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Title:

2016 United Kingdom national guideline on the sexual health care of men-who-have-sex-with-men (MSM)

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Objectives

This guideline is intended for use in UK Genitourinary medicine clinics and sexual health services but is likely to be of relevance in all sexual health settings, including general practice and CASH services, where MSM seek sexual health care or where addressing the sexual health needs of MSM may have public health benefit. For the purposes of this document, men-who have sex-with-men (MSM) includes all gay, bisexual and all other males who have sex with other males and both cis and trans men. This document does not provide guidance on the treatment of particular conditions where this is covered in other BASHH Guidelines but outlines best practice in multiple aspects of the sexual healthcare of MSM. Where prevention of STIs including HIV can be addressed as an integral part of clinical care, this is consistent with the concept of combination prevention and is included. The document is designed primarily to provide guidance on the direct clinical care of MSM but also makes reference to the design and delivery of services with the aim of supporting clinicians and commissioners in providing effective services.

Methodology

This document was produced in accordance with the guidance set out in the CEG's document 'Framework for guideline development and assessment' published in 2010 at http:/www.bashh.org/guidelines and with reference to the Agree II instrument. Following the production of the updated framework in April 2015, the GRADE system for assessing evidence was adopted and the draft recommendations were regraded.

Search Strategy (see also appendix 1)

Ovid Medline 1946 to December 2014, Medline daily update, Embase 1974 to December 2014, Pubmed NeLH Guidelines Database, Cochrane library from 2000 to December 2014. Search language English only. The search for Section 3 was conducted on PubMed to December 2014. Priority was given to peer-reviewed papers published in scientific journals, although for many issues evidence includes conference abstracts listed on the Embase database.

In addition, for Section 1.5: Identification of problematic recreational drug and alcohol use and Section 7: Sexual dysfunction, searches included PsycINFO

Methods

Article titles and abstracts were reviewed and if relevant the full text article was obtained. Priority was given to randomised controlled trial and systematic review evidence, and recommendations made and graded on the basis of best available evidence.

Piloting and Feedback

The first draft of the guideline was circulated to the writing group and to a small group of relevant experts, third sector partners and patient representatives who were invited to comment on the whole document and specifically on particular sections. The revised draft was reviewed by the CEG and then reviewed by the BASHH patient/public panel and posted on the BASHH website for public consultation. The final draft was piloted before publication.

Guideline Update

The guidelines will be reviewed and revised in 5 years' time, 2022.

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Section 3: The management of MSM with symptoms of sexually transmissible enteritis and proctitis

Lead Authors: Achyuta V Nori, Nigel Field, Gwenda Hughes

Section 4: Human Papillomavirus Infection (HPV) in MSM

Lead Authors: David Asboe and Carol Emerson

Section 5: Partner Notification for MSM

Lead Authors: Dan Clutterbuck and Martin Murchie

Section 6: STI & HIV prevention for MSM in the clinic

Lead Authors: Carol Emerson, Dan Clutterbuck and David Asboe

Section 7: Sexual Dysfunction in MSM

Lead Author: Stuart Gibson

Auditable Outcomes

Acknowledgements

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Statement of editorial independence

Sample BASHH conflict of interest declaration

Membership of the CEG

Appendix 1: Search Terms

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2.2 Assessment of dehydration

2.3 Collection of faecal samples for microbiological examination

2.4 Advice on preventing the spread of infection

1 Design and delivery of sexual health services for MSM

1.1 Access to sexual healthcare

1.1.1 Addressing the needs of subgroups of MSM

The high and rising incidence of STIs (1) and HIV (2) observed in MSM in the UK are a significant public health priority and mean that in any geographical area a range of sexual health services are required. The needs of younger men, men from ethnic minorities, migrants, trans men and men who do not identify as gay or bisexual may not be met through services in Level 3 GUM Clinics alone. Sexual dyad and network determinants and community and structural barriers (3) may mean that some groups of men experience higher rates of HIV despite evidence of lower rates of direct behavioural risk factors. A range of structural and social disadvantages (termed 'syndemics') (3, 4) –and including depression, substance use, violence, sexual stigma and homelessness show a clear dose-response relationship with risk of UAI and HIV infection in MSM (5, 6). There is limited evidence that such syndemics are associated with late HIV diagnosis in MSM in the UK (7). Several of the most effective prevention interventions (8) are deliverable by clinical services and equity of access can be addressed. The interaction between mental health, drug and alcohol use and sexual risk is recognised in the recent Public Health England framework for health and wellbeing of MSM (9) and associated action plan (10).

Younger men across the world are disadvantaged in accessing services (11) and bear a disproportionate burden of STIs and HIV (12, 13) . Younger MSM may prefer to attend generic young people's sexual health services rather than MSM specific services (7, 14). Data from Scotland shows that men under 25 are more likely to report UAI with 2 or more partners in the past year than men over 25 and data from Melbourne also suggests that teenage men are less likely to use condoms for receptive anal sex than older men (15, 16). Young MSM are more likely to suffer life stressors, anxiety, depression, suicide attempts and PTSD than their heterosexual peers (17).

A UK cross sectional study showed a higher HIV prevalence in black and lower prevalence in Asian MSM than in white British MSM (18) and black and minority ethnic (BME) MSM attending a London clinic were more likely to be diagnosed with rectal gonorrhoea than a matched group of white British men (19). However a large online survey showed no difference in reported rates of UAI ($p=0.8$) between any individual ethnic or migrant group (20). It is not therefore clear whether black or minority ethnicity in the UK confers a greater risk of HIV acquisition in MSM. Phylogenetic analysis suggests that the proportion of HIV infections in UK attributable to transmission between men may be underestimated: 1-11% of samples examined, recorded as heterosexual, were actually from within an MSM cluster. This proportion was higher for Black African men in whom the proportion was 1-21% (21).

Recommendations

- **Addressing the sexual health needs of MSM in any geographical area requires a range of inclusive specialist services. These may include specialist MSM-identified clinics, outreach services and clinics attached to HIV services (1C)**

- **In order to address the needs of younger men, ethnic minority men, men affected by social deprivation and men who do not identify as gay or bisexual; generic sexual health services including Youth Services, CASH and General Practice services, even if not explicitly identified as services for MSM, must be fully inclusive (1C)**

- **Younger men (under 25 years) are more likely to need intensive risk reduction interventions (1B)**

- **Black African men may be less likely to disclose sex with other men and opportunities for disclosure should be maximised (2C)**

1.1.2 Service levels and settings

There are no studies comparing the effectiveness of different service models in detecting STIs in MSM, but there is evidence relating to models of HIV testing (22). Clinical services that are identified as MSM clinics can significantly increase MSM attendances in established GUM and sexual health services (23, 24) but are the preferred option for only a minority of men (25). Other services including CASH and GP services and may be more acceptable, particularly to younger men and BME men (26). In a UK survey of HIV positive men, 9.4% reported using STI services remote from HIV care providers without disclosing HIV status (27). A majority of MSM surveyed were happy to discuss sexual health with general practitioners but many had not been asked about sexual orientation and were less likely to disclose sexual orientation to a health care worker than family, friends or colleagues (28). Young USA MSM were significantly ($P<0.001$) more likely to disclose sexual orientation to a female health care provider than a male one (29). In the USA non-disclosure of sex with other men is associated with being young, being black and having a low income (30). Phylogenetic data suggests that this issue may also apply to black African men in the UK (21). Many non-GUM sexual health services in the UK do not currently offer the full range of services to meet the needs of MSM (31) and HIV/STI risk assessment and offer of HIV testing were among the poorest areas of performance in a UK national audit of Level 2 and 3 services (32).

Recommendations

- **All sexual health services in a geographical area, including those offered by GPs, CASH and Young Peoples services, should offer a basic level of STI and HIV testing services for MSM (1C)**

- **Specialist MSM Clinics can be used to increase MSM attendances in established services (2C)**

- **All health services should establish clients' sexual orientation and partner gender, using established (eg census) methodology at registration or during all routine consultations, in order to ensure that health needs are appropriately addressed (2D)**

1.1.3 Service design and outreach services

Express style services are acceptable to MSM (33) and opt –out self-screening has high acceptability in HIV clinics (34) but it is not clear what proportion of MSM attending services are suitable for self-screening services (35) and the approach has been questioned. Anogenital examination in asymptomatic clients including MSM yields few new STI diagnoses in retrospective studies (36, 37). Many services across the UK offer services including partial or complete STI screens, HIV testing and vaccination for Hepatitis A and or B in outreach settings including public sex environments, saunas (38, 39) at one off events such as Pride events (40), or at home (41), with small but potentially important numbers of new infections detected in a variety of settings. There is evidence from the US that providing testing in sex-on-premises venues does not adversely affect client numbers (42). Offering point-of-care-testing (POCT) for HIV alone results in low levels of referral to mainstream services for other tests and vaccination (43), suggesting that the aim should be to offer comprehensive screening and vaccination where practicable.

Recommendations

- **Routine STI screening need not include examination in asymptomatic MSM (2C)**

- **Outreach services should offer a comprehensive package of STI tests (2B)**

1.2 History taking

The 2013 BASHH UK National Guideline on consultations requiring sexual history taking addresses the elements of sexual history taking required in all patients including MSM (44). The history should form a

comprehensive and holistic risk assessment including factors known to be associated with risk of STI and HIV infection, including frequency and number of condomless anal sex partners, serosorting, seropositioning, negotiated safety and use and understanding of antiretroviral drugs (ART) as HIV treatment-as-prevention (TasP) or PrEP (Section 6). Details of sexual activities conferring risk for enteric infections (Section 3) and Hepatitis A including oro-anal sex (rimming) and for Hepatitis C (including fisting; 2.1.6) should be included. Discussion of ways of meeting partners including the use of the internet/geospatial social networking applications (apps) (Section 5.3), sex-on-premises or cruising venues may be helpful in assessing and addressing risk. Routine assessment of alcohol intake and the use of recreational drugs during sex, including practices such as injecting and booty-bumping (taking recreational drugs per rectum) (Section 1.3), problems with sexual dysfunction (Section 7.3) and condom use and errors (45) should be included. History based screening of exposed anatomical sites is significantly better than symptom based screening in detecting chlamydial and gonococcal infections in MSM (46), but there are no studies comparing history based screening with routine sampling from throat, urethra and rectum in every case. However the high proportion of symptomless infections and infections in single sites (Section 2.1) suggests that routine sampling of all sites may be a more appropriate protocol. This can help to avoid 'tick box' approach to listing anatomical sites of potential exposure disliked by some men (14) and allow history taking to be holistic and focus on other aspects of health and risk behaviour. A comprehensive risk assessment can be used to guide testing, recommended recall periods (Section 2.3.1) and the need for behaviour change interventions.. In men with rectal symptoms, the presence of tenesmus and constipation are significantly associated with infection with *Lymphogranuloma venereum* (47) and further detail may be required in men suspected of having sexually transmitted enteric infection (STEI). History taking in men with rectal symptoms is covered in section 3.4.2.1 .

Recommendations

- **History taking should include a holistic risk assessment to identify the factors known to be associated with risk of STI including HIV (see Section 2.3.1) (1C)**

- **Appropriate questioning for Hepatitis C risk should be included in the sexual history of all MSM (2C)**

- **In symptomatic men, review should routinely include questions relating to perianal and rectal symptoms (1C)**

- **Questions on drug and alcohol use should be routine in all MSM consultations (1C)**

1.3 Identification of problematic recreational drug and alcohol use

Alcohol use is more common among adult MSM (48) and in adolescent MSM (49, 50) than their heterosexual peers , although data from the 3rd National Survey of Sexual Attitudes and Lifestyles showed higher rates of smoking and recreational drug use but not current binge alcohol use in a population sample of 190 MSM compared to 5069 men who have sex exclusively with women (51). Attendees at sexual health clinics as a whole have high rates of excessive alcohol use which is associated with STI diagnosis (52). Self-reported surveys of convenience samples have consistently found that use of recreational drugs in the LGBT population is significantly higher than among WSW or heterosexual adults (53, 54), . This pattern is also replicated in MSM attending sexual health clinics (55). A systematic review of 23 studies found only use of methamphetamine and binge alcohol consumption to be significantly associated with increased sexual risk (56). Evidence in HIV positive MSM also associates polydrug use, but particularly the use of crystal methamphetamine with high risk sexual behaviour and incident STI (57, 58) . A review of 14 studies on the use of sildenafil found an independent association of sildenafil use in MSM with increased odds of serodiscordant UAI as well as increased risk of STI in MSM living with HIV (59). Use of inhaled nitrites (poppers) in isolation, without the use of other drugs is common; men may not regard this as recreational drug use and specific questioning may be required.

In recent years it is more common for men to report the use of multiple substances (58, 60), including established 'Club drugs' and a range of novel psychoactive substances (NPS) which continually emerge (61), and for which the effects and influence on sexual behaviour are less clearly understood. Clinicians' awareness of 'chemsex' (using typically crystal methamphetamine, mephedrone or GHB/GBL specifically to facilitate or enhance sex) among a minority of MSM, particularly in Central and South East London but also in other major cities has increased dramatically over recent years. Qualitative and observational evidence suggests sex parties involving group sex and use of club drugs has contributed to the high rate of new HIV and Hepatitis C infections, including in a subset of Chemsex users, transmissions through intravenous use of crystal methamphetamine or mephedrone ("slamming") by inexperienced users or through deliberate sharing of blood injecting equipment (62). 'Club drug' use was associated with higher rates of self-reported UAI in study of 246 MSM attending clinics in Brighton (63) and self-report of chemsex on routine enquiry was associated with a significantly higher risk of bacterial STI diagnosis ($p<0.001$) and with rectal STI diagnosis ($p<0.001$) in MSM attending two London clinics (64). Chemsex has also been strongly associated with outbreaks of sexually transmitted Shigella flexneri 3a infection among MSM (65, 66) as well as with cases of rectal LGV infection in HIV infected MSM (67).

Specialist services report an increase in the proportion of clients seeking help with problem related to crystal methamphetamine, mephedrone or GHB/GBL (68). A qualitative study of MSM in Lambeth described MSM involved in chemsex using drugs solely in association with sex, often in clearly defined 'marathon sessions' of up to 3 days and associated with predetermined decisions to have UAI with men believed to be seroconcordant but also associated with loss of control (69).High levels of function in other aspects of life such as employment are often maintained and men neither self-identify as drugs

users nor fit a stereotype of 'drug user'. Routine enquiry regarding recreational drug use is indicated in all men disclosing other risk factors for STI and HIV acquisition (see Section 1.7) and there may be benefit in routinely assessing MSM (for example using self-completed screening tools) for problematic alcohol and recreational drug use. Brief interventions for problem alcohol use have been found to be effective in a range of primary care settings (70) including nurse-delivered brief interventions in a sexual health clinic (71) and are recommended in NICE guidance (72). However, a large randomised controlled trial in emergency departments showed no effect (73) and recent randomised controlled trial of 802 attendees (including 93 MSM) attending sexual health clinics found no significant difference in alcohol intake or condomless sex after 6 months between a group universally screened for alcohol use and provided with brief advice by a trained clinician and (where indicated) referral to an alcohol health worker compared to a control group (74). BASHH has provided guidance and recommendations on appropriate screening questions for recreational drug use (75). Although the harms associated with increased sexual risk in MSM using recreational drugs are of importance to sexual health clinicians, the direct harms of use of 'Chemsex' drugs, including the high risk of overdose and low threshold for dependence with GHB/GBL are likely to be an important and immediate risk to health. Sexual health services may offer the sole opportunity for early intervention in MSM prior to presentation to emergency services. The Novel Psychoactive Treatment UK Network (Neptune) has published detailed guidance on the clinical management of acute and chronic harms of club drugs and novel psychoactive substances, with specific reference to GUM clinics (61) and including detailed guidance on the structure and content of brief interventions in clinical settings.

Recommendations:

- **Binge drinking of alcohol, use of inhaled nitrites and methamphetamine should be employed as markers of increased STI risk in MSM (1A)**

- **The use of other recreational drugs including mephedrone, other novel psychoactive substances NPS and non-prescribed sildenafil are also likely to be reliable markers of increased STI risk in MSM (1C)**

- **Routine enquiry should cover the use of all drugs, including novel psychoactive substances (NPS) (2C)**

- **All individuals who report the use of any injectable drug should be asked if injecting and if so is equipment ever shared (1C)**

2 STI and HIV Testing in asymptomatic MSM

2.1 Testing for asymptomatic STIs

Introduction

The following recommendations relate to testing for STIs in asymptomatic MSM. For management of clinical syndromes, the appropriate BASHH guidance should be followed.

2.1.1 The range of tests provided

BASHH has produced Recommendations for Testing for Sexually Transmitted infections in MSM in Level 3 services (76), but all sexual health services should be able to meet the needs of MSM. All services offering STI testing should offer testing for MSM including NAAT testing for *Neisseria gonorrhoeae* (NG) and *Chlamydia trachomatis* (CT) from throat, urine and rectum, HIV, syphilis, hepatitis B and where indicated hepatitis C serology. National data from the Netherlands suggests that a majority of chlamydial and gonococcal infections in MSM would be missed if extragenital sites are not tested (77), although there is no published cost effectiveness data to compare this strategy with history-directed testing. Pooling of samples from pharynx, urine and rectum may be a means of reducing costs (78). It is desirable that hepatitis B vaccination is offered in all settings but the advantages of expanding the availability of HIV and STI testing should not be lost if this is not practicable in outreach situations.

Recommendation:

- **All services offering STI testing should offer testing for MSM including NAAT testing for NG and CT from throat, urine and rectum, HIV, syphilis, hepatitis B and where indicated (see 2.1.6) hepatitis C serology (1B)**

2.1.2 Chlamydia and Gonorrhoea

Chlamydia and gonorrhoea are among the most common STIs affecting MSM. Despite only 2.6% of the British male population reporting a same sex partner in last 5 years (1), in 2015 MSM accounted for 70% (22,408/32,095) of gonorrhoea diagnoses (a 105% rise over 2012) and 21% (12,805/ 60,514) of chlamydia diagnoses among male attendees at GUM and integrated GUM/SRH clinic services in England (1).

Infection may be carried at genital and extra-genital sites in asymptomatic MSM. Extra-genital testing of the pharynx and rectum is likely to play an important role in the control of both infections. Prevalence of extra-genital infections is high in UK, European, American and Australasian cohorts of HIV-negative and HIV-positive MSM (3-25). Whilst the risk of prevalent and incident chlamydia and

gonorrhoea infections is related to traditional markers of increased sexual risk and penetrative anal and oral sex, several non-penile intercourse practices such as rimming, fingering, fisting and sex toy use are also related to extra-genital infection (79-81). A substantial proportion of extra-genital infections (70-90% of rectal and 95-100% of pharyngeal) are asymptomatic (46, 82, 83). Many pharyngeal infections are restricted to the pharynx (46, 84, 85). Pharyngeal gonorrhoea has a high incidence: prevalence ratio, suggesting spontaneous resolution (86, 87), in contrast to pharyngeal chlamydia, where a high prevalence: incidence ratio supports longer lived infection. Thus, pharyngeal chlamydia may play an important role in onward transmission (88). However, a recent longitudinal study did demonstrate spontaneous clearance of pharyngeal chlamydia in 37% MSM after a median of 10 days (89).

