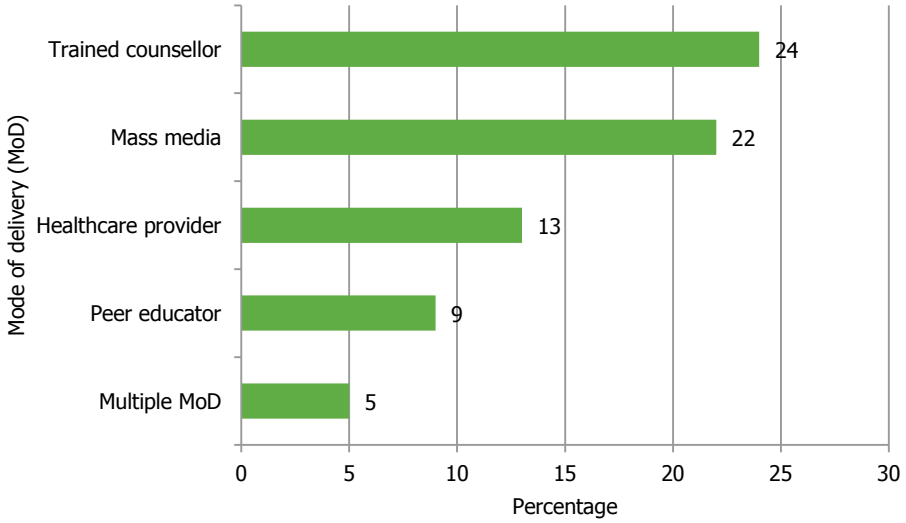
Mode of delivery (MoD) is the channel by which the HIV/STI prevention intervention activities were delivered. HIV/STI prevention interventions may employ a single or a combination of different modes.

Trained counsellor is the most common mode of delivery in HIV/STI prevention intervention studies (24%, n=28), followed by mass media (22%, n=26) and health care provider (13%, n=15). Five percent (n=6) of HIV/STI prevention interventions used three or more modes of delivery. Trained counsellors may be trained facilitators [149], trained staff performing counselling [182, 227], trained counsellors [208], specifically trained outreach workers [228], paraprofessional counsellors [229], clinical psychologists [230], programme-specific volunteer facilitators [231]), and public health investigators and field service staff [189]. Trained counsellors generally implemented their interventions in clinics or health care facilities [149, 186, 209, 212, 229, 230, 232, 233]. A quarter of the interventions by a trained counsellor were focused at minority populations [149, 152, 153, 161, 208, 234, 235] and used multiple activities if set in prisons [189, 236].

Mass media has been used in 22% (n=26) of the HIV/STI prevention interventions for MSM. Examples of mass media are advertisement posters [181], quiz shows [181], online video [234, 237], online education [157, 202, 238], online testing [195] and website banners [168]. Half (n=13) of the mass media interventions have only used the internet and 46% (n=12) used multiple settings. Mass media was used to increase general awareness and promote safe sex among MSM [167] and was found to be cost-effective [192]. Forty-six percent (n=12) of the mass media interventions focus on education only. Health promotion messages via mass media should be presented in a culturally relevant way with language and images that are familiar and relevant for the community [192]. Mass media interventions focused on the general MSM population although four did not specify a target population.

Health care providers were used in 13% (n=15) of the prevention interventions. The main activities are testing only (53%, n=8) [144, 170, 171, 213, 214, 219, 220, 225] of which all but one [219] focus on HIV. Forty percent (n=6) of the interventions with health care providers actually take place in a clinic or health care facility; 20% (n=3) reached out to a popular gay venue including a bar [144], bath house [171] and event [220] to offer testing. In two of these [144, 220], the activity was focused on minorities. Health care providers generally provide testing only (53%, n=8) and they are always involved in interventions within a programmatic response to STI.

Figure 2.5. Type of mode of delivery in HIV/STI prevention intervention for MSM



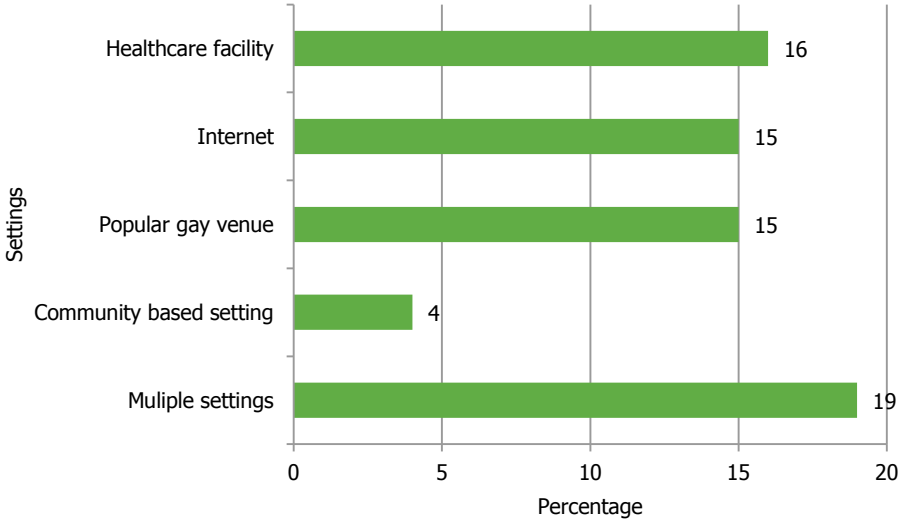
Peer educator is defined as a trained, self-identified member of the target population providing education to their peers. Peer educators usually served as role models demonstrating behaviour that promoted risk reduction and included opinion leaders or popular individuals in the community. Peer educators were often engaged in educational messages (82%, n=9) and were active in popular gay venues (45%, n=5). Peer educators appeared to be perceived as trusted for advice to the target group [239] and they have had an impact on the community through inducing conversations and interactions between gay men to encourage changes in social and sexual norms [164]. Interventions also combined trained counsellors and peer educators [145, 185, 240-244]. Peer educators have been used mainly to conduct activities for MSM only [146, 155, 163, 178, 199, 201, 205, 245, 246]. 36% interventions by peer educators focus on young MSM [146, 155, 239, 246], of which two interventions also focus on a minority population [146, 246].

Only 5% (n=6) used three or more modes of delivery. Examples of these interventions include a combination of mass media, trained counsellor and health care provider [184, 191, 247], mass media, peer education and trained counsellor [203], and peer education, trained counsellor, health care provider and outreach workers [211].

Settings of HIV/STI prevention intervention studies

HIV/STI prevention interventions may take place in a single setting, a combination of two separate settings, or in multiple settings. Health care facilities were among the most frequent settings for intervention activities (16%, n=19), followed by the internet (15%, n=18) and popular gay venues (15%, n=18). Nineteen percent (n=22) of the interventions took place in three or more settings.

Figure 2.6. Type of setting in HIV/STI prevention interventions for MSM



Health care facilities are defined as settings where medicine is practiced, like clinics for outpatient care or mobile units. As health care facilities can be either psychological or biomedical, examples include also substance use therapy [232, 240], individual or group counselling [205, 229], or may address HIV prevention with HIV positive MSM attending for primary care [158, 248]. Rationale for the choice of setting varied according to intervention design. For example, the Treatment Advocacy Program (TAP) in the USA considered primary care settings as an effective venue for delivering a peer-based behavioural intervention because of its ability to 'capitalise on participants' motivation for successful HIV treatment' [205]. However, the study also recognised that weaving secondary prevention into more general HIV coping limits the intervention to less risky men.

While the majority of these interventions occur solely at health care facilities, some were also combined with outreach settings such as bars or commercial sex venues [226, 249, 250]. These intervention study designs have the potential to overcome limitations identified above, as they target MSM with varying risk behaviour, and could overcome any barriers to access health care, including stigma associated with HIV/STI clinics. As one study identified, their intervention was able 'to bring syphilis screening, as well as other relevant services, literally, to priority communities and venues 'where people are'. They further concluded that, while lack of access to care was an issue, the poor integration of sexual health, psychosocial health (including Lesbian, Gay, Bisexual and Transgender [LGBT] sensitive providers), and general health in primary care settings justified the multiple setting approach. [251]

The internet has been used as a setting and a mode of delivery of prevention intervention studies, in addition to a medium for finding sexual partners for MSM. Men who have sex with men can be reached who might not publicly identify as gay or homo- or bi-sexual. The internet is a 'potentially useful platform for conducting public health interventions because of its popularity, its ability to reach certain hard-to-reach groups, the ability of users to maintain their anonymity and it can disseminate educational materials in a continuous, accessible and inexpensive manner" [243]. McFarlane et al. conclude that the 'Internet presents significant public-health challenges but could yield vast benefits if harnessed properly' [252]. Of all HIV/STI prevention intervention studies (n = 118) 15% used the internet. Examples include bi-weekly HIV/STI prevention educational email messages [243]; targeting chat room users via one-on-one discussions through instant message and email; same in personal dating sites; placement of animated banner advertisements to public health facilities; creating and maintaining a physical-level question and answer service on popular MSM websites; risk-assessment questionnaires and testing advice; and warnings on MSM pages around risks of multiple sex partners and STI transmission [183]; and creating on-line training courses [202]. Reported disadvantages to internet-based interventions include the difficulty of maintaining the interest of users, as internet-based interventions may not be challenging enough for users who can easily navigate away [202]. Limitations to evaluation of impact, such as the inability to verify participants' identities and responses, as well as adherence to the study, have been identified as challenges to the development of internet-based prevention interventions [202].

Example of syphilis intervention using the internet as a setting

Online-mediated syphilis testing in the Netherlands: syfilistest.nl

The aim of this internet-based intervention was to lower the threshold for syphilis testing and to increase testing capacity. A website was developed which offered information about syphilis, the on-going epidemic of this disease among MSM, its health consequences, transmission routes, symptoms and treatment options. The website also motivated users to download a referral letter with which they could make an appointment test for syphilis in an accredited testing laboratory. Information about the online testing procedure was provided. This allowed the MSM to make the appointment anonymously without a referral from their general practitioner. A week after the blood test, participants could retrieve their results with advice online. Participants who tested positive were invited to the STI clinic for further examination and treatment. Men who have sex with men were recruited to go to the website through online banners (internet advertisements) on chat and lifestyle sites that are popular among gay men. The banners displayed pictures of syphilis such as the treponema bacteria or syphilis ulcers with a text warning about the return of syphilis. After a period of banners and advertising, word-of-mouth communication was used for recruitment of MSM. This online-mediated testing for syphilis turned out to be feasible and more successful in detecting MSM with an early or late syphilis than in standard procedures at the local STI clinic.

Source: Koekenbier et al., 2008 [217]

2.4 Utilisation of base theories

Behavioural interventions often utilise a base theory to inform the intervention design. The use of theory 'is necessary in evidence-informed health promotion to ensure that we can describe and address the factors to achieve change' [253]. The distribution of reported established[7] behavioural change theories was assessed. Among the 31 interventions that focused on HIV and STI, 13 had used an established behavioural intervention theory (43%), ten (33%) had used another model or framework and seven (23%) had not used any theory or model framework. These theories included the Diffusion of Innovation Theory [163], Theory of Reasoned Action [254], Trans-theoretical Model of Change/Stages of Change [233, 241], Social Cognitive Theory/Cognitive Behavioural Model [199], Empowerment Education Theory [234], Harm Reduction Theory [190], Social Marketing [255], Motivational Interviewing [256, 257], Information-Motivation-Behavioural Skills Model [257], and the Bundling Model [218]. The model/frameworks included harm reduction [177], Bundling model [218] and holistic approach [188]. A detailed explanation of the base theories presented here can be found in Annex 3.

Example of theory in HIV/STI prevention intervention for MSM

Brief cognitive behavioural intervention to reduce STI among gay men

The aim of this intervention was to reduce the incidence of STI among gay men by a brief cognitive behavioural intervention. The intervention included a one day workshop, drawing on the trans- theoretical model of change, the model of relapse prevention, elements of social learning theory and motivational interviewing. Pairs of trained counsellors from the clinic facilitated the workshops. Participants of this intervention who presented an acute STI, reported that they had UAI with a partner of different HIV status in the past year, or expressed concern about their sexual practices.

Source: Imrie et al., 2001[233]

Of the 73 interventions focused only on HIV, 43 had used an established behavioural change theory (57.5%). Thirteen (17.8%) had used another model or framework and 18 (24.6%) had not used any theory or model. Two studies [172, 173] had used the Social Marketing Theory to design the campaigns and two studies used the Empowerment Education Theory in designing training activities [234, 244]. The majority of the interventions that focused on testing were not based on an established behaviour change theory. Theories used in interventions focusing on HIV, which were not used in interventions focusing on HIV/STI, included the Health Belief Model [197], Motivational Enhancement Theory [153], Social Action Theory [159], Prevention Case Management Model [159], Intent to Treat Model [193], and Personalized Cognitive Counselling [229].

Five of the 12 interventions focusing on syphilis (42%) used Social Marketing Theory, and one used Theory of Reasoned Action [258]. All of these were campaigns and used the mass media as the mode of delivery. Five studies had not used an established behavioural theory for design of intervention; and two studies employed a holistic approach [251] and outbreak response [191] as their logic model. In more recent studies, syphilis interventions were more prone to use an established theory to guide efforts in changing risk behaviours among MSM.

[7] An established theory is considered an academically accepted and published theory. For a complete list of theories utilized with brief explanations of each, see Annex 3.

2.5 Discussion

Generally, as STI and HIV transmission among MSM is on-going and has increased in recent years, the number of prevention intervention studies has increased as well, particularly with the international recognition of the effectiveness of behaviour change intervention for MSM [259] and combination prevention strategies that include both biomedical and behavioural strategies.

The majority of the HIV/STI prevention interventions for MSM came from North America and Western Europe. Despite the possible limitation of MSM studies in other parts of Europe (particularly in Eastern Europe), it should be acknowledged that STI and HIV prevention activities exist but may not be consistently documented and published. A limitation of this study resulted from focusing the main search strategy to bibliographic and electronic databases. Grey literature or literatures produced in local languages were therefore not captured.

Most prevention intervention studies among MSM within the framework of programmatic response were focused on HIV specifically. This might be explained by the severity of HIV as compared to STI and the urgent need to reduce transmission among MSM. In addition, more resources were available to develop HIV specific prevention interventions. A single focus on syphilis was the most common in interventions following outbreaks. Prevention interventions targeting syphilis as mass campaigns were not reported in recent studies, suggesting that syphilis interventions were designed as part of larger STI prevention strategies or were conducted within the programmatic response. Prevention intervention studies targeting LGV were not identified in this review. It is suggested that either studies are currently under way and will be published at a later date, that LGV studies have not been published or that LGV was not addressed as a single focus.

Few prevention interventions were targeted at sub-groups within MSM, like minority populations. The literature suggests a need to address these minority populations as they are more vulnerable to infection. Many intervention studies also targeted drug users, either recreational or habitual, with some ethnic minority drug users as well. These subpopulations are at greater risk for STI and HIV and it is likely that more intervention studies will emerge over time. Similarly with interventions targeting young and older MSM, more accurate surveillance data on epidemiological and behavioural trends interventions targeting specific age groups are also expected to emerge.

The majority of HIV and STI prevention intervention studies were aimed at affecting knowledge, attitudes and beliefs and influencing psychological and social risk correlates (Category 1). In addition, a substantial number of interventions were found to combine this with Harm Reduction (Category 2). The scope of interventions demonstrated the wide range of psychosocial issues affecting sexual behaviours among MSM. A diverse portfolio of interventions is required to build confidence and control over safe sex practices [120, 260].

Education-based interventions were the most frequent among HIV/STI prevention intervention studies for MSM, followed by counselling, testing and a combination of those activities. This finding coincides with the scope of behavioural prevention intervention, which often involves transfer of knowledge to facilitate behavioural changes in the later stage. Trained counsellors were the most frequent mode of delivery followed by mass media (printed materials and internet), health care providers and peer educators. The use of trained counsellors in delivering educational messages was perceived to overcome barriers such as language and social distance (as opposed to health care providers) as the interaction can be personalised and adjusted in terms of content and specific needs. Peer educators can be equated as trained counsellors with the same background with the intervention recipients. The use of mass media as a mode of delivery for prevention intervention is considered less stigmatising, cost efficient and culturally adaptive. Health care facilities, mass media (in particular the internet) and popular gay venues were the most frequently used settings for interventions. It appeared that recent prevention interventions often took place outside the traditional health facility and employed a combination of delivery modes and settings to increase their coverage.

The internet has been used for delivery prevention intervention studies as well as for finding sexual partners by MSM. As mobility increases with low cost travel across Europe, it is expected that the internet will become increasingly more important also as a source of prevention interventions. Innovative approaches such as mobile technology (including 'apps' on smart phones), social networking sites and gaming are expected to lead the developments [260].

For both HIV and STI/HIV focused prevention intervention studies, around 25% were developed without the use of established behavioural change theory or other frameworks. Although the majority of the interventions were developed without a theoretical framework change, many of them (often locally developed) may have been successfully implemented and well-received by clients. Interventions that were developed more recently seem to have used a theoretical framework more often in the design of the intervention. The use of established theories in the design of the intervention should be encouraged in future interventions.

The variety of prevention intervention studies demonstrates the heterogeneity of characteristics, strategies and target populations. Tried-and-true interventions were presented alongside innovative approaches, all of which were intended to meet the needs and behaviours of MSM. Given the heterogeneity of MSM populations across Europe, this review facilitates the sharing of these strategies among prevention experts who develop and implement behavioural prevention strategies for MSM in Europe. Annex 4 includes an inventory of all reviewed studies addressing HIV/STI prevention interventions for MSM.

3. Evaluation of STI and HIV prevention interventions

3.1 Introduction

Evaluation of HIV/STI prevention interventions for MSM is an essential part of determining their effectiveness. Despite the increasing number of prevention interventions, not all of them were evaluated against their impact, resulting in a general deficit in outcome evaluation. The main aim of this chapter is to review evaluation approaches of interventions to prevent HIV and STI among MSM. It seeks to provide an insight into how HIV/STI prevention intervention studies have been designed and evaluated. This chapter does not aim to review the actual effectiveness of interventions as it analyses intervention study characteristics, intervention outcomes, level of evidence produced and characteristics of effective interventions.

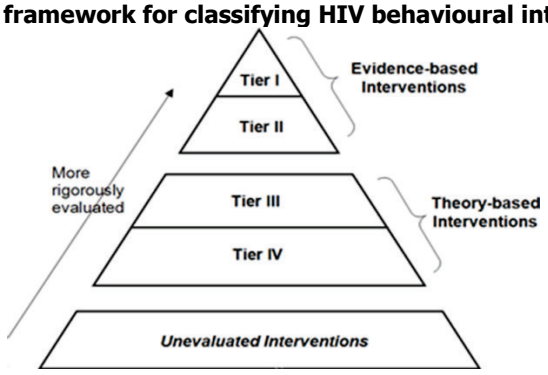
The lack of outcome evaluations within behavioural intervention exists within the broader issue of study design and evaluation standards among interventions. Sweat (2008) discussed the lack of consistency in the way interventions are described and defined, and the implications this has on comparing and evaluating the effectiveness of STI and HIV prevention interventions. 'Within HIV prevention interventions are complex systems of causal effects that mediate risk and vulnerability, many of which are non-linear, or contain feedback loops along the causal pathway. Therefore it can be challenging to establish the starting and stopping points for an intervention, in determining how to define and evaluate it' [154]. This also challenges the consistent evaluation of different behavioural interventions.

HIV and STI prevention interventions that are designed without an evaluation component lack important details and markers of reliability that are considered academically rigorous. Consequently, many interventions that report a positive impact (by self-reporting) are missing from meta-analyses of intervention studies or reviews of effectiveness. Apparently, the need is recognised for the development (and widespread use) of methods of impact evaluation that accommodate a wide range of STI and HIV behavioural prevention interventions.

Approaches to the evaluation of intervention studies as described in the previous chapter were reviewed. In order to do this, a framework was selected that is both inclusive and academically rigorous: the Tier of Evidence developed by the Centres for Disease Control and Prevention (CDC) (see Figure 4.1,Table 3.1) [261]. This framework has four tiers, with Tier I describing 'Best-evidence behavioural interventions' as the highest and Tier IV describing 'Theory-based interventions with no outcome monitoring' as the lowest. This framework emphasises specific conditions for elements of intervention study design and intervention outcomes in its criteria for classification. It provides a multi-tiered system for classifying all HIV behavioural interventions based on the type and level of evidence for reducing HIV risk. It includes both experimental and observational study designs. The framework is useful in that it provides positivist criteria for evaluating interventions whilst at the same time including interventions that might be missed by more exclusive standards.

This review did not utilise the potential depth of this framework to evaluate the effectiveness of the selected studies. Instead, this framework was used as a model to highlight specific elements of intervention study design, the difficulty in standardising evaluations, and to provide a platform for discussion for improving evaluation research in the European setting.

Figure 3.1. Tier of Evidence: a framework for classifying HIV behavioural interventions.



Source: CDC USA [261]

3.2 CDC Tier of Evidence

In total, 97 studies were included and 21 studies were excluded as no outcome evaluation was published. Sixty evaluations included HIV only (62%), 25 included both HIV and STIs (26%), 11 targeted syphilis (11%), and one addressed Hepatitis (1%). To be able to classify the interventions within the Tier of Evidence framework, the following criteria were used for the analysis: study design, intervention outcomes, comparison group, randomisation, blinding, formative research, sample size, length of follow up, retention rate, and baseline adjustments (for non- randomised controlled trial studies). The tier or level for each study was determined according to the extent to which a study utilised and adhered to these criteria.

Table 3.1. Tier of Evidence framework

Tier	Criteria
Tier I – Best-evidence Behavioural Interventions	• Significant and positive intervention effects on relevant outcomes • No significant and negative intervention effects on relevant outcomes measured in the study • Comparison group • unbiased assignment (randomisation) • ≥ 3 months follow-up in both groups • ≥ 70% retention in both groups • Analyses adjusted for baseline differences in outcome measures (if non-RCT) • At least 50 participants in the analytic sample in each group
Tier II –Good-evidence Behavioural Interventions	• Significant and positive intervention effects on relevant outcomes • No significant and negative intervention effects on relevant outcomes measured in the study • Comparison group • Unbiased or moderately biased assignment • ≥ 1 month follow-up in both groups • ≥ 60% retention in both groups • Analyses adjusted for baseline differences in outcome measures (if non-RCT) • At least 40 participants in the analytic sample in each group
Tier III – Theory-based Interventions with positive outcome monitoring	• Behavioural change theory • Logic model • Formative research • Positive process evaluation data demonstrating fidelity, availability, and acceptance • Outcome monitoring showing positive and significant before and after changes in relevant outcomes
Tier IV – Theory-based interventions with no outcome monitoring	• Behavioural change theory • Logic model • Formative research • Positive process evaluation data demonstrating fidelity, availability, and acceptance

Source: CDC USA [261]

3.3 Results

Study design characteristics

Study designs can be either experimental or observational. Experimental designs seek to determine whether the intervention produced the desired causal effects on the target population, and include a pre/post-test, a control and treatment group, and randomisation. Observational studies draw inference about the possible effects of an intervention. Researchers can only draw correlation from their findings, as opposed to causality. In order to understand the characteristics associated with rigorous study design, an overview of study designs is provided specifying certain elements of study design and describing the number of studies reviewed which contained each of these elements.

In this review, seven study designs were included: cross sectional study (n=36, 37%), randomised controlled trial (RCT) (n=34, 35%), longitudinal study with control (LWC) (n=5, 5%), quasi experimental study (n=5, 5%), cohort study (n=6, 6%), case control study (n=9, 9%), and time series analyses (n=2, 2%).

Randomised controlled clinical trials (RCTs) were the second most common study design. Randomised controlled clinical trials provide the strongest evidence for clinical efficacy of preventive and therapeutic procedures in the clinical setting because of their ability to reduce spurious causality and bias. Randomised controlled clinical trials were used in 34 studies (35%) in this review. Examples of these studies include the MPowerment Project: a community level HIV prevention programme for young gay men in USA [262], and Gay Cruise: an intervention to increase consequent condom use among online dating and chatting MSM in the Netherlands [263].

There were five quasi-experimental designs, whereby the participants were not randomly assigned to groups but were assigned according to certain characteristics [181, 264]. Quasi-experimental study designs are not based on randomisation and, because of this, statistical analyses can be very difficult. Quasi-experimental designs can use non-equivalent group design, whereby a pre-test and post-test are utilized in the treatment and control group to assess effectiveness. Examples of quasi-experimental studies are 'Promotion of sexual health among young MSM' [155]; 'Promotion of safe sex through community level intervention' [181]; 'Reduction of UAI by single individually tailored counselling session' [264]; and 'The use of health communication for prevention intervention for MSM living with HIV/AIDS' [204].

A longitudinal study with control is an observational study with repeated observations of the same variables over time. LWCs track the same people over time, including a comparison control group; the differences observed across these two groups over time are more likely to be the result of the intervention than due to other factors. However, since randomisation is not applied, differences between groups can be subject to selection or allocation bias. In this review, five interventions were designed as LWCs. An example of this study is a participatory education intervention to promote safer sex behaviour with gay and MSM at events and in bars in China [197], and bundling different tests to encourage HIV testing among high risk Latino men in USA [144].

Case-control studies are a retrospective, analytical, observational study based on secondary data in which the proportion of cases with a potential risk factor are compared to the proportion of controls (without the disease) with the same risk factor. These studies are commonly used for initial, inexpensive evaluation of risk factors and are particularly useful for rare conditions or for risk factors with long induction periods. Nine intervention studies were designed as case-control studies. Examples of those studies is an intervention to increase uptake of HIV testing by involving popular gay venues such as gay sex clubs [170], and an intervention to increase the proportion of partners receiving treatment for gonorrhoea and chlamydia via patient delivered partner treatment in USA [226].

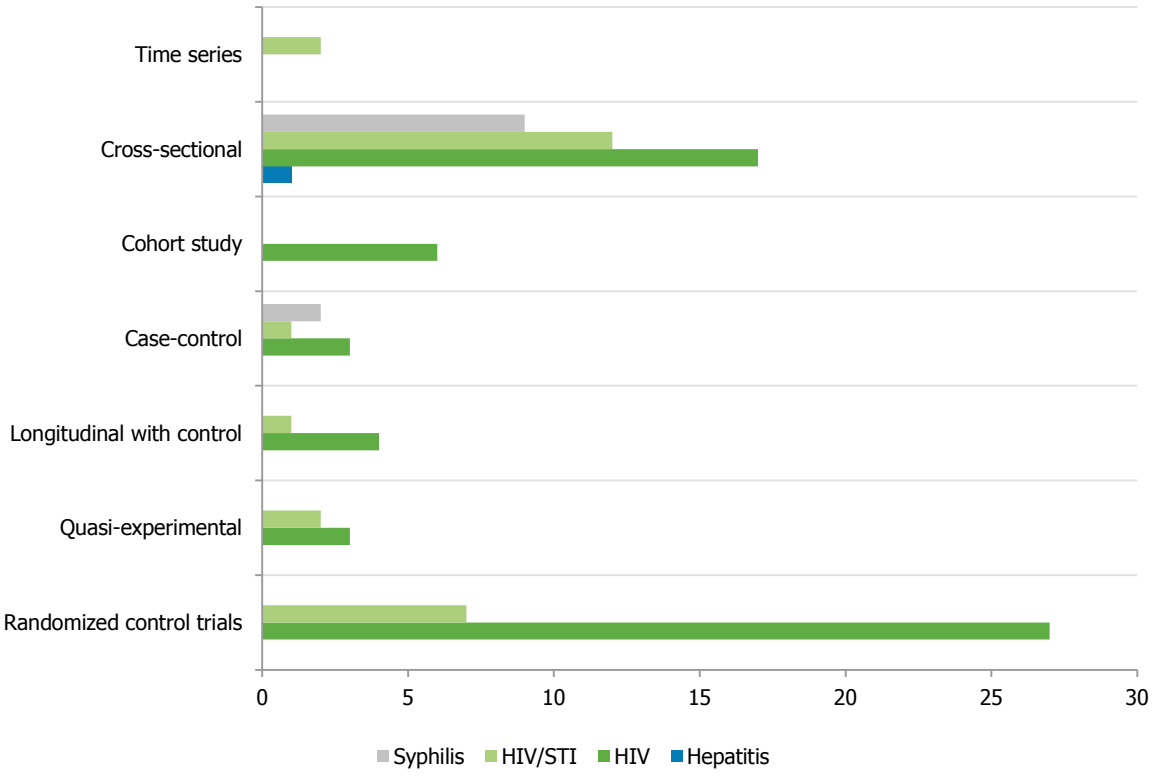
Cohort studies are prospective, analytical, observational, longitudinal studies based on data, usually primary, from a follow-up period of a group in which some have had, have or will have the exposure of interest, to determine the association between that exposure and an outcome. Six intervention studies were designed as cohort studies. Examples include an internet-delivered HIV risk education program for rural MSM in USA [194], and an intervention improving in AIDS knowledge and attitudes regarding safer sex by education and condom distribution in Brazil [186].

Cross-sectional studies are descriptive studies of the relationship between diseases and risk factors, usually at one point in time in a defined population. It is the simplest variety of observational studies that can be conducted on samples of a population and was mostly used in this review (36 studies). Examples include an intervention to promote and increase the uptake of syphilis testing among minority MSM at events in USA [218], and Power On Project: Using instant messages to perform counselling on the internet in the USA [228].

In a time series design, data are collected on the same variable at regular intervals in the form of aggregate measures of a population. Time series designs are particularly useful for describing changes over time, keeping track of trends and establishing a baseline measure. Two intervention studies were evaluated using time series design. They are the 'Man to Man' Project, an intervention to increase knowledge of safe sex and to change safe sex attitudes; intentions and HIV/STI test behaviour among MSM in the Netherlands [265]; and a social marketing campaign to increase HIV and STI testing and promote sexual health among MSM in Australia [266].

It appeared that (figure 3.2), RCT study designs are used more often in interventions focusing on HIV only and that cross sectional study design is the most frequently used across the STIs.

Figure 3.2. Distribution of study design by selected STIs



Randomisation:

Experimental studies apply randomisation with the intention of minimising allocation bias. Eligible participants can be randomly allocated to receive different treatments or interventions in the study arms. Randomisation also helps to control for the Hawthorne effect, where subjects' behaviour changes in a response to being studied rather than in response to the intervention. Randomisation also facilitates blinding, which can include both the participants and the researchers. Blinding further minimises bias but can be difficult for behavioural intervention studies. Allocation concealment is often done through computer algorithm (numeric selection) to randomly assign participants to study arms [162, 249, 267].

In this review, 43/97 studies applied randomisation (three at group level, 39 at individual level, and one unknown); 43 applied to the intervention group, 41 applied to the control group. Of the 43, three are cohort studies, five are cross sectional, two longitudinal with control, and 33 RCT. Fifteen of the 43 studies utilised blinding of the participants.

Comparison group:

Studies that use a control or comparison group (a group of individuals who do not receive the treatment or intervention) are considered more rigorous than studies not using a comparison group. In evidence-based medicine, a control group allows to adjust for changes over time between groups and rules out random or imagined effects to better determine the effectiveness of the intervention. Control or comparison groups should be identical to the intervention group.

Ethical concerns may also discourage the use of control groups adding further difficulty to randomisation. For this reason, interventions were often designed where all participants receive some kind of intervention [186, 268], and may include the difference between a 'standard' intervention and the same intervention with the addition of another method [229], or waitlist controls, whereby the wait-list participants will receive the intervention after the analysis of the first intervention group is complete [238]. Another alternative is to have a group which serves as a control and an intervention arm at a slightly different time during the intervention process (step-wise RCT)[269].

In this review, 50/97 studies have used a comparison group. Of these 50, 33 were RCT, one cohort, five LWC, three quasi experimental, and two time series. Three studies utilised different interventions as controls (without a non-intervention control group [194], one study used a non-equivalent control group [227], and two used control groups in online studies [238, 257].

Retention rate:

To ensure high retention rate, some studies provided incentives for participants to continue, such as financial incentives at baseline, at follow up(s), and linked to other feedback (keeping a diary; number of entries in the diary [175]). Amounts are usually placed at rates which are considered sufficient, but not coercive. Although this can be a costly way to retain participants throughout the study, it can indeed be very effective. However, it may also lead to biasing participants in their responses.

Thirty three studies reported retention rates of more than 70% (22 RCT, three LWC, three cohort, three quasi experimental, two cross-sectional). One study reported a 96% retention rate [186]. Another study, a risk reduction intervention for HIV positive African-American men, reported a 100% retention rate [149]. It was suggested that this overwhelming acceptability and participation was in response to appreciation of the intervention tailored to this specific group.

Three studies reported a retention rate between 60 and 69%, and 11 studies reported retention rates of less than 60%. Low retention is a concern for many prospective intervention studies. Reasons for dropping out of studies vary, but may include time constraints, waning interest, and inadequate compensation (for travel, time, child care, etc.) [270]. In two studies, reported retention rates fell into separate categories: (> 60%, > 70%) [240] and (>70%, <60%)[262]. Low employment opportunities in the area, leading to people seeking work elsewhere was the reason given in the second study for the reported 81% retention rate for the intervention group and 24% for the control group [262]. All studies with less than 60% retention rate were in samples of 50 or more people.

Retention in internet-based studies emerged as a problem for studies in this review. One internet-based study [162], for example, investigated low retention rates in internet-based studies, suggesting that retention rates are 'influenced by such factors as study population, contact information, behaviour under investigation, incentives, length of time/intensity required for the intervention and length of time for assessment'. They discuss the balance between maintaining confidentiality and obtaining follow up results. Their intervention, 'Smart Sex Quest', collected only email addresses to protect confidentiality of the participants; they had no recourse for additional follow up efforts if participants did not respond to the e-mail, had an invalid e-mail address and/or did not return to the site to complete follow-up [162]. Similar studies with high retention developed a retention protocol that utilised multiple means for contacting people [270]. Although less confidential, it did benefit the study. The authors point out the need to better understand what is necessary to retain participants in internet-based interventions.

Length of follow up:

Outcomes are measured by the changes between baseline and follow up measurements after the intervention has taken place. Follow up measurements can happen at given intervals throughout the intervention, as well as at a certain point after the close of the intervention. This measures retention of the intervention. Therefore the longer the follow up, the more rigorous the results as they measure longer periods of sustained behaviour change. Challenges in having sufficient length of follow up is often paired with keeping high retention.

Fifty-five of 97 studies identified specific length of follow up (three < 1 month; two > 1 month; 50 > 3 months). Of the latter category, at least eight identified a 12 month follow up, of which at least three included six month follow ups. Many studies utilised multiple follow-ups, such as one month, three months, six months and 12 months. Outliers included a 48-month follow up and a 25-month follow up.

Formative research:

Formative research provides a basis for developing effective strategies for influencing behaviour change. According to the California Department of Public Health (US), 'it helps researchers identify and understand the characteristics/interests, behaviours and needs of target populations that influence their decisions and actions' [271]. It is fundamental to include rigorous studies, as it allows for the improvement of interventions based on the responses of initial participants. Although perceived to be important, formative research is not always conducted due to limitation in cost and time. For this review, formative research included literature study, empirical study and research pilots.

Of the 97 interventions, 64 reported some kind of formative research to inform the interventions (such as pilot studies). Of those, 28 were designed as RCT studies, 22 as cross-sectional, two case-control, four longitudinal with control, three cohort, three quasi-experimental, and two time series. It was assumed that no formative research was done if it was not included in the report.

The use of established behavioural change theory:

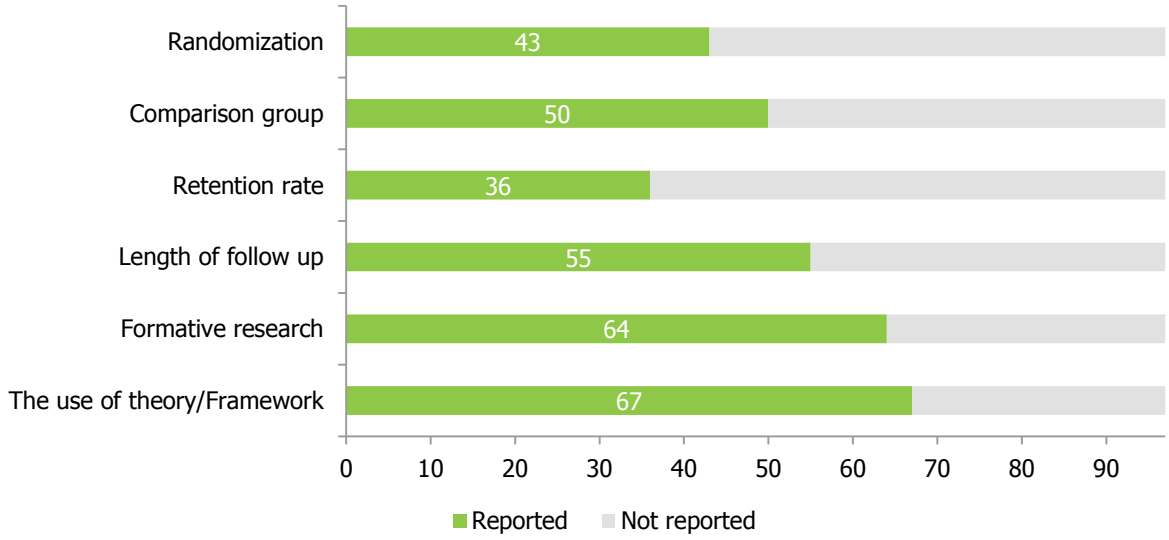
Behavioural interventions often utilise a base theory to inform the intervention design. The use of theory provides a framework for explaining behavioural change and for developing intervention strategies. The majority (77%) of the prevention intervention studies were designed according to an established behavioural theory. This was extensively discussed in the previous chapter of this report.

Sample size:

Sample size refers to the number of participants in a study. The larger the sample size, the easier it is to detect a small difference between groups at a statistically significant level. Such differences may not be detected, even if they do exist, with smaller sample sizes. Greater retention of larger sample sizes is considered even more rigorous.

All 97 studies specified sample sizes for intervention and comparison groups. Eighty five interventions had a sample size of 50 participants or more, of which, 45 included a comparison group of 50 or more. Of those 45 studies, 31 were RCT, six case-control, two time series, two cohort, three LWC, and one quasi-experimental. Four studies included between 40 and 50 participants with one with a comparison group of the same size. Seven interventions included 40 or fewer participants, of which five had a comparison group of the same size.

Figure 3.3. Summary of studies with reported and non-reported study design characteristics (n=97)



Intervention outcomes

Outcome is defined as the change of the health status of the individuals or populations that is attributable to an intervention. Intervention outcome is the directly measured result of the intervention, as reported by the researchers. Outcomes of interventions were usually recorded as positive, negative or neutral. Statistical significance was recorded as significant or not significant, as it is used to demonstrate the likelihood of results occurring by chance alone. The outcomes gathered from the prevention interventions were very diverse and are summarised in Table 3.2. It must be noted that some interventions reported more than one outcome [166, 272]. The outcomes were categorised in logical categories. Some were easy as they identified with similar terminology but some were more difficult to define. As expected from STI/HIV prevention interventions, risk reduction is the most common primary goal of interventions. Therefore reducing UAI and increasing condom use are considered as the main risk reduction strategies.

Table 3.2. Number of intervention outcomes included in the evaluation of STI and HIV prevention studies

Intervention Outcome	n
Increase knowledge and awareness of HIV and STI prevention and treatment • Intermediate outcome: intention to change behaviour	15 9
Risk reduction (including disclosure of HIV status, higher age at first sexual intercourse, fewer sexual practices) • Intermediate outcome: increase in condom use • Intermediate outcome: reduced unprotected (anal) intercourse	26 17 30
Increase uptake of HIV and STI biomedical services (including testing/screening, treatment, vaccination and post-exposure prophylaxis)	31
Promote increased sexual health and care	10
Improve psychosocial adjustment and situation	8
Change social norms	8
Outcomes related to substance use in MSM	7
Biological outcomes	5
Programme related outcome	22

Behavioural outcomes as an increase in the uptake of HIV and STI biomedical services (including screening, treatment, vaccination and post-exposure prophylaxis) are the most frequent intervention outcomes (n=31). This is followed by reduced unprotected anal intercourse (n=30) and risk reduction (n=26), such as disclosure of HIV status, higher age at first sexual intercourse, and fewer sexual practices. These findings were to be expected as 68 studies aimed at affecting knowledge, attitudes and beliefs and influencing psychological and social risk correlated.

Although not explicitly searched, biological outcomes appeared in five studies, such as reduced incidence of syphilis [168] and incidence [209, 233] and prevalence of STI [227]. Some interventions reported both behavioural and biomedical outcomes within a single intervention. An example of this was an intervention which measured increase in uptake of testing alongside increased knowledge [216] and an intervention which increased coverage of hepatitis vaccinations along with increased awareness of vaccinations [166].

Outcomes that were intermediate to behavioural change were also found, and included uptake of HIV and STI biomedical service, reduced UAI, and risk reduction such as: increased condom use (n=17); increased knowledge and awareness of HIV and STI prevention and treatment (n=15); intention to change behaviour (n=9); improved psychosocial adjustment and situation (n=8); and change social norms (n=8). The variety of intermediate outcomes depends on the type of behavioural change theory or framework used. Intermediate outcomes illustrate the fact that within behavioural interventions it may be difficult to attribute impact directly to intervention outcomes, as the causal effect is often complex.

Outcomes related to substance abuse in MSM such as reduction of alcohol consumed [198, 212], reduction in club drug use [232] and reduction in number of days with both heavy drinking and unsafe sex [240] were also found (n=7). Substance abuse was perceived as an additional risk in transmission of HIV and STI among MSM.

Programme related outcomes (n=22) were often measured as an addition (or in combination) with other behavioural or biological outcomes. Examples of them were studies that measured feasibility of internet-based interventions [193, 194, 202, 217]; they often studied the acceptance of new or innovative interventions [268, 273], channel of delivery (community partnership [251], internet chat room [199], online video [249, 251]) or setting (commercial gay venues [177, 181]; home-collection of HIV test [215, 268] and outreach programme [218]).

Classification of evidence according to Tier of Evidence

The Tiers of Evidence framework is a conceptual framework that provides a multi-tiered system for classifying HIV behavioural interventions based on the type and level of evidence for reducing HIV risk. It includes both experimental and observational study designs. The first two levels are considered to be evidence-based interventions (Tier I and Tier II); the last two are for theory-based interventions (Tier III and Tier IV). Tier IV serves to capture theory-based interventions with no outcome monitoring, which speaks to the strength of the Tier of Evidence framework, to capture interventions which might otherwise be missed. However, as the purpose is to review approaches to evaluation, those studies were excluded for this part. Each tier prescribes a set of criteria for classification.

For this review, additional categories have been added, Category Negative and Category Not Classified (NC). These additional categories are meant to accommodate intervention studies that are well designed and implemented, but have negative and or null outcomes (Category Negative), and to classify interventions that cannot be classified into the existing tiers due to shortcomings in study design characteristics (Category Not Classified).

Table 3.3 presents the classification of intervention studies according to the criteria of the Tier of Evidence framework and the additional categories.

Table 3.3. Classification of evidence according to Tier of Evidence framework (adapted after CDC [261])

Tier	Criteria	N	Study design	N	Reference
Tier I – Best evidence Behavioural Interventions	a. Significant and positive intervention effects on relevant outcomes b. No significant and negative intervention effects on relevant outcomes measured in the study c. Comparison group d. unbiased assignment (randomisation) e. ≥ 3 months follow-up in both groups f. ≥ 70% retention in both groups g. Analyses adjusted for baseline differences in outcome measures (if non-RCT) h. At least 50 participants in the analytic sample in each group	8	Randomised Control Trial	8	[175, 205, 209, 229, 238, 239, 241, 257]
Tier II – Good evidence Behavioural Interventions	a. Significant and positive intervention effects on relevant outcomes b. No significant and negative intervention effects on relevant outcomes measured in the study c. Comparison group d. Unbiased or moderately biased assignment e. ≥ 1 month follow-up in both groups f. ≥ 60% retention in both groups g. Analyses adjusted for baseline differences in outcome measures (if non-RCT) h. At least 40 participants in the analytic sample in each group	1	Randomised Control Trial	1	[212]
Tier III – Theory-based Interventions with positive outcome monitoring	a. Behavioural change theory b. Logic model c. Formative research d. Positive process evaluation data demonstrating fidelity, availability, and acceptance e. Outcome monitoring showing positive and significant before and after changes in relevant outcomes	38	Randomised Control Trial	9	[145, 193, 207, 210, 230, 237, 249, 258, 273]
			Longitudinal study with control	4	[144, 197, 211, 244]
			Quasi Experimental	3	[155, 227, 264]
			Case control	3	[147, 214, 247]
			Cohort	2	[186, 194]
			Cross Sectional	16	[146, 173, 190-192, 199, 202, 208, 216, 218, 219, 224, 251, 254, 258]
			Time Series	1	[184]
Tier IV – Theory-based Interventions with no outcome monitoring	a. Behavioural change theory b. Logic model c. Formative research d. Positive process evaluation data demonstrating fidelity, availability, and acceptance	0			
Category Negative	Intervention studies with a negative outcome (or at least one of the outcomes is negative or null)	28	Randomised Control Trial	16	[149, 157, 182, 206, 231-234, 240, 243, 256, 262, 263, 267, 270, 274]

Tier	Criteria	N	Study design	N	Reference
			Longitudinal study with control	1	[156]
			Quasi Experimental	2	[181, 204]
			Case control	2	[245, 275]
			Cohort	1	[152]
			Cross Sectional	5	[167, 178, 198, 246, 250]
			Time Series	1	[266]
Category Not Classified	Interventions that cannot be classified into Tier 1 – 4 and Category Negative due to shortcomings in study design characteristics.	22	Case Control	4	[170, 213, 217, 226]
			Cohort	3	[241, 268, 272]
			Cross Sectional	15	[163, 166, 171, 174, 183, 188, 189, 196, 215, 220-223, 225, 228]

Evidence-based intervention (Tier I and Tier II)

The presence of randomisation and a control (or comparison) group within the intervention design hold a crucial element for classification in Tier I or II. Outcomes from intervention studies that did not include randomisation and control (or comparison) group in study design will be classified as theory-based evidence (Tier III or Tier IV).

Eight intervention studies were classified into Tier I (Best evidence behavioural interventions) and all were designed as RCT, employing randomisation, control/comparison group and met the set of criteria for Tier 1 (sample size more than 50 in both groups, retention rate of more than 70%, with length of follow up more than three months and have no negative outcomes measured). Examples of evidence produced include reduction of UAI/UI/Unprotected sex; reduction on the number of sexual partners; increase in condom use; increase uptake of HIV testing and decrease incidence of STI. Examples of specific studies are HIV prevention by peer counselling within social networks of young MSM [239], and the use of web-based intervention to reduce sexual risk in MSM [257].

One intervention study [212] was classified into Tier II (Promising evidence behavioural intervention). This study was designed as an RCT with a sample size less than 50 for the intervention group. Evidence produced from this study is on reduction of alcohol consumption through counselling using motivational interviewing method.

Theory-based intervention (Tier III and IV)

The use of theory in evidence-informed health promotion ensures that all factors to achieve changes are addressed and also helps to properly design and implement the program [253]. Within the Tier of Evidence framework, only non-experimental studies that utilise established behavioural theory model, formative research, proper evaluating measures and that produce positive and significant effects can be classified into Tier III (theory-based evidence with positive outcome monitoring).

Thirty eight intervention studies were classified into Tier III of which 26 (68%) were non-experimental, 12 (32%) were experimental studies (RCT and quasi experimental) Nine intervention studies were designed as RCT but failed to meet the criteria for retention rates, length of follow up, and sample size to be classified into Tiers I or II. This is also true for the three quasi-experimental studies and the four longitudinal studies with control. Examples of evidence produced at this level are increased knowledge and awareness of HIV/STI prevention and treatment, increased condom use, reduction of UAI, increased uptake of HIV/STI testing/screening, fewer sexual partners, and increased coverage of intervention and changes in social norms. Specific examples of studies classified into this category are increasing knowledge of HIV among young minority MSM through counselling using motivational interview methods [145], and increasing uptake of HIV/STI testing/screening using motivational video messages [237].

Category Negative:

Interventions studies classified into Category Negative are interventions that have been properly designed, implemented and have negative, null or non-significant outcomes (or in one of their outcomes, for intervention with multiple outcomes measured). Twenty eight (29%) intervention studies were classified into this category, of which 16 were designed as RCT, two as Quasi experimental studies, one as longitudinal with control study, five as cross sectional studies, two as case control studies, one as cohort study and one as time series study. The majority of them met the required criteria to be classified into Tier I, II or III. However, due to one of the negative and or not significant outcomes, they were classified into Category Negative. Examples of those studies are Gay Cruise, non-significant effect in condom use [263]; social marketing campaign to increase HIV/STI testing, with no evidence of increase in testing rates [266]; the use of social networking in delivering HIV prevention messages with negative outcomes in changing risk perception and in reducing oral sex [246]; social marketing campaigns to prevent syphilis with no effect in increase knowledge [275], and promotion of safer sexual behaviour through evaluation of self-help and motivational enhancement intervention with negative outcomes in reduction of UAI [256].

Category Not Classified:

Intervention studies classified into Category Not Classified are interventions that have positive outcomes but did not meet the requirements to be classified in Tier I, II, or III. Twenty two (23%) intervention studies were classified into this category. All of them were designed as non-experimental studies (three cohort studies, four case control and 15 cross sectional studies) and the majority did not use a behavioural theory or formative research. Those studies involved either interventions that employed new settings (HIV testing in a bathhouse, community setting), or evaluated new techniques in HIV testing methods (home-based testing).

Characteristics of effective interventions

Although the effectiveness of interventions was not the main purpose of this review, characteristics associated with effective interventions were identified. Although those characteristics may not directly relate to effectiveness in terms of outcomes but to implementation of intervention, they may be useful for future intervention studies. According to Herbst et al. (2005), the following characteristics were associated with intervention efficacy: a theoretical model, interpersonal skills training, at least four delivery methods (including counselling, group discussion, lectures, live demonstrations, and role plays/practice), and exposure complexity (with multiple sessions, at least four hours of exposure over the course of a minimum three week time span) [259]. Those characteristics were recommended in the design of behavioural interventions. Whereas other authors [276] did not find sufficient evidence to conclude multi-session interventions were more effective, Tikkanen (2007) suggested, 'the types of components in the intervention as a whole, rather than the number of sessions, are the decisive factor' [277]. Johnson et al. (2008) suggested that short intervention span (up to one month), and small group and individual level interventions were associated with efficacy [278]. Greater effectiveness was to be achieved when efforts addressing personal skills were included. Moreover, interventions for MSM were more effective when formative research was conducted and were targeted to the specific needs of the target group. [277].

Table 3.4. Summary of intervention characteristics associated with effectiveness (adapted from Herbst et al [259])

Recommendation	Examples derived from effective studies
Theoretical models	Based on diffusion of peer norms or relapse prevention
Interpersonal skills training	Negotiation/communication of safer sex and assertiveness training
Mode of delivery (>4 methods)	Any of the following methods: Counselling, group discussions, lectures, live demonstrations, and role plays/practice
Exposure complexity	Intensity/dose of intervention >1 session ≥4 hours exposure ≥3 week time span

3.4 Discussion

Study design characteristics such as sample size, randomisation, control group, length of follow up, retention rate, the use formative research and theoretical framework are essential in the design and implementation of HIV/STI prevention interventions. Of the reviewed HIV/STI prevention interventions for MSM, 40% (n=39) were designed as experimental studies and 60% (n=58) as observational studies. The latter are considered as easier to conduct, less time consuming and less costly than the former but may provide less strong evidence. An experimental study design is shown to be feasible but requires extra implementation efforts with respect to sample size, randomisation, length of follow up, and retention rate.

Measurement of outcomes varies greatly within HIV/STI prevention intervention studies among MSM, making it difficult for standardisation and direct comparison. Increased uptake of HIV and STI biomedical services is the most frequent outcome measured in the reviewed studies followed by risk reduction, particularly reduction of UAI. Other intervention outcomes such as substance abuse and promotion of sexual health among MSM illustrate the need to broaden the focus in prevention interventions among MSM.

Nine HIV and STI prevention intervention studies for MSM, designed as experimental studies, were classified with positive and significant outcomes in Tier I/II of the Tier of Evidence framework as best or good evidence behavioural intervention. Thirty-eight other studies were classified into Tiers III (Theory-based interventions with positive outcome monitoring) with 31% designed as experimental study. Another 28 studies were classified in Category Negative, of which 64% were designed as experimental study. Randomised controlled trial design is considered to be the gold standard but does not always allow including information on social determinants or qualitatively obtained data. A number of innovative interventions were unable to conform to experimental study design or did not include funding for a robust evaluation.

4. Discussion and conclusion

This report provides an overview of STI outbreaks and increasing STI and HIV trends among MSM, an overview of STI and HIV prevention interventions targeted at MSM, and a review of intervention evaluations. This included an analysis of intervention outcomes, intervention characteristics and level of evidence produced. Current challenges in prevention include the theme of infectiousness in people living with HIV ('treatment as prevention') [279]. It is important to recognise that combination prevention interventions are a key to control STI and HIV.

The majority of the reviewed HIV and STI prevention intervention studies were classified into theory-based interventions with positive outcome monitoring (Tier III of the CDC Tier of Evidence). Few intervention studies were classified into best and good evidence behavioural intervention studies (Tier I and Tier II of the CDC Tier of Evidence). Among these, the HIV prevention by peer counselling within social networks of young MSM [239] and the use of web-based intervention to reduce sexual risk in MSM [238], inarguably proved to reduce risk behaviour (e.g. UAI, UI, unprotected sex, the number of sexual partners) and to increase condom use and the uptake of HIV testing. Most of the studies associated with intervention efficacy and positive outcomes made use of a theoretical model, addressed interpersonal skills training, and operated complex exposures.

Results of this report reconfirm earlier findings that an overall deficit of proper outcome evaluations exists [4], but it also highlights the barriers to effective evaluation in behavioural interventions, namely the difficulties in designing and implementing behavioural intervention studies that allow impact evaluation.

There are a considerable number of HIV and STI interventions that lack substantial elements in their study designs, and therefore were not able to be classified in the CDC Tier of Evidence framework (Category Not Classified). This lack could be due to the limited capacity in the design phase (i.e. lack of appropriate data to inform need assessment, limited access to empirical findings) or in the implementation phase (i.e. limited resources and time to perform formative research). Some of them were not designed to include a control (or comparison) group (Tier III of the CDC level of evidence) or suffered from difficulties in keeping a large sample size, sufficient length of follow up and retention (Category Negative). It should be explored how guiding base theories are translated into intervention activities and to what extent interventions must follow the principles of these theories to achieve successful risk reduction.

A number of well-designed prevention interventions were identified with a negative and/or insignificant result in their intervention outcome. Although many lessons can be learned from interventions without positive outcomes, within the current frameworks on effectiveness or grading systems of evidence, a negative outcome is considered as not effective, and therefore is usually excluded. Even though there is wide acknowledgement that producing high-level evidence for behavioural interventions is difficult. It is recognised that stories behind infection vary and are complex, and often need to be captured through qualitative methods; however, most existing frameworks for reviewing evidence and/or grading systems cannot accommodate the dynamics and inherent challenges within behavioural interventions.

In addressing these issues, the pursuit of "alternative" grading systems that are more inclusive and feasible in practice is needed. A study design that can be used to show intervention impact for behavioural interventions other than the classic experimental study design is needed. Randomised controlled trial designs with modified randomisation and cohort study design can be suggested as alternative study designs that fulfill standard measurement of effectiveness and are feasibly implemented in practice. Additional efforts to improve the overall quality of HIV and STI prevention interventions could be to initiate collaboration with existing initiatives (such as IQ^{hiv}[8]) in providing support in the design, implementation and evaluation of HIV and STI prevention interventions.

To improve the quality and effectiveness of prevention interventions, the design of any intervention should be based on epidemiological appraisal and behavioural profile of the specific MSM population. Consistent surveillance systems that support interpretation of trends and dissemination of prevention intervention need to be implemented at national and local level. Support could be provided to address structural, cultural and social barriers in places where surveillance data on MSM are lacking and where MSM are socially vulnerable. It is important that all countries address these issues so that accurate data can be provided to inform prevention intervention.

[8] IQ^{hiv} is an initiative of civil society, government, academic and international organizations investigating quality assurance and quality improvement practices relevant to HIV prevention programs and project across Europe. www.iqhiv.org

This review also shows an increasing number of HIV and STI preventions for MSM which combine behavioral and biomedical intervention strategies, as a standardised hybrid such as condom social marketing or VCT, or less standardised such as a combination of mass media campaigns and testing. This combination is necessary in addressing specific risk behaviors such as MSM who inject drugs, and HIV positive MSM at high risk for co-infection with other STI. Testing is essential as prevention starts with knowing your status. Moreover, although published after this review was nearly completed, new evidence shows the effectiveness of Pre-exposure Prophylaxis (PrEP) in prevention of the transmission of HIV among MSM as part of a comprehensive package of prevention services including monthly HIV testing, condom provision, and management of other STI [280]. Although there are still many challenges and questions regarding the use of PrEP as a prevention tool, it is expected that behavioural interventions will include at minimum combinations of PrEP with combination behavioural strategies in the future. Male medical circumcision has also shown to be an effective prevention strategy among heterosexual men, but the data is not conclusive for MSM as of yet (Weiss et al 2009; 2008). Recognising there is no single solution to HIV and STI prevention, a comprehensive approach of combination prevention strategies will continue to be essential in the future.

Prevention interventions should target sub-groups within the general MSM population since STI and HIV reporting rates differ between age groups (young, adult and senior), ethnic groups (minority), HIV serostatus, and specific risk group (substance abuse, lower socio-economic status, lower education). In addressing the needs of sub-groups within the larger MSM population, information from epidemiological and behavioural surveillance on risk profile of MSM populations is needed to ensure the effectiveness of the prevention intervention. Epidemiological data on HIV positive men is of increasing importance with new biomedical interventions, including proportion on ART at different CD4 strata and viral load. Epidemiological data for HIV and STI case reports should include age, marker of ethnicity/nationality/migration status (country of birth), residence, probably country of infection; for HIV, CD4 count at diagnosis; and for STIs, co-infections (prior and at diagnosis). With tests of recent infection being developed, there is an opportunity to obtain behavioural data on recently infected individuals. It is important to distinguish between new and known HIV infections in STI and HIV surveillance. A 'new paradigm' to better understand the impact of behavioural and biomedical interventions is needed, particularly the need to recognise the impact of 'treatment as prevention' on the HIV epidemic in EU/EEA.

Syphilis, LGV and HCV are observed to occur as outbreaks and/or as co-infections among (HIV positive) MSM in Europe, often belonging to core groups at highest risk. This occurrence may suggest that HIV and STI prevention interventions for these MSM could specifically focus on one of the above-mentioned STIs and its risk factors. Nevertheless, specific focus should be integrated into a broader disease prevention approach in the context of general sexual health for MSM, also to reach broader MSM populations (including those with gonorrhoea and chlamydia), and also in the light of changed perceptions on HIV (from a fatal disease to a treatable, chronic infection). This integration should be made as such to meet the specific needs and allow participation of MSM, particularly in places where homophobia and stigmatisation still occur.

To increase the coverage of HIV and STI prevention intervention for MSM, existing and innovative strategies in recruitment, selection and high retention need to be employed. In addition, the high mobility of MSM populations within Europe requires mobile accessibility of prevention interventions. This access should accommodate language considerations, cultural acceptability, and social and political circumstances. Approaches such as involvement of popular gay venues and online recruitment were reported. The internet and social media have also been used as a source of prevention intervention. The use of "Apps" on smart phones may be explored as a necessary way forward for delivering sexual health messages. The use of new and innovative methods such as the internet is not without challenges, particularly in evaluating its impact. The US *Internet Outreach Guideline* is reported to be an example of good practice. Triangulation of evaluation methods has also been used for this purpose. More innovative examples on evaluation approaches that enable provision of high level of evidence, but provide greater feasibility of practical implementation should be investigated and prioritised to address this issue. In addition, specific sub-groups of MSM (minority, senior MSM, substance users) may require approaches other than internet-based interventions.

The continuing transmission of HIV and STI among MSM supports the need for behavioural interventions that aim to address the limited awareness on HIV and STI related issues and increasing high risk behavior. The wide range of outcomes measured and scope of prevention interventions highlight the wide range of psychosocial reasons that lead men to engage in high risk behavior and justify the need to design interventions that respond to MSM's wider emotional needs. Consensus is needed around the concept of sexual health within the European context in guiding the objective and focus of comprehensive HIV and STI prevention. Collaboration and partnership between different stakeholders in this field is justified.

Acknowledging the great variety in intervention activities, mode of deliveries and settings, the need for a medium to disseminate lessons-learned and/or sharing of best practices, including mapping of interventions activities and evaluations, especially in European countries, is highlighted. The inventory of HIV and STI prevention interventions for MSM provides an overview and a description of intervention characteristics. Possible ways forward include an audit (mapping policies and "best-practice" programmes), peer reviews, and support from evidence-based experts.

However, it should be able to accommodate the diversity of languages within Europe, so that the threshold for 'publishing' interventions studies in this inventory remains low.

A considerable amount of information has been captured in this report relating to HIV and STI trends among MSM in Europe and existing prevention intervention studies. However, more data is needed, and the lessons learned throughout this process can be applied to future studies. Therefore the following recommendations are made:

- Explore future opportunities for internet-based interventions, including studies on the use of social media. The development and incorporation of mobile technology and the use of "apps" on smart phones and hand-held devices should also be supported. Although not necessarily mutually exclusive, MSM sub-populations deserve more in-depth analysis (youth, seniors, ethnic minorities, and drug users).
- A European network of prevention intervention specialists could be considered as part of the expert networks that support ECDC in STI and HIV activities. Sharing information, reporting what works and what doesn't, and the provision of a toolkit that includes a feasible grading system of evidence are possible ways for taking this forward. The inventory of prevention interventions (Annex 4) can serve the inception of this work.
- Countries could be encouraged to prioritise data collection surrounding MSM, for instance through creation of a toolkit to collect MSM data at European standard. This includes enhancing communication, collaboration between countries, and empowering countries to use the data. This may pose a great challenge as countries vary on the spectrum of conventional and innovative methods.

This report has identified many of the needs and challenges that remain with respect to STI and HIV prevention among MSM. In Europe, MSM are the most severely impacted population by HIV, despite many existing innovative prevention approaches among this group. The sharing between Member States of these practices is essential to effectively tackle STI and HIV in the wider context of the sexual health of MSM in Europe.

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Annex 1. Review protocol for chapter one

1. Aim and objective of the review

This protocol describes the specific research questions and methodology of an inventory of outbreaks and increasing trends of STI and HIV amongst MSM in Europe. The inventory includes: a) a systematic review (literature searching, screening, data extraction and data analysis) b) data analysis using the European Surveillance System-STI/HIV database and c) a short survey on outbreaks of STI and HIV in (candidate) EU countries.

Main activities:

- To compile and summarise published and grey literature regarding outbreaks and increasing trends of HIV and STI among MSM in (candidate) EU countries. The review will focus on increasing trends of syphilis, gonorrhoea, chlamydia (including LGV), HIV, and hepatitis B (five main STI). Outbreak descriptions may include other infectious diseases such as hepatitis C. Co-infections between HIV and STI will be taken into account
- Establishing a database of references and documents collected for the review
- The European Surveillance System dataset: Trend analysis and an in-depth analysis on MSM characteristics (age groups and HIV serostatus). The analysis includes comparisons of proportions of HIV+/HIV-, and age groups (<35 and ≥ 35 years) among MSM over time, stratified by STI
- A survey on STI/HIV outbreaks in MSM among (candidate) EU countries, using a short standardised form. The aim of the survey is to collect grey literature and unpublished data on outbreaks of STI among MSM.

2. Intended Approach

We will perform a systematic literature review according to the steps described below. The first step is to frame research questions, which were described separately for the outbreak review, review increasing STI/HIV trends, and review characteristics (HIV+/HIV-, age, region of origin) of STI/HIV infected MSM populations in Europe.

In the second step, we will identify relevant literature by using a comprehensive search strategy. Step three involves an assessment of the quality of the identified literature. In step four the findings from the studies will be summarised. Finally, in step five, the findings will be interpreted.

The literature search will be conducted using the library facilities at the RIVM, performed by a qualified librarian assisted by the researchers on this project. ENDNOTE databases of relevant publications on the epidemiology of HIV and STI among MSM in Europe will be developed.