Infection of the urethra with chlamydia and gonorrhoea is also common in MSM, and is associated with a history of penetrative oral and anal sex, but prevalence has been found at similar levels in men reporting only oro-insertive sex (90). A recent retrospective Australian study suggested oral sex to be significantly associated with urethral gonorrhoea infection (and primary syphilis), but urethral chlamydia was more strongly associated with anal sex (91). Both infections may be present in asymptomatic MSM, but in an Australian cohort of 4500 asymptomatic MSM, the prevalence of gonorrhoea in those without urethral symptoms (detected by NAAT) was only 0.04% (92).

Asymptomatic infection of the rectum with gonorrhoea and/or chlamydia has been identified as a significant risk factor for HIV sero-conversion. This may be as a surrogate marker of sexual risk, or due to changes in local inflammation and immunity, enhancing susceptibility (93-96). Infection of the urethra (and possibly rectum) may increase likelihood of HIV transmission in HIV-positive MSM (97), although interim data from the PARTNER study showed no transmissions from men with undetectable HIV viral loads, despite significant rates of incident bacterial STI (98). Higher rates of gonorrhoea and chlamydia have been reported in HIV-positive MSM than in HIV-negative MSM (99-102). Thus, more frequent chlamydia and gonorrhoea tests should be considered for sexually active HIV-positive MSM.

NAATs have been shown to be significantly more sensitive than culture in the detection of chlamydia and gonorrhoea, particularly in extra-genital sites (103-108). Owing to cross-reactivity with non-gonorrhoea *Neisseria* species, all NAAT tests for gonorrhoea from all sites should be confirmed with supplementary tests to improve specificity (109-111). A positive predictive value (PPV) of 90% should be achieved in all cases (112, 113) . Where possible, prior to treatment, all sites positive for gonorrhoea on NAAT should have a culture performed to monitor antimicrobial susceptibility (112, 114). First-void urine is the specimen of choice for genital sampling, but self-taken urethral meatus swabs have recently demonstrated equivalent sensitivity in the detection of both infections, and may be considered (115, 116). There is evidence to suggest that self-collected pharyngeal and rectal swabs perform as well as clinician-taken swabs from both sites, although published studies are not powered to exclude a difference in performance. Self-taken swabs are highly acceptable to MSM (117-119).

Cost effectiveness data are lacking for triple-site testing for gonorrhoea and chlamydia, but one modelling study examining the benefit of rectal screening on reducing HIV incidence alone in San Francisco has suggested that this a cost-saving intervention (120).

Recommendations

- **Testing should be performed with NAAT tests, with supplementary molecular testing for gonorrhoea (1B)**

- **Detection of chlamydia and gonorrhoea should be offered to all MSM, from all sites (urethra, pharynx, and rectum) irrespective of HIV status or sexual history (2B)**

- **First-void urine or clinician/patient collected meatal swabs are acceptable options in genital tract testing in asymptomatic MSM (2C)**

- **Extra-genital sites should be sampled with clinician-collected or self-collected swabs (2C)**

2.1.3 Lymphogranuloma Venereum

The diagnosis and management of Lymphogranuloma Venereum (LGV) is covered in a recent BASHH guideline (121). LGV, caused by the L serovars of CT , has been described in association with MSM in the US since the 1970s (122). Since 2003, LGV infection in MSM has re-emerged with outbreaks in Western Europe (including the UK), North America, and Australia (123-127). The vast majority of cases identified have presented with a symptomatic procto-colitis, and typical cases have occurred in HIV-positive men practicing higher risk sex (128, 129). There is a strong association between LGV infection and established or incident HIV infection and with incident hepatitis C infection (125). Chemsex (specifically the use of GHB), condomless anal sex and fisting are associated with LGV infection (67, 130, 131). In the UK, the LGV outbreak started in 2003 and the prevalence of asymptomatic infections increased from 6% of serotypes in 2006 to 22% in 2012 (132, 133), meaning that LGV in the UK has now entered an endemic phase (134).

The extent to which LGV is present in asymptomatic MSM, and whether this contributes to sustained cases in the UK, remains unclear. Some early European studies demonstrated a high prevalence of asymptomatic LGV infection in MSM (135, 136). In contrast, the largest published case finding study in UK MSM to date found LGV positivity to be 0.9% in rectal samples overall, of whom only 5% were asymptomatic, and only 0.04% from the urethra (137). Early US studies have also failed to detect LGV in asymptomatic cases (138, 139). However, a more recent case finding study in the UK identified 69 (9%) LGV and 721 (91%) non-LGV CT serovars from 713 men. In those with LGV for whom data was available 15/55 (27%) overall were asymptomatic (140).

These observed differences may be due to methodological differences between studies, due to changes in LGV epidemiology, or secondary to changes in detection with more frequent extra-genital sampling in routine care. LGV testing should be performed in all MSM with proctitis, regardless of HIV status and in HIV-positive MSM with CT at any site whether symptomatic or asymptomatic (141)

Recommendation

- **Routine LGV typing of symptomatic and asymptomatic chlamydia infection at any site is recommended in HIV-positive but not in HIV-negative MSM (2C)**

2.1.4 Mycoplasma Genitalium

A UK GUM clinic study demonstrated the prevalence of *Mycoplasma genitalium* infection (MG) at the urethra and rectum in MSM to be similar to that of chlamydia and gonorrhoea (2-6%), and in HIV-positive MSM to be substantially higher (21%) (142) . US authors detected 27 (5.4%) positive rectal specimens for MG in 500 MSM, and again there was a strong association with known HIV infection (143). Other studies have demonstrated much lower prevalence figures (<2%), usually independent of risk factors (144, 145). Pharyngeal infection has not been described (145).

MG is well described as a cause of non-gonococcal urethritis (NGU) (144). However, MSM with NGU have a lower prevalence of MG than heterosexual men, possibly because of a greater number of possible aetiologies in the former (146). In the UK MG study, urethral MG infection was strongly associated with dysuria and nearly all men with MG in the urethra were symptomatic (142). Conversely, rectal infection was largely asymptomatic, a finding reported in other studies, where no association with procto-colitis has been demonstrated (143, 145). Urethral to anal transmission has been described in MSM couples (147, 148) and the asymptomatic nature of rectal infection may provide a reservoir.

A systematic review and meta-analysis has demonstrated an association of MG with HIV infection, although only two of 19 studies included MSM. However, few studies were prospective and thus the nature of the association and the direction of any putative causation remains unclear (148). It may be that MG infection increases susceptibility to HIV infection, or may be more prevalent as it is a surrogate marker of sexual risk.

Recommendation

- **As most urethral MG is symptomatic, and most rectal MG infection asymptomatic and of uncertain consequence, routine testing of asymptomatic MSM for MG infection is currently not recommended in the UK (2C)**

2.1.5 Herpes Simplex Virus

The seroprevalence of infection with herpes simplex virus (HSV) types 1 and 2 is high in HIV-negative MSM and higher still in HIV-positive MSM (149, 150). A bi-directional transmission synergy exists between HSV-2 and HIV infection. A meta-analysis of 19 prospective studies demonstrated prevalent HSV-2 seropositivity to be a statistically significant risk factor for HIV acquisition among men who have sex with men (151). However, suppression of HSV-2 viral replication with aciclovir in two randomised controlled trials has not demonstrated a reduction in the risk of incident HIV acquisition and transmission, possibly because suppression is incomplete with current antivirals (152, 153). Studies with higher dose antivirals are ongoing. The effect of prevalent HSV-1 infection remains unclear.

Type specific serology can be used to detect prevalent HSV infection in asymptomatic MSM. Western blot testing is not commercially available, but several commercial assays are available which show high sensitivity and specificity in sexually active adults (154), but positive predictive value can still be diminished when used as a screening tool (155). Pending further studies and the availability of future prevention strategies such as vaccines, the utility, cost effectiveness and acceptability of routine screening of asymptomatic HSV infection in MSM attending GUM clinics remains to be determined.

Recommendations

- **It is not recommended that routine HSV serology be offered to asymptomatic MSM (2C)**

2.1.6 Hepatitis A, B & C

For full details, please see the BASHH National Guideline on the Management of the Viral Hepatitides A, B & C 2015 (156) and the BHIVA Immunisation Guidelines 2015 (157). The rationale for routine testing in asymptomatic MSM is discussed briefly below

Hepatitis A

Evidence suggests MSM are not at greater risk for hepatitis A infection, and therefore routine screening or testing for susceptibility (with a view to vaccination) is not recommended (158, 159). However, several outbreaks amongst MSM in metropolitan areas have been recorded, including an outbreak in England and Northern Ireland in 2016-2017(160). Vaccination should be offered during such times to at-risk MSM attendees including those with multiple partners and those attending public sex venues (161, 162). Testing for prior exposure before vaccination has been shown to be cost effective (163).

People who inject drugs and those living with HIV, hepatitis B and hepatitis C should be vaccinated in sexual health settings.

Hepatitis B

Incidence of acute hepatitis B in the UK remains low (164), but MSM represent a risk group and routine testing and vaccination is recommended for those at elevated risk, comprising all MSM, male and female sex workers, and people who inject drugs (165).

Unless already known to be hepatitis B immune or chronically infected, asymptomatic MSM should be tested for previous hepatitis B exposure and vaccination initiated at first presentation. If testing identifies susceptible individuals, the vaccination course should be continued. Chronically infected individuals should be evaluated and referred to specialist care.

Hepatitis C

Parenteral spread accounts for the majority of prevalent cases of hepatitis C (HCV) in the UK (166). There has been a steadily rising incidence of acute HCV in MSM in England since 2000, largely associated with HIV infection (166). Associated factors include the presence of other STIs (particularly syphilis and LGV), traumatic anal sex, fisting, shared sex toys, group sex, sero-sorting and concomitant use of recreational drugs (including injected recreational drugs such as crystal methamphetamine in

"chem-sex" party settings) (167, 168). Whilst permucosal transmission does account for acquisition in HIV-positive men, data are lacking to support significant permucosal transmission in HIV-negative MSM (169, 170). A prospective US cohort study demonstrated an association of incident HCV with higher numbers of receptive unprotected anal intercourse partners, as well as injecting drug use and HIV-positive status. HCV incidence was 0.5 per 1000 PY in HIV-negative MSM compared to 4.2 per 1000 PY in HIV-positive MSM (171). In a systematic review of 38 cross-sectional studies, the pooled HCV prevalence was found to be significantly higher in HIV-positive men (8.3%, 95% CI: 6.7-9.9) than in HIV-negative men (1.5%, 95% CI 0.8-2.1). Of the 16 longitudinal studies included, the pooled HCV incidence was markedly higher in clinic-based (7.0 per 1000 person-years, 95% CI 4.6-9.5) than in community-based (1.4 per 1000 person-years, 95% CI 0.7-2.1) studies, and in HIV-positive men (6.4 per 1000 person-years, 95% CI 4.6-8.1) than in HIV-negative men (0.4 per 1000 person-years, 95% CI 0-0.9) (172). Cross-sectional prevalence of HCV amongst non-injecting HIV-negative MSM in the UK is <1.0% (173). However, MSM eligible for PrEP appear to be a population at significantly increased risk of HCV:A higher baseline prevalence of Hepatitis C was observed in men eligible for PrEP at enrolment in the Amsterdam PrEP (AMPrEP) demonstration project; 18/375 HIV-negative participants (4.8%, 95%CI 2.9%-7.5%) were anti-HCV and/or HCV RNA positive at enrolment; 15/18 (83%) had detectable HCV RNA. All HCV-positive MSM starting PrEP in this study were part of MSM-specific HCV clusters containing MSM with and without HIV. (174) In the UK PROUD study, 5 of 160 (3.1%) men tested more than once for HCV had incident infection(175) and incident infections have been reported in routine clinical PrEP follow up (176).. The most cost-effective strategy for HCV testing among asymptomatic HIV-positive MSM is likely to be annual HCV antibody tests and 3–6 monthly testing of liver function (177).

Recommendations

- **Routine HCV testing should be offered to asymptomatic HIV-negative MSM in the presence of additional risk factors (for example, sex associated with trauma or injury, history of recreational drug use, or rectal lymphogranuloma venereum) (2B)**

- **Hepatitis C testing should be offered at least annually to men eligible for three monthly HIV testing (section 2.3.1) and those taking or eligible for PrEP. (2B)**

- **HIV-positive MSM should be routinely screened for HCV at least annually, and whenever clinically indicated (1C)**

2.1.7 Syphilis

Rates of infectious syphilis in MSM in the UK have continued to climb, with a 95% increase in cases from 2012 to 2015 (1) . MSM accounted for 84% (4,192/4,971) of syphilis diagnoses among male GUM clinic attendees in England in 2014 (1)

A third of MSM syphilis cases are in HIV infected men. Infectious syphilis is endemic in London, Brighton and Manchester (178), but recent localised MSM outbreaks have been described, often linked to the use of geospatial social networking applications (179). Increased testing in all sexually active MSM may help contain the current epidemic (180).

Recommendations

- **All asymptomatic MSM should be tested for syphilis as part of sexual health screening (1B)**

2.2 HIV Testing

Introduction

In 2014, 3360 (55%) of the 6151 new diagnoses of HIV in the UK were made in MSM (2). Rates of late HIV diagnosis (a CD4 count <350 within 3 months of diagnosis) have declined since 2005 and are lower in MSM than in other transmission groups, although the absolute number of late diagnoses in MSM has declined only slightly from 1,131 in 2005 to 974 in 2014 (181). There is a significant geographical variation in rates of late diagnosis, with higher rates outside London. There has been a parallel increase in the proportion of recent infections as defined by the Recent Infection Testing Algorithm (RITA) (182). In 2014, 32% of MSM were diagnosed within 6 months of acquiring infection, compared with 27% in 2012 and 23% in 2011. This finding is consistent with a high incidence of infection and suggests that a high proportion of undiagnosed infections are recently acquired. The proportion of recent infections was highest in the 15-24 year-old age group at 38% (2), consistent with the age-related vulnerabilities outlined in section 1.1.1 (15, 16, 183) . Mathematical modelling suggests that the majority of new HIV infections are likely to originate from men unaware of their status and that increased testing, linkage to care and early treatment could contribute to reduced HIV incidence (184). Hence there is a continued focus on avoiding harm to the individual from late diagnosis of HIV by encouraging and enhancing access to initial tests, but increasing attention to repeat testing to facilitate early diagnosis of recent infection for the purposes of prevention. Revised national BHIVA (185) and international WHO guidance (186) recommends starting ART before the CD4 count drops below 500mm^3 based on the START study findings (187), so early diagnosis offers individual clinical benefit but also the possibility of treatment as prevention (TasP) (188) and potentially the use of PrEP for serodiscordant regular partners.

In English Genitourinary medicine clinics in 2014, 87% of eligible MSM attendees were tested (2) . However, seven hundred MSM diagnosed HIV positive in 2013 were diagnosed on their first HIV test at that clinic (13) and 88% of all individuals diagnosed with HIV at English GUM clinics in 2014 had not had a previous test at the same clinic in the preceding 43 to 365 days (2). UK data collected in bars and on-line in both London and Scotland (n=2409) shows that only 26.7% of men reporting higher risk UAI reported having had 4 or more tests in the previous 2 years (189). Public Health England has published a systematic evidence summary on reducing late HIV diagnosis in all patients groups (190). Improving rates of testing for those with indicator conditions, routine testing in general practice and in acute medical admissions are all likely to improve late diagnosis in MSM in areas with higher overall HIV prevalence. Opt-out testing is the appropriate approach for MSM in all settings (22) and is recommended in existing UK HIV Testing Guidelines (191) and NICE Guidance (192), both of which are currently being updated. In all cases, identifying MSM in general medical services and general practice is key to routine testing in this group (Section 1.1.2) and will be particularly important in areas with lower overall HIV prevalence where universal approaches are not adopted and where existing evidence shows rates of late diagnosis to be higher (2). A systematic review found RCT evidence that point of

care testing (PoCT) and counselling in community outreach settings (not including general practice) increased uptake of HIV testing in MSM (22). Point of care testing (PoCT) in community settings identified HIV infection in MSM at a significantly earlier stage than in GUM clinics (193) although whether this is attributable to the test or the setting is not clear. Significant improvements in both the rate and frequency of testing in MSM outside the GUM clinic setting are still required.

Recommendations

- **Opt- out testing for HIV infection should be offered to MSM in all settings (1B)**
- **Opportunities for routine HIV testing in MSM in settings other than GUM clinics should be expanded (1C)**
- **Point-of-care-testing for HIV in community settings should be available to MSM (1B)**

2.2.1 Motivation for and barriers to HIV testing

NICE Guidance recommends that staff should ensure the provision of culturally competent care in HIV testing and that point of care testing should be routinely be offered alongside 4th generation laboratory tests (192). There is some evidence that MSM prefer less intrusive oral HIV testing to blood testing, but if a blood test is used then the waiting time for results is cited by users as being important (194). A conjoint analysis of factors affecting willingness to test in the US found that cost, timeliness of result and location (home vs clinic) were highly significantly associated with willingness to test (195). A semi-structured interview study in Boston, US, found that MSM prefer HIV testing in a venue that is friendly, culturally competent, gay-positive and allows for normalisation of STI/HIV testing (196). A UK study showed the importance of psychological barriers to testing. It showed no reduction in clinic related barriers to testing over time and highlighted that fear of a positive test result remained the single most important barrier to HIV testing (197).

Attendance for HIV testing is most commonly prompted by symptoms attributed by men to HIV infection and perceived HIV risk exposure (196, 198) . Learning of HIV infection in a partner or friends and peer encouragement to test are also cited as reasons to attend whereas fear of a positive result and not self-assessing as 'at risk' are given as the main reason for not or never testing (199). Intensive peer counselling also increased the uptake of testing (22). Alternative community venues (200) are used for on-site testing including gay saunas (201), event-related outreach (40), and college-based testing (202). Offering other tests (eg for STIs, alcohol or drug use) along with HIV testing may increase uptake in some groups of MSM (203).

It is estimated that 33-67% of HIV infections in MSM are acquired from primary sexual partners (204) and in the UK approximately 40% of MSM are in a regular relationship at the time of diagnosis (7). A high proportion of young MSM interviewed in Scotland aspired to sex within relationships (205) and

testing within relationships was routine for a minority of men in an online survey of US HIV negative MSM, in which younger men and those with higher levels of trust in a partner were less likely to test (206). Couples HIV counselling and voluntary testing (CVCT) has been utilised in both clinical and non-clinical settings and found to be acceptable and effective on a small scale in the US. An on line survey of 5,980 MSM found that 81.5% were willing to take part in CVCT (207). Of 95 couples tested in a study in Atlanta, 17% were serodiscordant (208).

Recommendations

- **Offering HIV tests along with other tests, such as tests for STIs or drugs and alcohol services, may improve uptake among some groups of hard-to-reach men (2C)**

- **Couples HIV counselling and voluntary testing (CVCT) for MSM should be provided and promoted (2C)**

2.2.2 Home sampling and testing

Home sampling for HIV has high levels of acceptability among UK MSM, with a high proportion of users reporting never having tested before (41, 209, 210). A possible advantage over home testing is the capacity for laboratory confirmation of an initial reactive result and linkage to care. Home sampling may be promoted and incorporate risk assessment tools via social networking or other websites (209, 211). Instant result HIV home testing kits were legalised in the UK in April 2014 (212) and the first commercially available kit gained a CE licence in April 2015 (213). Mixed methods research on self-testing from the UK showed that amongst MSM (n=999), awareness of the test was low (55%) and that willingness to use was high (89%) (214). In the US licensing studies of one kit (OraQuick/Orasure), a lower sensitivity was observed in studies involving unsupervised users than in studies of professionals or supervised users (215) . This suggests that interpretation or possibly acceptance of positive test results may occasionally be an issue. One mathematical modelling study using this sensitivity figure suggested that HIV prevalence in MSM would increase if home testing were to universally replace clinic-based testing (216). However, as a supplementary strategy home testing addresses some of the recognised barriers to testing (195) and may be utilised by high risk, hard-to-reach groups including MSM who are married to women (217). The use of voucher systems (218) or incentives (219) for home testing has been explored in the USA but the uptake appears to be relatively low. Guidance for users and service providers has been prepared by a national action group on self-testing for HIV (220).

Recommendations

- **Home sampling should be made available as an option for testing to all MSM (1C)**

- **MSM should be made aware of the availability of instant result home testing as an option for HIV testing (2C)**

- **Clinic services should have pathways in place for quick access and confirmatory testing for those reporting reactive results after home sampling or home testing for HIV (1D)**

2.3 STI and HIV Testing

2.3.1 Recall arrangements and frequency of routine STI and HIV testing

International guidance from the USA , Australia and the UK recommends annual STI testing for all sexually active MSM (221). US cost effectiveness analysis suggests that HIV diagnosis is cost saving up to a threshold cost of $22,909 (222) and that testing 3 monthly in high risk (annual incidence 1%) and 9 monthly in moderate risk (annual incidence 0.1%) individuals in a test-and-treat model is cost effective (223). A further modelling study found that increasing testing from annually to 3-monthly in MSM is cost saving (224). An Australian modelling study suggested that increasing HIV testing in MSM from 1 to 4 times per year was estimated to have the potential to reduce HIV incidence in NSW by 13.8% over 10 years (225). Cost effectiveness analysis has been performed for syphilis testing in MSM living with HIV, suggesting 3 monthly screening is cost effective (226), but there is no comparable evidence with respect to other STIs in HIV negative MSM. A retrospective analysis of the impact of strictly applying (Australian) (221) testing frequency guidelines to MSM attendees at a large UK GUM clinic was estimated to increase MSM testing visits by 30% (227). There is currently no evidence on which to base a different frequency of routine testing for other STIs than the frequency of HIV testing.

The presence of an acute STI, such as syphilis, chlamydia and gonorrhoea, is associated with increased HIV acquisition (228), the strongest association being with rectal infections (94, 95, 229). HIV incidence varied by the rate of incident syphilis, when controlled for known predictors of HIV in the iPrEx study of HIV PrEP (230). In a study of 301 MSM diagnosed with bacterial STI in a London clinic recalled at 3 months for retesting, of whom 206 attended (231); 29 MSM per 100 person-years of follow up were diagnosed with a new STI and there were 5 new cases of HIV infection. Given the high rate of HIV transmissions occurring immediately after STI acquisition, and the fact that 4th generation tests for HIV will detect the great majority of HIV infections at 4 weeks after exposure(232), a routine test at first follow up appointment in cases of syphilis, gonorrhoea infection at any site and rectal or urethral chlamydial infection, as well as at 3 months post diagnosis will maximise the opportunity for early HIV diagnosis.

Known markers of STI and HIV risk are inconsistently applied across UK clinics (233), suggesting a lack of consistent evidence and guidance. International guidance on testing frequency from Australia (221) (234) and the USA (235) use a number of observational studies including a weighted risk assessment (236) to guide recommendations on more frequent testing in men at 'high risk' who have greater partner numbers or a history of recreational drugs use. BASHH Recommendations for Testing for Sexually Transmitted Infections in Men-who have sex-with-men 2014, derived from an expert consensus meeting in 2014 (76) suggest a much broader interpretation of MSM at 'high risk' to include any unprotected sexual contact (oral, genital or anal) with a new partner. CDC data also showed that there was no difference in HIV incidence rates in 7271 men in 21 cities between MSM identified as high risk those who were not (237).

Recommendations:

- **Annual STI testing including HIV testing should be recommended to all sexually active MSM (other than those with one long term mutually exclusive partner*) (1C)**

- **3 monthly STI testing including HIV should be offered to all those with:**
    - **UAI with partner(s) of unknown or serodiscordant HIV status over last 12 months (1B)**
    - **>10 sexual partners, over last 12 months (1B)**
    - **Drug use (methamphetamine, inhaled nitrites) during sex over last 6 months (1B)**

  also, although the evidence base is less robust:
    - **Drug use (GBL, Ketamine, other novel psychoactive substances (NPS) during sex over last 6 months (1C)**
    - **Multiple or anonymous partners since last tested (1C)**

  and possibly, consistent with existing BASHH guidance and US cost-effectiveness data:
    - **Any unprotected sexual contact (oral, genital or anal) with a new partner since last tested (2D)**

- **A repeat HIV test (alone, or with repeat STI testing depending on further risk) should be offered at follow up attendance after treatment for syphilis, gonorrhoea or rectal or urethral chlamydial infection (at a test-of-cure or first follow up serology appointment) (1C) and also at 3 monthly intervals for 1 year afterwards (2C)**

- **Testing should form part of an integrated risk reduction strategy aimed at reducing behavioural risk (1A)**

*** The definition of long term exclusive partner used is for more than 2 years, but there is no evidence on which to derive a threshold for reduced risk.**

2.3.2 Recall reminders

SMS Text message reminders significantly ($p<0.001$) increased re-attendance for testing by Australian MSM (238) and increase the detection of gonorrhoea, chlamydia and latent syphilis (239). Smaller UK studies suggest SMS text reminders may be more effective in MSM than other risk groups (240) but effectiveness is highly dependent upon physician prompts (241) or preferably automated systems.

Recommendations

- **SMS text reminders should be used to increase re-attendance and STI detection rates in MSM (1C)**

3 The management of MSM with symptoms of sexually transmissible enteritis and proctitis

3.1 Introduction

Rectal symptoms among MSM presenting to GUM clinics are common (242, 243). Symptoms may be attributable to STIs acquired through anal sex (typically associated with proctitis) and/or those acquired through a faecal-oral route, typically causing gastroenteritis. These infections are referred to in this guideline as sexually transmissible enteric infections (STEI).

Diagnoses of *Shigella flexneri* 3a, *S. flexneri* 2a and *S. sonnei* in men without a travel history have increased markedly (244) while diagnoses in women have remained stable, strongly suggesting sexual transmission between MSM as the cause, and there has been a recent cluster of verotoxin-producing Escherichia coli 0117:H7 (VTEC) found among MSM (245). It is particularly important to identify enteric pathogens as the cause of symptoms in MSM, as STEIs will often require collaborative work between primary care and GUM/HIV clinicians, microbiologists and local health protection teams to ensure appropriate clinical and public health management is undertaken in a timely manner.

For opportunistic enteric infections in HIV positive MSM, refer to British HIV Association and British Infection Association guidelines 2011 (246).

3.2 Aetiology

STIs causing proctitis (Table 1) are transmitted rectally through receptive anal intercourse or fomites (fingers, sex toys or other objects carrying these pathogens) or through oro-anal intercourse.

Enteric pathogens, which are statutorily notifiable, tend to cause enterocolitis, although symptoms may overlap with those caused by STIs and there may be dual pathologies (247-250). Acquisition of enteric pathogens may be linked to travel or occur in outbreaks related to food in addition to person-to-person transmission (e.g. for Norovirus). However, there is increasing evidence that a range of enteric infections may be transmitted during sex between men (Table 1). Faeco-oral transmission may be through direct oro-anal practices, indirectly through oral sex after anal sex or via fingers (either directly into mouth or via food) or fomites.

Causes of sexually transmitted proctitis	**Causes of sexually transmitted enteric infections**

Neisseria gonorrhoeae	*Shigella* spp.
Chlamydia trachomatis:	VTEC[#]
Genotypes D-K	*Campylobacter* spp.
Genotypes L_{1-3} (LGV*)	*Salmonella* spp.
Treponema pallidum	*Entamoeba histolytica*
Herpes simplex virus	*Cryptosporidium* spp.[$]
	Cytomegalovirus[$]
	Giardia duodenalis
	Microsporidium spp.[$]
	Hepatitis A

Table 1 Aetiological agents of sexually transmitted proctitis and enteric infections(de Vries et al., 2013)(251)

*Lymphogranuloma venereum

[#]Verotoxigenic *Escherichia coli*

[$]Opportunistic infections in advanced HIV positive immunosuppression

Infectious causes of gastrointestinal infections in MSM include (252-254):

- Viruses: Hepatitis A (see Section 2.1.6), *Norovirus* (In immunocompetent patients, Adenovirus and Rotavirus are implicated in childhood gastroenteritis only)
- Bacteria: *Campylobacter sp., Escherichia coli, Salmonella sp., Shigella sp., Yersinia enterocolitica* (N.B. gastrointestinal infections not associated with transmission via sexual practices in the UK: *Vibrio cholera,*; *Clostridium difficile* ,; *Bacillus cereus*)
- Parasites: *Cryptosporidium sp., Entamoeba histolytica, Giardia lamblia/intestinalis, Blastocystis sp., Dientamoeba fragilis, Isospora sp., Microsporidium sp.*

A national outbreak of *S. flexneri* 3a in MSM started in 2009, and there is good evidence of sustained transmission of *S. flexneri* 2a and *S. sonnei* between MSM since 2010, suggesting separate introductions in the MSM population (244). Most MSM with *S. flexneri* 3a were white, UK-born, HIV-positive, and reported high numbers of casual and regular partners, and infection was associated with (i) low awareness about enteric infections, (ii) chemsex, and (iii) meeting sex partners and locating sex parties through social and sexual networking applications (66, 244, 255, 256). Co-infections with other STIs and with viral hepatitides and HIV are also common (66, 248, 250, 255, 257, 258).

Reduced sensitivity to antimicrobial agents, particularly to fluoroquinolones and macrolides (259-262) is a significant problem for some enteric pathogens and for STIs such as NG (263-265)and MG (145, 266, 267). Appropriate selection of antibiotics (antibiotic stewardship) is therefore required, based wherever possible on antibiotic susceptibility profiles.

3.3 Clinical features

MSM reporting symptoms of enteric or rectal infections usually fit into one of two presentation types, although mixed symptoms are not uncommon (247, 248, 250, 268-270)

Symptoms of proctitis include rectal pain, discharge or bleeding, with or without tenesmus. The aetiology is usually classic STI pathogens (CT including LGV serovars, NG, *T. pallidum* and HSV) transmitted via receptive anal sex (247, 249, 250, 268, 271) Treatment of these pathogens is covered in the appropriate BASHH guideline. MG, though found in the rectum, is not thought to be associated with a proctitis syndrome (142, 143, 145, 272).

Patients with symptoms of enteric infections including diarrhoea and/or dysentery and abdominal pain usually have colitis or enterocolitis that is caused by enteric pathogens, referred to in this guideline as sexually transmissible enteric infections (STEI). Mixed proctitis/STEI presentations and multiple infections are not uncommon.

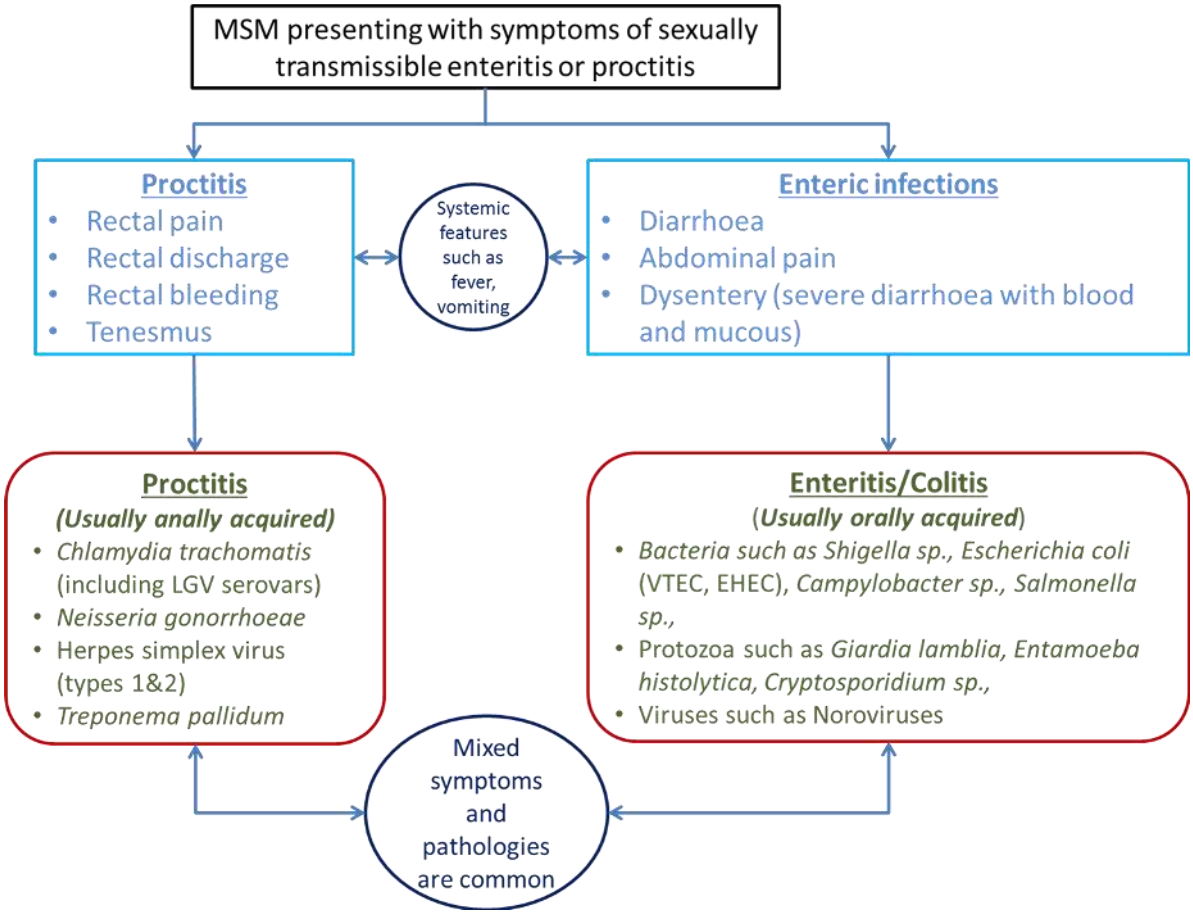

Figure 1. Classification of MSM presenting with symptoms of proctitis or STEI

3.4 Management

3.4.1 Proctitis

Symptoms of rectal pain, bleeding with fresh blood, and discharge are indicative of involvement of the rectum and the anal canal. See Figure 2 for assessment.

3.4.1.1 Diagnosis: History and Examination

The history should include a description of symptoms and duration (44, 273, 274). The sexual history should focus on the 4-weeks period prior to onset of symptoms (to cover the look back period for LGV and gonorrhoea) (275).

A thorough genito-anal examination is required (128, 271) including examination with a proctoscope if tolerated (276, 277). In cases of severe proctitis, blind (i.e. without the use of the proctoscope to visualise the mucosa) ano-rectal swabs may be necessary.

3.4.1.2 Diagnosis: Investigations

A full sexual health screen should be offered (271, 278, 279) (Section 2.1.1). Microscopy of a Gram-stained rectal smear should be performed and where possible culture for NG from all sites prior if treatment is to be given. Additional swabs for HSV PCR and *T. pallidum* PCR (where available) should be taken if ulcers are present.

Finding of >5 (280) or >10 (136) polymorphonuclear cells (PMNC)/high power field (HPF) on microscopic examination of a Gram-stained rectal swab smear indicates proctitis.

Recommendations

- **A full sexual health screen should be offered (1B)**
- **Rectal swabs should be sent for culture and sensitivities for NG if treatment is to be given at presentation (1B)**

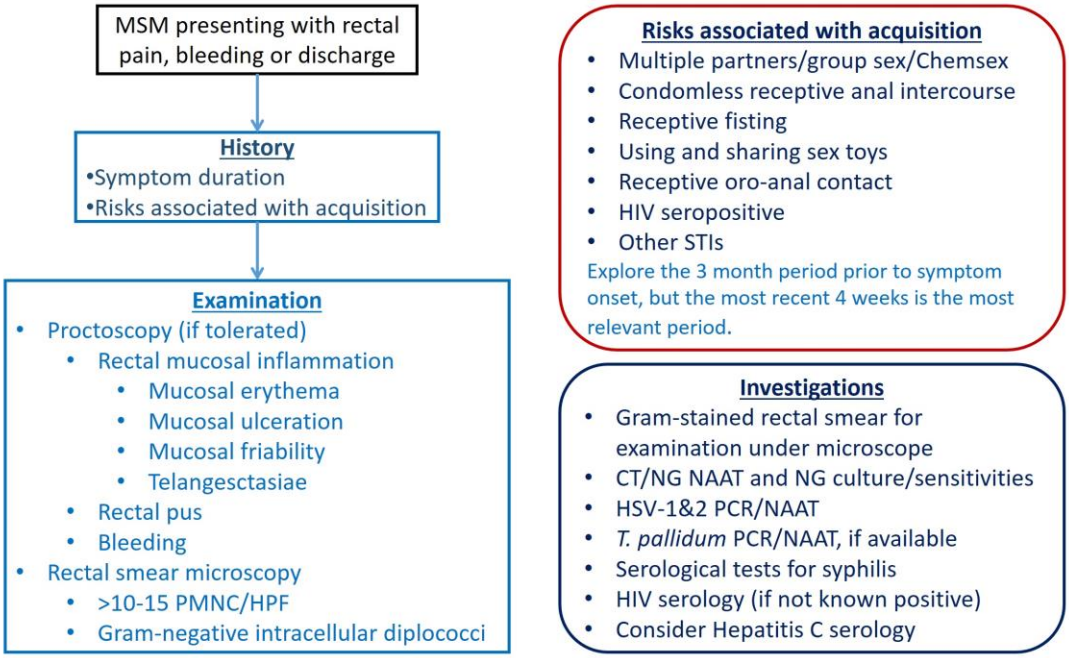

Figure 2. Assessment of MSM presenting with symptoms of proctitis. (Also assess for enteric infection; see section 3.4.2 and fig.4)

3.4.1.3 Further Investigations and Treatment

Management is summarised in Figure 3~~Figure 3~~. CT or LGV as an aetiology must be considered in addition to other diagnoses indicated by examination findings (such as HSV or Syphilis with ulcerative features) (271).