The search will be performed on databases of both published and grey literature (conference proceedings, abstracts and reports): Medline, and Scopus (includes Embase). The primary search will be conducted using predefined key words as described in § search strategy. In this search, literature will be screened for relevance and will be stored in the first ENDNOTE database. Deduplication will be conducted in ENDNOTE. Following the primary search, a secondary search will be performed. This consists of a manual search and a reference search. Literature found in this way can also include public health reports and websites (grey literature).

Step 1: research questions

1) What are the frequency, size and duration of outbreaks of STI/HIV among MSM in Europe in 1995–2010?

   -> literature review + survey in member states

2) What EU countries show increasing trends in prevalence/incidence of STI/HIV in MSM in 1995–2010?

   -> literature review + the European Surveillance System database

3) What are the main characteristics in terms of HIV serostatus, age groups and region of origin of MSM populations in EU countries with outbreaks or increasing trends of STI and HIV?

   -> literature review (age, serostatus, region of origin) + the European Surveillance System database (age, serostatus, if feasible)

Step 2: Search strategy

Search terms

The methodology used for the literature analysis is described separately by review question. We defined two separate search strategies (question 1+2 and question 3). The list of search terms includes free and MeSH terms and specific search term combinations, including 34 country names in each search (see Annex A). The search strategies were prepared in close collaboration with RIVM library staff and will be discussed with the ECDC. Minor changes - depending on search outcomes - will be implied if needed.

Bibliographic databases

Databases that will be searched using search terms combinations are:

- MEDLINE (via OVID)
- Scopus (including Embase, from 1996 complete)
- And reference lists of all papers included in the review. Literature found in this way can also include websites, fact sheets and public health reports (grey literature). Examples of national European public health bulletins that might be consulted: Epidemiologisch bulletin (Belgium), Germany: Robert Koch Institut (RKI), HPS Weekly Report, Infectieziekten Bulletin, National Disease Surveillance Centre (Ireland) , UK (England): Health protection Agency (HPA), UK (Northern Ireland): Communicable Disease Surveillance Centre (CDSC), UK (Scotland): Health Protection Scotland (HPS).

Other databases and websites

- The European Surveillance System, STI and HIV data from ECDC (database)
- Key websites: EPIS STI (Source of material for data on HIV and STI outbreaks from ECDC), UNAIDS, WHO, websites of national public health institutes, Medscape HIV/AIDS, Google scholar, etc (see ANNEX E).

Inclusion and exclusion criteria

- Thirty-four countries will be included in the literature review; all 27 EU member states, EEA/EFTA (Norway, Iceland, Liechtenstein and Switzerland) and candidate countries (Croatia, Former Yugoslav Republic of Macedonia and Turkey).
- Focus on MSM and STI/HIV
- Papers published between 01.01.1995 up the date of the search will be included.
- Initially only English language papers will be included. Depending on the content of the studies and results from searches in reference lists of key papers and grey literature and contacts with relevant institutes, other European languages may be included. Public health reports will be included when they can be downloaded from the Internet (such as ECDC reports, UNGASS reports, national surveillance reports) or obtained by other means within 10 days.

Support

This step in the review will be supported by RIVM library staff with proven experiences in performing thorough literature searches, and assisted by project researchers (search strategy, carrying out the search, de-duplication of identified papers, requesting manuscripts, etc.).

Selection of relevant studies to be included in the review

Primary search

The primary literature search will be conducted using search terms and inclusion criteria as described in this protocol. The searches will be carried out on keywords, titles, and abstracts. Duplicate titles will be deleted. The result of this primary search will be screened for relevance and will be stored in an Endnote database.

Secondary search

Following the primary screening, a secondary literature search will be performed. This consists of a manual search, a reference search, and tracking of grey literature. The results of the secondary search will be screened for eligibility and will be stored in an Endnotes database.

A minimum of two reviewers perform the primary and secondary screening of titles and abstracts based on the research questions, STIs, populations, and outcomes to be studied. Based on the initial screening, selected full-text articles are obtained for the final selection. The final selection will be conducted by the experts within the project.

Assessment of study quality and critical review of data

Relevant studies for the STI/HIV outbreaks and trends amongst MSM in Europe will be selected. Criteria for selection are described in § search strategies. After inclusion or exclusion of studies, based on quality criteria, data analysis on the results of the studies will be undertaken. The goal of this step is to draw conclusions on trends and epidemiology of HIV and STI, all based on the best-available scientific evidence.

Data synthesis and analysis

A standardised form is developed for the purpose of data extraction and summarisation. The form will be piloted on a limited number of studies before incorporated for the entire review. After data extraction, final inclusion and exclusion decisions are made regarding the manuscripts. For each publication, basic data were recorded on the data extraction form. The form included criteria to judge the quality of the study, such as study design, sampling method, sampling period, and description of the study population. When a study was not considered relevant and therefore excluded, the reason for exclusion was recorded on the data extraction form. Data will be summarised for each country and region (where appropriate). Reviews will be kept separate as these could not be summarised by using the data extraction form.

Finalising review in consultation with ECDC experts

When the initial draft report is submitted to ECDC there will be an approx. 4–6 weeks period to review the findings of the draft report. During this time the team will develop the final report, together with ECDC experts, considering findings of epidemiological trends and risks for HIV/ STI in MSM.

The results of this step will be presented in a detailed and structured report in English, to be presented at the expert meeting.

SEARCH STRATEGY Q1+Q2

1) What are the frequency and size of outbreaks of STI/HIV among MSM in Europe in 1995–2010?

2) What EU countries show increasing trends in prevalence/incidence of STI/HIV in MSM in 1995–2010?

Definitions

- STI among MSM is defined as a group of infections that may transmit through oral and anal sexual intercourse. The following STIs will be included: syphilis, gonorrhoea, chlamydia (including LGV), HIV, hepatitis B (5 main STIs), and hepatitis C. (lab confirmed cases). These STIs are also available in the European Surveillance System.
- MSM is defined as men who have sexual contact with other men, regardless of their sexual orientation or identification
- Outbreak is defined as the occurrence of disease greater than would otherwise be expected in a given area or among a specific group of persons during a specific period (source: www.cdc.gov). Usually cases are related or there is a common course. Terms as 'outbreaks and (increasing) trends' are not fully 'objective' and may overlap. Therefore, the definitions as described by the authors and those which authors themselves regard as significant will be taken into account.
- Prevalence: the total number of cases of the disease in the population at a given time
- Positivity rate: the total number of cases of the disease, divided by the number of tests performed at a given time
- Incidence (rate): the number of new cases per population during a given time period, expressed as a proportion or a rate with a denominator. When the denominator is the sum of the person-time of the at risk population, it is also known as person-time incidence rate
- Trends: in principle, trends on prevalence, positivity rates or incidence (rates) will be included. Absolute numbers will only be taken into account for countries without denominator data. Trends will be included only if based on at least a five year period, including at least three data points. Also, increasing trends as defined by the author as significant will be taken into account.

The infection:

- Sexual transmitted disease(s)/infection(s), sexually transmitted diseases (MeSH), STI, STD
- Syphilis (MeSH), lues
- Gonorrhoeae, Gonorrhoea, Gonorrhea (MeSH), gonococcal infection(s), gonorrhoeal/gonorrhoeal infections, neisseria gonorrhoeae (MeSH)
- Chlamydia (MeSH), Chlamydia trachomatis (MeSH), CT, C.Trachomatis, chlamydial
- Lymphogranuloma venereum (MeSH), LGV
- Human immunodeficiency virus (MeSH), HIV (MeSH), HIV infections (MeSH), acquired immunodeficiency syndrome (MeSH), AIDS, HIV-1 (MeSH), HIV-2 (MeSH), hiv-seropositivity, hiv-seronegativity
- Hepatitis B (MeSH), HBV, hepatitis B virus (MeSH)
- Hepatitis C (MeSH), HCV, hepacivirus (MeSH)
- or 1-8

The outcome:

- Outbreak(s), disease outbreaks (MeSH)
- Epidemic, epidemics (MeSH)
- Epidemic curve, Epi curve
- Attack rate, AR
- Cluster
- Prevalence (MeSH)
- Seroprevalence
- Seroepidemiologic Studies (MeSH)
- Seroepidemiolog$
- Incidence (MeSH)
- Seroincidence
- Trend(s)
- Increase(s), increasing, mounting, climbing
- Rise, rising, going up
- or 10–23

The population: MSM

- MSM, YMSM, young men
- men adj2 sex adj1 men (men having sex with men/ men who have sex with men)
- Homosexuality, Male (MeSH)
- homosex$
- homo adj3 $sexual
- Gay men
- Bareback$
- Male adj (prostitute$ or sex work$ or transactional sex$)
- Same sex
- Bisexual$
- or 25-34

The population: countries

- see country list (Annex A)
- EU
- European Union
- Europe
- EEA
- EFTA
- or 36-41
- and 9, 24, 35, 43

SEARCH STRATEGY Q3

3) What are the main characteristics in terms of HIV serostatus, age, and region of origin of MSM populations in (candidate) EU countries with outbreaks or increasing trends of STI and HIV?

The infection:

- =row 9

The population: MSM

- =row 35

The population: countries

- =row 43

The outcome:

- Age, Age factors (MeSH), age groups (MeSH)
- young(er), adolescents, older, old people, elderly
- ethnicity, ethnic groups (MeSH), minority groups (MeSH)
- country adj2 origin
- nationality
- country adj2 birth
- co-infection(s), co infection(s), coinfection(s)
- HIV serostatus, HIV-serostatus, serostatus, hiv status, hiv-status, hiv seroprevalence (MeSH)
- HIV positive, HIV negative, HIV seropositivity (MeSH), HIV seronegativity (MeSH), HIVsero$
- or 47-55
- and 9, 35, 43, 57

List of countries

- Austria
- Belgium
- Bulgaria
- Cyprus
- Czech Republic
- Denmark
- Estonia
- Finland
- France
- Germany
- Greece
- Hungary
- Ireland
- Italy
- Latvia
- Lithuania
- Luxembourg
- Malta
- Netherlands
- Poland
- Portugal
- Romania
- Slovakia
- Slovenia
- Spain
- Sweden
- United Kingdom
- Norway
- Iceland
- Liechtenstein
- Switzerland
- Croatia
- Former Yugoslav Republic of Macedonia
- Turkey

Data extraction form

First Author: _____ ☐ Excluded

Publication year: _____ Reason: .....

1. Date extracted ... - .... – .....
2. Extracted by: 1 ☐ Reviewer 1 1 ☐ Reviewer 2
   2 ☐ Reviewer 2 2 ☐ Reviewer 1
3. Type of publication 1 ☐ Peer-reviewed paper 3 ☐ Letter
   2 ☐ Public health report 4 ☐ Other: .....
4. Relevant for review question: 1 ☐ Q1: Outbreaks
   2 ☐ Q2: Increasing trends
   3 ☐ Q3: Characteristics MSM
5. Subject of the study: 1 ☐ Syphilis 4 ☐ HBV 7 ☐ HCV
   2 ☐ Gonorrhoea 5 ☐ HIV 8 ☐ Co infections
   3 ☐ Chlamydia 6 ☐ LGV 9 ☐ STI
   10 ☐ Other:_____
6. Period of data collection: _____ - _____ ☐ not specified

6b. Country:		
1 □ Austria	13 □ Ireland	25 □ Spain
2 □ Belgium	14 □ Italy	26 □ Sweden
3 □ Bulgaria	15 □ Latvia	27 □ United Kingdom
4 □ Cyprus	16 □ Lithuania	28 □ Norway
5 □ Czech Republic	17 □ Luxembourg	29 □ Iceland
6 □ Denmark	18 □ Malta	30 □ Liechtenstein
7 □ Estonia	19 □ Netherlands	31 □ Switzerland
8 □ Finland	20 □ Poland	32 □ Croatia
9 □ France	21 □ Portugal	33 □ Macedonia (form.Y.Rep.)
10 □ Germany	22 □ Romania	34 □ Turkey
11 □ Greece	23 □ Slovakia	
12 □ Hungary	24 □ Slovenia	35 □ multiple countries: .....

7. Area in country: 1 □ whole country 3 □ city: .....
   2 □ region: ..... 4 □ other:.....
   5 □ not specified
8. Study population:

1a □ MSM, general 1b □ MSM, STI clinic attendees 1c □ not specified

2a □ HIV+ MSM	2b □ HIV- MSM	2c □ not specified
3a □ < 25 years	3b □ ≥ 25 years	3c □ not specified
4a □ < 35 years	4b □ ≥ 35 years	4c □ not specified
5a □ National born	5b □ Foreign born	5c □ not specified
6a □ IDU	6b □ non-IDU	6c □ not specified

7 □ other.....

9. Behavioural indicators: 1 □ No 2 □ yes: .....3 □ not specified

10. Location of infection
    1 □ urogenital
    2 □ anorectal
    3 □ oral
    4 □ not specified
11. Outcome burden:
    1 □ outbreak
    2 □ increasing prevalence
    3 □ increasing positivity rate
    4 □ increasing incidence rate
    5 □ increasing absolute numbers
    6 □ other ……
12. Incidence measurement (HIV only)
    1 □ cohort study
    2 □ Recent Infection Testing Algorithm

Quality Criteria, external validity [Representativeness of the sample for the target population]

13. Study design:
    1 □ cross-sectional 2 □ cohort study
    3 □ longitudinal 4 □ other……
14. Sampling method:
    1 □ exhaustive (total population)
    a □ probabilistic sample (random sample)
    b □ non-probabilistic sample (convenience sample)
    2 □ other: ……..
    3 □ not specified
15. Remarks:

Table 1 a. Outbreaks

STI	Country	N	Period	Characteristics	Result text

Table 1 b. Increasing trends

STI	Country	N	Measurement* at start study	Measurement* at end study	Proportional increase (%)	Characteristics	Result text

** Prevalence, incidence, absolute numbers*

Survey Member States

Outbreak summary form

STIs among MSM in Europe -

Currently the ECDC and a Dutch project team are conducting a literature review of published data on outbreaks and increasing trends of STI/HIV among MSM in Europe. We would like to supplement these data by collating unpublished data and reports on STI outbreaks among MSM from European countries. We like to ask your contribution to provide any additional information regarding STI/HIV outbreaks among MSM in your country. The questionnaire would take about 15-20 minutes of your time. Submit this completed form electronically to eline.op.de.coul@rivm.nl and STIHIV@ecdc.europa.eu by latest on **Friday 1st of April 2011.** Many thanks for you kind collaboration!

Form completed by: _____

E-mail:_____

Country:_____

Overview of published articles on STI/HIV outbreaks among MSM in your country:

1.
2.
3.

1. Is the list of publications on STI/HIV outbreaks* among MSM in your country, as listed above (for the period 1995-2010), complete?

If not, please add other publications below:

1.
2.
3.

2. Did you have any other outbreaks* of STI/HIV among MSM between 1995 and 2010 in your country, that have not been published?

1 ☐ No 2 ☐ Yes, reported to EPIS 3 ☐ Yes, not (yet) reported to EPIS

** An outbreak is defined as "the occurrence of cases of a disease (illness) above the expected or baseline level, usually over a given period of time, in a geographic area or facility, or in a specific population group." Report only laboratory-confirmed outbreak cases.*

3. If yes, STI**:

1 ☐ Syphilis
2 ☐ Gonorrhoea
3 ☐ Chlamydia
4 ☐ HBV
5 ☐ HIV
6 ☐ LGV
7 ☐ HCV

*** Please note that if the national or regional outbreak was reported in EPIS you do not have to specify it again, just note 'yes, reported to EPIS' (question 2). Otherwise, please fill in the remaining questions 3-13; in case of more outbreaks of different STIs please fill in one separate form for each outbreak*

4. Describe the outbreak in a few sentences:

5. Location of detection of first case:

1 ☐ STI clinic
2 ☐ General practitioner
3 ☐ Hospital
4 ☐ Other:_____
5 ☐ Unknown

6. Date of first case notification (dd)-mm-yyyy (☐☐) - ☐☐ - ☐☐☐☐

7. Date of last observed cases (dd)-mm-yyyy (☐☐) - ☐☐ - ☐☐☐☐

☐ Outbreak still going on

8. Total number of outbreak cases identified (MSM only):_____
9. Geographical distribution: 1 ☐National 4 ☐city:_____
   2 ☐Regional: _____5 ☐other:_____
   3 ☐not specified
10. Linked to other European countries: 1 ☐yes:_____
    2 ☐no
    3 ☐don't know, not sure
11. MSM population characteristics: 1 ☐ HIV positive MSM
    (estimated %_____)
    2 ☐ Migrant MSM
    (estimated %_____)
    3 ☐ Young MSM (< 25 years)
    (estimated %_____)
    4 ☐ Other age group(s): specify:_____
    (estimated %_____), or median age_____
    5 ☐ Other:_____
    (estimated %_____)
    6 ☐ Not specified

12. Other comments on specific behavioral risks, other characteristics of well-defined exposed groups, specific settings in which the outbreak occurred):

13. Comments on public health actions taken:

If you have questions, please contact the project team: Eline Op de Coul and Femke Koedijk at Centre for Infectious Diseases Control, RIVM Netherlands.

Description of websites

ECDC - EPIS STI (2010), http://ecdc.europa.eu/en/activities/surveillance/sti Epidemic Intelligence Information System for Sexually Transmitted Infections (EPIS STI) is a surveillance system implemented to facilitate rapid reporting and dissemination of unusual events related to STI transmission across Europe. The European Network for STI surveillance is asked to report any unexpected and adverse STI transmission events, and is urged to submit null reports when no such events have been seen. It was previously known as ESSTI_ALERT (2003–2008) and STI Alert (2009–2010) until it was integrated into the Epidemic Intelligence Information System in August 2010.

UNAIDS (http://www.unaids.org), UNAIDS, the Joint United Nations Programme on HIV/AIDS is an innovative partnership that leads and inspires the world in achieving universal access to HIV prevention, treatment, care and support. This site will be consulted for epidemiological fact sheets, national HIV/AIDS reports and national UNGASS reports.

WHO (World Health Organization), (http://www.who.int), WHO is the directing and coordinating authority for health within the United Nations system. It is responsible for providing leadership on global health matters, shaping the health research agenda, setting norms and standards, articulating evidence-based policy options, providing technical support to countries and monitoring and assessing health trends. This site contains, among other things, epidemiological data on HBV.

Google Scholar - http://scholar.google.com/ Google Scholar provides a simple way to broadly search for scholarly literature. From one place, you can search across many disciplines and sources: articles, theses, books, abstracts and court opinions, from academic publishers, professional societies, online repositories, universities and other web sites. Google Scholar helps you find relevant work across the world of scholarly research

Annex 2. Review protocol for chapter two

The methodology described in this protocol intends to provide an inventory of HIV and STI prevention interventions relevant for MSM in Europe. The review will include interventions carried out following outbreaks or other events, as well as interventions which are routinely or structurally planned.

The objectives, including the main activities of this review are:

- To collect relevant reports and publications regarding HIV and or STI prevention interventions for MSM in Europe and other countries, taking into account previous ECDC and other work;
- To establish a database on relevant recent publications regarding HIV and or STI prevention interventions for MSM in Europe and other countries;
- To describe the type and scope of studies available and relevant for current HIV and STI prevention for MSM;
- To categorise interventions based on triggering event, type of study, intervention type, country where the study was carried out, the health focus of the study, the target population, outcome, and approach to evaluation;

Intended approach

We will perform a systematic literature review according to the following steps: The first step is formulating research questions, which were described separately for the inventory of HIV/STI prevention interventions for MSM, initiating event or programmatic response, and the type and scope of the prevention interventions relevant for the current situation.

The second step will be to identify literature to be included in this review. Four different types of searches will be conducted. The first one is a bibliographic search, using pre-defined search terminologies; the second search will be done on selected databases and websites; the third search is through references of key publications and websites; and the fourth search will be done through direct contact with key informants (see detailed description of the search strategies in section 4).

Results of each search strategy are divided into primary and secondary results. Primary results are results using pre-defined search terminologies and or key words; the secondary results are results after manual filter using inclusion and exclusion criteria.

Step three of this review involves characterising and abstracting findings of the included studies. Data from the included studies will be described and characterized using a standard form developed for this review.

In step four, the findings will be summarized in a table, complemented by narrative text.

Research questions

Step one involves the formulation of the research questions. The review questions for this research are:

- What are the different STI and HIV prevention interventions targeted at MSM in settings relevant to European situations implemented between 1995 and 2010?
- What kinds of interventions are planned within the framework of programmatic responses to the STI and HIV epidemic in MSM?
- What kind of STI and HIV interventions were carried out following outbreaks and or other events?
- What are the types and scopes of the studies are available and relevant for current HIV and STI prevention for MSM?

Review methodology

Step two includes the review methodology which has been prepared in close collaboration with RIVM library staff and will be discussed with ECDC.

Inclusion and exclusion criteria

Eligible studies are those:

- Published between 1995–2010:
- Papers published between 01.01.1995 up the date of the search will be included. In addition, they should describe interventions that commenced after 1995.
- Studies in English:

- Initially only English language papers will be included. Depending on the content of the studies and results from searches in reference lists of key papers and grey literature and contacts with relevant institutes, other European languages may be included.
- Focus on MSM:
- MSM is defined as men who have sexual relations with other men, regardless of their sexual orientation or identification;
- Focus on HIV and STI:
- STI is defined as a group of infections that may transmit through vaginal, oral and anal sexual intercourse. The following STI will be included: chlamydia (including LGV), gonorrhoea, syphilis, HIV, hepatitis B (5 main STIs), and hepatitis C. Studies might focus on one or more STIs.
- Describing interventions focusing on STI and HIV in MSM:
- Defined as 'a specific activity (or set of related activities) intended to bring about HIV risk reduction in a particular target population using a common strategy for delivering the prevention messages'; These interventions are those that aim to delay debut, decrease the number of sexual partners and concurrent partnerships, increase the proportion of protected sexual acts, increase acceptance of counselling and testing, and improve adherence to biomedical prevention interventions, such as condom use. These interventions can be focussing on the individual, peer, couple, group, family, institution, or the community.

The following interventions are to be included in the review:

- Interventions aimed at knowledge, attitudes and beliefs and influencing psychological and social risk correlates (e.g. media campaigns, interpersonal education programmes, sexual health education, safer sex promotion, detached education, outreach work, prevention counselling, peer education, community level interventions)
- Interventions aimed at lowering the risk of a behaviour (e.g. condom distribution, provision of paraphernalia for safer sex)
- Comprehensive prevention interventions: involves all the strategies required to prevent transmission of HIV. These include AIDS education; behaviour change programmes for young people and other populations at higher risk of HIV exposure; promotion of male and female condoms, along with abstinence, being safer through fidelity and reducing the number of partners; voluntary counselling and testing; preventing and treating sexually transmitted infections; blood safety, prevention of transmission in health care settings; community education to counter stigma; and vulnerability reduction through social change[9].

The following interventions are not to be considered in the review:

Socio-political interventions (e.g. social marketing, self-help and solidarity groups, medical and legal assistance services, legal, policy and institutional reforms to protect human rights of vulnerable groups for STI and HIV and PLWHA)

- Biological/biomedical interventions that reduce HIV infection and transmission risk are not within the scope of this tender (e.g. treatment (STI and ARV), drug substitution treatment, post-exposure prophylaxis, circumcision, prophylaxis for infants, breastfeeding substitution for HIV-positive mothers, screening blood and organs; hygiene, disinfection and disposal of equipment)
- Partner notification is covered by another ECDC project
- Descriptive studies and studies describing epidemiological trends.

The eligibility and exclusion criteria can also be found in the table in Annex 3, which will be used for the systematic assessment of the studies selected in the primary search.

Methods for identification of studies

To identify data describing behavioural prevention interventions on STI/HIV in MSM, the following methods will be used: searches of bibliographic database, websites, databases and reference of key publication will be limited so as to identify studies conducted in the time period (1995-2010) and published in English language. A highly sensitive search strategy will be devised, based on combining the following three concepts expressed through combinations of controlled vocabulary and free-text terms

- Men who have Sex with Men
- HIV/AIDS and/or STIs
- Behavioural interventions

Bibliographic databases:

The following database will be searched for published data:

[9] http://data.unaids.org/publications/Fact-Sheets04/fs_prevention_en.pdf

- Medline via Ovid
- Via DIMDI:
  - Embase
  - Scisearch
  - PsycInfo

A list of key words can be found in Annex 1 of this protocol. The searches in these three databases will be supported by RIVM library staff with proven experience in performing thorough literature searches, and assisted by project researchers (search strategy, carrying out the search, de-duplication of identified papers, requesting manuscripts, etc.).

(Manual) Search on the following databases:

We will search the following databases and websites, using search terminologies developed for the bibliographic database (see annex 1).

Databases:

- International AIDS Society (IAS)
- HIV AIDS Clearing House Aids Action Europe
- National Guideline Clearinghouse (NGC database) NGC database (National Guideline Clearinghouse)
- System of Information on Grey Literature in Europe (SIGLE)
- Cochrane Library
- EPPI-Centre's in-house health promotion bibliographic database - BiblioMap
- HIV/AIDS Prevention Research Synthesis database of the CDC
- Database RKI/EMIS project
- Database Schorer Stichting
- Aidsline (AEGIS)
- Database of Abstracts of Reviews of Effects (DARE)
- POPLINE
- CINAHL
- ERIC
- Applied Social Sciences Index and Abstracts (ASSIA)
- BL Direct
- Current Contents Connect
- National Library of Medicine (NLM) HIV/AIDS resources
- UNAIDS
- UK Clinical Research Network Portfolio Database
- NHS Evidence: HIV and sexually transmitted infections

Websites:

- CHAPS
- Loket Gezondleven (RIVM)
- AIDSmap
- AIDS Portal
- AIDSinfo (US)
- Avert
- Centre for Disease Control (Diffusion of Effective Behavioural Interventions
- Global Forum on MSM and HIV
- Global Network of People living with HIV (GNP+)
- National AIDS Trust
- NICE website and former Health Development Agency
- Terrence Higgins Trust (THT)
- Google Scholar

Short descriptions and URL addresses of these databases and websites can be found in Annex 2 of this protocol.

References of key publication and websites:

We will also include research of reference lists of key papers and key websites. Relevant articles which can be obtained within ten days will be included in this review.

Direct request to individual:

When needed, we will also contact individual researchers. Relevant articles which can be obtained within ten days will be included in this review.

Selection of relevant studies to be included in the review

Primary search:

The primary literature search will be conducted using search terms and inclusion criteria as described in this protocol. The searches will be carried out on keywords, titles, and abstracts. Duplicate titles will be deleted. The result of this primary search will be screened for eligibility and will be stored in an ENDNOTE database.

Secondary search:

Following the primary screening, a secondary literature search will be performed. This consists of a manual search, a reference search, tracking of grey literature, including contacting key informants and institutes. The results of the secondary search will be screened for eligibility and will be stored in an ENDNOTE database.

A minimum of two reviewers perform the primary and secondary screening of titles and abstracts based on the eligibility criteria mentioned above. Based on the initial screening, selected full-text articles are obtained for the final selection. The final selection will be conducted by the experts within the project.

Methods for characterising included studies and data extraction

In step four of this review, data from included studies on HIV and or STI prevention interventions targeted at MSM will be characterised using a standard form developed for this review (Annex 4). Studies which are found not to be eligible for inclusion in this review after completion of the characterisation form will be excluded from the review. The form will be piloted in a small numbers of the studies, before it is being used.

The form consists of the following items:

- References - including title, author, year
- Health focus – HIV and or STIs
- Scope – period of data collection and goal of the intervention
- Population – description of study population, country, age
- Type of intervention – focus, type, mode of delivery and setting
- Prevention strategy - triggering events (outbreak or regular surveillance), frequency and basis theory
- Study design, data collection method and approach to evaluation
- Outcome, results and impact of the study as reported by the author(s)

Data on study characterisation will be catalogued electronically in a database for ease of analysis.

Synthesis

In step five, the outputs from study characterisation and abstracted findings will be synthesised to answer the review questions. Data on HIV/STI prevention interventions for MSM will be grouped, summarised and analysed according to health focuses, age groups, regions, countries/continents, types of interventions and approach to evaluation. Trends in types and settings of HIV/STI prevention interventions in MSM over time will be analysed. All data will be presented in a table form, complemented with narrative text.

List of keywords for data extraction

Infection:

1	(sexual* transmitted disease* or sexual* transmitted infection* or std or stds or sti or stis).tw.
2	(syphilis or lues or treponema pallidum or "t. pallidum" or gonorrh* or gonococcal or chlamydial trachomatis or "c. trachomatis" or lymphogranuloma venereum or lgv or hepatitis b or hbv or hepatitis c or hcv or hiv* or human immunodefiency virus).tw.
3	(chlamydia* not (pneumoniae* or muridarum or psittaci or simkania)).tw.
4	exp sexually transmitted diseases/ or exp syphilis/ or gonorrhea/ or exp chlamydia infections/ or lymphogranuloma venereum/ or hiv infections/ or hepatitis b/ or hepatitis c/
5	treponema pallidum/ or neisseria gonorrhoeae/ or chlamydia trachomatis/ or exp hiv/ or hiv-1/ or hiv-2/ or hepatitis b virus/ or hepatitis c virus/
6	1 or 2 or 3 or 4 or 5

Population:

7	(msm or ymsm or (men adj2 sex adj1 men) or homosex* or (homo adj3 sexual*) or gay men or gay community or gay communities or bareback*).tw. or homosexuality, male/ or bisexuality/
8	6 and 7

Behavioural Intervention:

9	(intervention* or prevent* or behavio?r* or reduc* or program* or project* or campaign).ti.
10	preventive health services/ or primary prevention/ or preventive medicine/ or intervention studies/
11	exp sexually transmitted diseases/pc or hiv infections/pc or acquired immunodefiency syndrome/pc
12	health promotion/ or health education/ or sex education/ or communication/
13	(promot* or educat* or communicat* or training or message*).tw.
14	health knowledge, attitudes, practice/ or attitude to health/ or patient acceptance of health care/ or exp patient compliance/ or patient participation/ or treatment refusal/ or awareness/ or knowledge/ or self concept/
15	(awarenes* or knowledge or attitude* or health culture or cognition or cognition or self concept).tw.
16	risk taking/ or risk factors/ or safe sex/ or sexual behavior/ or sexual abstinence/ or circumcision, male/ or behavior therapy/ or sex counseling/ or counseling/
17	(safe sex or unsafe sex or bareback or (sex* adj2 behavio?r*) or safe behavio?r* or (sex* adj2 educat*) or abstinence* or "condom use" or circumsision or choice behavio?r* or risk taking or (risk* adj3 behavio?r*) or (risk* adj3 education*) or risk reduction behavio?r* or (risk* adj3 reduc*) or risk factor* or (sex* adj3 risk*) or counseling or behavio?r* therapy or partner notification).tw.
18	(social support or psychosocial support or skills building or support groups).tw.
19	social support/ or contact tracing/ or testing rate/ or health service accessibility/
20	(health* adj3 (educat* or aware* or opportunit* or attitude* or access* or inform* or promot* or prevent* or behavio?r*)).tw.
21	(patient* adj3 (satisfaction or educat* or behavio?r* or compliance or comply or complies*)).tw.
22	(barrier* or facillitat* or hinder* or block* or obstacle* or restrict* or restrain* or obstruct* or inhibit* or impede* or delay* or constrain* or hindrance).ti.
23	(attitude* or opinion* or belief* or perceiv* or perception* or aware* or personal view* or motivat* or incentive* or reason*).tw.
24	9 or 10 or 11 or 12 or 13 or 14 or 15 or 16 or 17 or 18 or 19 or 20 or 21 or 22 or 23
25	8 and 24

General:

26	25 and english.lg.
27	limit 26 to yr=1995-2010
28	27 not (letter or news).pt.

Short description of databases and websites

Databases

International AIDS Society (IAS) - http://www.iasociety.org/

The International AIDS Society is the world's leading independent association of HIV professionals. The IAS Online Resource Library is a fully-searchable collection of HIV research and information, including abstracts, presentations and multimedia resources from international conferences the IAS organises, and other materials produced by the IAS.

HIV AIDS Clearing House Aids Action Europe - http://www.aidsactioneurope.org/index.php

AIDS Action Europe was established in 2004 and has grown to be one of the largest HIV-related networks in the region. The AIDS Action Europe clearinghouse is a central point where NGOs, policy makers, networks and other stakeholders in Europe and Central Asia can share key documents and good practice materials.

National Guideline Clearinghouse (NGC database) - http://www.guideline.gov/index.aspx

NGC is a public resource for evidence-based clinical practice guidelines.

System of Information on Grey Literature in Europe (SIGLE) -
http://www.cardiff.ac.uk/insrv/eresources/databases/sigle.html

SIGLE contains details of reports and other grey literature produced in Europe; covers pure and applied science and technology, economics, other social sciences and humanities

Cochrane Library - http://www.cochrane.org/about-us

The Cochrane Collaboration, established in 1993, is an international network of people helping healthcare providers, policy makers, patients, their advocates and carers, make well-informed decisions about human health care by preparing, updating and promoting the accessibility of Cochrane Reviews – over 4 000 so far, published online in the Cochrane library.

EPPI-Centre's in-house health promotion bibliographic database - BiblioMap
http://eppi.ioe.ac.uk/webdatabases/Intro.aspx?ID=7

BiblioMap, the EPPI-Centre database of health promotion research, has been compiled over a number of years as a result of searching and coding research for inclusion in systematic reviews. It contains approximately 14 300 records at present and is being added to each time a systematic review is completed.

HIV/AIDS Prevention Research Synthesis database of the CDC-
http://www.cdc.gov/hiv/topics/research/prs/index.htm

The HIV/AIDS Prevention Research Synthesis (PRS) Project, through its ongoing efficacy review process, identifies evidence-based HIV behavioral interventions to help HIV prevention planners and providers in the United States select interventions most appropriate for their communities.

Database Schorer Stichting - http://www.schorer.nl/9/schorer/

Schorer is the Netherlands' institute for homosexuality, health and well-being. Schorer studies the position of lesbians, gay men, bisexuals and transgenders. In the area of HIV/STI, the annual Schorer Monitor survey is conducted among men who have sex with men.

Aidsline (AEGIS).- http://www.aegis.com/aidsline/

AIDSLINE® is from the US National Library of Medicine. It contains references to the published literature on HIV infections and acquired immune deficiency syndrome. It focuses on the biomedical, epidemiologic, health care administration, oncologic, and social and behavioral sciences' literature. AIDSLINE does not offer complete articles. It has short citations (with abstracts, if available) to journal articles, monographs, meeting abstracts and papers, government reports theses and newspaper articles.

Database of Abstracts of Reviews of Effects (DARE) -
http://www.crd.york.ac.uk/crdweb/Home.aspx?DB=DARE

DARE contains 15,000 abstracts of systematic reviews including over 6,000 quality assessed reviews and details of all Cochrane reviews and protocols. The database focuses on the effects of interventions used in health and social care.

POPLINE - http://www.popline.org/aboutpl.html

POPLINE®(POPulation information onLINE) contains citations with abstracts to scientific articles, reports, books, and unpublished reports in the field of population, family planning, and related health issues. POPLINE is maintained by the K4Health Project at the Johns Hopkins Bloomberg School of Public Health/Center for Communication Programs and is funded by the United States Agency for International Development. (USAID).

CINAHL - http://www.ebscohost.com/cinahl/

CINAHL®, the Cumulative Index to Nursing and Allied Health Literature, is the most comprehensive resource for nursing and allied health literature.

ERIC - http://www.eric.ed.gov/

ERIC - the Education Resources Information Center - is an online digital library of education research and information. ERIC is sponsored by the Institute of Education Sciences (IES) of the U.S. Department of Education. ERIC provides ready access to education literature to support the use of educational research and information to improve practice in learning, teaching, educational decision-making, and research

Applied Social Sciences Index and Abstracts (ASSIA) - http://www.csa.com/factsheets/assia-set-c.php

ASSIA: Applied Social Sciences Index and Abstracts on the Web is an indexing and abstracting tool covering health, social services, psychology, sociology, economics, politics, race relations and education. Updated monthly, ASSIA provides a comprehensive source of social science and health information for the practical and academic professional. ASSIA currently contains over 375 000 records from over 500 journals published in 16 different countries, including the UK and US.

BL Direct - http://direct.bl.uk/bld/Home.do

British Library Direct is the online British library collection.

Current Contents Connect - http://thomsonreuters.com/products_services/science/science_products/a-z/current_contents_connect/

Current Contents Connect is a current awareness database that provides easy Web access to complete tables of contents, abstracts, bibliographic information, and abstracts from the most recently published issues of leading scholarly journals, as well as from more than 7 000 relevant, evaluated websites. Also included is full bibliographic information from some electronic journals before they are published.

National Library of Medicine (NLM) HIV/AIDS resources - http://www.nlm.nih.gov/databases/databases_aids.html

The National Library of Medicine (NLM) provides access to the published literature on acquired immunodeficiency syndrome (AIDS) and human immunodeficiency virus (HIV) via several resources (AIDSInfo, an HIV/AIDS subset in Pubmed, clinicaltrials.gov).

UNAIDS - http://www.unaids.org/globalreport/AIDSinfo.htm

AIDSInfo is a data visualisation and dissemination tool to facilitate the use of AIDS-related data in countries and globally. AIDSInfo is populated with multisectoral HIV data, including AIDS spending, epidemiological estimates, country-reported programmatic data and National Composite Policy Index responses from government and civil society.

UK Clinical Research Network Portfolio Database - http://public.ukcrn.org.uk/search/Portfolio.aspx

The UKCRN Portfolio comprises four smaller portfolios of studies belonging to the four nations of the United Kingdom. In the UKCRN Portfolio system, studies are categorised using a three-tier classification. At the highest level, studies will be assigned to a Topic or Topics; within a Topic they are then assigned to one or more Clinical Studies Groups and one or more Subtopics. At the lowest level studies are associated with specific diseases, diagnoses or complications associated with the condition which they are investigating.

NHS Evidence: HIV and sexually transmitted infections - http://www.evidence.nhs.uk/aboutus/Pages/AboutNHSEvidence.aspx

NHS Evidence is a service that provides easy access to specially selected high quality clinical and non-clinical information about health and social care. NHS Evidence is for everyone in health and social care making decisions about treatments or the use of resources.

Websites

CHAPS - http://www.chapsonline.org.uk/

CHAPS is an England wide, collaborative programme of HIV health promotion for gay, bisexual and other homosexually active men, in conjunction with an integrated research and development programme. In the CHAPS library one can find our research, and that conducted by others, as well as the interventions we've produced to try and influence men's behaviour.

Loket Gezondleven (RIVM) - http://www.loketgezondleven.nl/

Loketgezondleven is the Dutch portal for health promotion and prevention developed by the Centre for Healthy Living (Centrum Gezond Leven). Here you will find information on health promotion and prevention in the Netherlands: the structure of health promotion in the Netherlands, the key Dutch organisations that are responsible for health promotion and significant health promotion interventions that have been developed in the Netherlands.

AIDSmap - http://www.aidsmap.com/en

National Aids Manual (NAM) - AIDSmap provides a variety of information on HIV/AIDS, providing independent, comprehensive, and accessible information and publications.

AIDS Portal - http://www.aidsportal.org/

AIDSPortal is a global initiative that aims to facilitate greater knowledge sharing and networking among organisations involved in the response to HIV and AIDS. AIDSPortal facilitates access to information by making documents directly available from the AIDSPortal site, and allowing users to quickly browse and search for resources around pre-defined policy, programmatic and country issues.

AIDSinfo (US) - http://www.aidsinfo.nih.gov/

AIDSInfo is a data visualisation and dissemination tool to facilitate the use of AIDS-related data in countries and globally. AIDSInfo is populated with multisectoral HIV data, including AIDS spending, epidemiological estimates, country-reported programmatic data and National Composite Policy Index responses from government and civil society.

Avert - www.avert.org

AVERT is an international HIV and AIDS charity, based in the UK, working to avert HIV and AIDS worldwide, through education, treatment and care. AVERT also provides a wide range of information to educate people about HIV/AIDS across the world. AVERT's highly successful website, avert.org, the most popular HIV/AIDS website in the world, has over 200 pages which describe all aspects of HIV and AIDS, as well as having specific areas for young people, interactive quizzes, an extensive photo gallery, and videos.

Centre for Disease Control (Diffusion of Effective Behavioural Interventions) - http://www.effectiveinterventions.org/en/home.aspx

The DEBI project is a US national-level strategy to provide high quality training and on-going technical assistance on selected evidence-based HIV/STD/ Viral Hepatitis prevention interventions to state and community HIV/STD program staff. It was designed to bring science-based, community, group, and individual-level HIV prevention interventions to community-based service providers and state and local health departments in the US. In collaboration with the Division of HIV/AIDS Prevention at the Centers for Disease Control and Prevention (CDC), the Center on AIDS & Community Health (COACH) at the Academy for Educational Development (AED) coordinates training on a variety of science-based, effective interventions for HIV prevention.

MSM Global Forum - http://www.msmgf.org/

MSMGF advocates for equitable access to effective HIV prevention, care, treatment, and support services tailored to the needs of gay men and other MSM. They work to ensure an effective response to rapidly escalating HIV epidemics among MSM, including the consequent support, treatment and care needs of HIV positive MSM, through advocacy, information exchange, knowledge production, networking, and capacity building activities, sustained over time at the global level.

Global Network of People living with HIV (GNP+) - www.gnpplus.net

GNP+ advocates to improve the quality of life of people living with HIV. As a network of networks, GNP+ is driven by the needs of people living with HIV worldwide, promoting evidence-informed advocacy programmes.

National AIDS Trust - www.nat.org.uk

UK-based charity working with other charities, people living with HIV, doctors, lawyers and other experts, utilizing all the latest evidence to influence national policy development and the actions of people and organisations across the UK who have the greatest impact on the lives of people living with HIV.

NICE website and former Health Development Agency - http://www.nice.org.uk/aboutnice/whoweare/who_we_are.jsp

The Health Development Agency was a special health authority established in 2000 to develop the evidence base to improve health and reduce health inequalities. It worked in partnership with professionals and practitioners across a range of sectors to translate that evidence into practice. Publications are either produced by the HDA, or commissioned by them, but published after its functions were transferred to NICE.

Terrence Higgins Trust (THT) - http://www.tht.org.uk/

THT is the leading HIV & AIDS charity in the UK and the largest in Europe. Their objectives are to reduce the spread of HIV and promote good sexual health, to provide services which improve the health and quality of life of those affected, and to campaign for greater public understanding of the personal, social and medical impact of HIV and AIDS.

Google Scholar - http://scholar.google.com/

Google Scholar provides a simple way to broadly search for scholarly literature. From one place, you can search across many disciplines and sources: articles, theses, books, abstracts and court opinions, from academic publishers, professional societies, online repositories, universities and other web sites. Google Scholar helps you find relevant work across the world of scholarly research.

Eligibility criteria for second search

To be included in the review, a study/intervention **must** fall into all of the following categories:

Inclusion Criteria	
1	Intervention focuses on HIV and STI: STI is defined as a group of infections that may transmit through vaginal, oral and anal sexual intercourse. The following STI will be included: • Chlamydia (including LGV); • Gonorrhoea; • Syphilis; • HIV; • Hepatitis B; • Hepatitis C; Paper might focus on one or more STIs
2	Intervention focuses on MSM: MSM is defined as men who have sexual relations with other men, regardless of their sexual orientation or identification. Included is a paper focusing on: • Men who are gay or bisexual • Men who have sex with men, but who do not identify as either gay or bisexual • Young men who have sex with men
3	Study focuses on prevention interventions on STI and HIV in MSM. Defined as 'a specific activity (or set of related activities) intended to bring about HIV risk reduction in a particular target population using a common strategy for delivering the prevention messages; These interventions are those that aim to delay debut, decrease the number of sexual partners and concurrent partnerships, increase the proportion of protected sexual acts, increase acceptance of counselling and testing, and improve adherence to biomedical prevention interventions, such as condom use. These interventions can be focussing on the individual, peer, couple, group, family, institution, or the community. The following interventions are to be included in the review: • Interventions aiming at knowledge, attitudes and beliefs and influencing psychological and social risk correlates (e.g. media campaigns, interpersonal education programmes, sexual health education, safer sex promotion, detached education, outreach work, prevention counselling, peer education, community level interventions) • Interventions aiming at lowering the risk of a behaviour (e.g. condom distribution, provision of paraphernalia for safer sex) • Comprehensive prevention interventions: include AIDS education; behaviour change programmes for young people and other populations at higher risk of HIV exposure; promotion of male and female condoms, along with abstinence, being safer through fidelity and reducing the number of partners; voluntary counselling and testing; preventing and treating sexually transmitted infections; blood safety, prevention of transmission in health care settings; community education to counter stigma; and vulnerability reduction through social change[10]. *The following interventions are not to be considered in the review:* • Socio-political interventions (e.g. social marketing, self-help and solidarity groups, medical and legal assistance services, legal, policy and institutional reforms to protect human rights of vulnerable groups for STI and HIV and PLWHA) • Biological/biomedical interventions that reduce HIV infection and transmission risk are not within the scope of this tender (e.g. treatment (STI and ARV), drug substitution treatment, post-exposure prophylaxis, circumcision, prophylaxis for infants, breastfeeding substitution for HIV-positive mothers, screening blood and organs; hygiene, disinfection and disposal of equipment) • Partner notification is covered by another ECDC project. • Descriptive studies and studies describing epidemiological trends.
Inclusion on language	
4	• Paper is written in English language • Paper in reference list of key paper, or grey literature, or paper found by contacts with relevant institutes is published in another European language
Inclusion on date	
5	Paper has been published between 01.01.1995 and 14.02.2011 (date of search)
6	Intervention commenced after 1995.

[10] http://data.unaids.org/publications/Fact-Sheets04/fs_prevention_en.pdf

Data extraction forms

No:_____
☐ Excluded Reason:_____
_____

Author:_____
Title:_____
_____
Publication year: _____

Date of data-extraction _____-_____-_____
1. Extracted by: 1 ☐ Reviewer 1 2 ☐ Reviewer 2 3 ☐ Reviewer 3

Health focus

2. Disease studied: 1☐ Syphilis 4 ☐ HBV 7 ☐ HCV ☐ Gonorrhoea 5
☐ HIV ☐ Co-infections 3 ☐ Chlamydia 6 ☐ LGV ☐ STI
☐ Other:_____

Scope

3. Period of data collection: 1 ☐ _____ - _____2 ☐ Other: 3 ☐ Not specified

4. Intervention Goal:_____
_____
_____

5. **Population**
6. Country:_____

7. Area in country: 1 ☐ Whole country 3 ☐ City:_____
2 ☐ Region:_____ 4 ☐ Place:_____
5 ☐ Not specified

8. Study population:
1a ☐ Only MSM 1b ☐ Mixed population 1c ☐ Not specified
2a ☐ HIV+ MSM 2b ☐ HIV- MSM 2b ☐ HIV-and+ MSM 2d ☐ Not specified
3a ☐ Age:_____ 3b ☐ Not specified

Type of intervention

9. Activity (specific activities undertaken by project staff):

1 ☐ Counselling 2 ☐ Testing
3 ☐ Education 4 ☐ Training
5 ☐ Campaign 6 ☐ Condom distribution
7 ☐ Other:_____

10. Mode of delivery (channel of content delivery):

1 ☐ Mass media 2 ☐ Peer education
3 ☐ Faith-based intervention 4 ☐ Community-based intervention
5 ☐ Trained counsellor 6 ☐ Health care provider
5 ☐ Other:_____

11. Setting (location where the intervention is delivered):

1 ☐ Workplace intervention 2 ☐ School-based intervention
3 ☐ TV 4 ☐ Radio
5 ☐ Event 6 ☐ Internet
7 ☐ PSE-based intervention 8 ☐ Bar
9 ☐ Clinic/health facility 10 ☐ Public setting, specify:
11 ☐ Other:_____

12. Commodity (product that is provided):

1 ☐ Condom social marketing 2 ☐ Condom distribution
3 ☐ Flyers/folder 4 ☐ Educational message
5 ☐ Test 6 ☐ Vaccin
7 ☐ Other:_____

Prevention strategy

13. Triggering Event:

1 ☐ Programmatic response
2 ☐ Outbreak
3 ☐ Other:_____

14. Frequency of intervention:

1 ☐ Once 2 ☐ Monthly
3 ☐ Yearly 4 ☐ No time defined
5 ☐ Other:_____

15. Basis theory:_____

_____

_____

_____

Notes on prevention strategy

_____

_____

_____

Study design

16. Study design (www.gwumc.edu/library/tutorials/studydesign101/ / www.vetmed.wsu.edu/courses-jmgay/glossclinstudy.htm):

1 ☐ Cross-sectional 2 ☐ Cohort study
3 ☐ Meta-analysis 4 ☐ Case-control
5 ☐ Case study 6 ☐ Longitudinal with control
7 ☐ Longitudinal without control 8 ☐ Policy/program evaluation
9 ☐ Other:_____

Data collection method

17. Data collection by:

1 ☐ Observation 2 ☐ Interview 3 ☐ Questionnaire
4 ☐ Discussion 5 ☐ Survey 6 ☐ Rating system
7 ☐ Self-reported 8 ☐ Not specified
9 ☐ Other:_____

Approach to evaluation

18. Comparison Condition:

1 ☐ None 2 ☐ Other:_____

_____

19. [If 17(2)] Method of Measurement:_____

Notes

20. Outcome, results, impact of the study, as reported by the author(s):_____

21. Other specifics/notes:_____

22. References from reference-list to be searched: _____

Annex 3. Explanations of terminologies used for data extraction and analysis

Not specified

Indicates the author(s) did not specifically indicate a selection within the category.

Risk

Risk is defined as the risk of exposure to HIV or the likelihood that a person may become infected with HIV. Certain behaviours create, increase, or perpetuate risk.

Behaviours, not membership of a group, place individuals in situations in which they may be exposed to HIV. People with behaviours that may place them at higher risk of HIV exposure do not necessarily identify themselves with any particular group (UNAIDS).

Combination antiretroviral therapy (cART)

Combination antiretroviral therapy is highly active in suppressing viral replication, reducing the amount of virus in the blood to undetectable levels, and slowing the progress of HIV disease. The usual antiretroviral therapy regimen combines three or more different drugs, such as two nucleoside reverse transcriptase inhibitors and a protease inhibitor, two nucleoside analogue reverse transcriptase inhibitors and a non-nucleoside reverse transcriptase inhibitor, or other combinations. More recently, entry inhibitors and integrate inhibitors have joined the range of treatment options.

Health focus

Diseases that were specifically indicated by the author(s) as a focus of the study were individually considered. *Sexually transmitted infections* (STIs) were considered a general term applied by the author(s). For this study, they are considered diseases that spread by the transfer of organisms from person to person during sexual contact. In addition to the traditional STIs (syphilis and gonorrhea), STIs are often the term given to a group of diseases which can include HIV, which causes AIDS; *Chlamydia trachomatis*; human papillomavirus (HPV), which can cause cervical, penile, or anal cancer; genital herpes; cancroid; genital mycoplasmas; hepatitis B; trichomoniasisenteric infections; and ectoparasitic diseases, i.e. diseases caused by organisms that live on the outside of the host's body. The complexity and scope of STIs sexually transmitted infections have increased dramatically since the 1980s; more than 20disease-causing organisms and syndromes are now recognized as belonging in this category (UNAIDS). However, 'HIV and STI' were considered two separate diseases when indicated by the author(s).

Period of data collection

This was the time indicated by the author(s) of the study of the intervention, not necessarily the intervention itself. For the sake of consistency, we utilised the starting year for our analysis.

Intervention goal

This refers to the goal of the intervention itself, as defined by the author(s), and not the goal of the study.

Population

Data on the country and the area in country (whole country, region, city, place, not specified) were initially collected. Due to inconsistent reporting of the area, only the country was included in the analysis.

Study population

This population refers to the behavioural risk group.

Men who have sex with men (MSM)

MSM is an abbreviation used for 'men who have sex with men' or 'males who have sex with males'. It describes males who have sex with males, regardless of whether or not they have sex with women or have a personal or social gay or bisexual identity. This concept is useful because it also includes men who self-identify as heterosexual but have sex with other men. (UNAIDS)

Mixed Population

Mixed population may include MSM, bisexual men, or men who have sex with men and women (MSMW), as specifically indicated by the author(s). A bisexual is defined as a person who is attracted to and/or has sex with both men and women and who identifies with this as a cultural identity. The expression 'men who have sex with both men and women' or 'women who have sex with both women and men' is used unless individuals or groups self-identify as 'bisexual'.

HIV-positive MSM

A person who is HIV-positive has had antibodies against HIV detected on a blood test or gingival exudate test (commonly known as a saliva test). Synonym: seropositive. 'Serostatus' is a generic term that refers to the presence/absence of antibodies in the blood. The term is often used to refer to HIV antibody status. Results may occasionally be false-positive. For the purposes of this study, HIV-positive was marked when the author(s) specifically indicated the targeted populations as people who tested or self-reported their status.

HIV-negative

A person who is HIV-negative shows no evidence of infection with HIV on a blood test (e.g. absence of antibodies against HIV). Synonym: seronegative. The test result of a person who has been infected but is in the window period between HIV exposure and detection of antibodies will also be negative. For the purposes of this study, HIV-negative was marked when the author(s) specifically indicated the target populations as people who tested or self-reported their status.

Age

Data was collected on the age range of the target population of the interventions, as specifically indicated by the author(s). For data analysis, ages were grouped into "Young MSM", "General population", or "Senior".

Ethnicity:

General

Refers to the general population, where the author(s) did not distinguish the ethnic or racial make-up of the target group.

Minority

Minority refers to a group that has different national or cultural traditions from the majority of the population, as defined by the author(s).

Activity

These are the specific activities undertaken by the project staff. Interventions were marked as indicated by the author(s). An intervention could have multiple activities.

Intervention

Defined as 'a specific activity (or set of related activities) intended to bring about HIV risk reduction in a particular target population using a common strategy for delivering the prevention messages' (CDC). These interventions are those that aim to delay debut, decrease the number of sexual partners and concurrent partnerships, increase the proportion of protected sexual acts, increase acceptance of counselling and testing, and improve adherence to biomedical prevention interventions, such as condom use. These interventions can be focusing on the individual, peer, couple, group, family, institution, or the community.

Counselling

Counselling is an interpersonal, dynamic communication process between a client and a trained counsellor. Counselling requires empathy, genuineness, absence of any moral or personal judgment, and the respect necessary to assist the client to explore, discover, and clarify ways of dealing with a concern. When counselling in the context of an HIV diagnosis, the objective is to encourage the client to explore important personal issues, identify ways of coping with anxiety and stress, and plan for the future (keeping healthy, adhering to treatment, and preventing transmission). When counselling in the context of a negative HIV test result, the focus is exploring the client's motivation, options, and skills to stay HIV-negative (UNAIDS). For the purposes of this research, voluntary counselling and testing (VCT) was also considered counselling. It is also known as 'client-initiated testing and counselling', in opposition to 'provider-initiated testing'. It also includes peer counselling, which is considered "individual or group support counselling sessions facilitated by a trained, self-identified member of the target group, population, or community, i.e., a peer outreach educator"; and risk reduction counselling, which is 'individual or group counselling sessions focusing on behaviour change activities, such as safer sex practices, proper condom use and demonstration, and needle cleaning. Usually conducted by trained AIDS health educators/counsellors. Trained peer outreach educators may also conduct risk-reduction counselling with their peers in or out of an office setting, e.g., as part of street outreach.'

Testing

HIV testing is pivotal to both prevention and treatment programmes. For the purposes of this research, testing is considered a biological intervention as not all testing interventions involve counselling; however, this study recognizes that testing is often used in conjunction with other intervention methods. Testing interventions, which include counselling, are marked both 'testing' and 'counselling'.

Education

For the purposes of this research, education is considered the process of acquiring information and forming attitudes and beliefs about HIV and STI. Prevention education includes knowledge about prevention of transmission.

Training

According to the CDC, 'HIV/AIDS training (lectures in basic AIDS facts, counselling and testing training, and AIDS updates/seminars/forums/workshops) provided usually for health, education, and social service professionals in the community, e.g., nurses, doctors, counsellors, social workers, teachers, and law enforcement officers'.

Campaign

A campaign is considered a series of actions to advance the principle of HIV prevention.

Condom distribution

Correct and consistent use of condoms is considered an effective HIV and STI prevention strategy. The distribution of condoms is a popular public health intervention. Condom distribution was included when specifically indicated by the author(s).

Mode of delivery

This refers to the channel of content delivery. Modes of delivery were marked as indicated by the author(s). An intervention could have multiple modes of deliveries.

Mass media

Mass media refers to the use of media technologies that are used for communicating messages to large segments of the population, although content can be targeted to subpopulations (Sweat 2008). For the purposes of this study, this includes the internet, TV, radio, telephones, newspapers, posters, and magazines. The reviewers determined this category according to the settings indicated by the author(s).

Peer education

Peer education is the process of community members who belong to the target group supporting behavior change among their peers, as opposed to health care professionals. This category was selected when specifically indicated by the author(s). According to the CDC, peer education is 'HIV/AIDS education provided by trained, self-identified members of the target population to groups of their peers. Peer educators usually serve as role models, demonstrating to their peers behaviours that promote risk-reduction'

Community-based intervention

Community-based interventions refer to interventions that occur in a community setting, as opposed to a health care setting. A community can be a group of people connected by visible or invisible links, such as geographic communities, communities of interest or a shared concern, communities of association, or professional communities. A community can be a target or a setting. Community-based interventions differ from individual clinically based interventions because of their focus on the target community. (media.wiley.com/product_data/excerpt/.../078798311X.pdf)

Trained counsellor

For the purposes of this review, trained counsellors were considered non-medical professionals who were trained to deliver counselling.

Health care provider

For the purposes of this review, health care providers were considered licensed biomedical professionals (such as nurses, doctors, and psychiatrists).

Setting

Settings focus on the location where the intervention is delivered. Settings were marked as indicated by the author(s). An intervention could have multiple settings.

Workplace intervention

Workplace interventions were those, which targeted populations within a given workplace.

Television

Television as a setting included public service announcements, commercials, or any other message that was broadcast on the TV.

Events

Events were considered an occurrence happening at a specific time and place, such as a party, gay pride event, or any other organised activity.

Clinic/health facility

Interventions that were conducted in a clinical setting or a health facility. Health facilities are considered buildings where medicine is practiced. Clinics are considered a healthcare facility for outpatient care, which can be also be mobile.

School-based intervention

Interventions that are targeted to students in a school.

Radio

Educational messages (usually relating to campaigns or social marketing strategies) which are broadcast over the radio.

Internet

Internet-based interventions include chat rooms, website banners, and any website targeting a certain population.

Bar

This includes bars, clubs, and cafes.

Public setting (specified)

This includes any public setting not specifically identified as a public sex environment. The reviewers identified the locations and recorded them according to the author(s) indications.

Popular Gay Veue

For the sake of more robust evaluation, the review team included those venues which are popularly frequented by gay or bisexual men for the purpose of meeting [sexual] partners into one setting, as there were limited numbers for each individual category. For the sake of this review, popular gay venues includes bars, clubs, saunas, bathhouses, gyms, hotels, cruising areas, public sex environments, parks, events, or any other public setting which may be identified by the author(s).

Street Outreach

The CDC defines street outreach as, 'HIV/AIDS educational interventions generally conducted by peer outreach educators on the street, face-to-face with high-risk individuals. The handing out of condoms, bleach, sexual responsibility kits, and educational materials, e.g., safer sex cards and pamphlets, is usually done as part of street outreach targeted at high-risk groups'

Commodity

Commodity describes a product that is provided. Commodities were marked as indicated by the author(s). An intervention could have multiple commodities.

Flyers/folder

This category was used for printed educational materials. According to the CDC, education materials 'are learning or teaching aids. They can be used to reach masses of people, to reinforce or illustrate information given in a one-on-one setting, or serve as references to remind people of information they received earlier. Materials also teach skills by providing hands-on experience or by illustrating a step-by-step approach. Effective materials can also influence attitudes and perceptions' (http://www.cdc.gov/hiv/resources/guidelines/herrg/pub-info_educational.htm).

Test

Either a blood or an oral HIV antibody-screening test that may be accompanied by counselling. When it is accompanied by counselling, it is considered a standard combination behavioural intervention for this study.

Condom distribution

According to the CDC, condom distribution is 'the distribution of condoms is the handing out of free condoms as part of an HIV/AIDS educational intervention. Condoms and literature with instructions on proper use may also be distributed as an item in safer sex kits'

Educational message

Educational messages include health education and risk reduction activities in order to reduce disease transmission. These messages are generally directed to persons whose behaviours or personal circumstances place them at risk. Street and community outreach, risk reduction counselling, prevention case management, and community-level intervention may all contain health education and risk reduction activities

Vaccination

A vaccination is the injection of a killed or weakened infectious organism in order to prevent the disease. A vaccine is a product that produces immunity therefore protecting the body from the disease. Vaccines are administered through needle injections, by mouth and by aerosol. For the purposes of this review, vaccinations pertained to the Hepatitis B virus.

Other

Hotline

According to the CDC, a hotline is a 'telephone service (local or toll-free) offering up-to-date information on HIV/AIDS and referral to related local services, e.g., counselling/testing and support groups. Hotlines may receive crisis calls; however, the intent is usually to provide information and referral'.

Triggering Event

Outbreak

According to the CDC, an outbreak is 'the occurrence of more cases of disease, injury, or other health condition than expected in a given area or among a specific group of persons during a specific period. Usually, the cases are presumed to have a common cause or to be related to one another in some way. Outbreaks are sometimes distinguished from an epidemic as more localized, or the term less likely to evoke public panic'

Framework of Programmatic Response

Part of routine programme (not outbreak)

Theories and logic frameworks[11]

Theory reflects the theoretical basis of the intervention. Logic frameworks review to established methods of interventions which are more action-based than theoretical guidelines.

Bundling model

Bundling refers to grouping different intervention methods together, such as HIV testing with other services. It is a concept borrowed from business practices, where products are grouped together and are offered as a package. It is suggested that bundling leads to increased usage of services, better coordination of activities, and reduced costs. It also has the potential of helping overcome barriers to access to HIV testing and services. Sweat (2008) found that interventions are typically bundled in order to create systematic programmes.

Diffusion of innovation theory

The diffusion of innovations theory provides guidelines for the development and dissemination of programs into a community. It has been found useful for developing, adopting, and disseminating intervention programs. The theory states that 1) peers who adopt an innovation can become social models whose behaviour tends to be imitated by others; 2) adoptable prevention packages should meet successful diffusion standards: advantageous, compatible, simple, testable, and observable; 3) reinvention should be expected, encouraged, and assisted; and 4) change agents should have characteristics similar to those of individuals expected to adopt the innovation. Part of this theory is the use of popular opinion leaders (POL) serve as role models and can spread new ideas, a model developed by Kelly and colleagues at the Centre for AIDS Intervention Research (CAIR), Medical College of Wisconsin.

Empowerment education theory

The empowerment education theory focuses on the identification and discussion of problems for joint agreement and action.

Harm reduction theory

The goal of harm reduction is to reduce negative effects of harmful behaviour through a process of behavioural change. It is a strategy, service or product that is designed to modify causes, consumption and/or consequences of risky behaviour.

Health belief model

On the individual level, the health belief model includes the need for individuals to believe 1) they are at risk for a certain condition; 2) the condition is very serious; 3) there are benefits to changing behaviour to avoid the condition; 4) the individual can understand and overcome barriers to change; 5) sufficient reason (i.e., symptoms of a close friend, intervention messages); and 6) self-confidence to make the changes necessary.

Information-motivation-behavioural skills model

IMB provides information, motivation and behavioural skills to bring about behavioural change. 'Information' targets the cognitive domain, by offering knowledge to support the behaviour change. 'Motivation' addresses the affective domain. It provides the opening to develop a favourable attitude toward the new behaviour, and taps into existing support systems to enhance motivation. 'Behaviour' addresses the psychomotor domain, with return demonstrations and practice

Intent to treat model

Intent to treat refers to a type of study design where scientists analyse the results of their study based on what the patients were told to do, or how they were supposed to be treated, rather than what actually happened. Ideally the intended treatment and the actual treatment would be the same, but often they are not. Scientists want to know how drugs or treatments will work in the real world -- and in the real world, not everyone takes drugs as prescribed or ends up getting the surgery they are recommended. By using this model, researchers gain a real-world understanding of the intervention.

[11] Unless otherwise specified, the following theoretical explanations are adapted from: Godin, Gaston et al (2008). Promotion of safe sex: evaluation of a community-level intervention programme in gay bars, saunas and sex shops. *Health Education Research*, Vol. 23, no. 2, pp 287-297.