Examination and findings of microscopic examination of Gram-Stained smears from rectal swabs should guide therapeutic decisions and follow the relevant specific infection guideline (accessed at: http://www.bashh.org/BASHH/Guidelines/Guidelines/BASHH/Guidelines/Guidelines.aspx)

If CT is detected, testing for LGV-specific DNA should be done by sending the residual NAAT specimen or a fresh rectal swab to the local microbiology laboratory, where available or to Public Health England's Sexually Transmitted Bacteria Reference unit in England and Wales or Health Protection Scotland's Scottish Bacterial Sexually Transmitted Infections Reference Laboratory in Scotland (141). Empirical treatment should cover LGV (121, 271) and gonorrhoea as the prevalence of NG amongst MSM is high and the sensitivity of microscopy examination of Gram stained rectal swabs for gonorrhoea is low (281). Patients with rectal STIs are at high risk for other STIs, including HIV and Hepatitis C and so follow up STI and HIV testing both at test-of-cure and at 3 months is recommended (282).

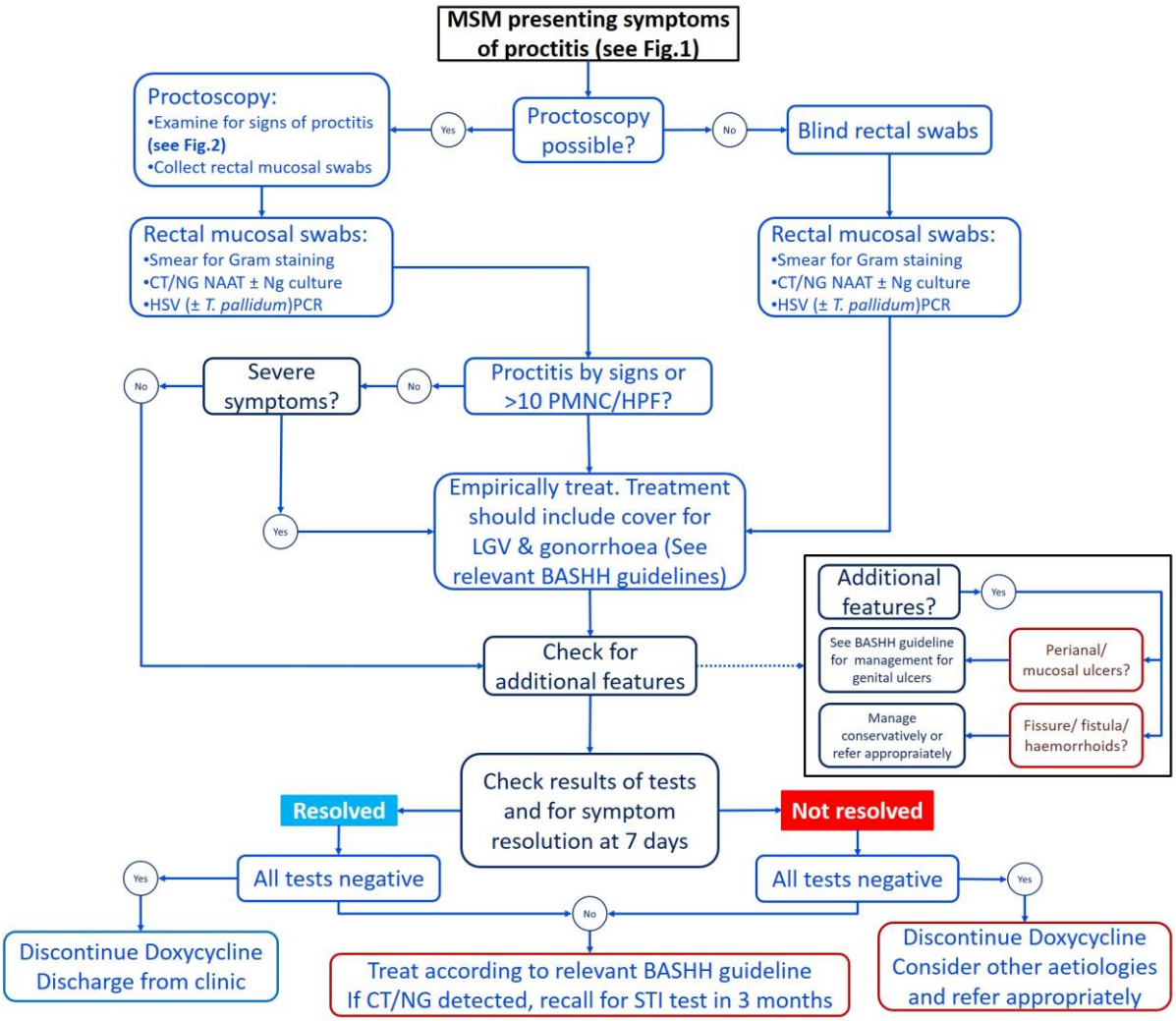

Figure 3. Management of MSM presenting with symptoms of proctitis (de Vries et al., 2013)(271)

Recommendations

- **Rectal chlamydia, if detected, should be typed for LGV serovars in HIV positive and HIV negative MSM with proctitis (1B)**

- **Examination and findings of microscopic examination of Gram-Stained smears from rectal swabs should guide therapeutic decisions (1B)**

- **Empirical therapy, in symptomatic men with proctitis in whom rectal chlamydia status is unknown, should include LGV (which also effectively treats syphilitic proctitis) and gonorrhoea treatment (1B)**

- **Offer Hepatitis C testing to all HIV positive MSM and HIV negative MSM with risk factors at 3 months' follow up (1D)**

3.3.1.4 Contact tracing and treatment

Partner notification for STIs is covered in the BASHH statement on partner notification (275).

Recommendations

- **Active partner notification covering up to at least the 4-week period prior to symptom onset should be attempted and documented (1B)**

3.4.2 Sexually transmitted Enteric Infections (STEI)

Enteric infections are characterized by sudden onset of diarrhoea, with or without vomiting and are usually transient disorders due to enteric infection with viruses, bacteria, or protozoa, typically affecting the large bowel (the colon) and less commonly, the small bowel. Other symptoms include blood and/or mucous in the faeces (dysentery), and fever or malaise. The diagnosis is usually made on the basis of clinical symptoms and signs. Microbiological tests of faecal samples are necessary to determine the causative organism. Infectious bloody diarrhoea as a clinical syndrome is a notifiable infection and should be notified to the Local Authority Proper Officer (Section 3.5.1) (283, 284)

Diagnosis: History and Examination

Assessment is summarised in Figure 4 (65, 66, 253, 254, 285, 286). History should include questions on the severity of illness, medication and risk factors, including travel abroad and food history (Map: Appendix 2.1). Sexual risks within the 2 weeks preceding onset of symptoms should be assessed including: receptive oro-anal sexual contact (both direct as well as indirect, i.e. performing oral sex after anal penetration (of another partner), multiple sexual partners and participating in group sex, sexual activity involving recreational drug use (chemsex – Section 1.3) and sexual activities involving faeces (e.g. scat play)
Symptoms of diarrhoea may be mild and may not be elicited in the history without direct questioning if other symptoms of discomfort, pain or tenesmus predominate.

Symptoms of STEI tend to be acute. However, with parasitic infections such as giardiasis and amoebiasis, chronic symptoms are not uncommon. LGV may also present as a chronic enteritis with a presentation not unlike inflammatory bowel disease.

Examination should include assessment of the severity of infection, including the severity of dehydration (Appendix 1.2), particularly in patients who are unwell or frail (older age, advanced HIV infection or other co-morbidities). The presence of blood/mucous in faeces, prolonged (more than 7 days) diarrhoea, and systemic features such as fever (especially), weight loss and dehydration, would be considered indicative of severe infection and hospital admission should be considered.

Examination of the patient should include assessment for proctitis as described above (Section 3.4.1.1)

RECOMMENDATIONS:

- **History should cover assessment of duration and severity of symptoms, identify potential causes and risk factors for complications and public health risk (1B)**

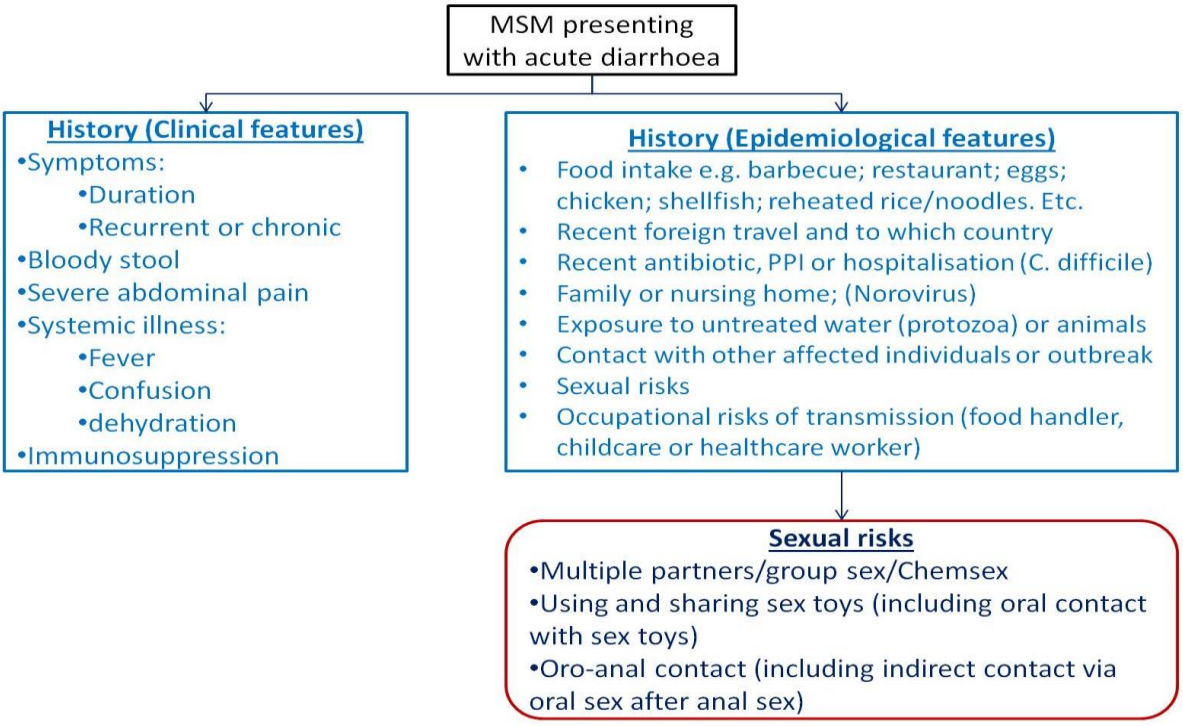

Figure 4. Summary of salient features of clinical history in assessing MSM with enteric infections (Also assess for proctitis; see section 3.4.1 and fig. 2)

3.4.2.2. Diagnosis: Investigations

Investigations should include a full sexual health screen as described in section 3.4.1.2

Microbiology examination of stool is recommended in all cases and is essential when the patient:

- needs antibiotics.
- is systemically unwell.
- needs hospital admission.
- has blood, mucous or pus in stool.
- has diarrhoea after foreign travel
- is immunosuppressed.

Include examination for ova, cysts and parasites (up to 3 samples taken at 3 different occasions might be needed), culture with antibiotic susceptibility testing, and where available, molecular detection assays (such as PCR). It is important that the faecal samples are collected properly (as described in Appendix 2.3) and for each investigation, a minimum of 1ml of faeces is required.

RECOMMENDATIONS:

- **Assess for severity including evidence of dehydration (1A) and fever**

- **Consider referral to tertiary care or specialist inpatient units for severe infections (1A)**
- **Send faecal samples for microbiological examination (1A)**
- **Offer STI and HIV testing (1B)**
- **Assess for proctitis (1B)**

3.4.2.3 Further Investigations and Treatment

The majority of patients with STEI have a brief self-limiting illness and can be managed conservatively (253, 287-290).

Oral rehydration therapy, if required, consists of using oral rehydration salts taken after every loose stool passed for up to 48 hours (253, 289)

Antidiarrhoeal (or antimotility) drugs such as loperamide are contraindicated for the management of infectious diarrhoea (253, 289, 290)

The use of empirical antibiotic therapy, where the diarrhoea is mild and of unknown aetiology, is not recommended. Evidence suggests that they have minimal benefits, with high rates of side effects reported (253, 288, 291) and their use promotes the development of resistant bacteria (260, 291-293). Circulating *Shigella* sp. and other enteric infections are reported to have high prevalence of resistance to antibiotics, particularly macrolides and fluoroquinolones (259-262, 292, 294, 295). However, empirical therapy guided by microbiology advice based upon most likely aetiology, may be considered when:

- The patient is pyrexial (temperature ≥38^{o}C)
- The stools are bloody
- Diarrhoea lasts more than 7 days
- Co-morbidities (frailty, inflammatory bowel disease, immunocompromised state e.g. advanced HIV infection, immunosuppressive agents, etc) are present

Where a microbiological cause is known antibiotic therapy may be appropriate. The choice of agent is best guided by microbiology advice informed by either antibiotic susceptibility profile of an isolate or from local susceptibility data.

HIV positive patients were reported to have more recurrent, persistent and invasive infections in the pre-HAART era. There are a few case reports of invasive shigellosis in MSM with well controlled HIV infection. However, there are no data comparing clinical outcomes of STEI in well-controlled HIV positive MSM and MSM without HIV.

RECOMMENDATIONS:

- **Advise on Oral rehydration therapy (1A)**
- **Avoid antimotility agents if invasive disease or infectious agents are suspected (1A)**
- **Consider empirical antibiotic therapy only in severe disease or in the presence of complicating co-morbidities (1A)**

- **Antibiotic therapy should be guided by local antimicrobial resistance patterns (1B)**

3.4 Preventing the spread of infection

All patients with suspected or confirmed STEI should be provided with advice on the prevention of non-sexual and sexual transmission of infection. Clinical syndromes of infectious bloody diarrhoea, haemolytic uraemic syndrome, and food poisoning, even of unproven aetiology, are statutorily notifiable (Section 3.5.3) (283, 284).

3.5.1 Advice on preventing the non-sexual spread of infection (285)

Detailed advice should be provided on the non-sexual transmission of infection. (Appendix 2.4)

RECOMMENDATIONS:

- **Advise on hygiene (1B)**
- **Advise to avoid return to work until 48 hours after last episode of diarrhoea (1B)**
- **For patients who work as food handlers or with people vulnerable to infections, return to work should be guided by local public health authorities (Statutory requirement, Section 3.5.3)**

3.5.2 Advice on sexual practices for preventing spread of infection (296)

- Wash hands, genitals and perianal skin before and after sexual activities such as intercourse, rimming, fingering or handling used condoms and sex toys. If possible, showering is advised as bacteria like Shigella may be present on other skin surfaces.
- Use condoms for anal sex and latex gloves for digital penetration or fisting. Dental dams or a condom cut into a square to make a barrier for rimming.
- Avoid sharing sex toys or douching equipment.
- Avoid recommencing sexual contact until 7 days after the last episode of diarrhoea.

RECOMMENDATIONS:

- **Advise on hygiene practices before and after sexual contact (1B)**
- **Advise on barrier protection and refraining from sharing toys or personal hygiene devices (1B)**
- **Advise on abstinence from sexual contact for 7 days after the last episode of diarrhoea (2D)**

3.5.3 Other public health actions

Effective management of enteric pathogens requires notification to the Local Authority proper officers under the respective Health Protection (Notification) Regulations and Public Health Acts in each country (283). Lists of notifiable diseases and organisms and associated guidance on how to report in each country are available. [See Box 1] Clinical syndromes should be reported by the attending clinician who first saw the patient for the episode; laboratory diagnoses are, in addition, statutorily reported separately by laboratory personnel.

Local health protection teams and environmental health officers will often need to contact patients to undertake a questionnaire to ascertain the likely source of infection and linked cases. For patients diagnosed with STEI it may be appropriate for the GUM clinic to assist in completing the questionnaire and obtaining this information , and collaborate closely with the local health protection teams (284).

Box 1. Health Protection (Notification) Regulations and Public Health Acts in each country

1. England works to the Health Protection (Notification) Regulations 2010 (http://www.legislation.gov.uk/uksi/2010/659/contents/made). The list of notifiable diseases and guidance on reporting in England can be accessed at: https://www.gov.uk/guidance/notifiable-diseases-and-causative-organisms-how-to-report
2. Wales works to The Health Protection (Notification) (Wales) Regulations 2010 http://www.legislation.gov.uk/wsi/2010/1546/contents/made . The list of notifiable diseases and guidance on reporting in Wales can be accessed at: http://www.wales.nhs.uk/sites3/page.cfm?orgid=457&pid=48544
3. Northern Ireland works to the Public Health Act (Northern Ireland) 1967 (http://www.legislation.gov.uk/apni/1967/36/contents). Northern Ireland uses the list of notifiable diseases and used in England (see 1. above)
4. Scotland works to the Public Health Scotland Act 2008. The full list of notifiable disease in Scotland can be accessed at: http://www.legislation.gov.uk/asp/2008/5/schedule/1 and guidance on how to report in Scotland can be accessed at: http://www.gov.scot/Topics/Health/Policy/Public-Health-Act/Implementation/Guidance/Guidance-Part2

RECOMMENDATIONS:

- **The attending physician should report all cases, with contact details, of enteric infections, regardless of confirmation, to the relevant local health protection team (Statutory requirement)(275)**

3.5 Asymptomatic infections

The majority (>80%) of rectal STIs are asymptomatic (297) and are a reservoir for onward transmission and increase the risk of HIV acquisition and transmission(298, 299). Treatment results in a reduction in onward transmission of the infection (300) as well as of HIV (298). However, there are no data on asymptomatic carriage of enteric pathogens within cohorts of MSM.

Testing and treating asymptomatic contacts of STEIs for enteric infections is not recommended at present. MSM with enteric infections, however, are part of a sexual network that is high risk for other STIs; engaging contacts of STEI with STI testing and prevention interventions is good clinical practice from a public health STI control perspective.

4 HPV infection and anal dysplasia in MSM

4.1 HPV Infection

Two issues arise with HPV infection in the ano-genital area in MSM; genital warts and epithelial neoplasia. HPV subtypes 6 and 11 cause genital warts; subtypes 16, 18, 31 and 33 are associated with neoplasia. HPV may also infect and persist in the oropharynx and may lead to oropharyngeal squamous cell carcinoma. Anogenital warts in MSM should be managed according to current BASHH guidelines (301).