Motivational enhancement theory

Motivational enhancement therapy (MET) seeks to evoke from clients their own motivation for change and to consolidate a personal decision and plan for change. The approach is largely client centred, although planned and directed. MET is based on principles of cognitive and social psychology. The counsellor seeks to develop a discrepancy in the client's perceptions between current behaviour and significant personal goals. Emphasis is placed on eliciting from clients self-motivational statements of desire for and commitment to change. The working assumption is that intrinsic motivation is a necessary and often sufficient factor in instigating change.

Motivational interviewing

Motivational interviewing (MI) is a brief treatment model designed to help clients low in motivation to change to help them realise the need for change of certain risky behaviours. MI offers specific reinforcing manoeuvres for every step of the way as the client advances, often in a spiralling fashion, toward change. It is a stage-based model, and is a person-centred, goal-oriented approach for facilitating change through exploring and resolving ambivalence. Pragmatic strategies are tailored to the client's level of willingness to adjust his or her behaviour.

Multi-level approach

Multilevel approach allows for simultaneous explanation of individual- and group- level factors. It considers the presence of multiple levels of organisation, where individuals are nested within groups, and involves units at a lower level (or micro units) nested within units at a higher level (or macro units) (including for example, persons nested within studies as in meta-analysis, and measures over time nested within individuals as in the analysis of repeat measures).

Personalized Cognitive Counselling

Personalized Cognitive Counselling (PCC) is a single-session counselling intervention designed to reduce unprotected anal intercourse (UAI) among men who have sex with men (MSM) who are repeat testers for HIV and who meet other criteria for the intervention. PCC focuses on the person's self-justifications (thoughts, attitudes and beliefs) he uses when deciding whether or not to engage in sexual behavior which can transmit HIV. PCC encourages the client to explore his reasons or self-justifications (thoughts, attitudes, and beliefs) for engaging in risky sexual behaviours and to develop strategies to avoid future episodes of UAI with partners of unknown or positive HIV status. The process of PCC is to identify the specific thoughts used by the client when he decided to engage in UAI, aid him in reconsidering those thoughts, and create an opportunity for him to plan for safer ways to think about and behave in future sexual situations.

Prevention case management model

According to the CDC, 'PCM is a time-limited behavioural intervention designed to assist HIV-seropositive and HIV-seronegative persons. It is intended for persons having, or likely to have, difficulty initiating and sustaining practices that limit the transmission and the acquisition of HIV. PCM, a hybrid of HIV risk-reduction counselling and case management, provides intensive, individualized support and prevention counselling. PCM comprises several essential components, including the assessment of clients' HIV and STI risk behaviour and medical and psychosocial needs, risk-reduction counselling, and service brokerage. PCM is based on the premise that some people may not be able to prioritize HIV prevention when they face problems perceived to be more important and immediate (Falck, Carlson, Price, & Turner, 1994). Furthermore, developing an on-going relationship with each client provides an environment of trust and understanding within which prevention counselling can take place.'

Social action theory

Based on the work of Max Weber, social action theory is a community-oriented theory which seeks to redress power imbalances between a person's social and personal health. It is often applied to problems disproportionately affecting disadvantaged communities. A social action view emphasises social interdependence and interaction in personal control of health-endangering behaviour and proposes mechanisms by which environmental structures influence cognitive action schemas, self-goals, and problem-solving activities critical to sustained behavioural change. Social action theory clarifies relationships between social and personal empowerment and helps explain stages of self-change (Ewart, Craig K., *American Psychologist*, Vol 46(9), Sep 1991, 931-946). It utilises such concepts as empowerment and critical consciousness.

Social cognitive theory/cognitive behaviour model

The social cognitive theory/cognitive behaviour model includes both adopting behaviour seen modelled (social learning theory) and self-efficacy—confidence that the person will be able to use that behaviour in new settings. Skill-based training appears to be more effective than standard education. Components of this model are as follows: 1) information designed to increase awareness and knowledge of behaviour consequence; 2) social and self-regulative skills development to act on that knowledge; 3) practice, with feedback, to build skills and self-efficacy; and 4) changes in social norms and social support for behaviour change. The protection motivation theory (PMT), a social cognitive theory, uses cost-and-reward constructs to explain how intentions are formed to respond to threats in adaptive or maladaptive ways. Self-efficacy is balanced with barriers to form a response to a potential threat in an n adaptive or a maladaptive manner.

Social marketing

Social marketing is the application of commercial marketing techniques for the promotion of behavioural changes for social good, particularly with regard to health. According to the Academy of Educational Development, in order to 'better understand the perceived benefits and barriers to behaviour change, social marketers employ consumer research and competitive analyses and draw on marketing, product development and policy strategies to make change easier and more appealing for identified audiences.'[12] Social marketing was introduced to the public health community in 1988 because of its ability to translate complex educational messages and behavioural change techniques in ways which can be acted upon by large segments of the population.

Social support/social networks theory

The social support/social networks theory refers to aid and assistance received from social relationships and support.

Theory of gender and power

The theory of gender and power views power dynamics, with gender roles as structures that produce inequalities and increase one's vulnerability to HIV. Developed by Connell, this social structure theory is based on sexual inequality and gender and power imbalances in divisions of labour and power, activities in which one is emotionally invested (cathexis).

Theory of implementation intentions

According to Godin et al (2008), this theory 'refers to the process of self-regulating a behaviour and includes the planning and control of the action. The planning allows one to transform intention into more detailed instructions and specify the sequence of actions which aim to fulfil these instructions.'

Theory of reasoned action

The theory of reasoned action emphasises intention as a key to behavioural change. Developed by Ajzen and Fishbein, this theory assumes that people are rational and make systematic use of information available to them, considering their actions before they decide to or not to engage in certain behaviours. The theory of planned behaviour was developed to account for behaviour not fully within a persons' control and includes the necessary component of belief in one's ability and opportunity to control the particular behaviour (self-efficacy).

Transtheoretical model of change (TCM)/stages of change

The trans-theoretical model describes four transitions: pre-contemplation to contemplation, contemplation to preparation, preparation to action, and action to maintenance. This intervention combines individual (clinical) and population (public health) perspectives. Many interventions focus on the preparation-action transition, but some individuals are not ready for the stage. This model has been used successfully for smoking cessation interventions and other health education activities.

[12] Academy for Educational Development http://www.aed.org/Approaches/SocialMarketing/index.cfm

Type of intervention: scope of intervention[13]

	Scope/goal	Key activities (key words)
1	Interventions affecting knowledge, attitudes and beliefs and influencing psychological and social risk correlates	(Mass media) Campaign
		Education (interpersonal, interactive, FTF, interactive dialogue, sex education)
		Education to promote adherence to universal precautions
		Prevention counselling
2	Harm reduction (lowering risk of a behaviour, but not eliminating the behaviour)	Condom distribution
		Needle exchange
		Provision of equipment for universal precautions
		Provision of safe space for MARPS
		Livelihood alternatives to transactional sex
		Testing only
3	Biological/biomedical interventions that reduce HIV infection and transmission risk	Diagnosis and treatment for STI
		PEP
		Family planning service
		Male circumcision
		ARV prophylaxis for infant from HIV + mother
		Breastfeeding subst. for HIV + mother
		Blood screening, sperm screening,
		Disinfection of medical, tattoo/piercing equipment, Disinfection gloves, proper disposal of biohazard waste
		Drug treatment including substitution treatment
4	Mitigation of barriers to prevention and negative social outcomes of HIV infection	Training of service provider and law enforcement
		Separate accommodation to protect at risk population
		Self-help and solidarity groups
		Financial assistance/support
		Counselling for empowerment, coping and advocacy
		Legal, policy and institutional reform
5	Mitigation of biological outcomes of HIV infection	HIV/TB treatment service
		HIV treatment with ARV
		HIV-related opportunistic infection prophylaxis and treatment
		Treatment for hepatitis (access to ARV)
		Palliative care for PLWH
6	Standardised hybrid interventions in common use	VCT for HIV
		Condom social marketing
		Comprehensive sex education
		Social mobilisation
7	Combination of 1 and 2	(Hybrid interventions which do not fall into category 6)

According to Sweat (2008), HIV interventions can be classified in categories 1 through 6 of the above table. These categories are based on a review of HIV prevention programmes most commonly implemented. Category 6 is a summary of popular hybrid interventions and is considered standardised[14]. For the purpose of this study, we have created category 7, which accounts for hybrid interventions that are not standardized, but do serve as a combination of interventions from categories 1 and 2.

Combination HIV prevention

The combination prevention approach seeks to achieve maximum impact on HIV prevention by combining behavioural, biomedical, and structural strategies that are human rights-based and evidence-informed, in the context of a well-researched and understood local epidemic. The foundation of combination prevention is 'know your epidemic, know your response' gap analysis.

[13] Sweat, Michael. Report to the Joint United Nations Programme on HIV/AIDS (UNAIDS): A Framework for Classifying HIV Prevention Interventions. 2009. pp.14-22. [online]

[14] Sweat, Michael. Report to the Joint United Nations Programme on HIV/AIDS (UNAIDS): A Framework for Classifying HIV Prevention Interventions. 2009. pp.14-22. [online]

Annex 4. Inventory of HIV and STI prevention interventions for MSM 1995–2010

Introduction

This inventory covers all prevention interventions included in the review of HIV and STI prevention interventions in MSM. The purpose of this inventory is to initiate a forum to disseminate and exchange information on prevention interventions for STI and HIV. This inventory is intended for all parties involved in designing and implementing prevention interventions. It should be viewed as part of the overall efforts in improving the quality of HIV and STI prevention intervention in MSM.

A detailed description of the terminology used in this inventory can be found in Annex 3.

Summary format

Summaries of HIV and STI prevention interventions for MSM 1995–2010 use a standard format, with the same elements used to describe each intervention. If an element is missing from a summary, it is because the source citation does not contain that information. The following elements comprise the format:

Article ID	Number and ID as listed in the Table of Contents
Title, authors, references	Bibliographic information for the source report
Intervention goal(s)	Selected behavioural/health aims of the intervention
Intervention setting	The place in which intervention was conducted
Population	The target group, age, ethnicity (when applicable) and sample size
Intervention characteristics	Health Focus, Activity, Mode of delivery, setting, commodity, and outcomes
Study design	Study design and level of evidence
Comments	

List of HIV and STI prevention interventions in MSM

1. Anonymous, 2002, Condoms distribution to gay inmates
2. Anonymous, 2007, Gay students paid for prevention
3. Ahrens et al., 2006, Healthy Penis
4. Amirkhanian et al., 2005, Risk reduction among young MSM in Bulgaria, Russia
5. Bailey, 2009, Community HIV testing
6. Binson, 2005, HIV/STI prevention program in a gay bathhouse
7. Birrell, 2010, Non-invasive testing for HIV within a community setting
8. Blank, 2005, HOT SHOT! Health Men's Night Out Program
9. Blas, 2009, Online video-based intervention to increase HIV testing
10. Bloomfield, 2002, Community-based chlamydia and gonorrhea screening through the US mail
11. Bonnell, 2006, HIV prevention outreach in commercial gay venues
12. Bowen, 2006, Internet-delivered HIV prevention for rural MSM
13. Bowen, 2008, Wyoming Rural AIDS Prevention Project
14. Bull, 2010, Smart Sex Quest
15. Carballo-Dieguez, 2005, Latino Empowering Ourselves (LEO)
16. Carpente, 2010, Web-based intervention to reduce sexual risk
17. CDC, 2007, Rapid HIV testing among racial/ethnic minority men at gay pride events
18. Chen, 2001, Rapid public health interventions in response to an outbreak of syphilis in Los Angeles
19. Chen, 2002, Sypilis control among incarcerated MSM
20. Chen, 2008, Computer-based, health provider delivered HIV prevention for HIV+ MSM
21. Chiason, 2009, www.hivbigdeal.org
22. Coleman, 2009, HIV risk reduction for older seropositive African American men
23. Conner, 2005, SOLAAR
24. Darrow, 1998, HIV counseling and testing on HIV+ MSM
25. Darrow, 2008, Social marketing campaign to prevent syphilis
26. Daskalakis, 2009, HIV testing at bathouses
27. Davidovich, 2006, Using the internet to reduce risk of HIV-infection in steady relationships
28. DeBattista, 2001, Screening for Gonorrhoeae and Chlamydia at entertainment venues
29. Dilley, 2002, Changing sexual behavior among gay male repeat testers for HIV
30. Dilley, 2007, Brief cognitive counseling with HIV testing to reduce sexual risk
31. Dukes-Muijrers, 2009, Opting-out strategy for HIV testing
32. Elford, 2001, HIV risk reduction by peer education
33. Erausquin, 2009, Increasing the reach of HIV testing to young Latino MSM
34. Galvan, 2006, Increasing HIV testing among Latinos by bundling HIV testing with other test
35. Gao, 2007, Participatory communication to promote safer sex behavior in China
36. Garfein, 2010, Avoiding Risks from Methamphetamine-Use (ARM-U)
37. Gilbert, 2010, Online campaign to Increase intention to receive HAV and HBV vaccination
38. Godin, 2007, Community-level intervention programme in gay bars, saunas and sex shops
39. Gold, 1998, Examining self-justifications for unsafe sex as a technique of AIDS education
40. Gutierrez et al., 2010, Frontiers Prevention Project (FPP)
41. Guy et al., 2009, Increase HIV or STI testing by social marketing campaign
42. Harding, 2001, GMFA
43. Harding et al., 2004, Sadomasochism (SM) Sex: An Introduction to the SM Scene
44. Harterink, 2006, Gay Cruise
45. Hays, 2003, MPowerment
46. Huebner, 2006, Bathhouse-based voluntary counselling and testing
47. Imrie, 2001, A cognitive behavioral intervention to reduce STIs
48. Jones, 2008, HIV prevention intervention adapted for black MSM
49. Katz, 2005, The Sex Check
50. Katzman, 2007, Community Manifesto
51. Klausner, 2010, Internet-based site-specific interventions for syphilis prevention
52. Knauz, 2007, Enhance
53. Ko, 2009, Increasing condom availability and reduce risky sexual behaviours in gay bathhouses
54. Koblin, 2004, EXPLORE
55. Koekenbier, 2008, Online-mediated syphilis testing:Syfilistest.nl
56. Laperriere, 2008, STD/HIV/AIDS peer-education and danger
57. Lapinski, 2009, Prevention Options for Positives (POP)
58. Lau, 2008. Internet based intervention in reducing HIV risk behaviour in Hong Kong
59. Levine, 2005, STDTest.org
60. Lombardo, 2007, Think Again
61. MacDougall, 1998, Culture sensitive campaign targets Hepatitis awareness

62. MacMaster, 2003, Providing HIV education and outreach via internet chatrooms
63. Mansergh, 2010, Intervention to reduce HIV risk behaviour of substance-using MSM
64. Martinez-Donate, 2009, Hombres Sanos
65. Mausbach, 2007, EDGE
66. McFarlane, 2005, Internet-based health promotion and disease control in the 8 cities
67. McKirnan, 2010, Treatment Advocacy Program (TAP)
68. McOwan, 2002, Gimme 5 minutes
69. Mikolajczak, 2008, Queermasters
70. Miller, 1998, HIV prevention with male prostitutes and patrons of Hustler bars
71. Morgenstern, 2007, Goal choice interventions for alcohol use disorder
72. Morgenstern, 2009, Reduce club drug use and HIV risk behaviours
73. Morin, 2008, Healthy Living Project
74. Moskowitz, 2009, PowerOn
75. Mullens, 2009, Sex on premises venue (SOPV)
76. Nanin, 2009, Syphilis prevention campaign in Los Angeles County
77. Operario, 2010, Bruthas Project
78. Osmond, 2000, Urban Men Health Study
79. Osté, 2008, Safe Sex Zones
80. Outlaw, 2010, Motivational Interviewing in HIV field outreach with young african american MSM
81. Picciano, 2007, Brief Telephone-Based Intervention Using Motivational Enhancement Therapy
82. Plant, 2010, Stop the Sores
83. Read, 2006, Socially optimized learning in a virtual environment to reduce risky sexual behavior
84. Renaud, 2009, Free Condom Initiative
85. Rhodes, 2010, CyBER/M4M
86. Roedling, 2008, Provision of PEP after introduction of guidelines and publicity campaigns
87. Rose, 2006, Late Night Breakfast Buffet
88. Rosser, 2002, Sexual health approach to long-term HIV risk reduction on unsafe sexual behavior
89. Rosser, 2010, Positive Connections
90. Rosser, 2010, Sexpulse
91. Sampaio, 2002, Projeto Contato
92. Sànchez, 2009, DL STATS PARTY
93. Sànchez, 2010, Syphilis and Men
94. Schwappach, 2008, Checkpoint
95. Shepherd, 1997, The HAPEER Project
96. Somerville, 2006, Young Latino Promotores (YLPs)
97. Spielberg, 2000, Home collection for frequent HIV testing
98. Spielberg, 2003, HIV Counseling and Testing Program for Bathhouses
99. Stephens, 2010, Dogs are Talking
100. Stephens, 2010, Patient-delivered partner therapy in San Francisco
101. Toomer, 2009, Offering Hepatitis B vaccinations in known gay venues)
102. Van Kesteren et al., 2007, Self-help and motivational enhancement to promote sexual health in HIV+ MSM
103. Vega, 2010, SOMOS
104. Velasquez, 2009, Reducing sexual risk behaviors and Alcohol Use among HIV-positive MSM
105. Verma, 2010, Avahan
106. Wall, 2010, Offering of HIV Screening to MSM by Their Health Care Providers and Associated Factor
107. Warwick, 2007, Sorted Campaign, 'B safe'
108. Whittier, 2005, Embedding Health Messages into Entertainment Television
109. Williams, 2010, HOPE project
110. Williamson et al., 2001, Gay Men's Task Force
111. Wilton, 2009, Many Men, Many Voices (3MV)
112. Wohl, 2009, Case management to engage young latino and African American MSM into HIV care
113. Wolfers, 2009, Individually counselling on HIV prevention in men receiving Hepatitis B vaccination
114. Wolitski, 2005, SUMIT
115. Woods, 2000, HIV testing in gay sex clubs
116. Wu, 2010, Couple-based HIV intervention for methamphetamine-involved African American MSM
117. Zimmerman, 1997, HIV/AIDS Prevention Project for Mexican Homosexual Men
118. Zuilhof, 2009, Man tot Man

1. Condoms distribution to gay inmates

US: Condoms distributed to gay inmates in LA. Canadian HIV/AIDS Policy and Law Review 2002; 6(3): 18–19

Intervention Goal(s): Reduce spread of HIV and other STIs in prisons.

Intervention setting: Los Angeles, USA

Population: Only MSM, HIV+ and HIV-, adults, general population

Size of study population:

Intervention characteristics:

Health focus	HIV and STI
Activity	Condom distribution, Education and Campaign
Mode of delivery	Trained counsellor
Setting	Prison
Commodity	Educational message and Condom distribution
Triggering event	Programmatic Response
Outcomes	--
Study design	--

2. Gay students paid for prevention

Gay students paid for prevention. The Journal of the Royal Society for the Promotion of Health 2007; 127: 249

Intervention Goal(s): Raise awareness of STIs amongst homosexual men and to obtain information about the gay community at universities.

Intervention setting: China

Population: Only MSM, young, general (student) population

Size of study population:

Intervention characteristics:

Health focus	HIV
Activity	Counselling and Testing
Mode of delivery	Health care provider
Setting	School-based intervention
Commodity	Cash and free medical treatment
Triggering event	Programmatic Response
Outcomes	--
Study design	--

3. Healthy Penis

Healthy Penis: San Francisco's social marketing campaign to increase syphilis testing among gay and bisexual men. Ahrens K. et al., PLoS Medicine 2006; 3(12)

Intervention Goal(s): Social marketing campaign to increase testing for syphilis and awareness and knowledge about syphilis among gay and bisexual men.

Intervention setting: San Francisco, USA

Population: Only MSM, HIV- and HIV+, adults, general population

Size of study population: 244 participants

Intervention characteristics:

Health focus	Syphilis
Activity	Campaign
Mode of delivery	Mass media
Setting	Internet, Bar, Streets, commercial sex venues, bus, shelters, palm cards and bus shelters
Commodity	Internet (Banners), posters and cartoon strips
Triggering event	Outbreak
Outcomes	Increase uptake of HIV and STI testing/screening and treatment (positive)
Study design	Cross-sectional

4. Risk reduction among young MSM in Bulgaria and Russia

A randomized social network HIV prevention trial with young men who have sex with men in Russia and Bulgaria. Amirkhanian Y. A. et al., AIDS 2005; 19: 1897–1905

Intervention Goal(s): HIV prevention within social networks to reduce sexual risk behaviour for HIV

Intervention setting: St. Petersburg, Russia and Sofia, Bulgaria

Population: Mixed population, young (mean age: 22.5 years old), general population

Size of study population: 276 participants

Intervention characteristics:

Health focus	HIV
Activity	Counselling and Training
Mode of delivery	Peer education
Setting	Social networks gathering location
Commodity	Educational message
Triggering event	Programmatic Response
Outcomes	Reduce UI/UAI (significantly positive), Reduce UAI with multiple partners (significantly positive)
Study design	Randomized Control Trial

Comments: HIV risk reduction counseling has been directed at social network.

5. Community HIV testing

Community HIV testing for men who have sex with men: results of a pilot project and comparison of service users with those testing in genitourinary medicine clinics. Bailey A.C. et al., Sexually Transmitted Infections 2009; 85: 145–147

Intervention Goal(s): Rapid HIV testing in CBOs targeting high risk groups.

Intervention setting: Brighton, UK

Population: Mixed population, adults, general population

Size of study population: 294 participants

Intervention characteristics:

Health focus	HIV
Activity	Testing
Mode of delivery	Health care provider
Setting	CBO
Commodity	Test
Triggering event	Programmatic Response
Outcomes	Increase uptake of HIV and STI testing/screening and treatment
Study design	Cross-sectional

Comments: Fast-test increases choice for MSM wanting to test for HIV and fits well with moves to deliver STI care in the community. HIV testing in a CBO is feasible, reaches high-risk MSM and can increase capacity access.

6. HIV/STI prevention program in a gay bathhouse

Building an HIV/STI prevention program in a gay bathhouse: a case study. Binson D. et al., AIDS Education and Prevention 2005; 17(4): 386–399

Intervention Goal(s): Prevention program in collaboration with bathhouse managers, health department officials, and academics to provide prevention in a bathhouse. Educate an HIV/STD testing prevention program in a bathhouse setting.

Intervention setting: California, USA

Population: Only MSM, adults, general population

Size of study population: Intervention characteristics:

Health focus	HIV and STI
Activity	Counselling and Testing
Mode of delivery	Health care provider and Peer Counseling (MSM)
Setting	Bathhouse
Commodity	Educational message and Test
Triggering event	Programmatic Response
Outcomes	--
Study design	--

Comments: Harm reduction in sex environments. Intervention provided outreach and a one-to-one intensive session that included a risk assessment, risk reduction plan, an STD and/or HIV screen client-centered referral and follow up for results, treatment and further risk reduction counseling.

7. Non-invasive testing for HIV within a community setting

Pilot of non-invasive (oral fluid) testing for HIV within a community setting. Birrell F. et al., Sexual Health 2010; 7: 11–16

Intervention Goal(s): Determine the level of undiagnosed HIV infection within a community setting of MSM and identify any associated sexual risk behaviours.

Intervention setting: Brisbane, Australia

Population: Only MSM, adults, general population

Size of study population: 464 participants

Intervention characteristics:

Health focus	HIV
Activity	Testing
Mode of delivery	Trained counsellor
Setting	Event
Commodity	Test
Triggering event	Programmatic Response
Outcomes	Increase uptake of HIV and STI testing/screening and treatment
Study design	Cross-sectional

Comments: Oral testing that can be performed by non-clinical health workers, increased coverage. A significant minority of HIV+ MSM are currently unaware of their positive serostatus.

8. HOT SHOT! Healthy Men's Night Out Program

Reaching out to boys at bars: Utilizing community partnerships to employ a wellness strategy for syphilis control among men who have sex with men in New York City. Blank S. et al., Sexually Transmitted Diseases 2005; 32(10): S65–S72

Intervention Goal(s): Explore the impact of a holistic approach for syphilis control to improve the sexual health and well-being of MSM.

Intervention setting: New York, USA

Population: Mixed population, adults, general population

Size of study population: 445 participants

Intervention characteristics:

Health focus	Syphilis
Activity	Education and Campaign
Mode of delivery	Trained counselor and Health care provider
Setting	Bar and CBO
Commodity	Test and Vaccin
Triggering event	Programmatic Response
Outcomes	Increase quality of care for MSM
Study design	Cross-sectional

Comments: The Hot shot! Approach to syphilis control can facilitate STD education, screening, and treatment of MSM while addressing comprehensive health issues.

9. Online video-based intervention to increase HIV testing

Effect of an online video-based intervention to increase HIV testing in men who have sex with men in Peru. Blas M. M. et al., PLoS ONE 2010; 5(5)

Intervention Goal(s): Promote and improve HIV testing via video-based online intervention among MSM populations. Test efficacy of video-based online intervention in improving HIV testing among non-gay-identified MSM in Peru.

Intervention setting:

Population: Only MSM, HIV-, adults, general population

Size of study population: 187 participants

Intervention characteristics:

Health focus	HIV
Activity	Counselling, Testing and Education
Mode of delivery	Mass media
Setting	Internet
Commodity	Test
Triggering event	Programmatic Response
Outcomes	Increase uptake of HIV and STI testing/screening and treatment (positive)
Study design	Randomized Control Trial

Comments: HIV-testing motivational videos vs. standard public health text through a gay website.

10. Community-based chlamydia and gonorrhoea screening through the US mail

Community-based chlamydia and gonorrhoea screening through the United Stated Mail, San Francisco. Bloomfield P. J. et al., Sexually Transmitted Diseases 2002; 29(5): 294–297

Intervention Goal(s): Increase chlamydia and gonorrhea testing and screening by means of urine kits made available in public place and mailed in for STD testing.

Intervention setting: San Francisco, USA

Population: Mixed population, adults, general population

Size of study population: 80 participants

Intervention characteristics:

Health focus	HIV and STI
Activity	Testing
Mode of delivery	Health care provider
Setting	Home-based
Commodity	Test
Triggering event	Programmatic Response
Outcomes	Increase uptake of HIV and STI testing/screening and treatment (positive)
Study design	Cross-sectional

Comments: Remove barriers for population screening by change of responsibility and venue of sample collection to individual at home; mail to transport samples

11. HIV prevention outreach in commercial gay venues

HIV prevention outreach in commercial gay venues in large cities: evaluation findings from London. Bonell C. et al., Health Education Research 2006; 21(4): 452–464

Intervention Goal(s): Increase men's desire not to be involved in HIV-exposure, negotiation skills, knowledge about HIV and testing, awareness for exposure, knowledge of other services.

Intervention setting: London, UK

Population: Only MSM, HIV+ and HIV-, adults, general population

Size of study population: Intervention characteristics:

Health focus	HIV
Activity	Condom distribution and Education
Mode of delivery	Trained counsellor and Peer education
Setting	Bar
Commodity	Educational message, Flyers/folder, Condom distribution and Lubricant
Triggering event	Programmatic Response
Outcomes	--
Study design	--

Comments: Professional HIV prevention outreach in gay venues in large cities is a feasible and acceptable intervention with significant potential impacts.

12. Internet-delivered HIV prevention for rural MSM

A randomized control trial of internet-delivered HIV prevention targeting rural MSM. Bowen A. M., Horvath K. and Williams M. L., Health Education Research 2007; 22(1): 120–127

Intervention Goal(s): Educate people on living with HIV and methods for risk reduction between peers. Develop more positive outcome expectations for risk reduction and increase their risk reduction self-efficacy.

Intervention setting: Wyoming, USA

Population: Only MSM, adults, general population

Size of study population: 82 participants

Intervention characteristics:

Health focus	HIV
Activity	Education
Mode of delivery	Mass media
Setting	Internet
Commodity	Educational message
Triggering event	Programmatic Response
Outcomes	Increase knowledge and awareness of HIV and STI prevention and treatment (significantly positive), Acceptability of intervention (positive)
Study design	Randomized Control Trial

13. Wyoming Rural AIDS Prevention Project

Internet based HIV prevention research targeting rural MSM: feasibility, acceptability, and preliminary efficacy

Bowen A. M. et al., Journal of Behavioural Medicine 2008; 31: 463–477

Intervention Goal(s): Increase HIV knowledge and HIV risk reduction education and self-efficacy in MSM, increase condom use in anal sex, decrease frequency of anal sex.

Intervention setting: Wyoming, USA

Population: Only MSM, adults, general (rural) population

Size of study population: 475 participants

Intervention characteristics:

Health focus	HIV
Activity	Education
Mode of delivery	Mass media
Setting	Internet
Commodity	Educational message
Triggering event	Programmatic Response
Outcomes	Increase knowledge and awareness of HIV and STI prevention and treatment (positive), Willingness to reduce risk behaviour (positive), Increased in self-efficacy to use condom (positive), Fewer sexual partners (positive), Increase in condom use (positive), Acceptability of intervention (positive)
Study design	Cohort

Comments: Internet can be used to reach MSM in rural areas.

14. Smart Sex Quest

Recruitment and retention of an online sample for an HIV prevention intervention targeting men who have sex with men: the smart sex quest project. Bull S. S. et al., AIDS Care 2004; 16(8): 931–943

Intervention Goal(s): Increase STD prevention among MSM

Intervention setting: USA

Population: Only MSM, adults, general population

Size of study population: Intervention group: 141, Control group: 129

Intervention characteristics:

Health focus	HIV and STI
Activity	Education
Mode of delivery	Mass media
Setting	Internet
Commodity	Educational message
Triggering event	Programmatic Response
Outcomes	Increase willingness to obtain information about STI prevention (positive), Increase uptake of HIV and STI testing/screening and treatment (positive)
Study design	Randomized Control Trial

Comments: Intervention included 3 tailored messages (based on risk assessment).

15. Latino Empowering Ourselves (LEO)

A randomized controlled trial to test an HIV-prevention intervention for Latino gay and bisexual men: Lessons learned. Carballo-Diéguez A. et al., AIDS Care 2005; 17(3): 314–328

Intervention Goal(s): Reduce unprotected sex, reduce absolute number of unprotected anal intercourse among Latino gay and bisexual men.

Intervention setting: New York, USA

Population: Only MSM, adults (older than 16 years old), minority (latino) population.

Size of study population: 180 participants

Intervention characteristics:

Health focus	HIV
Activity	Training
Mode of delivery	Trained counsellor
Setting	Not specified
Commodity	Educational message
Triggering event	Programmatic Response
Outcomes	Reduce UAI with multiple partners (no effect), Reduce unprotected sex (no effect)
Study design	Randomized Control Trial

16. Web-based intervention to reduce sexual risk

Efficacy of a web-based intervention to reduce sexual risk in men who have sex with men. Carpenter K. M. et al., AIDS Behaviour 2010; 14: 549–557

Intervention Goal(s):

Reduce risk of HIV/STI by increasing knowledge of risk factors with a web-based skills training and motivational intervention.

Intervention setting: USA

Population: Only MSM, adults, general population.

Size of study population: 112 participants

Intervention characteristics:

Health focus	HIV and STI
Activity	Education
Mode of delivery	Mass media
Setting	Internet
Commodity	Educational message
Triggering event	Programmatic Response
Outcomes	Fewer sexual partners (significantly positive), Reduce sexual activity (significantly positive), Reduce unprotected sex (significantly positive)
Study design	Randomized Control Trial

Comments: Control group received stress reduction training.

17. Rapid HIV testing among racial/ethnic minority men at gay pride events

Rapid HIV testing among racial/ethnic minority men at gay pride events - nine U.S. cities, 2004-2006. Centers for Disease Control and Prevention, Morbidity and Mortality Weekly Report 2007; 56: 602–604

Intervention Goal(s): Reduce racial/ethnic disparities in HIV prevention.

Intervention setting: USA

Population: Only MSM, adults (older than 16 years old), minority population

Size of study population: 627 participants

Intervention characteristics:

Health focus	HIV
Activity	Testing
Mode of delivery	Health care provider
Setting	Event
Commodity	Test
Triggering event	Programmatic response
Outcomes	Increase uptake of HIV and STI testing/screening and treatment (positive)
Study design	Cross-sectional

18. Rapid public health interventions in response to an outbreak of syphilis

Rapid public health interventions in response to an outbreak of syphilis in Los Angeles. Chen J. L. et al., Sexually Transmitted Diseases 2002; 29(5): 277–284

Intervention Goal(s): Use local, multi-faceted interventions in response to a syphilis outbreak.

Intervention setting: Los Angeles, USA

Population: Only MSM, adults, general population

Size of study population: 89 participants

Intervention characteristics:

Health focus	Syphilis
Activity	Condom distribution, Campaign,Training, Education, Counselling and Testing
Mode of delivery	Mass media, Trained counselor and Health care provider
Setting	Internet, Bar, Clinic/health facility, street, Bathouse and Sex club
Commodity	Test, Educational message and Flyers/folder
Triggering event	Outbreak
Outcomes	Decline number of syphilis cases in outbreak (positive)
Study design	Cross-sectional

Comments:The diverse components of the response were associated with a faster decline in the outbreak than would have been expected.

19. Syphilis control among incarcerated MSM

Syphilis control among incarcerated men who have sex with men: Public health response to an outbreak. Chen J. L., Callahan C. B. and Kerndt P. R., American Journal of Public Health 2002; 92(9): 1473–1475

Intervention Goal(s): Syphilis and HIV screening and treatment and detect risk behaviours among newly incarcerated MSM in LA county jail among MSM.

Intervention setting: Los Angeles, USA

Population: Only MSM, adults, general (inmates) population

Size of study population: 811 participants

Intervention characteristics:

Health focus	Syphilis
Activity	Counselling, Testing and Treatment prophylactic
Mode of delivery	Trained counsellor
Setting	Prison
Commodity	Educational message and Test
Triggering event	Outbreak
Outcomes	Increase uptake of HIV and STI testing/screening and treatment (positive)
Study design	Cross-sectional

Comments: Intervention does not change behavior but prevents STI/HIV by diagnosis and treating syphilis and other STI.

20. Providers Advocating for Sexual Health Initiative (PASHIN)

A process evaluation of the implementation of a computer-based, health provider-delivered HIV-prevention intervention for HIV-positive men who have sex with men in primary care setting. Chen H. T. et al., AIDS Care 2008; 20(1): 51–60

Intervention Goal(s): Provide targeted HIV-prevention counselling to HIV+ MSM by health care providers.

Intervention setting: USA

Population: Only MSM, HIV+, adults, general population

Size of study population:

Intervention characteristics:

Health focus	HIV
Activity	Counselling
Mode of delivery	Health care provider
Setting	Clinic/health facility
Commodity	Educational message
Triggering event	Programmatic Response
Outcomes	--
Study design	--

Comments: Computer-based, provider-delivered intervention was successfully within the context of regularly scheduled treatment sessions with HIV+ MSM

21. www.hivbigdeal.org

Increased HIV disclosure three months after an online video intervention for men who have sex with men (MSM) Chiasson M. A. et al., AIDS Care 2009; 21(9): 1081–1089

Intervention Goal(s): Video intervention on internet to promote critical thinking about HIV disclosure, HIV testing, alcohol use, and risky sexual behaviour.

Intervention setting: USA

Population: Only MSM, adults (older than 16 years old), general population

Size of study population: 522 participants

Intervention characteristics:

Health focus	HIV
Activity	Education
Mode of delivery	Mass media
Setting	Internet
Commodity	Educational message
Triggering event	Programmatic Response
Outcomes	Fewer sexual partners (positive), Disclose HIV status (positive), Reduce UAI with multiple partners (positive), Reduce alcohol use (no effect)
Study design	Cross-sectional

22. HIV risk reduction for older seropositive African American men

Development of an HIV risk reduction intervention for older seropositive African American Men. Coleman C. L. et al., AIDS Patient Care and STDs 2009; 23(9): 647–655

Intervention Goal(s): HIV risk reduction intervention to increase consistent condom use in older HIV positive African American MSM.

Intervention setting: USA

Population: Only MSM, HIV+, senior adults (older than 50 years old), minority, African American, Population

Size of study population: 60 participants

Intervention characteristics:

Health focus	HIV
Activity	Education
Mode of delivery	Trained counsellor
Setting	Clinic/health facility
Commodity	Condom distribution and Educational message
Triggering event	Programmatic Response
Outcomes	Increase in condom use (not significant)
Study design	Randomized Control Trial

23. SOLAAR (Superacion, Orgullo y Lucha Atraves de Amor en Relaciones)

The SOLAAR HIV prevention program for gay and bisexual Latino men: using social marketing to build capacity for service provision and evaluation. Conner R. F. et al., AIDS Education and Prevention 2005; 17(4): 361–374

Intervention Goal(s): To address HIV transmission in a new way; recognized contextual and cultural issues influencing men's behavior

Intervention setting: South California, USA

Population: Only MSM, adults (older than 16 years old), minority (Latino) population

Size of study population:

Intervention characteristics:

Health focus	HIV
Activity	Education and Training
Mode of delivery	Trained counsellor
Setting	Hotel
Commodity	Educational message
Triggering event	Programmatic Response
Outcomes	--
Study design	--

Comments: Intervention included an intensive retreat with a small group of men.

24. HIV Counselling and testing on HIV+ MSM

Impact of HIV counselling and testing on HIV-infected men who have sex with men: The South Beach Health Survey. Darrow W. W. et al., AIDS and Behaviour 1998; 2(2): 115–126

Intervention Goal(s): Educate individuals about the course of disease, advantages and limitation of blood tests and informed decision about taking the test. Give people results of test, describe implications of results on health and safety (also of others) and assist in follow up services.

Intervention setting: Miami, USA

Population: Only MSM, HIV+, adults (older than 16 years old), general population

Size of study population: 205 participants

Intervention characteristics:

Health focus	HIV
Activity	Testing
Mode of delivery	Field workers
Setting	Home-based
Commodity	Educational message, Test
Triggering event	Programmatic Response
Outcomes	Reduce UI/UAI
Study design	Cross-sectional

Comments: Counseling and testing is ineffective as a measure for promoting behavioral change among HIV+ MSM in South Beach.

25. Social marketing campaign to prevent syphilis

Short-term impact evaluation of a social marketing campaign to prevent syphilis among men who have sex with men. Darrow W. W. and Biersteker S., American Journal of Public Health 2008; 98(2): 337–343

Intervention Goal(s): Reduce syphilis infections through a social marketing campaign

Intervention setting: Fort Lauderdale and Miami, USA

Population: Only MSM, HIV+ and HIV-, adults (older than 16 years old), general population

Size of study population: 406 participants

Intervention characteristics:

Health focus	Syphilis
Activity	Campaign
Mode of delivery	Mass media
Setting	TV, Radio, Internet, Bar, Advertisement, Posters and palm cards
Commodity	Flyers/folder and Educational message
Triggering event	Programmatic Response
Outcomes	Increase knowledge and awareness of HIV and STI prevention and treatment, Perception of risk, Risky sexual practice, Higher age sexual debut, Reduce recreational drug use – all no effect
Study design	Case-control

26. HIV testing at bathhouses

Implementation of HIV testing at 2 New York City bathhouses: From pilot to clinical service. Daskalakis D. et al., Clinical Infectious Diseases 2009; 48: 1609–1616

Intervention Goal(s): Reduce the risk and rate of HIV transmission by venue-based (bathhouse) testing.

Intervention setting: New York, USA

Population: Only MSM, HIV-, adults (older than 16 years old), general population

Size of study population: 493 participants

Intervention characteristics:

Health focus	HIV
Activity	Testing
Mode of delivery	Health care provider
Setting	Bathouse
Commodity	Test
Triggering event	Programmatic Response
Outcomes	Increase uptake of HIV and STI testing/screening and treatment (positive)
Study design	Cross-sectional

Comments: This rapid HIV testing intervention was collaboration between PH, academia and private sector.

27. Using internet to reduce risk of HIV-infection in steady relationships

Using the internet to reduce risk of HIV-infection in steady relationships: A randomized controlled trial of a tailored intervention for gay men. Davidovich U., de Wit J. and Stoebe W., Liaisons Dangereuses: HIV risk behavior and prevention in steady gay relationships. (PhD Thesis Ehud Davidovich)) 2006; 95–120

Intervention Goal(s): Prepare single gay men to practice safe sex with future steady partners, and promote practice of negotiated safety.

Intervention setting: The Netherlands

Population: Only MSM, HIV-, adults (older than 16 years old), general population

Size of study population: Tailored intervention: 240, non-tailored intervention: 340, control: 333

Intervention characteristics:

Health focus	HIV
Activity	Education
Mode of delivery	Mass media
Setting	Internet
Commodity	Educational message
Triggering event	Programmatic Response
Outcomes	Intention of condom use (positive), Negotiated safety (significantly positive), Response efficacy (positive), Increase social norm (positive)
Study design	Randomized Control Trial

28. Screening for gonorrhoeae and chlamydia at entertainment venues

Screening for Nesseria gonorrhoeae and Chlamydia trachomatis at entertainment venues among men who have sex with men. Debattista J. et al., Sexually Transmitted Diseases 2002; 29(4): 216–221

Intervention Goal(s): Assess prevalence and increase awareness of gonorrhea and chlamydia infections and the importance of maintaining sexual health by providing easy onsite testing and printed information among MSM in 3 inner city homosexual entertainment venues.

Intervention setting: Brisbane, Australia

Population: Mixed population, adults (older than 16 years old), general population

Size of study population: 202 participants

Intervention characteristics:

Health focus	HIV and STI
Activity	Testing and Campaign
Mode of delivery	Mass media and Health care provider
Setting	Bar
Commodity	Educational message and Test
Triggering event	Programmatic Response
Outcomes	Increase uptake of HIV and STI testing/screening and treatment
Study design	Cross-sectional

Comments: Screening programs are valuable as health-promotion exercises.

29. Changing sexual behaviour among gay male repeat testers for HIV

Changing sexual behaviour among gay male repeat testers for HIV – A randomized, controlled trial of a single-session intervention. Dilley J. W. et al., Journal of Acquired Immune Deficiency Syndromes 2002; 30: 177–186

Intervention Goal(s): Reduce future high-risk behaviour among HIV-negative MSM through one counselling intervention session focusing on self-justification at most recent UAI.

Intervention setting: San Francisco, USA

Population: Only MSM, HIV-, adults (older 16 years old), general population

Size of study population: 248 participants

Intervention characteristics:

Health focus	HIV
Activity	Counselling and Testing
Mode of delivery	Health care provider
Setting	Anonymous testing site
Commodity	Educational message and Test
Triggering event	Programmatic Response
Outcomes	Reduce UAI with multiple partners (significantly positive)
Study design	Randomized Control Trial

Comments: A specific, single-session counselling session intervention focusing on a re-evaluation of a person's self-justifications of high-risk behavior may prove useful in decreasing individual risk behavior and thus community-level HIV transmission.

30. Brief cognitive counselling with HIV testing to reduce sexual risk

Brief cognitive counselling with HIV testing to reduce sexual risk among men who have sex with men – results form a randomized controlled trial using paraprofessional counsellors. Dilley J. W. et al., Journal of Acquired Immune Deficiency Syndromes 2007; 44(5): 569–577

Intervention Goal(s): Reduce sexual risk through a single-session personalized cognitive counselling (PCC) intervention.

Intervention setting: California, USA

Population: Only MSM, HIV-, adults (younger than 16 years old), general population

Size of study population: 305 participants

Intervention characteristics:

Health focus	HIV
Activity	Counselling
Mode of delivery	Trained counsellor
Setting	Clinic/health facility
Commodity	Educational message and Test
Triggering event	Programmatic Response
Outcomes	Risk reduction (positive), Reduce UI/UAI (positive)
Study design	Randomized Control Trial

Comments: Both interventions (types of counseling) were effective.

31. Opting-out strategy for HIV testing

Effectiveness of an opting-out strategy for HIV testing: evaluation of 4 years of standard HIV testing in a STI clinic. Dukers-Muijrers N. H. T. M. et al., Sexually Transmitted Infections 2009; 85: 226–230

Intervention Goal(s): To increase awareness of HIV infections of individual (increase testing rates); an opting-out approach for HIV testing was used.

Intervention setting: South Limburg, the Netherlands

Population: Mixed population, adults, general population

Size of study population: 1920 participants

Intervention characteristics:

Health focus	HIV
Activity	Testing
Mode of delivery	Health care provider
Setting	Clinic/health facility
Commodity	Test
Triggering event	Programmatic Response
Outcomes	Disclose HIV status
Study design	Cross-sectional

Comments: Standard HIV testing in STI clinic is feasible and effective in increasing awareness of one's HIV status.

32. HIV risk reduction by peer education

Peer education has no significant impact on HIV risk behaviours among gay men in London. Elford et al., AIDS 2001; 15(4): 535–538

Intervention Goal: To promote and endorse HIV risk reduction by Popular Opinion Leader education among gay men in gyms.

Intervention setting: London, UK

Population: Only MSM, adult (older than 16 years old) and general population

Size of study population:

Intervention group: 612 men

Intervention characteristics:

Health focus	HIV
Activity	Education
Mode of delivery	Peer Education
Setting	Gym
Commodity	Educational Message
Triggering event	Programmatic Response
Outcomes	Reduce UI/UAI (not significant), Increase uptake of HIV (not signification) and STI testing/screening and treatment (not significant)
Study design	Cross sectional

Comments: Peer education did not appear to be an effective tool for HIV prevention among gay men in London, opposed to results in the USA where significant reductions in high-risk sexual behavior were shown.

33. Increasing the reach of HIV testing to young Latino MSM

Increasing the reach of HIV testing to Young Latino MSM: Results of a pilot study integrating outreach and services. Erausquin et al., Journal of Health Care for the Poor and Underserved 2009; 20(3); 756–765

Intervention Goal(s): Increasing HIV testing among young Latino MSM by integrating tailored outreach strategies with testing, counselling, and HIV medical services

Intervention setting: Los Angeles, USA

Population: Only MSM, young (≤ 25 years old) and Latino

Size of study population:

Intervention group: 46 participants, Control group: 49 participants

Intervention characteristics:

Health focus	HIV
Activity	Counselling, Testing and Campaign
Mode of delivery	Mass media, Trained counsellor, Health care provider
Setting	Service Prevention Outreach Treatment (SPOT) Center
Commodity	Educational message and Test
Triggering event	Programmatic Response
Outcomes	Increase coverage of HIV/STI testing (positive)
Study design	Case-Control study

Comments: Venue-based and selective media outreach in combination with linking rapid testing to HIV care may help overcome some of the barriers among high-risk young Latino MSM.

34. Increase HIV testing among Latinos by bundling HIV testing with other tests

Increasing HIV testing among Latinos by bundling HIV testing with other tests. Galvan et al., Journal of Urban Health 2006; 83(5): 849–859

Intervention Goal(s): Increasing bundling of HIV prevention interventions with screening for other conditions at bars

Intervention setting: Los Angeles, USA

Population: Not specified, adult (older than 16 years old) and Minority population

Size of study population:

Intervention: 394 participants

Intervention characteristics:

Health focus	HIV
Activity	Testing
Mode of delivery	Health care provider
Setting	Bar
Commodity	Test
Triggering event	Programmatic Response
Outcomes	Increase uptake of HIV and STI testing/screening and treatment (positive)
Study design	Longitudinal with Control

Comments: Bundling: grouping products and offering them as a package. Bundling test could encourage HIV testing among high risk Latino men.

35. Participatory communication to promote safer sex behaviour in China

Participatory communication and HIV/AIDS prevention in a Chinese marginalised (MSM) population. Gao, M. Y. and Wang, S., AIDS Care 2007; 19(6): 799–810

Intervention Goal(s): Use socially and culturally appropriate participatory communication to promote safer sexual behaviour with gay men and MSM

Intervention setting: Chengdu, China

Population: Only MSM, adult (older than 16 years old) and general population

Size of study population:

Intervention group: 80 participants, Control group: 80 participants

Intervention characteristics:

Health focus	HIV
Activity	Education
Mode of delivery	Mass Media and Peer education
Setting	Event and Bar
Commodity	Flyers/folder and Educational message
Triggering event	Programmatic Response
Outcomes	Increase knowledge and awareness of HIV and STI prevention and treatment, Correct attitude towards HIV, Fewer sexual partners, Increase in condom use – all positive
Study design	Longitudinal with Control

Comments: Intervention included a gay bar-based participatory entertainment education. Intervention activities for these MSM in the intervention group were successful in significantly increasing HIV-related knowledge, improving attitudes towards safe sex, promoting condom use.

36. Avoiding Risks form Methamphetamine-Use (ARM-U)

Formative assessment of ARM-U: A modular intervention for decreasing risk behaviours among HIV-positive and HIV-negative methamphetamine-using MSM. Garfein R. S. et al., The Open AIDS Journal 2010; 4: 105–115

Intervention Goal(s): For methamphetamine-using MSM to decrease unprotected anal intercourse (UAI) and increase awareness parenteral HIV transmission risk.

Intervention setting: San Diego, USA

Population: Only MSM, HIV- and HIV+, adults (older than 16 years old), general population

Size of study population:

Intervention characteristics:

Health focus	HIV
Activity	Counselling
Mode of delivery	Trained counsellor
Setting	Clinic/health facility and Telephone
Commodity	Educational message
Theory	Toolbox intervention, motivational interviewing, cognitive behavioral theory
Outcomes	--
Study design	--

Comments: Revised ARM-U intervention to emphasize pre-planning to avoid combining methamphetamine use and sex or develop strategies to avoid sex risk following meth use.

37. Online campaign to increase intention to receive HAV and HBV vaccination

Promoting sexual health among MSM online: A hepatitis campaign comparison study. Gilbert L. K., Peterson R. S. and Scanlon K. E., Journal of Gay and Lesbian Social Services 2010; 22(4): 446–462

Intervention Goal(s): To increase awareness of and intention to receive HepA and HepB vaccination through an online sexual health promotional campaign.

Intervention setting: USA

Population: Only MSM, HIV- and HIV+, adults (older than 16 years old), general population

Size of study population:

Intervention characteristics:

Health focus	HIV and STI
Activity	Campaign
Mode of delivery	Mass media
Setting	Internet
Commodity	Educational message
Triggering event	Programmatic response
Outcomes	--
Study design	--

Comments: Findings of this study provide a great deal of formative evaluation data to use in the design, implementation, and evaluation of online sexual health promotions for MSM.

38. Community-level intervention programme in gay bars, saunas and sex shops

Promotion of safe sex: evaluation of a community-level intervention programme in gay bars, saunas and sex shops. Godin G. et al., Health Education Research 2008; 23(2): 287–297

Intervention Goal(s): Promote use of condoms during anal sex

Intervention setting: Canada

Population: Only MSM, adults (older than 16 years old), general population

Size of study population: 1757 participants in total (in 24 activities)

Intervention characteristics:

Health focus	HIV
Activity	Counselling, Education and Condom distribution
Mode of delivery	Mass media
Setting	Bar, Sauna, Sex shop
Commodity	Condom distribution and Educational message
Triggering event	Programmatic Response
Outcomes	Reduce UI/UAI (positive), Increase self-efficacy (no effect), Increase anticipated regret (no effect), Increase subjective norm (no effect)
Study design	Quasi experimental

Comments: Fashion show (group activities), Rally, Individual counselling, free condom, poster.

39. Examining self-justifications for unsafe sex as a technique of AIDS education

Examining self-justifications for unsafe sex as a technique of AIDS education: the importance of personal relevance. Gold R. S. and Rosenthal D. A., International Journal of STD and AIDS 1998; 9: 208–213

Intervention Goal(s): Highlight contrast (for gay men) between their thinking in the heat of the moment and their thinking otherwise change behavior in sexual risk taking in gay men.

Intervention setting: Melbourne and Syndney, Australia

Population: Only MSM, adults (older than 16 years old), general population

Size of study population: Intervention group 1: 31, Intervention group 2: 29, Control group: 32

Intervention characteristics:

Health focus	HIV
Activity	Education
Mode of delivery	Printed materials
Setting	Home-based
Commodity	Educational message
Triggering event	Programmatic Response
Outcomes	Risk reduction (negative)
Study design	Longitudinal with control

Comments: 'Education' was performed via reconstruction of a recent slip-up, but without questions about self-justifications and posters focusing on self-justifications.

Specific Encounter Group: sexual risk-taking in gay men was reduced by getting them to evaluate the self-justifications for having unsafe sex, which they had used on a specific occasion when they slipped-up did NOT occur because recalling vividly a specific encounter in which a slip-up took place brought the men's risk-taking home to them very strongly. Posters group: suggest the importance of ensuring personal ownership of the self-justifications presented.

40. Frontiers Prevention Project (FPP)

Community-based prevention leads to an increase in condom use and a reduction in sexually transmitted infections (STIs) among men who have sex with men (MSM) and female sex workers (FSW): the Frontiers Prevention Project (FPP) evaluation results. Gutierrez J-P. et al., BMC Public Health 2010; 10: 497

Intervention Goal(s): Targeted HIV prevention among FSW and MSM to reduce risk taking behaviour and STI incidence

Intervention setting: Andhra Pradesh, India

Population: Mixed, general population

Size of study population: Baseline: 2786 participants, Follow-up: 1535 participants

Intervention characteristics:

Health focus	HIV and STI
Activity	Counselling, Campaign, Condom distribution and STI services
Mode of delivery	Peer education, Trained counsellor, Health care provider and Outreach
Setting	Clinic/health facility
Commodity	Educational message
Triggering event	Programmatic Response
Outcomes	Increase in condom use (positive)
Study design	Longitudinal with Control

Comments: FPP is associated with increased condom use.

41. Social marketing campaign to promote HIV or STI testing

No increase in HIV or sexually transmissible infection testing following a social marketing campaign among men who have sex with men. Guy R. et al., Journal of Epidemiology and Community Health 2009; 63: 391–396

Intervention Goal(s): Social marketing campaign to increase HIV and STI testing, to increase regular testing, and promote sexual health.

Intervention setting: Victoria, Australia

Population: Only MSM, adults (older than 16 years old), general population

Size of study population: 4147 participants

Intervention characteristics:

Health focus	HIV and STI
Activity	Campaign
Mode of delivery	Mass media
Setting	TV, Radio, Internet and Public setting
Commodity	Flyer/folders, Educational message
Triggering event	Programmatic response
Outcomes	Increase uptake of HIV and STI testing/screening and treatment (negative)
Study design	Time series

42. Gay Men Fighting AIDS (GMFA)

Motivational interviewing for HIV risk reduction among gay men in commercial and public sex settings. Harding R. et al., AIDS Care 2001; 13(4): 493-501

Intervention Goal(s): Motivate gay men to address unwanted risk taking and ultimately reduce HIV transmission.

Intervention setting: London, UK

Population: Only MSM, adults (older than 16 years old), general population

Size of study population:

Intervention characteristics:

Health focus	HIV
Activity	Education
Mode of delivery	Peer education
Setting	Commercial sex venue, sauna and cruising ground
Commodity	Educational message
Triggering event	Programmatic response
Outcomes	--
Study design	--

Comments: Questionnaires used to encourage participants to compare desired versus actual behavior.

43. SADOMASOCHISM (SM) Sex: An Introduction to the SM Scene

Outcomes and lessons from a pilot RCT of a community-based HIV prevention multi-session group intervention for gay men. Harding R. et al., AIDS Care 2004; 16: 581-585

Intervention Goal(s): Reduce incidence of HIV among gay men in UK by addressing assumptions and knowledge, practical tools of SM sex, risk taking, emotional aspects, STI and HIV infection, rights and responsibilities, legal issues, role of fantasy, limits and boundaries.

Intervention setting: London, UK

Population: Only MSM, HIV+ and HIV-, adult (older than 16 years old) and general population

Size of study population:

Intervention group: 25 participants, Control group: 25 participants

Intervention characteristics:

Health focus	HIV
Activity	Training
Mode of delivery	Trained counsellor and NGO
Setting	NGO
Commodity	Educational message
Triggering event	Programmatic Response
Outcomes	Increase knowledge and awareness of HIV and STI prevention and treatment (positive), Fewer sexual partners (no effect), Reduce UI/UAI (no effect), Reduce frequency of anal sex (no effect)
Study design	Randomized Control Trial

Comments: Multi-session groups are feasible, acceptable and efficacious for gay men in the UK. However, current evidence does not allow them to reach behavioral conclusions regarding this model of intervention in the UK.

44. Gay Cruise

De 'Gay Cruise'. Een internetpreventieprogramma voor mannen die seks hebben met mannen. Harterink P. et al., SOA AIDS magazine 2006; 3(1)

Intervention Goal(s): Prevent HIV in MSM by increasing consequent condom use in online dating and chatting MSM.

Intervention setting: Netherlands

Population: Only MSM, adults (older than 16 years old),

general population

Size of study population:

Intervention group: 2886, control group: 2731

Intervention characteristics:

Health focus	HIV and STI
Activity	Education
Mode of delivery	Mass media
Setting	Internet
Commodity	Educational message
Triggering event	Programmatic Response
Outcomes	Increase in condom use, Reduce UI/UAI (significantly positive)
Study design	Randomized Control Trial

Comments: Gay Cruise is an interactive website to advise MSM. Gaycruise.nl is since 2008 part of MantotMan.nl.

45. MPowerment

The MPowerment Project: community-building with young gay and bisexual men to prevent HIV. Hays, R. B. et al., American Journal of Community Psychology 2003; 31(3/4): 301–312

Intervention Goal(s): To build a strong, supportive young gay and bisexual men's community where young gay and bisexual men nurture and protect each other particularly with regard to HIV prevention.

Intervention setting: California, USA

Population: Only MSM, young (18-27 years old), general population

Size of study population:

Intervention group: 103 participants, Control group: 88 participants

Intervention characteristics:

Health focus	HIV
Activity	Counselling and Campaign
Mode of delivery	Mass media, Peer education and Trained counsellor
Setting	Event, Internet, Bar and Community Center
Commodity	Condom distribution, Flyers/folder and Educational message
Triggering event	Programmatic Response
Outcomes	Reduce UI/UAI (not significant)
Study design	Randomized Control Trial

Comments: This project creates a collective, community empowerment that emboldens young gay/bisexual men to organize together for taking on them any challenges of their lives.

46. Bathhouse-based voluntary counselling and testing

Bathhouse-based voluntary counseling and testing is feasible and shows preliminary evidence of effectiveness. Huebner D. M., et al., Journal of Acquired Immune Deficiency Syndromes 2006; 43(2): 239–246

Intervention Goal(s): Reduce sex risk behavior and increase precautionary behavior in bathhouses by offering VCT.

Intervention setting: San Francisco, USA

Population: Only MSM, adults (older than 16 years old), general population

Size of study population: 133 participants

Intervention characteristics:

Health focus	HIV
Activity	Counselling and Testing
Mode of delivery	Trained counsellor
Setting	Clinic/health facility and Bathhouse
Commodity	Educational message and Test
Triggering event	Programmatic Response
Outcomes	Willingness and attitudes to get tested (positive), Reduce UI/UAI (positive), Communication to partners about condoms (no effect), Communicate about HIV with partners (positive, Reduce sex while under influence of drugs (positive), Reduce sex while under influence of alcohol (positive)
Study design	Cross-sectional

47. A cognitive behavioural intervention to reduce STIs

A cognitive behavioural intervention to reduce sexually transmitted infections among gay men: randomised trial. Imrie J. et al., BMJ 2001; 322: 1451–1456

Intervention Goal(s): Brief cognitive behavioural intervention in reducing the incidence of STI among gay men

Intervention setting: London, UK

Population: Only MSM, HIV+ and HIV-, adult (older than 16 years old) and general population

Size of study population: Intervention group: 172 participants, Control group: 166 participants

Intervention characteristics:

Health focus	HIV and STI
Activity	Counselling, Testing, Training
Mode of delivery	Trained counsellor
Setting	Clinic/health facility
Commodity	Educational message and Test
Triggering event	Programmatic Response
Outcomes	Decrease incidence STI (not significant)
Study design	Randomized Control Trial

48. HIV prevention intervention adapted for black MSM

Evaluation of an HIV prevention intervention adapted for black men who have sex with men. Jones K. T. et al., American Journal of Public Health 2008: 98(6): 1043–1050

Intervention Goal(s): HIV behavioural intervention adapted for black MSM

Intervention setting:

Population: Only MSM, young (18-30 years old), black minority population

Size of study population: 1190 participants in total

Intervention characteristics:

Health focus	HIV
Activity	Counselling
Mode of delivery	Peer education
Setting	Bar and Private meetings
Commodity	Flyers/folder and Educational message
Triggering event	Programmatic response
Outcomes	Fewer sexual partners (positive), Increase in condom use (positive) and Reduce UI/UAI (positive)
Study design	Cross-sectional

Comments: Adapting proven interventions for Black MSM can potentially significantly reduce risky behaviour for HIV transmission and acquisition.

49. The Sex Check

The Sex Check: The development of an HIV-prevention service to address the needs of Latino MSM. Katz J. L. et al., Journal of Gay and Lesbian Social Services 2005; 18(1): 37–49

Intervention Goal(s): Culturally Relevant HIV prevention for Latinos

Intervention setting: USA

Population: Only MSM, HIV- and HIV+, adults (older than 16 years old), minority (Latino) population

Size of study population:

Intervention characteristics:

Health focus	HIV
Activity	Counselling, Education
Mode of delivery	Trained counsellor
Setting	Telephone
Commodity	Educational message
Triggering event	Programmatic response
Outcomes	--
Study design	--

Comments: One-to-one, brief intervention.

50. Community Manifesto

A "Community Manifesto" for gay and bisexual men: An appeal to control HIV/STDs. Katzman J. et al., Public Health Management Practice 2007, 13(3), 244–251

Intervention Goal(s): To stop the spread of STDs and promote practices to enhance personal and community sexual health for HIV-positive and HIV-negative MSM.

Intervention setting: USA

Population: Only MSM, HIV- and HIV+, adults (older than 16 years old), general population

Size of study population: 136 signing manifesto, 70 responses on manifesto

Intervention characteristics:

Health focus	HIV and STI
Activity	Education
Mode of delivery	Mass media
Setting	Internet, Newspapers, press conferences, fax, email to organizations
Commodity	Educational message
Triggering event	Programmatic Response
Outcomes	Change sexual behaviour (positive), Increase in condom use (negative)
Study design	Cross-sectional

Comments: Such interventions may have the potential for increasing awareness about sexual responsibility and may facilitate behavior change.

51. Internet-based site-specific interventions for syphilis prevention

Internet-based site-specific interventions for syphilis prevention among gay and bisexual men. Klausner J.D, Levine D.K. and Kent C. K., AIDS Care 2004; 16(8): 964–970

Intervention Goal(s): Increase awareness of the epidemic, knowledge about syphilis transmission and testing in person at risk for infection.

Intervention setting: San Francisco, USA

Population: Only MSM, HIV+ and HIV-, adult (older than 16 years old) and general population

Size of study population: 140 participants

Intervention characteristics:

Health focus	Syphilis
Activity	Counselling, Testing and Education
Mode of delivery	Health care provider
Setting	Internet
Commodity	Educational message and Test
Triggering event	Programmatic Response
Outcomes	Increase uptake of HIV and STI testing/screening and treatment (positive)
Study design	Cross-sectional

52. Enhance

Developing an HIV-prevention intervention for HIV-infected men who have sex with men in HIV care: Project Enhance. Knauz R.O. et al., AIDS Behaviour 2007; 11: S117–S126

Intervention Goal(s): Integrating HIV prevention to reduce HIV sexual risk transmission behavior for HIV infected MSM that is integrated into HIV care.

Intervention setting: Boston, USA

Population: Only MSM, HIV+, adult (older than 16 years old) and general population

Size of study population:

Intervention characteristics:

Health focus	HIV
Activity	Counselling
Mode of delivery	Peer education, Trained counsellor, Health care provider
Setting	Clinic/health facility
Commodity	Educational message
Triggering event	Programmatic Response
Outcomes	--
Study design	--

Comments: Activities included a client centred workbook. 'Enhance' has been designed to meet demands of scientific rigor whilst addressing communities needs for relevant and acceptable interventions.