4.1.1 Anal dysplasia

Screening for anal dysplasia in MSM using anal cytology remains controversial. Although biennial screening for AIN in HIV negative MSM has been suggested (302) it is not routinely practiced and cost effectiveness is unproven. MSM with HIV are reported to have a higher frequency of prevalent high risk HPV strains, persistence of HPV, incident anal dysplasia, progression to and relapse of anal intra-epithelial neoplasia (AIN) and anal cancer than heterosexual men and women (303, 304) . An Australian meta-analysis estimated an anal cancer rate of 46 per 100,000 HIV-infected MSM, with US rates around 135 per 100,000 (305). An evidence based UK cost effectiveness analysis in 2010 concluded that screening did not reach the cost effectiveness threshold (306), although an Australian study published in 2000 showed that 2 or 3 yearly screening in MSM was cost-effective (307). Smoking is identified as a risk factor for external genital warts, anal dysplasia and anal cancer among HPV infected MSM (308, 309). Lower CD4 counts (<350 cells/microL) are strongly associated with prevalent high risk HPV strains (OR 3.65; 95% confidence interval [CI], 1.28-10.4) (309) . There are no RCTs evaluating impact of antiretroviral therapy (ART) on HPV or dysplasia. Some cohorts report lower prevalence of HPV and anal dysplasia (310), others report no effect with ART (311).

Despite the high rates of abnormalities reported there are no evidence-based recommendations on screening for anal dysplasia. Where expertise in high resolution anoscopy exists, routine anal cytology may be performed (312), although the specificity of the technique in detecting high grade lesions is only 32% to 59% (313), meaning that a screening program is likely to be highly resource intensive.

Retrospective studies of large scale screening programs suggest that the vast majority of anal cancers present with a lump and over half of anal cancers detected by digital examination are asymptomatic. There is limited evidence that a screening programme utilizing perianal examination and digital ano-rectal examination (DARE) is both acceptable and depending on the base case variables used might be cost-effective for HIV positive MSM (314). Screening those over 50 every 2 years yielded an incremental cost-effectiveness ratio (ICER) per quality-adjusted life year (QALY) of AUD 29 760 compared with AUD 45 484 for screening 4 yearly.

However questions remain. Only one small, short term study on acceptability has been published (315). In this study 28% of those approached declined to take part. The cost-effectiveness models above were partly based on this study. These models were very sensitive to the costs of managing false positive results and to assumptions regarding sensitivity of screening and rates of progression. While non-Australian healthcare costs were modeled these findings were not published. The European AIDS clinical society guidelines recommend that digital anal examination +/- PAP smear every 1-3 years in MSM with HIV infection should be considered but this is an expert recommendation only (316). To-date the recommendation has not been taken up by other guidelines. The possibility of using digital anal self-examination has been explored but there is insufficient evidence on which to base any recommendation(317).

HPV may also affect the oropharynx where it may lead to squamous cell carcinoma. Ong et al found 19% (33/173) of MSM with HIV had any oral HPV genotype detected; 43% of these had the same genotype detected 3 years later and 40% were high risk genotypes (318). This compares with a prevalence of 7% for any oral HPV in general population (319). HPV persisted in HIV negative MSM for a median of 6.9 months for any HPV genotype and 6.3 months for high risk strains (320). However, there is no data to suggest an increased frequency of oropharyngeal cancers in MSM and some to suggest that, in HIV infected MSM at least, the frequency may be lower than in heterosexual men when matched for partner numbers and other risk factors (321). Oral HPV testing remains a research tool and is not currently recommended in clinical practice.

Recommendations

- **Genital warts in MSM should be managed according to existing BASHH guidelines (1C)**
- **HIV units should develop either local clinical expertise or referral pathways for suspected anal cancer and anal dysplasia. (2C)**
- **Regular digital ano rectal examination (DARE) can be incorporated into routine HIV care and may be cost effective in MSM over 50 (2B)**

4.2 HPV vaccination in MSM

HPV vaccine is most effective when administered before the onset of sexual activity. However in the UK, universal HPV vaccination is only available for girls. Unvaccinated heterosexual boys benefit from

herd immunity but young MSM do not experience significant benefit (322) . In November 2014, the (UK) Joint Committee on Vaccination and Immunisation (JCVI) issued an interim position statement , having reviewed an unpublished impact and cost effectiveness analysis on vaccinating MSM when attending sexual health clinics. JCVI recommended that a programme for the vaccination of MSM aged 45 years and younger should be implemented in GUM and HIV clinics in the UK using the quadrivalent HPV vaccine with a 3 dose series (0, 1-3, and 6 months or 0,6 and 12 months), subject to the programme being commissioned and implemented at a cost-effective price (323). Vaccination is available at a number of pilot sites in England and at clinics in Scotland. Dosage timings can be adjusted to correspond with routine sexual health or HIV clinic visits. For guidance, in a three-dose schedule, the second dose should be administered at least one month after the first dose and the third dose should be administered at least three months after the second dose. All three doses should ideally be given within one year; however, a 24-month period is clinically acceptable.

4.2.1 Acquisition of HPV

The prevalence of high risk HPV increases quickly in MSM throughout the late teens and is strongly associated with numbers of sexual partners. In a group of 16-20 year old MSM in Australia the proportion of men with anal HPV of any type increased from 10.0% in men reporting no prior receptive anal sex to 47.3% in men reporting ≥4 receptive anal sex partners ($P < .001$) A similar pattern was also seen with HPV type 16 ($P = .044$). However there is also evidence that a substantial proportion of MSM appear to remain uninfected with vaccine specific/targeted types into their 20s and 30s. In a London study 25.1% of MSM aged between 18 and 40 had DNA evidence of one quadrivalent vaccine HPV types, while only 7.4% had presence of two HPV vaccine types or more. These findings offer the possibility that HPV vaccination may also benefit older individuals (324).

4.2.2 Quadrivalent HPV (qHPV) vaccine efficacy in MSM - HIV negative

The efficacy of qHPV vaccine was investigated in a placebo controlled trial of 4065 HIV negative males including 602 MSM aged 16-26 years followed for a median of 2.9 years. (325). Vaccination resulted in a 63.7% reduction in external genital lesions (EGL) related to vaccine HPV types in heterosexual men, 70.2% (23.0-90.2) in MSM (ITT). The per-protocol efficacy was 90.5%.

The efficacy of qHPV vaccine in 16 – 26 year old MSM against AIN was 50.3% (intention-to-treat) and 77.5% (per-protocol) (326). Incident AIN was 17.5 per 100 person years in the placebo group.

Quadrivalent HPV vaccine is highly immunogenic in MSM (327) . For those participants without serological or PCR evidence of infection with relevant HPV types at baseline seroconversion rates at 7 months were 96.5% for HPV-6, 97.4% for HPV-11, 94.1% for HPV-16 rates of and 89.7% for HPV-18.

4.2.3 Quadrivalent HPV vaccine efficacy - HIV positive

There is a comprehensive review of HPV vaccination in the recently published BHIVA vaccination guidelines (157). HPV vaccination is considered safe and seroconversion rates are usually greater than 85%. In some but not all studies, seroconversion rates and antibody titres are highest in those receiving ART and those with higher CD4 counts. There is very limited cohort evidence that vaccinating individuals with high grade anogenital dysplasia reduces the risk of recurrent dysplasia (328) and that such a strategy would be cost-effective or even cost-saving (329). Randomized controlled trials are needed.

4.2.4 Nonovalent (9-valent) HPV vaccine

The US Advisory Committee on Vaccination Practices recommended the use of 9-valent HPV vaccine for routine vaccination including MSM up to the age of 26 years in March 2015 (330). US providers will move from the use of quadrivalent to 9-valent vaccine over the course of 2016. Discussion of 9-valent vaccine is not included in the recent JCVI interim statement on vaccination of MSM in the UK (323).

4.2.5 Economic analysis

In a cost-effectiveness modelling analysis of targeted HPV-vaccination of young MSM in the USA, vaccination was considered likely to be cost-effective even when considering vaccination of 26 year olds with an assumption of exposure to vaccine HPV types of 50% (331). In an unpublished UK analysis reviewed by the JCVI, vaccinating HIV positive MSM was incrementally cost-effective up to age 40 using the list price of qHPV. Vaccination of all MSM was cost effective at a threshold vaccine price (not stated) below list price but was not cost effective at list price (157).

4.2.6 HPV vaccination to reduce risks of HIV transmission

In a meta-analysis of observational studies prevalent HPV was associated with an approximate doubling of risk of HIV acquisition(332). However in the one study within this report performed in MSM infection with one HPV type compared with no HPV infection was not significantly associated with HIV acquisition (aHR=2.0 (95%CI=0.61-6.5)). However, the presence of infection with 2 or more HPV types compared with being HPV un-infected was associated with HIV acquisition (aHR=3.5 (95%CI=1.2-10.6)) (333).

4.2.7 HPV vaccine acceptability

In a systematic review of HPV vaccine perceptions amongst MSM a wide range of views were reported. However more than 50% of individuals were prepared to consider vaccination if offered. Most studies were conducted in North America. Further studies in those with little or no sexual experience, who would benefit most from HPV vaccination are required (334).

Recommendations

- **MSM should be encouraged to attend sexual health services for preventative health interventions including hepatitis B and HPV vaccination at the time of considering commencement of sexual activity (1B) or as early as possible after commencing sexual activity (1B).**

- **All MSM aged 45 years and younger should be offered standard HPV vaccination (0, 2 and 6 months) irrespective of HPV and HIV status (1B).**

5: Partner Notification and MSM

5.1 Introduction

Partner notification (PN) in MSM should follow general guidance provided by the Society of Sexual Health Advisers (SSHA) (335) and by the British Association for Sexual Health and HIV (BASHH) in 2012 (275). A systematic review of partner notification strategies and outcomes concluded that in MSM partner notification can reduce disease incidence, condomless sex, sex with infected partners, reinfection rates and other adverse outcomes (336, 337). Recognised barriers to PN such as resistance affect MSM (338), but other factors including higher partner numbers and sex with anonymous and pseudoanonymous partners may present additional challenges. Attitudes to PN vary significantly according to partner status and the infection involved (339)

5.2 Anonymous Partners

Partner notification which relies on a case finding approach alone has always had limited effect in MSM in whom sexual contacts may be anonymous, contacted through established methods of meeting partners including sex-on-premises venues such as saunas or in public sex environments. Where no contact details are available, "Hot spotting" is a technique for identifying where the index client met their contacts. Real or virtual venues or sites that are recurrently named as meeting places are targeted with health promotion information with the aim of facilitating testing. Although it may not be possible to identify a core group or individual in person it may be possible to reduce the ongoing transmission of infections through the identification of common venues (340). The delivery of such information may include online and app based interventions (341) .

Recommendation:

- **Information obtained in the course of individual case finding should be combined to identify and target locations where STI transmissions are likely to occur (2C)**

5.3 Pseudoanonymous partners

Use of the internet to find sexual partners is extensive and more commonly reported by MSM than other STI clinic attendees (342). Men who use the internet to meet partners have a greater number of partners (343) and a higher probability of being diagnosed with an STI (344, 345) than men recruited in community based or national probability samples. Meta-analysis showed that UAI, including UAI with serodiscordant partners was more common in men who met partners online (346). Social media sites and more recently Geosocial networking smartphone apps (apps) are widely used in combination with pseudonyms, which preclude the use of names, addresses or telephone numbers in tracing contacts. A systematic review of new technology in partner notification identified 379 papers published 2000 to 2012 (347). MSM were the first patient group in whom provider use of the internet for PN was reported and much of the published literature applies to MSM. Only one published study compared provider PN using the internet to 'conventional PN' in an unmatched patient group, finding it to be less effective when used instead of conventional methods (348). However as an adjunct to conventional methods it increased the number of syphilis contacts tested and treated by 26% (349). Several studies show it to be more acceptable to MSM than to the general population (350) and a high proportion of English MSM reported that they would engage with a health care worker in an on-line chat room (351). Patient initiated PN is supported by the LetThemKnow tool first used in Melbourne (352) and provided in the UK by GMFA (353, 354), allowing patients to send a code to contacts via text, website or app.

Smartphone apps have overtaken the internet as the most common method for meeting partners for casual sex (355) , but there are as yet no systems that allow direct linkage to these apps in order to send messages directly to contacts who need to be notified. The engagement of app providers with healthcare organisations is variable and some apps exist with the explicit purpose of facilitating condomless anal sex. A large cross sectional study in Los Angeles found that men who used apps to meet partners had a higher probability of being diagnosed with chlamydia and gonorrhoea (but not syphilis or HIV) than men who met using other methods (356). There is evidence that men who use apps have a higher number of partners (both on and offline) than men who meet partners offline alone, but do not differ in other demographics or personality variables (357). The app profile information often includes no true identity details, so patient referral is the only mode of PN currently possible in situations where an app contact has not been followed up by SMS text or internet contact. Patient initiated PN using email appears to be more acceptable to MSM than to other patient groups but where options are available; communication in person is preferred to the use of email or e-card, or to text messaging (358). Patient led referral is preferred for regular and known partners whereas provider led referral is preferred for casual partners (339)

Recommendations:

- **Use of the internet to find partners should be employed as a marker of increased partner numbers, bacterial STI risk and risk of UAI with serodiscordant partners (1A)**

- **Provider use of internet partner notification (IPN) or text or app based PN increases the number of MSM contacts successfully contacted and should be used as an adjunct to conventional methods (1C)**

- **Patients should be advised of and supported in the use of internet, App or text based PN but for patient initiated PN communication in person or by phone is often the preferred option (2C)**

Section 6: STI & HIV prevention for MSM in the clinic

6.1 Introduction

Combination HIV prevention requires a multi-faceted approach encompassing behavioural, biomedical, structural and increased testing interventions, including those delivered in clinical settings (359). Brief behaviour change interventions for MSM, including consideration of serosorting and negotiated safety for HIV positive MSM are covered in the UK National Guideline on Safer Sex Advice (45).

6.2 Antiretroviral pre-exposure prophylaxis (PrEP)

6.2.1 PrEP Effectiveness

An overall reduction in HIV transmissions of 44% (95% CI 15-63%) was reported in the iPrEx study, the first large randomised placebo controlled efficacy trial of daily oral tenofovir disoproxil fumarate (TDF) – emtricitabine (FTC) as PrEP in MSM and transgender women (360).TDF alone has been demonstrated to be effective in heterosexual men and women but is not recommended in MSM in CDC or European PreP guidelines (due to lack of evidence of effectiveness rather than evidence of no effect) (235). The PROUD study, a pilot study of the use of daily oral PrEP (TDF-FTC)), conducted in MSM attending 13 sexual health clinics in England was subject to early discontinuation of the deferred treatment arm due to an unexpectedly high rate of HIV in this group (9 per 100 person years) and an 86% (90%CI 64-96%) reduction in HIV seroconversions in men in the immediate treatment arm (361, 362). PROUD inclusion criteria were the reporting of condomless anal sex on one or more occasions in the last 90 days and the likelihood in the opinion of the participant of further condomless anal sex in the next 90 days. The ANRS IPERGAY study of 'on demand' use of TDF-FTC PrEP (two tablets 2-24 hours before sex and one tablet a day through to two days after the last condomless sex act) also showed an86% reduction in HIV seroconversions compared to placebo (363). Adherence to on demand PrEP (defined as reporting taking at least 1 tablet before and 1 tablet after sex) was 43%; no tablets before or after were taken in 28% of sex acts, and suboptimal adherence (one before or one after) was reported in 29% of acts. In spite of this, effectiveness was very high, suggesting that participants were able to judge the risk with reasonable accuracy. The median monthly dose of tablets of 15 was approximately half of the total monthly dose of tablets in the PROUD study. Such a regimen offers obvious potential financial and cost benefit implications. Importantly it offers a choice of regimen for MSM whose frequency of risk is diverse.

The CDC has provided comprehensive guidance on PrEP use (235). A joint BHIVA BASHH position statement on PrEP in UK was updated in May 2016 and includes guidance for clinicians providing advice on and monitoring for PrEP including that purchased online (364). A BASHH/BHIVA UK Guideline on PrEP is in preparation.

Recommendations

- **PrEP with on demand or daily oral tenofovir-emtricitabine (TD-FTC)should be offered to HIV negative MSM who are identified as being at elevated risk of HIV acquisition through condomless anal sex (1A)**

- **PrEP with on demand or daily oral TD-FTC should be offered to HIV negative MSM whose regular partners are newly diagnosed with HIV infection, until the partner's serum viral load reaches undetectable levels (1C)**

- **TD alone should not currently be offered as PrEP to MSM (2C)**

6.2.2 PrEP adverse effects

Adverse effects are an uncommon cause of discontinuing PrEP (365). Gastrointestinal effects were reported in <10% of those receiving TDF-FTC as PrEP in iPrEx, were mild and resolved within 1 month of initiating therapy (360). Proximal renal tubular dysfunction and measurable loss in bone mineral density have been reported with therapeutic tenofovir (TDF) use. A 1% reduction in bone mineral density was observed when TDF was used as PrEP but has not been associated with increased fracture rate and no increase in renal complications was reported (366). Viral resistance to either tenofovir DF or emtricitabine was rare and almost all cases were thought to be infected at or immediately after enrolment in the study (360, 361). A modelling study of the UK epidemic suggested resistance would have a negligible impact on PrEP efficacy at a population level (367). Baseline HIV testing using 4th generation serological testing, supported by a point of care test if indicated, should always be undertaken on commencing PrEP, but a history of condomless sex within the HIV window period was not an exclusion criterion in the PROUD study. Starting PrEP should be avoided in men with current symptoms suggestive of HIV seroconversion until infection can be reliably excluded. There was no evidence of risk compensation with the use of PrEP in iPrEx , but this was a placebo-controlled study (368). In the PROUD study, after adjustment for the number of STI screens, there was no difference in the rate of bacterial STI between the immediate and deferred groups and the rate of rectal infections was the same (RR 1.00) in both groups. However, a greater proportion of the immediate group reported receptive anal sex without a condom with ten or more partners at 1 year compared to the deferred group (21% vs 12%, p=0.03) (361). In the open label phase of the IPERGAY study there was a decrease in overall reported condom use over time (P=0.0003)(369) and a large observational cohort of MSM on PrEP reported that condom use declined in 41% of those on PREP (370) . There is therefore some evidence of risk compensation among MSM taking PrEP ; however, longer term real-world data is lacking. Repeat HIV testing and tests for other STIs should be offered every 3 months (235, 364). Serum creatinine and estimated Glomerular Filtration Rate (eGFR) should be checked every 3-6 months and Hepatitis C serology at least once a year. Routine urinalysis for proteinuria with urinary protein:creatinine ratio and albumin:creatinine ratio if there is more than a trace of protein is recommended by some authorities. Provision of behavioural interventions alongside routine

monitoring may be indicated in reducing the frequency and/or duration of PrEP use but there is currently very little evidence to support recommendations in this area.