53. Increasing condom availability and reduce risky sexual behaviours in gay bathhouses

Effects of structural interventions on increasing condom availability and reducing risky sexual behaviours in gay bathhouse attendees. Ko N-Y., et al., AIDS Care 2009; 21(12): 1499–1507

Intervention Goal(s): Reducing UAI, increasing condom availability and their relationship to gay bathhouse attendees

Intervention setting: Taiwan

Population: Only MSM, adult (older than 16 years old) and general population

Size of study population:

Sample size: 632 participants

Intervention characteristics:

Health focus	HIV and STI
Activity	Counselling, Testing and Condom distribution
Mode of delivery	Trained counsellor
Setting	Bathhouses
Commodity	Condom distribution, Educational message, Test
Triggering event	Programmatic response
Outcomes	Increase in condom use (positive), Increase in access to condoms (positive), STI prevalence (no effect)
Study design	Quasi-experimental

Comments: Intervention on structure-level: intervention works by altering the four conditions external to individual control, including accessibility, physical structure, social structure and media messages.

54. EXPLORE

Effect of a behavioural intervention to reduce acquisition of HIV infection among MSM: The Explore randomized controlled study. Koblin B. A., et al, Lancet 2004; 364: 41–50

Intervention Goal(s): To prevent acquisition of HIV infection among MSM in USA

Intervention setting: USA

Population: Only MSM, adult (older than 16 yrs old)

Size of study population:

Sample size: 4295 participants

Intervention characteristics:

Health focus	HIV
Activity	Counselling and education
Mode of delivery	Trained counsellor
Setting	Clinic/health facility
Commodity	Educational message
Triggering event	Programmatic response
Outcomes	Reduce UI/UAI (positive), Decrease incidence STI (positive)
Study design	Randomized Control Trial

55. Online-mediated syphilis testing: Syphilistest.nl

Online-mediated syphilis testing: feasibility, efficacy, and usage. Koekenbier R. H. et al., Sexually Transmitted Diseases 2008; 35(8): 764–769

Intervention Goal(s): Increase syphilis testing.

Intervention setting: Netherlands

Population: Only MSM, adult (older than 16 years old), general population

Size of study population: Intervention group: 93 participants, Control group: 5852 participants

Intervention characteristics:

Health focus	Syphilis
Activity	Testing, Education
Mode of delivery	Mass media, Health care provider
Setting	Internet, Clinic/health facility
Commodity	Educational message, Test, Treatment and support (partner notification)
Triggering event	Programmatic Response
Outcomes	Detection early/late syphilis infection (positive), Feasibility of intervention (positive)
Study design	Case-Control

Comments: Obtainment of referral letter and results via internet. Online-mediated testing is feasible and more successful than detecting MSM with early or late syphilis infections than standard procedures. However, longer promotion periods are needed.

56. STD/HIV/AIDS peer-education and danger

Evaluation of STD/HIV/AIDS peer-education and danger: A local perspective. Laperrière H., Ciência e Saúde Coletiva 2008; 6: 1817–1824

Intervention Goal(s): Reduce morbidity and mortality due to STD/HIV/AIDS and their impact by blocking the transmission of STDs (including HIV).

Intervention setting: Brazil

Population: Mixed population, adult (older than 16 years old) and general population

Size of study population:

Intervention characteristics:

Health focus	HIV and STI
Activity	Testing, Education
Mode of delivery	Peer education, Health care provider
Setting	School-based intervention, Bar, Clinic/health facility, Hotel, Park and Prostitution quarters
Commodity	Condom distribution, Educational message, Test and Treatment
Theory	PAR, critical consciousness
Outcomes	--
Study design	--

Comments: Nurses have a role to play in the conceptualization of participating evaluation.

57. Prevention Options for Positives (POP)

Prevention Options for Positives: The effects of health communication intervention for men who have sex with men living with HIV/AIDS. Lapinski M. K. et al., Health Communication 2009; 24(6): 562–571

Intervention Goal(s): Reduce risky behaviour and modify normative perceptions for MSM.

Intervention setting: Michigan, USA

Population: Only MSM, HIV+, adult (older than 16 years old) and general population

Size of study population:

Sample size: 72

Intervention characteristics:

Health focus	HIV
Activity	Counselling
Mode of delivery	Trained counsellor
Setting	CBO and NGO
Commodity	Educational message
Triggering event	Programmatic Response
Outcomes	Increase knowledge and awareness of HIV and STI prevention and treatment (no effect), Promoting sexual health including safe sex (positive), Increase subjective norm (no effect)
Study design	Quasi experimental

Comments: Intervention activities included individual and group counselling. Group and individual-level interventions combined have a greater impact on risk communication behaviours with main partners than did the ILC-only sessions.

58. Internet based intervention in reducing HIV risk behaviour in Hong Kong

A randomized controlled study to evaluate the efficacy of an internet-based intervention in reducing HIV risk behaviours among men who have sex with men Hong Kong. Lau J. T. F. et al., AIDS Care 2008; 20(7); 820–828

Intervention Goal(s): Internet-based HIV prevention, combining periodic HIV-related information dissemination, monitoring with interactive feedback and online peer counselling.

Intervention setting: Hong Kong, China

Population: Only MSM, HIV+ and HIV-, adult (older than 16 years old) and general population

Size of study population: 280 participants

Intervention characteristics:

Health focus	HIV
Activity	Counselling and Education
Mode of delivery	Peer education and Trained counsellor
Setting	Internet and Hotline
Commodity	Flyers/folder and Educational message
Triggering event	Programmatic Response
Outcomes	Increase knowledge and awareness of HIV and STI prevention and treatment, Increase in condom use, Increase coverage of HIV/STI testing, Promoting sexual health including safe sex – all no effect
Study design	Randomized Control Trial

Comments: Intervention did not bring any improvement in terms of knowledge/perception and behaviour.

59. STDTest.org

Online syphilis testing – confidential and convenient. Levine D. K., Scott K. C. and Klausner J. D., Sexually Transmitted Diseases 2005; 32(2): 139–141

Intervention Goal(s): Increase syphilis testing.

Intervention setting: San Francisco, USA

Population: Mixed population, general population

Size of study population:

Intervention characteristics:

Health focus	Syphilis
Activity	Testing
Mode of delivery	Mass media
Setting	Internet
Commodity	Test
Triggering event	Programmatic Response
Outcomes	--
Study design	--

Comments: Intervention is an innovative, confidential, online testing service for syphilis: www.STDTest.org. It included a website for lab acquisition form and test results.

60. Think Again

Thinking about "Think Again" in Canada: Assessing a social marketing HIV/AIDS prevention campaign. Lombardo A. P. et al., Journal of Health Communication 2007; 12(4): 377–397

Intervention Goal(s): Encourage gay men to rethink their assumptions about their partners' HIV status and the risks of unsafe sex with them

Intervention setting: Canada

Population: Only MSM, HIV+ and HIV-, adults (older than 16 year old) and general population

Size of study population:

Intervention characteristics:

Health focus	HIV
Activity	Campaign
Mode of delivery	Mass media
Setting	TV, Radio, Internet, Bar, streets (posters, billboards), Public Transit and Bathrooms
Commodity	Condom distribution, Flyers/folder and Educational message
Triggering event	Programmatic Response
Outcomes	--
Study design	--

Comments: San Francisco Ascumption, Canadian Think Again. Mode of delivery included billboards, advertisements in public transit, bathroom advertisements, posters, postcards, condom packs, coasters, magnets. 'Think Again' campaign is a good example of how existing campaigns can be adapted elsewhere, however, formative research in still an important step

61. Culture sensitive campaign targets Hepatitis awareness

Culture-sensitive campaign targets hepatitis awareness. MacDougall D. S., Journal of the International Association of Physicians in AIDS Care; 4(7): 38–40

Intervention Goal(s): Increase awareness of hepatitis A, B, and C among the public.

Intervention setting: USA

Population: Mixed population, adults (older than 16 years old), general population

Size of study population:

Intervention characteristics:

Health focus	Hepatitis
Activity	Campaign
Mode of delivery	Mass media
Setting	TV, Radio, Bar, Public Transport, Churches, Community Centre, Health Club, Gay Pride and Advertisement
Commodity	Educational message
Triggering event	Programmatic Response
Outcomes	--
Study design	--

Comments: TV and radio ('broadcast') were for non-MSM, but were part of the intervention.

62. Providing HIV education and outreach via internet chatrooms

Providing HIV education and outreach via internet chat rooms to men who have sex with men. MacMaster S. A., Aquino R. and Vail K. A., Journal of Human Behavior in the Social Environment 2003; 8(2/3): 145-151

Intervention Goal(s): Support behaviour changes as well as serving a gateway function for additional services at the host agency with a chat-room-based HIV prevention.

Intervention setting: Santa Clara County, USA

Population: Only MSM, general population

Size of study population:

Intervention characteristics:

Health focus	HIV
Activity	Education
Mode of delivery	Peer education and Trained counsellor
Setting	Internet
Commodity	Educational message
Theory	Behaviour Change
Outcomes	--
Study design	--

Comments: Chat room/chat session. This pilot is successful in demonstrating the feasibility and impact of an internet-based program as a means of accessing a difficult to reach and often overlooked at risk population.

63. Intervention to reduce HIV risk behaviour of substance-using MSM

An intervention to reduce HIV risk behaviour of substance-using men who have sex with men: A two-group randomized trial with a nonrandomized third group. Mansergh G. et al, PLoS Med 2010; 7(8)

Intervention Goal(s): Group-based cognitive behavioural intervention to reduce risk behaviour of substance using MSM

Intervention setting: USA

Population: Only MSM, HIV+ and HIV-, adults (older than 16 years of age), general population

Size of study population: 1686 participants

Intervention characteristics:

Health focus	HIV
Activity	Counselling, Testing and Education
Mode of delivery	Trained counsellor
Setting	Not defined
Commodity	Educational message and Test
Triggering event	Programmatic Response
Outcomes	Reduce UI/UAI (no effect)
Study design	Randomized Control Trial

Comments: Target population is substance using MSM. Activities included group sessions and videos.

64. Hombres Sanos

Hombres Sanos: Exposure and response to a social marketing HIV prevention campaign targeting heterosexually identified Latino men who have sex with men and women. Martínez-Donate A. P. et al., AIDS Education and Prevention 2009; 21(Suppl. B): 124–136

Intervention Goal(s): Social marketing intervention to reduce HIV risk among heterosexual Latino men.

Intervention setting: California, USA

Population: Mixed, minority population

Size of study population: 1242 participants

Intervention characteristics:

Health focus	HIV
Activity	Campaign and Condom distribution
Mode of delivery	Mass media
Setting	Radio, Bar, Clinic/health facility and streets (posters)
Commodity	Condom distribution, Flyers/folder and Educational message (Comic books)
Triggering event	Programmatic Response
Outcomes	Increase uptake of HIV and STI testing/screening and treatment (significant positive)
Study design	Cross-sectional

Comments: Intervention included brochures, posters and comic books, business cards, mobile ads, and condoms. Intervention included Spanish language.

65. EDGE

Efficacy of a behavioural intervention for increasing safer sex behaviours in HIV-positive MSM methamphetamine users: Results from the EDGE study. Mausbach B. T. et al., Drug and Alcohol Dependence 2007; 87: 249–257

Intervention Goal(s): Behavioural intervention for increasing safer sexual behaviour in the context of ongoing methamphetamine use.

Intervention setting: San Diego CA, USA

Population: Only MSM, HIV+, adults (older than 16 years old), general population

Size of study population: 341 participants

Intervention characteristics:

Health focus	HIV
Activity	Counselling
Mode of delivery	Trained counsellor
Setting	Clinic/health facility
Commodity	Flyers/folder and Educational message
Triggering event	Programmatic Response
Outcomes	Increased in self-efficacy to use condom (positive), Increase in condom use (positive)
Study design	Randomized Control Trial

Comments: Target population: methamphetamine using MSM. Activity included individual therapy and counseling. Outcomes suggests it is possible to reduce high risk sexual behaviour in the context of ongoing meth use among HIV-infected MSM. EDGE did not address meth use.

66. Internet-based health promotion and disease control in the 8 cities

Internet-based health promotion and disease control in the 8 cities: successes, barriers, and future plans. McFarlane M. et al., Sexually Transmitted Diseases 2005; 32(10): S60–S64

Intervention Goal(s): Internet-based STD/HIV prevention in 8 cities (US) most affected by syphilis in MSM.

Intervention setting: USA

Population: Only MSM, adults (older than 16 years old), general population

Size of study population:

Intervention characteristics:

Health focus	HIV and STI
Activity	Campaign
Mode of delivery	Mass media and Trained counsellor
Setting	Internet
Commodity	Educational message and Online testing
Triggering event	Programmatic Response
Outcomes	--
Study design	Descriptive evaluation

Comments: Activities included partner notification intervention, chat room outreach, online testing and banner advertisements, interactive, targeted intervention. Though a number of policy-related barriers prevent some cities from engaging in internet-based prevention, these activities are clearly important to the overall prevention effort. In order to surmount local policy barriers, it is essential to obtain evaluation data from the programs initiated.

67. Treatment Advocacy Program (TAP)

The Treatment Advocacy Program: A randomized controlled trial of a peer-led safer sex intervention for HIV-infected men who have sex with men. McKirnan D. J., Tolou-Shams M. and Courtenay-Quirk C., Journal of Consulting and Clinical Psychology 2010; 78(6): 952–963

Intervention Goal(s): Behavioural intervention for sexual safety among HIV+ MSM, to reduce unprotected sex with HIV- or partners with unknown status.

Intervention setting: Chicago, USA

Population: Only MSM, HIV+, adults (older than 16 years old), general population

Size of study population: 313 participants

Intervention characteristics:

Health focus	HIV
Activity	Counselling
Mode of delivery	Peer education
Setting	Clinic/health facility
Commodity	Educational message
Triggering event	Programmatic Response
Outcomes	Risk reduction (positive)
Study design	Randomized Control Trial

Comments: four session primary-care-based, individual counselling intervention led by HIV-positive MSM 'peer advocates' in reducing unprotected sex with HIV-or-unknown partners (HIV transmission risk).

68. Gimme 5 minutes

Can targeted HIV testing campaigns alter health-seeking behaviour? McOwan A. et al., AIDS Care 2002; 14(3): 385–390

Intervention Goal(s): Promote HIV testing among gay and bisexual men in London

Intervention setting: London, UK

Population: Only MSM, young (younger than 25 years old) and minority population

Size of study population: Intervention group: 292 participants, Control group: 65 participants

Intervention characteristics:

Health focus	HIV
Activity	Testing and Campaign
Mode of delivery	Mass media and Health care provider
Setting	Clinic/health facility and Advertisement
Commodity	Flyers/folder and Test
Triggering event	Programmatic Response
Outcomes	Increase uptake of HIV and STI testing/screening and treatment (positive)
Study design	Case-control

Comments: a multimedia HIV testing campaign. Mass media included newspapers. Including detailed information about accessing testing services may be a vital ingredient in the success of media campaigns focusing on HIV testing.

69. Queermasters

Queermasters: developing a theory- and evidence-based Internet HIV-prevention intervention to promote HIV-testing among men who have sex with men (MSM). Mikolajczak J., Kok G. and Hospers H. J., Applied Psychology: an international review 2008; 57(4): 681-697

Intervention Goal(s): Motivate homo- and bisexual men to test for HIV in the Netherlands.

Intervention setting: The Netherlands

Population: Only MSM, HIV-, adults, general population

Size of study population:

Intervention group: 638 participants (immediate post-test), Control group: 787 participants

Intervention characteristics:

Health focus	HIV
Activity	Education
Mode of delivery	Mass media
Setting	Internet
Commodity	Educational message
Triggering event	Programmatic Response
Outcomes	Willingness and attitudes to get tested (positive), Increase self-efficacy (no effect), Increase social norm (no effect)
Study design	Randomized Control Trial

Comments: Interactive 'game'(quiz) on internet in which the participant needs to answer questions on HIV and sex. In addition, motivation to test on HIV via Sexual Health Check-up (SHC) for HIV and other main STIs. Queermasters did not explicitly include risk information and communication.

70. HIV prevention with male prostitutes and patrons of Hustler bars

HIV prevention with male prostitutes and patrons of Hustler bars: Replication of an HIV preventive intervention. Miller R. L., Klotz D. and Eckholdt H. M., American Journal of Community Psychology 1998; 26(1) 97–131:

Intervention Goal(s): Reduce reported rates of unprotected sexual behavior and unclean needle sharing among male prostitutes and patrons in 3 bars by creating the perception that safer behaviors are normative among men in the bars. Encourage safer sex behavior.

Intervention setting: USA

Population: Mixed population, adults (older than 16 years old), general population

Size of study population: 1741 in total

Intervention characteristics:

Health focus	HIV
Activity	Education and Training
Mode of delivery	Peer education
Setting	Bar
Commodity	Educational message
Triggering event	Programmatic Response
Outcomes	Reduce paid, UI and oral sex (significantly positive), Reduce unpaid UI (no effect), Reduce unpaid oral sex (negative)
Study design	Cross-sectional

Comments: Intervention makes use of POL.

71. Goal choice interventions for alcohol use disorder

A randomized controlled trial of goal choice interventions for alcohol use disorders among men who have sex with men. Morgenstern J. et al., Journal of Consulting and Clinical Psychology 2007; 72(1): 72–84

Intervention Goal(s): Behavioural treatment for alcohol use disorders among MSM

Intervention setting: USA

Population: Only MSM, HIV-, adults (older than 16 years old), general population

Size of study population: Intervention group: 89 participants, Control group: 109 participants

Intervention characteristics:

Health focus	HIV
Activity	Counselling
Mode of delivery	Trained counsellor
Setting	Clinic/health facility
Commodity	Educational message
Triggering event	Programmatic Response
Outcomes	Reduce alcohol use (positive)
Study design	Randomized Control Trial

Comments: Target population: Alcohol Use Disorders (AUD) MSM.

72. Reduce club drug use and HIV risk behaviours

Randomized trial to reduce club drug use and HIV risk behaviours among men-who-have-sex-with-men (MSM). Morgenstern J., Journal of Consulting and Clinical Psychology 2009; 77(4): 645–656

Intervention Goal(s): Reduce risky behaviour among drug using MSM

Intervention setting: New York, USA

Population: Only MSM, adults (older than 16 years old), general population

Size of study population: Intervention group: 70 participants, Control group: 80 participants

Intervention characteristics:

Health focus	HIV
Activity	Counselling
Mode of delivery	Trained counsellor
Setting	Clinic/health facility
Commodity	Educational message
Triggering event	Programmatic response
Outcomes	Risk reduction (no effect), Reduce recreational drug use (positive)
Study design	Randomized Control Trial

Comments: Target population: club drug users.

73. Health Living Project

A behavioural intervention reduces HIV transmission risk by promoting sustained serosorting practices among HIV-infected men who have sex with men. Morin S. F. et al., Journal of Acquired Immune Deficiency Syndrome 2008; 49(5): 544-551

Intervention Goal(s): Individually delivered cognitive behavioural intervention to reduce HIV transmission risk behaviour

Intervention setting: USA

Population: Only MSM, HIV+, adults (older than 18 years old), general population

Size of study population: 616 participants

Intervention characteristics:

Health focus	HIV
Activity	Counselling
Mode of delivery	Trained counsellor
Setting	Not specified
Commodity	Educational message
Triggering event	Programmatic response
Outcomes	Reduce UI/UAI (positive), Improve psychosocial adjustment and situation (no effect)
Study design	Randomized Control Trial

74. PowerON

PowerON: The use of instant message counselling and the internet to facilitate HIV/STD education and prevention. Moskowitz D. A. et al., Patient Education and Counseling 2009; 77: 20–26

Intervention Goal(s): Using online/instant messaging technology to counsel MSM to STD/HIV risk taking behaviour. To meet health information needs of the MSM community in Seattle-Washington

Intervention setting: Kansas and Washington, USA

Population: Only MSM, adult (older than 16 years old) and general population

Size of study population: 297 transcripts of instant message exchanges

Intervention characteristics:

Health focus	HIV and STI
Activity	Counselling
Mode of delivery	Trained counsellor
Setting	Internet
Commodity	Educational message
Triggering event	Programmatic response
Outcomes	Risk reduction, Increase uptake of HIV and STI testing/screening and treatment
Study design	Cross-sectional

Comments: The internet offers potential to expand HIV/STD prevention efforts to new audiences. This study provides evidence for continued support of the internet as a medium through which tailored programs can be implemented.

75. Sex On Premises Venue (SOPV)

Sex on premises venue (SOPV) health promotion project in response to sustained increases in HIV notifications. Mullens A. B. et al., Sexual Health 2009; 6: 41–44

Intervention Goal(s): Promote safer sexual behaviour and reduce sexual risk-taking by outreach services in dry venues.

Intervention setting: Brisbane, Australia

Population: General population

Size of study population:

Intervention characteristics:

Health focus	HIV
Activity	Education
Mode of delivery	Trained counsellor
Setting	Dry settings
Commodity	Educational message
Triggering event	Programmatic Response
Outcomes	--
Study design	--

Comments: Includes a pilot and continued outreach. In continued outreach, brief survey was used to increase conversations (difficulty in pilot). Presence of a health worker within an SOPV was acceptable to patrons. Project was deemed effective for a limited time period and within certain constraints.

76. Stop the Sores

Community reactions to a syphilis prevention campaign for gay and bisexual men in Los Angeles County

Nanín J. E. et al., Journal of Sex Research 2009; 46(6): 525-534

Intervention Goal(s): Increasing awareness, testing and knowledge about syphilis prevention among gay and bisexual men by a humor-based syphilis prevention campaign.

Intervention setting: Los Angeles, USA

Population: Only MSM, HIV- and HIV+, adults (older than 16 years old), general population

Size of study population: 564 participants

Intervention characteristics:

Health focus	Syphilis
Activity	Campaign
Mode of delivery	Mass media
Setting	TV, Radio, Event, Internet, Bar, billboards, subways, bus placard and Advertisement
Commodity	Flyers/folder and Educational message
Triggering event	Programmatic Response
Outcomes	Increase willingness to learn about syphilis, Increase willingness to be more selective in partners, Increase willingness to talk to friends about syphilis, Increase uptake of HIV and STI testing/screening and treatment, Reaching audience with campaign – all positive
Study design	Cross-sectional

Comments: Mass media included promotional materials, cars and stress grip.

77. Bruthas Project

The Bruthas Poject: Evaluation of a community-based HIV prevention intervention for African American men who have sex with men and women. Operario D. et al., AIDS Education and Prevention 2010; 22(1): 37–48

Intervention Goal(s): Address the gap in HIV intervention for African American MSMW. Reduce HIV risk behaviour among African American MSMW but who do not form an identity around same-sex behaviour through the use of theory driven risk reduction strategies delivered in a manner that is sensitve and responsive to men's sexual risk behaviour and to cultural and gender related social dynamics.

Intervention setting: Oakland, USA

Population: Only MSM, adults (older than 16 years old), minority (African American) population

Size of study population: 36 participants

Intervention characteristics:

Health focus	HIV
Activity	Counselling
Mode of delivery	Trained counsellor
Setting	CBO
Commodity	Educational message
Triggering event	Programmatic Response
Outcomes	Fewer sexual partners (positive), Reduce UI/UAI (positive), Increase social support (positive), Increase self-esteem (positive), Reduce loneliness (positive), Reduce sex while under influence of drugs (positive), Reduce sex while under influence of alcohol (no effect)
Study design	Cohort Study

Comments: Intervention is a pilot of the first HIV prevention intervention developed for African Americans. Study lacks control/comparison group; findings restricted to short-term effects.

78. Urban Men Health Study

Obtaining HIV test results with a home collection test kit in a community telephone sample. Osmond D. H. et al., Journal of Acquired Immune Deficiency Syndromes 2000; 24: 363–368

Intervention Goal(s): Test the feasibility of obtaining HIV test results by home collection kit from a probability telephone sample of MSM

Intervention setting: Chicago, Los Angeles, New York, and San Francisco, USA

Population: Only MSM, adults (older than 16 years old), general population

Size of study population: 615 participants

Intervention characteristics:

Health focus	HIV
Activity	Counselling and Testing
Mode of delivery	Home-based testing
Setting	Home and telephone counselling
Commodity	Test
Triggering event	Programmatic Response
Outcomes	Increase uptake of HIV and STI testing/screening and treatment (positive)
Study design	Cross-sectional

Comments: Participants were able to perform the tests technically well. Urban Men Health Study. Home-based HIV testing and telephone interview.

79. Safe Sex Zones

Gezonde keuzes makkelijk maken. Osté J. P., Bakker B. H. W. and S. W. Cremer, Schorer and GGD Amsterdam 2008

Intervention Goal(s): Remove barriers for safe sex and change personal and social norms on healthy sex in sex venues. Increase condom use.

Intervention setting: Amsterdam and Rotterdam, the Netherlands

Population: Only MSM, adults, general population

Size of study population: 946 participants

Intervention characteristics:

Health focus	HIV and STI
Activity	Condom distribution and Change in environment (light in darkrooms, hygiene, videos and shows on safe sex)
Mode of delivery	Sex venue owner and staff
Setting	Darkrooms, sauna and sex parties (indoor sex venues)
Commodity	Condom distribution, Flyers/folder, Prototype condom dispenser, fluorescent billboard for darkroom
Triggering event	Programmatic Response
Outcomes	Increase in condom use (positive), Changes in social norms about condom use (positive), Awareness of activity (positive), Acceptability of intervention (positive)
Study design	Cross-sectional

Comments: Intervention focused on sexual health in general, not on disease specific.

80. Motivational interviewing in HIV field outreach with young African American MSM

Using Motivational Interviewing in HIV field outreach with young African American men who have sex with men: A randomized clinical trial. Outlaw A. Y. et al., American Journal of Public Health 2010; 100(Suppl1): S146–S151

Intervention Goal(s): Integrate Motivational Interviewing with field outreach to promote knowledge of HIV status among young African American MSM in the context of oral swab HIV testing.

Intervention setting: USA

Population: Only MSM, young (between 16 and 24 years old), minority (African American) population

Size of study population: Intervention group: 96 participants, Control group: 92 participants

Intervention characteristics:

Health focus	HIV
Activity	Counselling and Testing
Mode of delivery	Peer education and Trained counsellor
Setting	Community venues, urban. Place of recruitment
Commodity	Condom distribution, Educational message, Test and Safe sex supplies
Triggering event	Programmatic Response
Outcomes	Increase in counselling and testing (significantly positive), Return for test-results (significantly positive)
Study design	Randomized Control Trial

Comments: A brief intervention that focuses not only on outreach but on motivation may be an effecting way of engaging this high-risk population. Motivational Interviewing: provisional education (HIV 101) and expressing empathy, exploring ambivalence, building motivation to change via client centered and goal oriented.

81. Brief telephone-based intervention using Motivational Enhancement Therapy

Lowering obstacles to HIV prevention services: Effects of a brief, telephone-based intervention using Motivational Enhancement Therapy. Picciano J. F., Kalichman S. C. and Walker D. D., Annals of Behavioral Medicine 2007; 34(2): 177–187

Intervention Goal(s): Risk reduction using brief and low burden HIV.

Intervention setting: Seattle (Washington) and Portland (Oregon), USA

Population: Only MSM, adults (older than 16 years old), general population

Size of study population: Intervention group: 157 participants, Control group: 162 participants

Intervention characteristics:

Health focus	HIV
Activity	Counselling
Mode of delivery	Trained counsellor
Setting	Telephone
Commodity	Educational message
Triggering event	Programmatic Response
Outcomes	Fewer sexual partners (no effect), Reduce UI/UAI (significantly negative), Increase uptake of HIV and STI testing/screening and treatment (positive), IMB skills (no effect)
Study design	Randomized Control Trial

Comments: Telephone-based intervention designed to allow high-risk MSM to 'take stock' of current sexual behaviour is effective strategy for engaging MSM in prevention interventions .All interactions with the study participants accrued by phone. Participants received a personalised feedback report (PFR) prior to their first counselling session. Counselling used Motivational Interviewing Techniques. Control was a single didactic session (30-45 min) similar to pretest counselling/information from a Hotline.

82. Stop the Sores

Stop the Sores: The making and evaluation of a successful social marketing campaign. Plant A. et al., Health Promotion Practice 2010; 11(1): 23–33

Intervention Goal(s): Increasing syphilis testing, knowledge and awareness among MSM

Intervention setting: Los Angeles, USA

Population: Only MSM, adults (older than 16 years old), general population

Size of study population: 297 participants

Intervention characteristics:

Health focus	Syphilis
Activity	Testing and Campaign
Mode of delivery	Mass media
Setting	TV, Radio, Event, Internet, Bar, Life size sore costume, streets, commerical sex venues, Advertisement, Hotlines (telephone)
Commodity	Flyers/folder and Educational message
Triggering event	Outbreak
Outcomes	Increase knowledge and awareness of HIV and STI prevention and treatment (significantly positive), Awareness of activity (significantly positive)
Study design	Cross-sectional

Comments: Primary goal of intervention: get tested. Secondary goal is to increase awareness and knowledge. Humour was essential to the campaign. Serial nature of the campaign encouraged people to follow the campaign.

83. Socially optimized learning in a virtual environment to reduce risky sexual behavior

Socially optimized learning in a virtual environment: Reducing risky sexual behavior among men who have sex with men. Read S. J. et al., Human Communication Research 2006; 32: 1–34

Intervention Goal(s): Effectiveness of Interactive Video in promoting safer sex for MSM and reducing sexually risky behavior.

Intervention setting: USA

Population: Only MSM, HIV-, adults (older than 16 years old), general population

Size of study population: Intervention group: 68 participants, Control group: 35 participants

Intervention characteristics:

Health focus	HIV
Activity	Counselling and Education
Mode of delivery	Trained counsellor and Video
Setting	Computer-based intervention
Commodity	Educational message
Triggering event	Programmatic Response
Outcomes	Reduce UI/UAI (positive)
Study design	Randomized Control Trial

Comments: Intervention included a video.

84. Free Condom Initiative

The Free Condom Initiative: Promoting condom availability and use in New York City. Renaud T. C. et al., Public Health Reports 2009; 124: 481–489

Intervention Goal(s): Make condoms more available, particularly in minority neighbourhoods, through web based ordering system

Intervention setting: New York, USA

Population: General population

Size of study population: 877 organisations, 409 venue managers and 740 patrons

Intervention characteristics:

Health focus	HIV and STI
Activity	Condom distribution
Mode of delivery	Mass media
Setting	Internet, Clinic/health facility, streets, Beauty parlors, nail salons, small hotels and motels
Commodity	Condom distribution
Triggering event	Programmatic Response
Outcomes	Increase in condom use (positive), Increase condom distribution (positive)
Study design	Cross-sectional

Comments: Intervention was to offer condoms for free through internet. In addition, to reach minorities, condoms were marketed, delivered and restocked in other places and on the streets.

85. CyBER/M4M

A pilot intervention utilizing internet chat rooms to prevent HIV risk behaviours among men who have sex with men. Rhodes S. D. et al., Public Health Reports 2010; 125(Suppl1): 29–37

Intervention Goal(s): Reduce HIV risk behavior among MSM through internet chatrooms Reduce risk of HIV exposure, infection and re-infection among MSM

Intervention setting: North-western North Carolina, USA

Population: Only MSM, HIV+ and HIV-, adults (older than 16 years old), general population

Size of study population: 210 participants

Intervention characteristics:

Health focus	HIV and STI
Activity	Education
Mode of delivery	Peer education
Setting	Internet
Commodity	Educational message
Triggering event	Programmatic Response
Outcomes	Reaching audience with campaign (positive)
Study design	Cross-sectional

Comments: Cyber educators reached large numbers of people. Anonymity of users not opens to informing others of their sexuality. Positive aspects of chat rooms. Chat Room Educator has predefined roles and responsibilities

86. Provision of PEP after introduction of guidelines and publicity campaigns

Changes in the provision of post-exposure prophylaxis for HIV after sexual exposure following introduction of guidelines and publicity campaigns. Roedling S. et al., International Journal of STD and AIDS 2008; 19: 241–242

Intervention Goal(s): Promotion of PEPSE

Intervention setting: London, Brighton, UK

Population: Mixed population, general population

Size of study population: 112 participants

Intervention characteristics:

Health focus	HIV
Activity	Campaign
Mode of delivery	Mass media and Health care provider
Setting	Internet, Clinic/health facility, Advertisement, Pay press and 'other materials'
Commodity	PEPSE
Triggering event	Programmatic Response
Outcomes	Fewer sexual partners (no effect), Increase uptake of HIV and STI testing/screening and treatment (not significant), Increase request on of PEPSE (significantly positive), Commencing time PEPSE (no effect), Completion rates PEPSE (no effect), Awareness of activity (negative)
Study design	Cohort

Comments: Online self-assessment helps men to decide whether they have taken a risk that could justify them having PEP and gives details of clinics in local area.