Recommendations

-
- **PrEP can be commenced while waiting for the results of baseline HIV testing (1A) unless there are symptoms suggestive of HIV seroconversion (1C)**
- **PrEP can be commenced while waiting for the results of baseline creatinine measurements (1C)**
- **PrEP should be offered as part of a package of care including regular (3 monthly) HIV and STI testing and monitoring of renal function (1C)**
- **MSM should be informed about the potential side effects of PrEP medication (1D)**
- **MSM receiving PrEP should receive advice on the high risk of other STIs and the need for regular testing (1B)**
- **PrEP provision should include condom provision and behavioural support (1D)**

6.2.3 Awareness and availability of PrEP

Awareness of and willingness to use PrEP is higher in MSM than in other groups, most studies having been conducted in the US (371). Community based surveys in London (372) and Scotland (373) have assessed awareness and willingness to use PrEP among UK MSM. In both studies around half of men questioned would consider PrEP use and reporting condomless anal sex was associated with a higher likelihood of considering PrEP. An on-line study of MSM from Scotland, Wales and Northern Ireland who reported condomless anal sex with ≥2 men in the last year showed 34.5% of participants were aware of PrEP but 58.5% reported that they would be willing to use PrEP if it were available to them (374).

A qualitative study of focus groups including MSM revealed concerns about adherence, condom non-use and other STIs (375). Use of PrEP following inclusion in randomised controlled trials is higher in older and more educated men (365), suggesting that additional information and publicity about PrEP is required to ensure equity of access. Cost effectiveness of PrEP is highly dependent upon HIV incidence rates and the price of drug (376-378). Targeting MSM in serodiscordant relationships (in the absence of treatment) is most cost effective but has negligible effect on HIV incidence and less relevant as early treatment becomes the norm (376, 379). UK cost effectiveness studies give a wide range of possible outcomes in sensitivity analyses showing that PrEP cost effectiveness in MSM is highly dependent upon uptake, duration of use, drug costs, real-life effectiveness and changes in HIV test uptake and condom use resulting from PrEP availability. Identification of subgroups of MSM with the highest HIV incidence,

managing the duration of PrEP use and the use of event-based PrEP and obtaining antiretrovirals at a reduced price on the patent expiry of Truvada in 2018 will be critical to ensuring cost-effective implementation (380, 381).

PrEP access in NHS England is planned through a large scale clinical trial (IMPACT) enrolling 10,000 participants over 3 years(382). The European Medicines Agency recommended that Truvada was granted a marketing authorisation in Europe for PrEP in July 2016. In Scotland, a marketing license for PrEP was granted by the Scottish Medicines Consortium in April 2017, allowing PrEP to be made available through NHS clinics from July 2017. Where PrEP is indicated but not accessible through the NHS in the UK, MSM have accessed medication through private medical clinics or online. Purchase of PrEP online is increasingly routine (383, 384). Guidance for individuals who wish to pursue this route is available and the GMC has provided advice for UK clinicians wishing to support monitoring (including therapeutic blood monitoring) for those using this route. Generic versions of Truvada can be legally imported to the UK for personal use (383). Guidance for patients on importing ART for personal use and on MRHA regulations is available online (385). Clinicians should clarify local arrangements for provision of advice and monitoring for non-NHS supplied medications. MSM obtaining PrEP either through NHS provision or personal import should be provided with detailed guidance on the on-demand use of PrEP where appropriate (364) and recommended tests including baseline 4th generation HIV test and serum creatinine.

Recommendations

- **MSM at risk of HIV infection should be made aware of the availability of PrEP through all services proving sexual health care (1C)**
- **If PrEP is not available to men at risk who are willing and able to pay for it, they should be directed to guidance on reputable sources of medication (1D)**
- **PrEP provision should include condom provision and behavioural support (1D)**

6.3 Antiretroviral post-exposure prophylaxis for sexual exposure (PEPSE)

A BASHH/BHIVA guideline on post exposure prophylaxis (PEP) following sexual exposure to HIV (PEPSE) was updated in 2015 (386). PEPSE provision is not recommended in cases where the index individual is HIV positive with a viral load of <200copies/ml, regardless of the type of sexual exposure. Convenience samples of HIV negative MSM found that 34% of MSM in Spain and 36% in the USA were aware of PEPSE availability; having a higher number of sex partners was significantly associated (OR 5.1, p=0.02) with higher rates of awareness (387, 388). Awareness was higher (52-66%) in MSM living with HIV (389, 390). Men who accessed PEPSE in Los Angeles were found to have greater odds of

having had gonorrhoea or to have used methamphetamine or inhaled nitrites in the previous year than other men who were 'high risk', but there was no difference by race or ethnicity (391). Analysis of an Australian database of PEP prescribing found that repeat presentation for PEPSE occurred in 17.5% of users and that 1.2% of individuals were HIV positive at baseline (392). Higher lifetime and recent sexual risk behaviour was associated with lower adherence to PEPSE in a small study of high risk, methamphetamine using MSM (393). An increased HIV incidence of 6.4 per 100 person/yrs among MSM prescribed PEPSE verses v 1.6 in a control group was found in an Amsterdam cohort of MSM (394) and was higher in PEPSE users than other MSM in an Australian data linkage study (395). A UK study comparing 8,801 MSM receiving PEPSE between 2011-2013 with 141,151 who did not, found an adjusted HR of subsequently receiving a positive HIV diagnosis in the same service of 1.19 (1.04-1.37) (396) suggesting that PEPSE use is a marker of elevated risk. PEP prescribing outside the parameters defined in UK guidelines is relatively common and is unrelated to prescriber's grade, setting or experience (397). Emergency departments need education, training (398) and protocols to increase healthcare provider knowledge and use of PEP(399).

Recommendations

- **PEPSE should be provided through sexual health and out-of-hours services and availability publicised to MSM (1C)**
- **Education of emergency department staff and local protocols are required to ensure appropriate advice, baseline HIV testing and follow up for MSM who present requesting PEPSE (1C)**
- **MSM who present for PEPSE constitute a high risk population and should be offered additional prevention interventions including frequent HIV and STI testing and PrEP (1B)**

6.4 Sexual Health of HIV positive MSM

The sexual health needs of MSM living with HIV should be addressed at diagnosis and as part of routine holistic HIV care and monitoring (400). Guidance on sexual and reproductive health of people living with HIV (2008) (401) (currently undergoing revision), the management of STIs in people living with HIV (2006) (402) and on Safer Sex advice (2012) (45) are directly applicable to MSM living with HIV, but do not incorporate recent significant developments relating to the reduction in risk of sexual transmission. Following a diagnosis of HIV, highly significant reductions in partner numbers were observed in the first 12 months in a cohort of 193 MSM (403). There is evidence that among MSM the number of episodes on UAI with partners of unknown status and the age-adjusted number of sexual partners do not increase up to 5 years after diagnosis (404). A UK study using phylogenetic analysis and clinical data found that HIV transmission was strongly associated with younger age, recently acquired HIV infection, being ART naive or having concomitant STI. The majority of new infections appeared to be acquired from men who had not yet been diagnosed with HIV (405). Mathematical modelling suggests that the proportion of new infections attributable to transmission from undiagnosed men is 82% (184). The contribution of MSM on effective treatment to onward HIV transmission is likely to be small. However, the population rate of acute bacterial STI is up to four times higher in HIV infected compared to HIV uninfected or undiagnosed men and this ratio appears to have increased over recent years (406).

Particular attention is required to interventions to reduce transmission risk in MSM the first year following HIV diagnosis, particularly those have yet to commence or have recently commenced ART, and to addressing rates of bacterial STI in men on effective ART.

6.4.1 Advice on HIV transmission risk

Advice on HIV sexual transmission risk through oral and anal sex may be required by MSM living with HIV and their partners. Clinical trial HPTN 052 trial found that initiating ART in HIV positive individuals regardless of CD4 level in heterosexual serodiscordant relationships reduced HIV transmission by 96% (407). Only 2% of couples in the trial were MSM. A comparable reduction in transmission risk attributable to ART was reported in a small longitudinal clinic based study of 859 MSM in whom a likely transmitter was identified by phylogenetic analysis in 41 cases (405). Interim findings from the PARTNER study updated in July 2016 (98, 408) included 22000 occasions of anal sex in 340 gay MSM couples. The upper 95% confidence limit for the risk of transmission per year through anal sex with a partner with undetectable serum HIV viral load was 0.89% (2.7% in the subgroup reporting receptive anal sex with ejaculation) due to the low number of person years accumulated. However, no phylogenetically linked transmissions occurred despite 16% of MSM acquiring other STIs during follow up and the lower 95% confidence interval for the risk of transmission was zero. The investigators' best estimate for the risk of transmission was zero. 34% of men reported condomless sex with other partners, underlining the potential risk of both other STIs and of HIV acquisition from non-primary partners. A systematic review of studies of oral HIV transmission risk in cohorts including untreated individuals reported a non-zero upper confidence limit based on limited data (409) but biological data (410) and longitudinal studies support the contention that the risk is significantly lower than that for vaginal or anal sex and may be zero in some untreated individuals (45). There is no published estimate for an upper confidence limit for transmission risk through oral sex with undetectable HIV viral load but given that sexual behaviours in both HPTN 052 and the PARTNER study would include oral sex in both heterosexual and MSM couples, it seems that a best estimate of transmission risk for oral sex with undetectable viral load is zero. It also follows that this estimate can be made with greater confidence than for vaginal or anal sex. BHIVA Treatment Guidelines recommend that the benefits of starting treatment to reduce transmission (TasP) should be discussed with all HIV positive patients at diagnosis and treatment initiated if the patient wishes (411). Modelling suggests that starting ART at diagnosis is both cost effective and cost saving in MSM in the UK (412). NHS England has published a Clinical Commissioning Policy on Treatment as Prevention (413).

Recommendations

- **MSM in the first year following HIV diagnosis should be offered additional psychological support to address HIV and STI risk behaviours (1B)**
- **Younger men living with HIV may require particular attention (2B)**
- **The risk of HIV transmission through receptive oral sex with a partner with high serum viral load (such as in acute seroconversion) is unknown, but is thought to be non-zero. MSM should be advised that oral sex carries an onward transmission risk in this situation (1D)**
- **MSM should be advised that the risk of HIV transmission through oral sex with undetectable viral load is highly likely to be zero (1B)**

- **MSM should be advised that the risk of HIV transmission through insertive or receptive anal sex with undetectable viral load and in the absence of other STIs is low and may be zero. The upper estimate of the risk of unprotected receptive anal sex with an HIV positive partner with undetectable HIV viral load may be as high as 2.7% per year. This upper estimate may fall as further evidence accumulates (1B)**
- **All HIV positive MSM including those newly diagnosed with HIV should be offered Treatment as Prevention (1B)**

6.4.2 STI testing for HIV positive MSM

Of MSM newly diagnosed with HIV in England in 2013, 25% had a concurrent STI and in that year MSM with diagnosed HIV infection accounted for 40% of all new syphilis diagnoses (13). In 2008-9, 6.7% of MSM had an incident STI in the year after diagnosis (excluding those at baseline), the rate being 18.8% in MSM aged 16-19 years (414). Routine testing of cohorts of MSM in HIV clinics reveals high rates of asymptomatic STIs (101, 415-418) and a systematic review found a point prevalence in all HIV infected individuals of 16% (97). Opt-out self-screening is effective and acceptable (34) and the detected incidence of STIs in MSM was doubled when testing was supported by prompts in the electronic patient record (419). BASHH/BHIVA/FSRH sexual health in HIV guidelines recommend at least an annual offer of STI screening (401) and BHIVA monitoring guideline recommends 3-6 monthly syphilis testing to increase detection of asymptomatic infections (400), consistent with BASHH guidance for all MSM (76). Regular serological testing for syphilis can increase the detection of asymptomatic infections (420). Cost effectiveness analysis suggests that three monthly syphilis testing is cost effective in HIV infected MSM (226) Hepatitis C infection is more common in HIV infected MSM (421, 422) and annual antibody testing is recommended, with more frequent testing for those with specific risk factors (see 2.1.5). Bacterial STIs are common in MSM screened as part of routine HIV care (416) but partner notification procedures may be incomplete in HIV clinics. Having an STI at baseline is an independent predictor of incident STI in HIV infected MSM (423) and a risk score developed from observational data on a 2129PY of follow up in a large cohort of HIV infected MSM identified prior STI, UAI with other HIV infected men, >10 partners and methamphetamine use as predictors of asymptomatic bacterial STI (424). Similar predictors have been identified in other cohorts (425). These predictors closely parallel predictors in HIV negative MSM (Section 1.5) but identification requires regular sexual history taking which is not always reliably performed (426). Inclusion of sexual risk assessment and history taking in an HIV care Integrated Care Pathway (ICP) can improve recording (427). A small study of the use of prophylactic doxycycline in HIV positive MSM with a history of two or more episodes of syphilis showed a highly significant reduction in new diagnoses of bacterial STI despite lower levels of condom use (428) but this is not routine practice in the UK.

Recommendations

- **Syphilis serology should be performed at least annually as part of routine monitoring in sexually active HIV infected MSM (1B)**
- **A sexual history should be documented at least annually in the routine care of HIV infected MSM (1C)**
- **MSM under the age of 20 years and those with risk factors including prior STI, UAI with other HIV infected MSM, recreational drug use associated with sex, Chemsex, >10 partners should be offered opt-out STI screening at every HIV care visit and/or at 3 monthly intervals (2B)**

7 Sexual Problems and Dysfunctions in MSM

Dr Stuart Gibson

7.1 Introduction

Sexual problems and dysfunctions affecting MSM can have significant adverse effects on quality of life and have been associated with a self-reported history of sexually transmitted infections in a large cross sectional internet survey sample (429). It has also been argued that they can contribute to sexual risk taking (430-432). In addition to individual interventions, suggested population interventions have included greater clarity on the criminalisation of HIV transmission and efforts to reduce HIV-related stigma (433).

7.2 Clinical Features and Aetiology

Problems including low sexual desire, erectile dysfunction and ejaculatory dysregulation have been reported in large samples of MSM across the UK, US, Australia and Europe (429-431, 433-436). Distress associated with anodyspareunia (pain with receptive anal penetration) has also been reported as having a negative impact on sexual pleasure and activity (436). Sexual problems are associated with depression, performance anxiety, low self-confidence and poor self-image (429, 431, 433, 437) and there are complex interactions between depression, anxiety, general wellbeing, sexual risk taking and HIV infection (431, 432). Recreational drug use and problematic alcohol use have also been identified as risk factors for sexual dysfunction (429, 437).

MSM living with HIV report greater numbers of sexual problems and dysfunctions compared to MSM who are HIV negative (431, 435, 436, 438). This has been related to psychological factors (432) and to duration of antiretroviral therapy, but no association has been found with any specific class of antiretrovirals (439). Sexual problems such as erectile dysfunction have also been associated with using sex as an avoidant strategy to cope with daily life stress and sexual risk taking in casual encounters (430). Both delayed ejaculation and erectile difficulties have also been associated with antidepressant SSRIs in HIV-positive MSM (432).

7.3 Diagnosis

Men may present with symptoms of sexual dysfunction as the primary concern. However, questions relating to sexual dysfunction should be part of the routine assessment of men reporting high risk sexual behaviour. Particular attention should be paid to men living with HIV and those reporting problematic alcohol or recreational drug use. Identifying whether the problem is primary or secondary is helpful in directing treatment.

Recommendation

- **Assessment of sexual risk behaviour in MSM should include routine inquiry into sexual dysfunction (2C)**

7.4 Management

To date, evidence based reviews and treatment guidelines for psychological interventions with male sexual difficulties have been based on heterosexual men. It has been argued that the models used to conceptualise and treat sexual problems such as ED or PE are based on the heterosexual experience, with little acknowledgement of how it could be different for MSM (440). Such issues are likely to apply to the assessment of suitability for, but not the prescribing of, pharmaceutical therapies.

There is also a general lack of evidence to guide a more holistic sense of sexual wellbeing in MSM. An analysis of nearly 13,000 UK responses from the 2010 European Men-who-have-sex-with men Internet Survey to a general question on what constitutes the 'best sex' (441) found that the most commonly identified theme was a desire for sex within committed relationships, followed by a desire for sex that is emotionally or psychologically connected.

A recent systematic review (442) concluded that psychological therapies improved sexual functioning but it was recognised that the methodological quality of many of the studies was limited. International Society for Sexual Medicine (ISSM) evidence-based guidelines for psychological interventions men who have ED and PE concluded that the psychological literature has made an important contribution to the description, aetiology, and diagnosis of these difficulties but there is a lack of large, randomized, and controlled studies demonstrating the efficacy of such interventions (443). Interventions for ED included psychodynamic interpretations of anxiety, systematic desensitization, sensate focus, couples therapy, behavioural experiments, psychosexual education, communication skills training, and masturbation exercises. Overall, it is not clear which of these interventions in combination or alone has the greatest

efficacy but the evidence clearly indicates that these interventions help men to improve their relationship and sexual life (443).

For PE, psychological interventions range from psychodynamic to systemic, behavioural, and cognitive approaches. Besides teaching self-control techniques to delay ejaculation, psychological interventions aim to reduce performance anxiety, improve communication with sexual partners and resolve issues that precipitate and maintain the sexual problem. Psychological interventions for PE are generally effective but the evidence base for such interventions is not considered to be as clear or reliable as the findings from the research on ED (444) . Combining pharmacological and psychological treatments can be especially useful in men with acquired premature ejaculation where there is a clear psychosocial precipitant or lifelong cases where the individual or couple's responses to PE are likely to interfere in the medical treatment and ultimate success of therapy (445). NICE has recently issued guidance on the use of dapoxetine in the first line treatment of PE (446). For men with PE and comorbid ED, combination therapy may also be helpful to manage the psychosocial aspects of these sexual dysfunctions (444).

The existing guidelines for treating men who have sexual dysfunctions such as ED and PE (443, 444, 447), including men who are HIV-positive (401), are applicable to working with MSM. However, none of these guidelines provide specific guidance in working with MSM, regardless of HIV status.