87. Late Night Breakfast Buffet

Assessing the feasibility of harm reduction services for MSM: the Late Night Breakfast Buffet study. Rose V. J. et al., Harm Reduction Journal 2006; 3: 29–36

Intervention Goal(s): Provide harm reduction services to a late night population of non-injecting drug using MSM

Intervention setting: San Francisco, USA

Population: Only MSM, adult (older than 16 yrs old) and general population

Size of study population: 55 participants

Intervention characteristics:

Health focus	HIV and STI
Activity	Counselling, Education, Testing and Needle Exchange
Mode of delivery	Trained Counsellor and Health Care Provider
Setting	Mobile van
Commodity	Education Message and Test
Triggering event	Programmatic Response
Outcomes	Reaching audience with campaign (positive), Acceptability of intervention (positive), Feasibility of intervention (positive)
Study design	Cross-sectional

Comments: Project Late Night Breakfast Buffet. Buffet refers to the 'buffet' of harm reduction services which were offered to the target population.

88. Sexual health approach to long-term HIV risk reduction on unsafe sexual behaviour

A randomized controlled intervention trial of a sexual health approach to long-term HIV risk reduction for men who have sex with men: Effects of the intervention on unsafe sexual behavior. Rosser B. R. S., et al., AIDS Education and Prevention 2002; 14(3 Suppl A): 59–71

Intervention Goal(s): Use an innovative sexual health approach to prevent HIV in MSM.

Intervention setting: Minnesota, USA

Population: Only MSM, adults (older than 16 years old), general population

Size of study population:

Intervention group: 101 participants, Control group: 68 participants

Intervention characteristics:

Health focus	HIV
Activity	Education
Mode of delivery	Trained counsellor
Setting	University of Minnesota
Commodity	Educational message
Triggering event	Programmatic Response
Outcomes	Increase in condom use (positive), Reduce UI/UAI (significantly positive)
Study design	Randomized Control Trial

Comments: For this intervention, the Man-to-Man Sexual Health Seminars were developed.

89. Positive Connections

Effects of a behavioral intervention to reduce serodiscordant unsafe sex among HIV positive men who have sex with men: the Positive Connections randomized controlled trial study. Rosser B. R. S. et al., Journal of Behavioral Medicine 2010; 33: 147–158

Intervention Goal(s): To address HIV prevention and sexual health specifically from an HIV+ MSM perspective. Reduce risk behavior among HIV positive MSM wiht a sexual health approach. Help MSM to identify and address their sexual health and HIV risk concerns

Intervention setting: USA

Population: Only MSM, HIV- and HIV+, adults (older than 16 years old), general population

Size of study population:

Intervention group 1: 188 participants, Intervention group 2: 184 participants, Control group: 155 participants

Intervention characteristics:

Health focus	HIV
Activity	Counselling and Education
Mode of delivery	Trained counselor and Health care provider
Setting	Not defined
Commodity	Educational message
Triggering event	Programmatic Response
Outcomes	Risky sexual practice (positive), Reduce UI/UAI (no effect)
Study design	Randomized Control Trial

Comments: Two different types of seminars where included: 'Man2Man' and 'positive sexual health'. 'Men speaking out' (video) was the contrast/control group. Sexual health approach could achieve better results in reducing high risk behavior in HIV+ MSM than video-based; interventions targeting HIV+ men are more effective than mixed population targeting interventions. A sexual health approach appeared as effective as an untailored video-based HIV prevention intervention in reducing serodiscordant UAI in HIV+ MSM.

90. Sexpulse

Reducing HIV risk behavior of men who have sex with men through persuasive computing: results of the Men's INTernet Study-II. Rosser B. R. S. et al., AIDS 2010, 24:2099–2107

Intervention Goal(s): Reduce risk behavior for HIV/AIDS in MSM in US through an interactive internet-based HIV prevention intervention.

Intervention setting: USA

Population: Only MSM, adults (older than 16 years old), general population

Size of study population

Intervention group: 276 participants, Control group: 278 participants

Intervention characteristics:

Health focus	HIV
Activity	Education
Mode of delivery	Mass media
Setting	Internet
Commodity	Educational message
Triggering event	Programmatic Response
Outcomes	Risk reduction (positive), Fewer sexual partners (significantly positive)
Study design	Randomized Control Trial

Comments: Internet-based, persuasive computing programs hold promies as an effective new approach to HIV prevention for MSM, at least in the short term.

91. Projeto Contato

Reducing AIDS risk among men who have sex with men in Salvador, Brazil. Sampaio M. et al., AIDS and Behavior 2002; 6(2): 173–181

Intervention Goal(s): Examine pattern of risk behavior among MSM in Bahia and feasibility/impact of organized AIDS prevention programme to reduce HIV risk behaviour among MSM

Intervention setting: Salvador, Brazil

Population: Only MSM, adults (older than 16 years old), general population

Size of study population: 227 participants

Intervention characteristics:

Health focus	HIV
Activity	Education and Condom distribution
Mode of delivery	Trained counsellor
Setting	Clinic/health facility
Commodity	Condom distribution and Educational message
Triggering event	Programmatic Response
Outcomes	Increase knowledge and awareness of HIV and STI prevention and treatment (positive), Risky sexual practice (positive), Reduce UI/UAI (positive)
Study design	Cohort

Comments: Two types of intervention were performed: a safe-sex workshop and a class lecture followed by a group discussion. Participants were randomly placed in 1 of the 2 intervention groups, but the results of the 2 groups were merged since no difference in results from both interventions could be identified.

92. DL STATS PARTY

A syphilis control intervention targeting Black and Hispanic men who have sex with men. Sánchez J. P. et al., Journal of Health Care for the Poor and Underserved 2009; 20(1): 194–209

Intervention Goal(s): To promote syphilis testing among minority MSM through a sexual health and general well being framework; increase the uptake of testing

Intervention setting: New York, USA

Population: Only MSM, adults (older than 16 years old), minority (Black and Hispanic) population

Size of study population: 461 participants

Intervention characteristics:

Health focus	HIV and STi
Activity	Testing, Education and Vaccination
Mode of delivery	Health care provider and Outreach/venue staff members
Setting	Event and CBO
Commodity	Educational message, Test and Vaccin
Triggering event	Outbreak
Outcomes	Feasibility of intervention (positive)
Study design	Cross-sectional

Comments: A set of 9 services were offered at the events (syphilis, HIV, gonorrhoea, Chlamydia testing, Hepatitis A and B vaccination, blood pressure screening, mental health/substance abuse screening, smoking cessation counselling and nicotine free patches) in a bundling model.

93. Syphilis and Men

Video tool to promote knowledge of syphilis among black and Hispanic men recruited from clinical and non-clinical settings. Sánchez J. P. et al., Journal of Community Health 2010; 35: 220–228

Intervention Goal(s): Syphilis and Men video to increase and promote syphilis knowledge among black and hispanic MSM

Intervention setting: New York, USA

Population: Only MSM, adults (older than 16 years old), minority (Black and Hispanic) population

Size of study population:

Intervention group: 85 participants. Control group: 83 participants

Intervention characteristics:

Health focus	HIV and STI
Activity	Education
Mode of delivery	Video
Setting	Bar, Clinic/health facility and CBO
Commodity	Educational message
Triggering event	Outbreak
Outcomes	Increase knowledge and awareness of HIV and STI prevention and treatment (positive)
Study design	Randomized Control Trial

Comments: Video in this intervention focused on transmission, treatment, symptoms, connection to HIV and reduction of syphilis and HIV co-infection.

94. Checkpoint

An integrated model of care to counter high incidence of HIV and sexually transmitted diseases in men who have sex with men – initial analysis of service utilizers in Zurich. Schwappach D. L. B. and Bruggmann P., BMC Public Health 2008, 8: 180-189

Intervention Goal(s): To provide sexual health services for gay men. Reduce rates of new HIV and STI infections and provide comprehensive health services for men.

Intervention setting: Switzerland

Population: Only MSM, adults (older than 16 years old), general population

Size of study population: 247 participants

Intervention characteristics:

Health focus	HIV and STI
Activity	Counselling, Testing, Vaccination and PEP
Mode of delivery	Trained counselor and Health care provider
Setting	Clinic/health facility
Commodity	Educational message, Test and Vaccin
Triggering event	Programmatic Response
Outcomes	Acceptability of intervention (positive), Feasibility of intervention (positive)
Study design	Cross-sectional

Comments: The Checkpoint service followed a holistic approach to health in the MSM community and served as a door opener between established systems of care and men who have no access. The service achieved high levels of recognition, acceptance and demand in the MSM community.

95. The HAPEER Project

Peer-led sexual health promotion with young gay and bisexual men - results of The HAPEER Project. Shepherd J., et al., Health Education 1997; 97: 204–212

Intervention Goal(s): Promotion of sexual health among young MSM through peer-led HIV prevention.

Intervention setting: UK

Population: Only MSM, young, general population

Size of study population: Intervention group: 43 participants, Control group: 23 participants

Intervention characteristics:

Health focus	HIV
Activity	Education
Mode of delivery	Peer education
Setting	CBO
Commodity	Educational message
Triggering event	Programmatic Response
Outcomes	Increase knowledge and awareness of HIV and STI prevention and treatment, Increase information provision by peers, Increase exportation of attitudes and beliefs by peers – all positive
Study design	Quasi experimental

Comments: Recruitment of a core of initial peer educators can be problematic. Peer education were most effective in terms of information provision.

96. Young Latino Promotores (YLP)

Adapting the popular opinion leader intervention for Latino young migrant men who have sex with men. Somerville, G. G. et al., AIDS Education and Prevention 2006; 18(4 Suppl A): 137–148.

Intervention Goal(s): Reduce risk behaviour through delivering HIV prevention messages using the social networks (POL) of latino migrant MSM

Intervention setting: USA

Population: Only MSM, young, minority (Latino) population

Size of study population: 766 participants

Intervention characteristics:

Health focus	HIV
Activity	Education and Training
Mode of delivery	Peer education
Setting	CBO
Commodity	Educational message
Triggering event	Programmatic Response
Outcomes	Increase knowledge and awareness of HIV and STI prevention and treatment, Perception of risk, Reduce oral sex, Increase condom use IAI, Increase condom use RAI, Acceptance safe sex by friends, Acceptance condom use by friends
Study design	Cross-sectional

Comments: Target population is young migrant MSM. POL was provided with t-shirts, incentives, bags, condoms and buttons to distribute under their peers. YLP is a good example of processed followed to adapt HIV prevention interventions with process effectiveness for high-risk marginalized racial/ethnic communities.

97. Home collection for frequent HIV testing

Home collection for frequent HIV testing: acceptability of oral fluids, dried blood spots and telephone results. HIV Early Detection Study Group. Spielberg, F. et al., AIDS 2000; 14(12): 1819–1828

Intervention Goal(s): Early detection of HIV infection by provision of bimonthly home oral fluid and dried blood spot collection of HIV testing to high risk groups (MSM, Injecting Drug Users, WAHR).

Intervention setting: Mixed population, HIV-, adults (older than 16 years old), general population

Population: Size of study population:

Intervention group: 120 participants, Control group: 121 participants

Intervention characteristics:

Health focus	HIV
Activity	Counselling and Testing
Mode of delivery	Trained counsellor and Self-administered
Setting	Clinic/health facility and Home-based and telephone
Commodity	Educational message and Test
Triggering event	Programmatic Response
Outcomes	Risky sexual practice (no effect/positive), Acceptability of intervention (positive), Feasibility of intervention (positive)
Study design	Cohort

Comments: Part of bigger cohort: VPS of HIVNET. Pre-test counselling could be scheduled before each bimonthly test. Face-to-face counselling was the only part of the intervention taking place in the clinic. This intervention, a bimonthly home specimen collection of both oral fluid and dried blood spots with telephone counselling is acceptable and feasible among study participants at high risk.

98. HIV counselling and testing program for bathhouses

Designing an HIV counselling and testing program for bathhouses. Spielberg F. et al., Journal of Homosexuality 2003; 44(3/4): 203–220

Intervention Goal(s): Provide counseling and testing in bathhouses, including disclosure

Intervention setting: Seattle, USA

Population: Only MSM, adults (older than 16 years old), general population

Size of study population:

Intervention characteristics:

Health focus	HIV
Activity	Counselling and Testing
Mode of delivery	Trained counselor and Health care provider
Setting	Bathhouses
Commodity	Educational message and Test
Triggering event	Programmatic response
Outcomes	--
Study design	--

Comments: Disclosure by trained staff of the bathhouse was given (part of the intervention), optionally by phone. Bathhouses provide an opportunity for HIV prevention interventions that can reach MSM at highest risk. HIV rapid tests were well received.

99. Dogs are Talking

Dogs Are Talking: San Francisco's social marketing campaign to increase syphilis screening. Stephens, S. C. et al., Sexually Transmitted Diseases 2010; 37(3): 173–176

Intervention Goal(s): Increase syphilis awareness and promote regular syphilis testing among MSM in San Francisco

Intervention setting:San Francisco, USA

Population: Only MSM, adults (older than 16 years old), general population

Size of study population: 289 participants

Intervention characteristics:

Health focus	Syphilis
Activity	Campaign
Mode of delivery	Mass media
Setting	Internet, streets (posters), Advertisement
Commodity	Educational message
Triggering event	Programmatic Response
Outcomes	Increase knowledge and awareness of HIV and STI prevention and treatment (negative), Increase uptake of HIV and STI testing/screening and treatment (negative), Increase syphilis testing by HIV-pos (significantly positive), Increase syphilis knowledge by HIV-pos (positive)
Study design	Cross-sectional

Comments: Campaign gave information and promoted municipal STI-clinic and websites for testing.

100. Patient-delivered partner therapy in San Francisco

The effectiveness of patient-delivered partner therapy and chlamydial and gonococcal reinfection in San Francisco. Stephens, S. C et al., Sexually Transmitted Diseases 2010; 37(8): 525–529

Intervention Goal(s): Increase the proportion of partners receiving treatment for gonorhoea and chlamydia via Patient-Delivered Partner Treatment

Intervention setting: USA

Population: Mixed population, general population

Size of study population:

Chlamydia intervention group: 1908 participants, Control group: 2508 participants

Gonorrhoa intervention group: 1195 participants, Control group: 921 participants

Intervention characteristics:

Health focus	HIV and STI
Activity	Testing
Mode of delivery	Health care provider and Patients
Setting	Clinic/health facility and Where patients meet their sex partners
Commodity	Condom distribution, Test, Safer sex materials and medications for partner treatment including instructions
Triggering event	Programmatic Response
Outcomes	Risk reduction (negative), Reduce risk of reïnfection (negative)
Study design	Case-Control

Comments: Patients diagnosed with chlamydia and/or gonorrhoea where encouraged to notify their sex partners of exposure and to refer partners for testing. In addition a PDPT (patient delivered partner therapy) kit was offered.

101. Offering Hepatitis B vaccination in known gay venues

Promotion of sexual health services to men who have sex with men, offering Hepatitis B vaccinations in known gay venues. Toomer S. et al., Hiv Medicine 2009; 10(S1): 14–15

Intervention Goal(s): Promote Hep B vaccinations and sexual health in gay bars.

Intervention setting: UK

Population: Only MSM, general population

Size of study population: 58 participants

Intervention characteristics:

Health focus	HIV and STI
Activity	Education and Vaccination
Mode of delivery	Trained counsellor
Setting	Bar
Commodity	Educational message and Vaccin
Triggering event	Programmatic Response
Outcomes	Sexual health promotion (positive)
Study design	Cross-sectional

Comments: Prevent STIs in high-risk populations by raising sexual health awareness and promote Hepatitis B vaccination.

102. Self-help and motivation enhancement to promote sexual health in HIV+ MSM

Evaluation of a self-help and motivation enhancement intervention to promote sexual health in HIV-positive men who have sex with men. Van Kesteren N. M. C. et al., Positive and Gay: safer sex by definition (PhD thesis N. van Kesteren) 2007; 131–150

Intervention Goal(s): Promote satisfactory sexual function and safer sexual behaviour. Reduce sexual problems and UAI.

Intervention setting: The Netherlands

Population: Only MSM, HIV+, adults (older than 18 years old), general population

Size of study population:

Intervention group: 63 participants, Control group: 99 participants

Intervention characteristics:

Health focus	HIV and STI
Activity	Counselling and Education
Mode of delivery	Health care provider
Setting	Clinic/health facility
Commodity	Educational message
Triggering event	Programmatic response
Outcomes	Social-psychological determinants of intended condom use (no effect), Reduce UI/UAI (negative), Reduce sexual health problems (negative), Increase social support (negative), Increase self-esteem (negative)
Study design	Randomized Control Trial

Comments: Health care provider was an HIV nurse. Focus of intervention is on sexual health in general.

103. SOMOS

SOMOS: evaluation of an HIV prevention intervention for Latino gay men. Vega M. Y. et al. Health Education Research 2011; 26(3): 407–18

Intervention Goal(s): Latino specific health-HIV prevention intervention that holistically approaches actually specific needs, barriers and resistence of latino gay male communities.

Intervention setting: USA

Population: Only MSM, adults (older than 16 years old), minority (Latino) population

Size of study population: 113 participants

Intervention characteristics:

Health focus	HIV
Activity	Counselling and Education
Mode of delivery	Trained counsellor
Setting	Advertisement, NGO and Non defined place (sessions and presentations)
Commodity	Educational message
Triggering event	Programmatic response
Outcomes	Increase knowledge and awareness of HIV and STI prevention and treatment, Risk reduction, Fewer sexual partners, Increase self-esteem, Social support resources, Group identification – all positive
Study design	Cross-sectional

Comments: Activities involved group sessions, social marketing and community presentations. Trained Counselors were facilitators. Somos means 'we are' in Spanish.

104. Reducing sexual risk behaviours and alcohol use among HIV-positive MSM

Reducing sexual risk behaviors and alcohol use among HIV-positive men who have sex with men: a randomized clinical trial. Velasquez M. M. et al., J Consult Clin Psychol 2009; 77(4): 657–667

Intervention Goal(s): Reduce alcohol use and incidence of unprotected sexual behaviours among HIV positive MSM with alcohol use disorders through promotion of target behaviours. Test effectiveness of a TTM and MI based intervention.

Intervention setting: USA

Population: Only MSM, HIV+, adults (older than 16 years old), general population

Size of study population:

Intervention group: 118 participants, Control group: 135 participants

Intervention characteristics:

Health focus	HIV
Activity	Counselling and Education
Mode of delivery	Peer education and Trained counsellor
Setting	Clinic/health facility
Commodity	Educational message
Triggering event	Programmatic Response
Outcomes	Reduce UI/UAI (no effect), Reduce alcohol use (positive), Reduction heavy drinking days (positive), Reduction days with both heavy drinking and UI (positive)
Study design	Randomized Control Trial

Comments: Focus of intervention also on alcohol use. Trained counsellor was a therapist. Counselling was individual, peer education was group-based.

105. Avahan

Scale-up and coverage of Avahan: a large-scale HIV prevention programme among female sex workers and men who have sex with men in four Indian states. Verma R. et al., Sexually Transmitted Infections 2010; 86(Suppl 1): i76–i82

Intervention Goal(s): Achieve high coverage of HIV-prevention services.

Intervention setting: Andhra Pradesh, Tamil Nadu, Karnataka and Maharashtra, India

Population: Mixed population, general population

Size of study population:

Intervention characteristics:

Health focus	HIV
Activity	Education and Condom distribution
Mode of delivery	Health care provider and Outreach staff
Setting	Clinic/health facility and NGO
Commodity	Condom distribution, Educational message and STI services
Triggering event	Programmatic Response
Outcomes	--
Study design	--

Comments: Program includes a series of interventions. Avahan achieved infrastructure scale by year 3 and high contact coverage through peers and with commodities by year 5. Avahan means "call to action" in Sanskrit.

106. Offering of HIV screening to MSM by their health care providers and associated factors

Offering of HIV screening to men who have sex with men by their health care providers and associated factors. Wall K. M. et al., Journal of International Association of Physicians in AIDS Care 2010; 9(5): 284–288

Intervention Goal(s): To examine the extent to which medical providers offer HIV testing to MSM in accordance with CDC guidelines.

Intervention setting: USA

Population: Only MSM, HIV-, adults (older than 16 years old), general population

Size of study population: 4620 participants

Intervention characteristics:

Health focus	HIV
Activity	Testing
Mode of delivery	Health care provider
Setting	Clinic/health facility
Commodity	Test
Triggering event	Programmatic Response
Outcomes	Provider adherence to recommendations (testing offering) (negative)
Study design	Cross-sectional

Comments: Evaluation of national policy of opting-out model of testing. Less than one third of the MSM visiting a provider reported being offered HIV testing.

107. Sorted Campaign, 'B safe'

B safe, B sorted: results of a hepatitis B vaccination outreach programme. Warwick Z. et al., International Journal of STD and AIDS 2007; 18(5): 335-337

Intervention Goal(s): Raise awareness of hepatitis B and increase vaccination uptake for MSM not accessing conventional SHS

Intervention setting: UK

Population: Only MSM, general population

Size of study population: 150 participants

Intervention characteristics:

Health focus	Hepatitis
Activity	Campaign
Mode of delivery	Mass media and Health care provider
Setting	Radio and Bar
Commodity	Condom distribution and Vaccin
Triggering event	Programmatic Response
Outcomes	Vaccination completion rate (positive), Acceptability of intervention (positive)
Study design	Cross-sectional

Comments: Programme succeeded in reaching MSM not routinely accessing services. Text messaging was an acceptable and effective method for follow-up (= high vaccination completion rates).

108. Embedding Health Messages into Entertainment Television

Embedding health messages into entertainment television: effect on gay men's response to a syphilis outbreak Whittier D. K. et al., Journal of Health Communication 2005; 10(3): 251-259

Intervention Goal(s): Communicate messages about syphilis to increase intention to be screened for syphilis.

Intervention setting: USA

Population: Only MSM, adults (older than 16 years old), general population

Size of study population: 501 participants

Intervention characteristics:

Health focus	Syphilis
Activity	Education
Mode of delivery	Mass media
Setting	TV
Commodity	Educational message
Triggering event	Outbreak
Theory	Entertainment Education, Reasoned Action
Outcomes	Increase uptake of HIV and STI testing/screening and treatment (positive), Promote testing to others (positive)
Study design	Cross-sectional
Level of evidence	Tier III

Comments: MSM were recruited in an Internet Chat Room for MSM serving in 8 US urban areas. Exposure to a storyline about syphilis in gay men had a positive public health outcome on users of Internet Chat Rooms for MSM.

109. HOPE project

An evaluation of the experiences of rural MSM who accessed an online HIV/AIDS health promotion intervention. Williams, M. et al., Health Promotion Practice 2010; 11(4): 474-482

Intervention Goal(s): Reduce HIV/AIDS risk in rural MSM by online risk reduction activities.

Intervention setting: USA

Population: Only MSM, adults (older than 16 years old), general population

Size of study population: 300 participants

Intervention characteristics:

Health focus	HIV
Activity	Education
Mode of delivery	Mass media
Setting	Internet
Commodity	Educational message
Triggering event	Programmatic response
Outcomes	Feasibility of intervention (positive)
Study design	Cross-sectional

Comments: Target population of this intervention was rural MSM. Rural MSM are willing to enroll in and complete and internet-delivered HIV/AIDS risk reduction intervention; participants significant increase HIV-related knowledge, positive condom use, outcome expectancies.

110. Gay Men's Task Force

The Gay Men's Task Force: the impact of peer education on the sexual health behaviour of homosexual men in Glasgow. Williamson L. M et al., Sexually Transmitted Infections 2001; 77(6): 427-432

Intervention Goal(s): Reduce sexual risk behaviors for HIV infection and increase use of a dedicated homosexual men's sexual health service; increase HBV vaccine.

Intervention setting: Scotland, UK

Population: Only MSM, adults (older than 16 years old), general population

Size of study population: 1442 participants

Intervention characteristics:

Health focus	HIV and STI
Activity	Education
Mode of delivery	Peer education
Setting	Bar
Commodity	Flyers/folder and Educational message
Triggering event	Programmatic Response
Outcomes	Increase uptake of HIV and STI testing/screening and treatment (significantly positive), Increase uptake of STI vaccination (significantly positive), Increase of use of sexual health services (positive), Community wide changes in sexual behaviour (negative)
Study design	Cross-sectional

Comments: Intervention had direct impact on Glasgow's homosexual men and reached men of all ages and social classes.

111. Many Men, Many Voices (3MV)

Efficacy of an HIV/STI prevention intervention for black men who have sex with men: findings from the Many Men, Many Voices (3MV) project. Wilton L. et al., AIDS Behaviour 2009; 13(3): 532-544

Intervention Goal(s): Lower HIV and STI transmission risks among black MSM by reducing UAI (insertive and receptive) with main and casual partners and the number of sex partners and by increasing protective behavior including consistent condom use during AI and testing for HIV/STIs.

Intervention setting: New York, USA

Population: Only MSM, HIV-, adults (older than 16 years old), minority (black) population

Size of study population: Intervention group: 127 participants, Control group: 133 participants

Intervention characteristics:

Health focus	HIV and STI
Activity	Training
Mode of delivery	Peer education, Trained counsellor
Setting	Facilities in upstate NY (retreat)
Commodity	Educational message
Triggering event	Programmatic Response
Outcomes	Fewer sexual partners (significantly positive), Increase in condom use (positive), Increase condom use RAI (positive), Reduce UI/UAI (significantly positive), Reduce number of UAI episodes (no effect), Increase uptake of HIV and STI testing/screening and treatment (positive)
Study design	Randomized Control Trial

Comments: Target population: black MSM.

112. Case management to engage young Latino and African American MSM into HIV care

Using A Clinic-Based Case Management Intervention To Engage Young Latino And African American Men Who Have Sex With Men In To HIV Care. Wohl A. R., et al., The Journal of adolescent health: official publication of the Society for Adolescent Medicine 2009; 44(2): S35

Intervention Goal(s): Improve initial engagement in HIV care, address barriers to care and referrals among YMSM by a clinic-based Case Management intervention.

Intervention setting: USA

Population: Only MSM, HIV+, young, minority (Latino and African American) population

Size of study population: 40 participants

Intervention characteristics:

Health focus	HIV
Activity	Support service referrals
Mode of delivery	Health care provider
Setting	Clinic/health facility
Commodity	HIV care, support service referrals
Triggering event	Programmatic Response
Outcomes	Initial engagement in HIV care (positive)
Study design	Cohort Study

113. Individually counselling on HIV prevention in men receiving Hepatitis B vaccination

Effects of a short individually tailored counselling session for HIV prevention in gay and bisexual men receiving Hepatitis B vaccination. Wolfers M. E. et al., BMC Public Health 2009; 9: 255

Intervention Goal(s): Reduce UAI in gay and bisexual men by single individually tailored counseling sessions.

Intervention setting: The Netherlands

Population: Only MSM, general population

Size of study population:

Intervention group: 158 participants, Control group: 123 participants

Intervention characteristics:

Health focus	HIV and STI
Activity	Counselling
Mode of delivery	Health care provider
Setting	Clinic/health facility
Commodity	Educational message
Triggering event	Programmatic response
Outcomes	Reduce UI/UAI (positive), Acceptability of intervention (positive)
Study design	Quasi experimental

Comments: Counselling was an individual session, health care provider were public health nurses. Intervention took place during HBV vaccination campaign. Intervention had a protective effect on sexual behaviour with steady partners. Strongest within steady relationships. Counselling sessions were well-accepted.

114. Seropositive Urban Men's Intervention Trial (SUMIT)

Effects of a peer-led behavioral intervention to reduce HIV transmission and promote serostatus disclosure among HIV-seropositive gay and bisexual men. Wolitski R. J et al., AIDS 2005; 19 Suppl 1: S99–109

Intervention Goal(s): Reduce HIV transmission risk and increase serostatus disclosure of HIV positive gay and bisexual men.

Intervention setting: USA

Population: Only MSM, HIV+, general population

Size of study population:

Intervention group: 346 participants, Control group: 324 participants

Intervention characteristics:

Health focus	HIV
Activity	Education and Training
Mode of delivery	Peer education
Setting	CBO
Commodity	Educational message
Triggering event	Programmatic response
Outcomes	Disclose HIV status (no effect), Increase in condom use (no effect), Reduce UI/UAI (positive), Reduce RUAI (significantly positive), STI prevalence (no effect)
Study design	Randomized Control Trial

Comments: Study contained 2 interventions: standard intervention (local expert led) and enhanced (peer-led) intervention. Focus of intervention is on HIV but includes STI testing on baseline and after 6 months (chlamydia, gonorroea, syphilis). Intervention includes interactive training activities and discussions groups.

115. HIV testing in gay sex clubs

HIV testing in gay sex clubs. Woods W. J. et al., International Journal on STD and AIDS 2000; 11(3): 173-175

Intervention Goal(s): Test for HIV in gay sex clubs.

Intervention setting: USA

Population: Only MSM, adults (older than 16 years old), general population

Size of study population: Intervention group: 162 participants, Control group: 2224 participants

Intervention characteristics:

Health focus	HIV
Activity	Testing
Mode of delivery	Health care provider
Setting	Bar and Clinic/health facility
Commodity	Test
Triggering event	Programmatic Response
Outcomes	Acceptability of intervention (positive), Feasibility of intervention (positive)
Study design	Case-Control

Comments: Two datasets were compared in this study. HIV testing in sex clubs is feasible and offer an opportunity to reach men at high risk for HIV, some who might not test otherwise (including younger HIV positive men).

116. Couple-based HIV intervention for methamphetamine-involved African American MSM

Adaptation of a couple-based HIV intervention for methamphetamine-involved African American men who have sex with men. Wu E. et al., The Open AIDS Journal 2010; 4: 123–131

Intervention Goal(s): Behavioural/sexual risk reduction among MSM African American meth-users in long-term, same sex initimate relationships

Intervention setting: New York, USA

Population: Only MSM, adults (older than 16 years old), minority (African Americans) population

Size of study population:

Intervention characteristics:

Health focus	HIV and STI
Activity	Education
Mode of delivery	Trained counsellor
Setting	Room in research institution
Commodity	Educational message
Triggering event	Programmatic Response
Outcomes	--
Study design	--

Comments: Target group of intervention: methamphetamine-involved African American MSM. Intervention uses a couple-based approach.

117. HIV/AIDS Prevention Project for Mexican Homosexual Men

An HIV/AIDS prevention project for Mexican homosexual men: an empowerment approach. Zimmerman M. A. et al., Health Educ Behav 1997; 24(2): 177-190

Intervention Goal(s): Prevent HIV/AIDS in Mexican homosexual men.

Intervention setting: Mexico

Population: Only MSM, general population

Size of study population:

Intervention group: 37 participants, Control group: 55 participants

Intervention characteristics:

Health focus	HIV
Activity	Education and Training
Mode of delivery	Peer education and Trained counsellor
Setting	Workplace intervention, Bar, streets and CBO
Commodity	Condom distribution, Flyers/folder and Educational message
Triggering event	Programmatic Response
Outcomes	Increase knowledge and awareness of HIV and STI prevention and treatment (significantly positive), Increase in condom use (positive)
Study design	Longitudinal with contol

Comments: Intervention included group discussions, outreach training and group initiatives.

118. Man tot Man

Evaluatie van het bereik, de waardering en de effectiviteit van MANtotMAN. Van Empelen P., June 2009

Intervention Goal(s): Increase sexual health of MSM.

Intervention setting: Netherlands

Population: Only MSM, adults, general population

Size of study population: Unknown

Intervention characteristics:

Health focus	HIV and STI
Activity	Counselling, Testing and Education
Mode of delivery	Mass media, Trained counselor and Health care provider
Setting	Internet and Clinic/health facility
Commodity	Educational message and Test
Triggering event	Programmatic Response
Outcomes	Increase uptake of HIV and STI testing/screening and treatment (positive), Increase uptake of STI vaccination (positive), Sexual health promotion (positive)
Study design	Time series

Comments: Intervention includes 'Sex-wijzer', 'PEP-check', 'Test-Lab' and 'MANcyclopedia'. Thematic Areas of intervention: reduce UAI; Increase HIV and STI test-rates; hepatitis B vaccination; stimulate safe sex agreements between steady partners; increase PEP-use after unprotected risky sex. For evaluation of MantotMan.nl, triangulation of data has been performed: Content and design of website is appreciated. Advises (education) are considered relevant. MantotMan seems to be related to positive changes in attitudes, intentions and test behaviour and PEP-knowledge.