Recommendations:

- **Psychosexual counselling, behavioural interventions, pharmaceutical and/or psychological therapy should be offered to MSM as part of treatment for sexual dysfunctions such as low sexual desire, erectile difficulties or ejaculatory dysregulation (1C)**

- **Interventions should be relevant and appropriate to the sexual identities, sexual practices and sexual desires of MSM (1D)**

Auditable Outcomes

Services

- **Proportion of services offering STI testing for MSM that include NAAT testing for NG and CT from throat, urine and rectum, HIV, syphilis, hepatitis B and where indicated hepatitis C serology. Target 100%**
- **Proportion of services offering opt- out testing for HIV infection to all MSM. Target 100%**

History Taking

- **Proportion of MSM in whom a history of alcohol and recreational drug use, including injecting drug use is recorded. Target 97%**
- **Proportion of MSM in whom risk factors for Hepatitis C are recorded (including traumatic anal sex, fisting, shared sex toys, group sex, sero-sorting and concomitant use of recreational drugs). Target 97%**
- **Proportion of men with identified risk factors for Hepatitis C in whom the offer of a Hepatitis C test is documented. Target 97%**

STI Testing

- **Proportion of MSM STI screens which include a test for syphilis. Target 97%**
- **Proportion of MSM screens including an HIV test, after excluding known HIV positive individuals. Target 87%**

Recall and testing frequency

- **Proportion of MSM with rectal bacterial STI diagnosed who are recalled for HIV testing at 3 months: Target 97%**
- **Proportion of MSM retested for HIV infection within 4 months of attendance for treatment for syphilis, gonorrhoea or rectal or urethral chlamydial infection. Target 50%**

Sexually Transmitted Enteric Infections

- **Proportion of cases rectal chlamydia in HIV positive MSM typed for LGV serovars. Target 97%**
- **Proportion of symptomatic men with proctitis in whom rectal chlamydia status is unknown who are treated with recommended LGV treatment. Target 97%**

PrEP

- **Proportion of men reporting condomless anal sex with more than one partner in the last 3 months advised on the availability of PrEP with daily or event based (on demand) oral Tenofovir/emtricitabine. Target 97%**

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The guideline writing committee members have made the following declarations: none received to date

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References

1. Public Health England. Sexually transmitted infections and chlamydia screening in England, 2015. Health Protection Report [Internet]. 2016 [cited 2016 15th October]; 10(22). Available from: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/559993/hpr2216_stis_CRRCTD4.pdf

2. Skingsley A YZ, Kirwan P, Croxford S, Chau C, Conti S, Presanis A, Nardone A, Were J, Ogaz D, Furegato M, Hibbert M, Aghaizu A, Murphy G,Tosswill J, Hughes G, Anderson J, Gill ON, Delpech VC and contributors,. HIV in the UK – Situation Report 2015: data to end 2014. November 2015. . London: Public Health England; 2015.
3. Sullivan PS, Peterson J, Rosenberg ES, Kelley CF, Cooper H, Vaughan A, et al. Understanding racial HIV/STI disparities in black and white men who have sex with men: a multilevel approach. PLoS One. 2014;9(3):e90514.
4. Millett GA, Peterson JL, Flores SA, Hart TA, Jeffries WLt, Wilson PA, et al. Comparisons of disparities and risks of HIV infection in black and other men who have sex with men in Canada, UK, and USA: a meta-analysis. Lancet. 2012;380(9839):341-8.
5. Santos GM, Do T, Beck J, Makofane K, Arreola S, Pyun T, et al. Syndemic conditions associated with increased HIV risk in a global sample of men who have sex with men. Sex Transm Infect. 2014;90(3):250-3.
6. Mimiaga MJ, O'Cleirigh C, Biello KB, Robertson AM, Safren SA, Coates TJ, et al. The effect of psychosocial syndemic production on 4-year HIV incidence and risk behavior in a large cohort of sexually active men who have sex with men. Journal of acquired immune deficiency syndromes. 2015;68(3):329-36.
7. Coia N MD, McAdams R, Morrison C, Winter A, Clutterbuck D, et al. HIV Prevention Needs Assessment of Men Who Have Sex with Men. Edinburgh: Scottish Government; 2014.
8. Stromdahl S, Hickson F, Pharris A, Sabido M, Baral S, Thorson A. A systematic review of evidence to inform HIV prevention interventions among men who have sex with men in Europe. Euro surveillance : bulletin Europeen sur les maladies transmissibles = European communicable disease bulletin. 2015;20(15).
9. Public Health England. Promoting the health and wellbeing of gay, bisexual and other men who have sex with men: initial findings. 2014 [cited 2015 17th October]. Available from: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/339041/MSM_Initial_Findings__GW2014194.pdf.
10. Public Health England. PHE action plan 2015-16: Promoting the health and wellbeing of gay, bisexual and other men who have sex with men.2015 [cited 2015 17th October]. Available from: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/401005/PHEMSMActionPlan.pdf.
11. Santos GM, Beck J, Wilson P, Hebert P, Ayala G. Homophobia and access to HIV services among young men who have sex with men (YMSM). Journal of the International AIDS Society. 2012;15:190.
12. Bekker LG, Johnson L, Wallace M, Hosek S. Building our youth for the future. J Int AIDS Soc. 2015;18(2 Suppl 1):20027.
13. Yin ZB, A.E.; Hughes, G.; Nardone, A.; Gill, O.N.; Delpech, V.C.; &, contributors. HIV in the United Kingdom 2014 Report: data to end 2013. November 2014. London: Public Health England; 2014.
14. Morrison C, G. B. FAQ Scotland: Younger Men. TASC Agency; 2014.
15. Zou H, Fairley C, Grulich A, Garland S, Sze J, Afrizal A, et al. High risk sexual behaviours and sexually transmitted infections among teenage men who have sex with men. Sexually Transmitted Infections. 2013;89.
16. Knussen C, Flowers P, McDaid LM, Hart GJ. HIV-related sexual risk behaviour between 1996 and 2008, according to age, among men who have sex with men (Scotland). Sex Transm Infect. 2011;87(3):257-9.
17. Pettifor A, Nguyen NL, Celum C, Cowan FM, Go V, Hightow-Weidman L. Tailored combination prevention packages and PrEP for young key populations. J Int AIDS Soc. 2015;18(2 Suppl 1):19434.
18. Hickson F, Reid D, Weatherburn P, Stephens M, Nutland W, Boakye P. HIV, sexual risk, and ethnicity among men in England who have sex with men. Sex Transm Infect. 2004;80(6):443-50.

19. Soni S, Bond K, Fox E, Grieve AP, Sethi G. Black and minority ethnic men who have sex with men: a London genitourinary medicine clinic experience. International Journal of STD & AIDS. 2008;19(9):617-9.
20. Elford J, Doerner R, McKeown E, Nelson S, Anderson J, Low N. HIV infection among ethnic minority and migrant men who have sex with men in Britain. Sexually Transmitted Diseases. 2012;39(9):678-86.
21. Hue S, Brown AE, Ragonnet-Cronin M, Lycett SJ, Dunn DT, Fearnhill E, et al. Phylogenetic analyses reveal HIV-1 infections between men misclassified as heterosexual transmissions. Aids. 2014;28(13):1967-75.
22. Lorenc T, Marrero-Guillamon I, Aggleton P, Cooper C, Llewellyn A, Lehmann A, et al. Promoting the uptake of HIV testing among men who have sex with men: systematic review of effectiveness and cost-effectiveness. Sex Transm Infect. 2011;87(4):272-8.
23. Allstaff S, Bird C, Ditcham K, Nicholson A, McIntyre P, Stephens B, et al. Co-production in practice: HIV prevention services for men who have sex with men. HIV Medicine. 2014;15:34.
24. Haidari G, Youssef E, Tooke B, Boyt T, Smith G, Bannister A, et al. Modernising services: A new strategy to increase uptake of sexual health services in high-risk men who have sex with men. HIV Medicine. 2014;15:30.
25. Walker-Haywood J, Williams G, Brown L, Manavi K. Gay men, what do they expect from sexual health clinics? HIV Medicine. 2010;11:101.
26. Forbes K, West R, Byrne R, Daniels D. Unintended consequences: A lost opportunity to test men who have sex with men attending contraception and sexual health clinics. HIV Medicine. 2014;15:30.
27. Datta J, Hickson F, Reid D, Weatherburn P. STI testing without HIV disclosure by MSM with diagnosed HIV infection in England: cross-sectional results from an online panel survey. Sex Transm Infect. 2013;89(7):602-3.
28. Laird G, Nandwani R. Do not ask, sometimes tell. A survey of sexual orientation disclosure in general practice. International Journal of STD and AIDS. 2013;24:1.
29. Rosenberger JG, Stupiansky N, Zimet GD, Weaver B, Novak DS, Rosenthal S. Health care utilization among a national sample of young men who have sex with men recruited from online social and sexual networks. Journal of Adolescent Health. 2013;1:S36.
30. Petroll AE, Mosack KE. Physician awareness of sexual orientation and preventive health recommendations to men who have sex with men. Sex Transm Dis. 2011;38(1):63-7.
31. Dabrera G, Johnson SA, Bailey AC, Cassell JA. Do Enhanced Sexual Health Services meet the needs of men who have sex with men? International Journal of STD and AIDS. 2013;24(3):233-5.
32. McClean H, Sullivan AK, Carne CA, Warwick Z, Menon-Johansson A, Clutterbuck D. UK national audit against the key performance indicators in the British Association for Sexual Health and HIV Medical Foundation for AIDS and Sexual Health Sexually Transmitted Infections Management Standards. International Journal of STD and AIDS. 2012;23(10):742-7.
33. Richards J, Jeffery N, Hedley M. Men who have sex with men survey: Do men who have sex with men want an express style asymptomatic screening service and if so in what setting would they like the service to be available? International Journal of STD and AIDS. 2013;24:44.
34. Soni S, Mukela A, White J. Opt-out self-screening for sexually transmitted infections (STIs) in the HIV clinic - High yields and high acceptability. HIV Medicine. 2010;11:114.
35. Roberts W, Chauhan M, Sankar N. Is it appropriate for men who have sex with men to attend health-care assistant-led asymptomatic screening clinics? International Journal of STD and AIDS. 2013;24:39.
36. Ma JY, Ryder N, Wray L, McNulty A. Low yield of anogenital examination among asymptomatic clients of an urban sexual health clinic. Sexual Health. 2011;8(1):90-4.
37. Collister A, Bains M, Jackson R, Clarke E, Patel R. Can an asymptomatic screening pathway for men who have sex with men be introduced safely at a level 3 sexual health service in the UK? Int J STD AIDS. 2015;26(3):181-6.

38. Wood M, Elks R, Grobicki M. Outreach sexual infection screening and postal tests in men who have sex with men: How do they compare with clinicbased screening? HIV Medicine. 2014;15:32.
39. Sellors V, Akers A, Bostock E, Dutton R, Apoola A. How effective is targeted outreach? Sexually Transmitted Infections. 2012;88.
40. Mdodo R, Thomas PE, Walker A, Chavez P, Ethridge S, Oraka E, et al. Rapid HIV testing at gay pride events to reach previously untested MSM: U.S., 2009-2010. Public Health Rep. 2014;129(4):328-34.
41. Fisher M, Wayal S, Smith H, Llewellyn C, Alexander S, Ison C, et al. Home sampling for sexually transmitted infections and HIV in men who have sex with men: a prospective observational study. PLoS ONE [Electronic Resource]. 2015;10(4):e0120810.
42. Huebner DM, Binson D, Pollack LM, Woods WJ. Implementing bathhouse-based voluntary counselling and testing has no adverse effect on bathhouse patronage among men who have sex with men. Int J STD AIDS. 2012;23(3):182-4.
43. Roberts J, Cull M, Dean G, Richardson D, Fisher M. Improved but still suboptimal uptake of STI testing and vaccination in the outreach setting. HIV Medicine. 2010;11:118.
44. Brook G, Bacon L, Evans C, McClean H, Roberts C, Tipple C, et al. 2013 UK national guideline for consultations requiring sexual history taking. Clinical Effectiveness Group British Association for Sexual Health and HIV. Int J STD AIDS. 2014;25(6):391-404.
45. Clutterbuck DJ, Flowers P, Barber T, Wilson H, Nelson M, Hedge B, et al. UK national guideline on safer sex advice. Int J STD AIDS. 2012;23(6):381-8.
46. Peters RP, Verweij SP, Nijsten N, Ouburg S, Mutsaers J, Jansen CL, et al. Evaluation of sexual history-based screening of anatomic sites for chlamydia trachomatis and neisseria gonorrhoeae infection in men having sex with men in routine practice. BMC infectious diseases. 2011;11:203.
47. Phillips KA, Epstein DH, Mezghanni M, Vahabzadeh M, Reamer D, Agage D, et al. Smartphone Delivery of Mobile HIV Risk Reduction Education. AIDS research and treatment. 2013;2013:231956.
48. Guasp. A. The gay and bisexual men's health survey 2012.2012 [cited 2015 28th December]. Available from: https://www.stonewall.org.uk/documents/stonewall_gay_mens_final_1.pdf.
49. Marshal MP, Friedman MS, Stall R, King KM, Miles J, Gold MA, et al. Sexual orientation and adolescent substance use: a meta-analysis and methodological review. Addiction. 2008;103(4):546-56.
50. Hagger-Johnson G, Taibjee R, Semlyen J, Fitchie I, Fish J, Meads C, et al. Sexual orientation identity in relation to smoking history and alcohol use at age 18/19: cross-sectional associations from the Longitudinal Study of Young People in England (LSYPE). BMJ open. 2013;3(8):e002810.
51. Mercer C PP, Tanton C, Field N, Clifton S, Sonnenberg P, Nardone A, Johnson A. The sexual health & well-being of MSM in Britain: Evidence from the third National Survey of Sexual Attitudes & Lifestyles (Natsal-3). Sex Transm Inf. 2015;91(Suppl1):A8.
52. Standerwick K, Davies C, Tucker L, Sheron N. Binge drinking, sexual behaviour and sexually transmitted infection in the UK. Int J STD AIDS. 2007;18(12):810-3.
53. Home Office. British Crime Survey, 2008-2009. London: Research, Development and Statistics Directorate and BMRB; 2010.
54. Hickson F, et al. Illicit drug use among men who have sex with men in England and Wales. . Addiction Research and Theory. 2010;18(1):14-22.
55. Hunter LJ, Dargan PI, Benzie A, White JA, Wood DM. Recreational drug use in men who have sex with men (MSM) attending UK sexual health services is significantly higher than in non-MSM. Postgraduate Medical Journal. 2014;90(1061):133-8.
56. Vosburgh HW, Mansergh G, Sullivan PS, Purcell DW. A review of the literature on event-level substance use and sexual risk behavior among men who have sex with men. AIDS Behav. 2012;16(6):1394-410.

57. Rajasingham R, Mimiaga MJ, White JM, Pinkston MM, Baden RP, Mitty JA. A systematic review of behavioral and treatment outcome studies among HIV-infected men who have sex with men who abuse crystal methamphetamine. AIDS Patient Care STDS. 2012;26(1):36-52.
58. Daskalopoulou M, Rodger A, Thornton A, Phillips A, Sherr L, Gilson R, et al. Sexual behaviour, recreational drug use and hepatitis C co-infection in HIV-diagnosed men who have sex with men in the United Kingdom: results from the ASTRA study. J Int AIDS Soc. 2014;17(4 Suppl 3):19630.
59. Swearingen SG, Klausner JD. Sildenafil use, sexual risk behavior, and risk for sexually transmitted diseases, including HIV infection. Am J Med. 2005;118(6):571-7.
60. Fendrich M, Johnson TP. Editors' Introduction to this Special Issue on Club Drug Epidemiology. Subst Use Misuse. 2005;40(9-10):1179-84.
61. Abdulrahim D, Bowden-Jones, O, on behalf of the NEPTUNE Expert Group. Guidance on the Management of Acute and Chronic Harms of Club Drugs and Novel Psychoactive Substances. London: Novel Psychoactive Treatment UK Network (NEPTUNE); 2015.
62. Kirby T, Thornber-Dunwell M. High-risk drug practices tighten grip on London gay scene. Lancet. 2013;381(9861):101-2.
63. Kurka T SS, Richardson D. Men who have sex with men (MSM) report high use of club drugs which is associated with high risk sexual behaviour Sex Transm Inf. 2015;91(Suppl 1):A4.
64. Lee MJ HA, Green S, ,Curtis R, Simms R, Whittaker W, Nagington M, Barbour A, Nathan B, Pakianathan M. Chemsex and the city: sexualised substance use in gay bisexual and other men who have sex with men. Sex Transm Inf. 2015;91(Suppl 1):A5.
65. Gilbart VL, Simms I, Gobin M, Oliver I, Hughes G. High-risk drug practices in men who have sex with men. The Lancet. 2013;381:1358-9.
66. Gilbart VL, Simms I, Jenkins C, Furegato M, Gobin M, Oliver I, et al. Sex, drugs and smart phone applications: findings from semistructured interviews with men who have sex with men diagnosed with Shigella flexneri 3a in England and Wales. Sex Transm Infect. 2015.
67. Macdonald N, French P, White JA, Dean G, Smith A, Winter AJ, et al. Risk factors for rectal lymphogranuloma venereum in gay men: results of a multicentre case-control study in the U.K. 2014;90(4):262-8.
68. Stuart D. Sexualised drug use by MSM: background, current status and response. . HIV Nursing. 2013;Spring:8-10.
69. Bourne A RD, Hickson F, Torres Rueda S, Weatherburn P,. The Chemsex study: drug use in sexual settings among gay & bisexual men in Lambeth, Southwark & Lewisham London: Sigma Research, London School of Hygiene & Tropical Medicine.; 2014.
70. Kaner EF, Dickinson HO, Beyer F, Pienaar E, Schlesinger C, Campbell F, et al. The effectiveness of brief alcohol interventions in primary care settings: a systematic review. Drug Alcohol Rev. 2009;28(3):301-23.
71. Lane J, Proude EM, Conigrave KM, de Boer JP, Haber PS. Nurse-provided screening and brief intervention for risky alcohol consumption by sexual health clinic patients. Sex Transm Infect. 2008;84(7):524-7.
72. NICE. Services for the identification and treatment of hazardous drinking, harmful drinking and alcohol dependence in children, young people and adults. NICE commissioning guides [CMG38]. 2011 [Available from: https://www.nice.org.uk/guidance/cmg38/chapter/31-opportunistic-screening-and-brief-interventions-for-adults-who-are-hazardous-and-harmful.
73. Drummond C, Deluca P, Coulton S, Bland M, Cassidy P, Crawford M, et al. The effectiveness of alcohol screening and brief intervention in emergency departments: a multicentre pragmatic cluster randomized controlled trial. PLoS One. 2014;9(6):e99463.
74. Crawford MJ, Sanatinia R, Barrett B, Byford S, Dean M, Green J, et al. The clinical and cost-effectiveness of brief advice for excessive alcohol consumption among people attending sexual health clinics: a randomised controlled trial. Sex Transm Infect. 2015;91(1):37-43.
75. Sullivan A, Bowden-Jones, O, Azad,Y. BASHH statement on 'club' (recreational) drug use: BASSH; 2014 [Available from:

http://www.bashh.org/documents/BASHH%20Statement%20on%20'club'%20(recreational)%20drug%20use.pdf.
76. BASHH. Recommendations for Testing for Sexually Transmitted Infections in Men-who have sex-with-men2014 [cited 2015 17th October]. Available from: http://www.bashh.org/documents/BASHH%20Recommendations%20for%20testing%20for%20STIs%20in%20MSM%20-%20FINAL.pdf.
77. Koedijk FD, van Bergen JE, Dukers-Muijrers NH, van Leeuwen AP, Hoebe CJ, van der Sande MA, et al. The value of testing multiple anatomic sites for gonorrhoea and chlamydia in sexually transmitted infection centres in the Netherlands, 2006-2010. Int J STD AIDS. 2012;23(9):626-31.
78. Sultan B, White JA, Fish R, Carrick G, Brima N, Copas A, et al. The "3 in 1" Study: Pooling Self-Taken Pharyngeal, Urethral, and Rectal Samples into a Single Sample for Analysis for Detection of Neisseria gonorrhoeae and Chlamydia trachomatis in Men Who Have Sex with Men. J Clin Microbiol. 2016;54(3):650-6.
79. Heiligenberg M, Rijnders B, Van Der Loeff MFS, De Vries HJC, Van Der Meijden WI, Geerlings SE, et al. High prevalence of sexually transmitted infections in HIV-infected men during routine outpatient visits in the Netherlands. Sexually Transmitted Diseases. 2012;39(1):8-15.
80. Morris SR, Klausner JD, Buchbinder SP, Wheeler SL, Koblin B, Coates T, et al. Prevalence and incidence of pharyngeal gonorrhea in a longitudinal sample of men who have sex with men: the EXPLORE study. Clin Infect Dis. 2006;43(10):1284-9.
81. Jin F, Prestage GP, Mao L, Kippax SC, Pell CM, Donovan B, et al. Incidence and risk factors for urethral and anal gonorrhoea and chlamydia in a cohort of HIV-negative homosexual men: the Health in Men Study. Sex Transm Infect. 2007;83(2):113-9.
82. Annan NT, Sullivan AK, Nori A, Naydenova P, Alexander S, McKenna A, et al. Rectal chlamydia--a reservoir of undiagnosed infection in men who have sex with men. Sex Transm Infect. 2009;85(3):176-9.
83. Dudareva-Vizule S, Haar K, Sailer A, Wisplinghoff H, Wisplinghoff F, Marcus U, et al. Prevalence of pharyngeal and rectal Chlamydia trachomatis and Neisseria gonorrhoeae infections among men who have sex with men in Germany. Sex Transm Infect. 2014;90(1):46-51.
84. Templeton DJ, Jin F, McNally LP, Imrie JCG, Prestage GP, Donovan B, et al. Prevalence, incidence and risk factors for pharyngeal gonorrhoea in a community-based HIV-negative cohort of homosexual men in Sydney, Australia. Sex Transm Infect. 2010;86(2):90-6.
85. Park J, Marcus JL, Pandori M, Snell A, Philip SS, Bernstein KT. Sentinel surveillance for pharyngeal chlamydia and gonorrhea among men who have sex with men--San Francisco, 2010. Sex Transm Dis. 2012;39(6):482-4.
86. Apewokin SK, Geisler WM, Bachmann LH. Spontaneous resolution of extragenital chlamydial and gonococcal infections prior to therapy. Sex Transm Dis. 2010;37(5):343-4.
87. Hutt DM, Judson FN. Epidemiology and treatment of oropharyngeal gonorrhea. Ann Intern Med. 1986;104(5):655-8.
88. Templeton DJ, Jin F, Imrie J, Prestage GP, Donovan B, Cunningham PH, et al. Prevalence, incidence and risk factors for pharyngeal chlamydia in the community based Health in Men (HIM) cohort of homosexual men in Sydney, Australia. Sex Transm Infect. 2008;84(5):361-3.
89. van Rooijen MS, Morre SA. Spontaneous pharyngeal Chlamydia trachomatis RNA clearance. A cross-sectional study followed by a cohort study of untreated STI clinic patients in Amsterdam, The Netherlands. Sex Transm Inf. 2014:sextrans-2014-051633.
90. Bernstein KT, Stephens SC, Barry PM, Kohn R, Philip SS, Liska S, et al. Chlamydia trachomatis and Neisseria gonorrhoeae transmission from the oropharynx to the urethra among men who have sex with men. Clin Infect Dis. 2009;49(12):1793-7.
91. Nash JL, Hocking JS, Read TR, Chen MY, Bradshaw CS, Forcey DS, et al. Contribution of sexual practices (other than anal sex) to bacterial sexually transmitted infection transmission in men who have sex with men: a cross-sectional analysis using electronic health records. Sex Transm Infect. 2014;90(1):55-7.

92. Ryder N, Lockart IG, Bourne C. Is screening asymptomatic men who have sex with men for urethral gonorrhoea worthwhile? Sex Health. 2010;7(1):90-1.
93. Jin F, Prestage GP, Imrie J, Kippax SC, Donovan B, Templeton DJ, et al. Anal sexually transmitted infections and risk of HIV infection in homosexual men. J Acquir Immune Defic Syndr. 2010;53(1):144-9.
94. Pathela P, Braunstein SL, Blank S, Schillinger JA. HIV incidence among men with and those without sexually transmitted rectal infections: estimates from matching against an HIV case registry. Clin Infect Dis. 2013;57(8):1203-9.
95. Bernstein KT, Marcus JL, Nieri G, Philip SS, Klausner JD. Rectal gonorrhea and chlamydia reinfection is associated with increased risk of HIV seroconversion. Journal of acquired immune deficiency syndromes. 2010;53(4):537-43.
96. Heiligenberg M, Lutter R, Pajkrt D, Adams K, De Vries H, Heijman T, et al. Effect of HIV and chlamydia infection on rectal inflammation and cytokine concentrations in men who have sex with men. Clin Vaccine Immunol. 2013;20(10):1517-23.
97. Kalichman SC, Pellowski J, Turner C. Prevalence of sexually transmitted co-infections in people living with HIV/AIDS: systematic review with implications for using HIV treatments for prevention. Sex Transm Infect. 2011;87(3):183-90.
98. Rodger A, Bruun T, Cambiano V, Vernazza P, Estrada V, Van Lunzen J, et al. HIV Transmission Risk Through Condomless Sex If HIV+ Partner On Suppressive ART: PARTNER Study. Topics in Antiviral Medicine. 2014;22 (e-1):24-5.
99. Keaveney S, Sadlier C, O'Dea S, Delamere S, Bergin C. High prevalence of asymptomatic sexually transmitted infections in HIV-infected men who have sex with men: a stimulus to improve screening. International journal of STD & AIDS. 2014;25(10):758-61.
100. Dang T, Jaton-Ogay K, Flepp M, Kovari H, Evison JM, Fehr J, et al. High prevalence of anorectal chlamydial infection in HIV-infected men who have sex with men in Switzerland. Clin Infect Dis. 2009;49(10):1532-5.
101. Heiligenberg M, Rijnders B, Schim van der Loeff MF, de Vries HJ, van der Meijden WI, Geerlings SE, et al. High prevalence of sexually transmitted infections in HIV-infected men during routine outpatient visits in the Netherlands. Sex Transm Dis. 2012;39(1):8-15.
102. Scott KC, Philip S, Ahrens K, Kent CK, Klausner JD. High prevalence of gonococcal and chlamydial infection in men who have sex with men with newly diagnosed HIV infection: an opportunity for same-day presumptive treatment. Journal of acquired immune deficiency syndromes. 2008;48(1):109-12.
103. Ota KV, Tamari IE, Smieja M, Jamieson F, Jones KE, Towns L, et al. Detection of Neisseria gonorrhoeae and Chlamydia trachomatis in pharyngeal and rectal specimens using the BD Probetec ET system, the Gen-Probe Aptima Combo 2 assay and culture. Sex Transm Infect. 2009;85(3):182-6.
104. Cook RL, Hutchison SL, Østergaard L, Braithwaite RS, Ness RB. Systematic review: noninvasive testing for Chlamydia trachomatis and Neisseria gonorrhoeae. Ann Intern Med. 2005;142(11):914-25.
105. Chernesky MA, Martin DH, Hook EW, Willis D, Jordan J, Wang S, et al. Ability of new APTIMA CT and APTIMA GC assays to detect Chlamydia trachomatis and Neisseria gonorrhoeae in male urine and urethral swabs. J Clin Microbiol. 2005;43(1):127-31.
106. Schachter J, Moncada J, Liska S, Shayevich C, Klausner JD. Nucleic acid amplification tests in the diagnosis of chlamydial and gonococcal infections of the oropharynx and rectum in men who have sex with men. Sex Transm Dis. 2008;35(7):637-42.
107. Page-Shafer K, Graves A, Kent C, Balls JE, Zapitz VM, Klausner JD. Increased sensitivity of DNA amplification testing for the detection of pharyngeal gonorrhea in men who have sex with men. Clin Infect Dis. 2002;34(2):173-6.
108. Bissessor M, Tabrizi SN, Fairley CK, Danielewski J, Whitton B, Bird S, et al. Differing Neisseria gonorrhoeae bacterial loads in the pharynx and rectum in men who have sex with men: implications for gonococcal detection, transmission, and control. J Clin Microbiol. 2011;49(12):4304-6.

109. Alexander S. The challenges of detecting gonorrhoea and chlamydia in rectal and pharyngeal sites: could we, should we, be doing more? Sex Transm Infect. 2009;85(3):159-60.
110. Whiley DM, Garland SM, Harnett G, Lum G, Smith DW, Tabrizi SN, et al. Exploring 'best practice' for nucleic acid detection of Neisseria gonorrhoeae. Sex Health. 2008;5(1):17-23.
111. McNally LP, Templeton DJ, Jin F, Grulich AE, Donovan B, Whiley DM, et al. Low positive predictive value of a nucleic acid amplification test for nongenital Neisseria gonorrhoeae infection in homosexual men. Clin Infect Dis. 2008;47(2):e25-7.
112. Public Health England. Guidance for the detection of gonorrhoea in England.2014 [cited 2015 28th October]. Available from: https://www.gov.uk/government/publications/guidance-for-the-detection-of-gonorrhoea-in-england.
113. Public Health England. Gonorrhoea positive predictive value (PPV) estimate toolkit.2014 [cited 2015 28th October]. Available from: https://www.gov.uk/government/publications/guidance-for-the-detection-of-gonorrhoea-in-england.
114. Bignell C, Ison C, Fitzgerald M, BASHH Clinical Effectiveness Group. United Kingdom National Guideline for Gonorrhoea Testing 2012[cited 2015 28th October]. Available from: http://www.bashh.org/documents/4490.pdf.
115. Chernesky MA, Jang D, Portillo E, Smieja M, Gilchrist J, Ewert R, et al. Self-collected swabs of the urinary meatus diagnose more Chlamydia trachomatis and Neisseria gonorrhoeae infections than first catch urine from men. Sex Transm Infect. 2013;89(2):102-4.
116. Dize L, Agreda P, Quinn N, Barnes MR, Hsieh Y-H, Gaydos CA. Comparison of self-obtained penile-meatal swabs to urine for the detection of C. trachomatis, N. gonorrhoeae and T. vaginalis. Sex Transm Infect. 2013;89(4):305-7.
117. Dodge B, Van Der Pol B, Reece M, Malebranche D, Martinez O, Goncalves G, et al. Rectal self-sampling in non-clinical venues for detection of sexually transmissible infections among behaviourally bisexual men. Sex Health. 2012;9(2):190-1.
118. Soni S, White JA. Self-Screening for Neisseria gonorrhoeae and Chlamydia trachomatis in the Human Immunodeficiency Virus Clinic—High Yields and High Acceptability. Sex Transm Dis. 2011;38(12):1107-9.
119. Dodge B, Van Der Pol B, Rosenberger JG, Reece M, Roth AM, Herbenick D, et al. Field collection of rectal samples for sexually transmitted infection diagnostics among men who have sex with men. Int J STD AIDS. 2010;21(4):260-4.
120. Chesson HW, Bernstein KT, Gift TL, Marcus JL, Pipkin S, Kent CK. The cost-effectiveness of screening men who have sex with men for rectal chlamydial and gonococcal infection to prevent HIV Infection. Sex Transm Dis. 2013;40(5):366-71.
121. White J, O'Farrell N, Daniels D. 2013 UK National Guideline for the management of lymphogranuloma venereum: Clinical Effectiveness Group of the British Association for Sexual Health and HIV (CEG/BASHH) Guideline development group. International Journal of STD & AIDS. 2013;24:593-601.
122. Cone DLA, Woodard DR, Potts BE, Byrd RG, Alexander RM, Last MD. An update on the acquired immunodeficiency syndrome (AIDS). Dis Colon Rectum. 1986;29(1):60-4.
123. Nieuwenhuis RF, Ossewaarde JM, Götz HM, Dees J, Thio HB, Thomeer MGJ, et al. Resurgence of lymphogranuloma venereum in Western Europe: an outbreak of Chlamydia trachomatis serovar l2 proctitis in The Netherlands among men who have sex with men. Clin Infect Dis. 2004;39(7):996-1003.
124. Savage EJ, Van de Laar MJ, Gallay A, van der Sande M, Hamouda O, Sasse A, et al. Lymphogranuloma venereum in Europe, 2003-2008. 2009.
125. Ward H, Rönn M. Lymphogranuloma Venereum in Men Who Have Sex in Men. Sex Transm Dis. 2013;40(8):609-10.
126. Ahdoot A, Kotler DP, Suh JS, Kutler C, Flamholz R. Lymphogranuloma Venereum in Human Immunodeficiency Virus–Infected Individuals in New York City. Journal of Clinical Gastroenterology. 2006;40(5):385.

127. Kropp RY, Wong T, Group CLW. Emergence of lymphogranuloma venereum in Canada. CMAJ. 2005;172(13):1674-6.
128. White JA. Manifestations and management of lymphogranuloma venereum. Curr Opin Infect Dis. 2009;22(1):57-66.
129. de Vries HJC, Van der Bij AK, Fennema JSA, Smit C, de Wolf F, Prins M, et al. Lymphogranuloma Venereum Proctitis in Men Who Have Sex With Men Is Associated With Anal Enema Use and High-Risk Behavior. Sex Transm Dis. 2008;35(2):203-8.
130. de Vrieze NHN, de Vries HJC. Lymphogranuloma venereum among men who have sex with men. An epidemiological and clinical review. Expert Rev Anti Infect Ther. 2014;12(6):697-704.
131. Rönn MM HG, Simms I, et al. Challenges presented by re-emerging sexually transmitted infections in HIV positive men who have sex with Men: An observational study of lymphogranuloma venereum in the UK. Journal of Aids and Clinical Research. 2014;5:1-7.
132. Saxon CJ, Hughes G, Ison C, Group ULC-FS. P3.138 Increasing Asymptomatic Lymphogranuloma Venereum Infection in the UK: Results from a National Case-Finding Study. Sexually Transmitted Infections. 2013;89:A190-A1.
133. Ward H, Martin I, Macdonald N, Alexander S, Simms I, Fenton K, et al. Lymphogranuloma venereum in the United kingdom. Clin Infect Dis. 2007;44(1):26-32.
134. Hughes G, Alexander S, Simms I, Conti S, Ward H, Powers C, et al. Lymphogranuloma venereum diagnoses among men who have sex with men in the U.K.: interpreting a cross-sectional study using an epidemic phase-specific framework. 2013;89(7):542-7.
135. Haar K, Dudareva-Vizule S, Wisplinghoff H, Wisplinghoff F, Sailer A, Jansen K, et al. Lymphogranuloma venereum in men screened for pharyngeal and rectal infection, Germany. Emerging Infect Dis. 2013;19(3):488-92.
136. Van der Bij AK, Spaargaren J, Morre SA, Fennema HSA, Mindel A, Coutinho RA, et al. Diagnostic and Clinical Implications of Anorectal Lymphogranuloma Venereum in Men Who Have Sex with Men: A Retrospective Case-Control Study. Clinical Infectious Diseases. 2006;42:186-94.
137. Ward H, Alexander S, Carder C, Dean G, French P, Ivens D, et al. The prevalence of lymphogranuloma venereum infection in men who have sex with men: results of a multicentre case finding study. Sexually Transmitted Infections. 2009;85:173-5.
138. Tinmouth J, Gilmour MW, Kovacs C, Kropp R, Mitterni L, Rachlis A, et al. Is there a reservoir of sub-clinical lymphogranuloma venereum and non-LGV Chlamydia trachomatis infection in men who have sex with men? Int J STD AIDS. 2008;19(12):805-9.
139. Geisler WM, MORRISON SG, Bachmann LH. Absence of Lymphogranuloma Venereum Strains Among Rectal Chlamydia trachomatis Outer Membrane Protein A Genotypes Infecting Women and Men Who Have Sex With Men in Birmingham, Alabama. Sex Transm Dis. 2008;35(10):856-8.
140. Saxon C, Hughes G, Ison C, Group ULC-F. Asymptomatic Lymphogranuloma Venereum in Men who Have Sex with Men, United Kingdom. Emerging infectious diseases. 2016;22(1):112-6.
141. Nwokolo NC, Dragovic B, Patel S, Tong CY, Barker G, Radcliffe K. 2015 UK national guideline for the management of infection with Chlamydia trachomatis. Int J STD AIDS. 2016;27(4):251-67.
142. Soni S, Alexander S, Verlander N, Saunders P, Richardson D, Fisher M, et al. The prevalence of urethral and rectal Mycoplasma genitalium and its associations in men who have sex with men attending a genitourinary medicine clinic. Sexually Transmitted Infections. 2010;86:21-4.
143. Francis SC, Kent CK, Klausner JD, Rauch L, Kohn R, Hardick A, et al. Prevalence of rectal Trichomonas vaginalis and Mycoplasma genitalium in male patients at the San Francisco STD clinic, 2005-2006. Sexually Transmitted Diseases. 2008;35:797-800.
144. Cazanave C, Manhart LE, Bébéar C. Mycoplasma genitalium, an emerging sexually transmitted pathogen. Médecine et maladies infectieuses. 2012.
145. Bradshaw CS, Fairley CK, Lister NA, Chen SJ, Garland SM, Tabrizi SN. Mycoplasma genitalium in men who have sex with men at male-only saunas. Sexually Transmitted Infections. 2009;85:432-5.
146. Moi H, Reinton N, Moghaddam A. Mycoplasma genitalium is associated with symptomatic and asymptomatic non-gonococcal urethritis in men. Sex Transm Infect. 2009;85(1):15-8.

147. Edlund M, Blaxhult A, Bratt G. The spread of Mycoplasma genitalium among men who have sex with men. Int J STD AIDS. 2012;23(6):455-6.
148. Napierala Mavedzenge S, Weiss HA. Association of Mycoplasma genitalium and HIV infection: a systematic review and meta-analysis. Aids. 2009;23(5):611-20.
149. Bohl DD, Katz KA, Bernstein K, Wong E, Raymond HF, Klausner JD, et al. Prevalence and Correlates of Herpes Simplex Virus Type-2 Infection Among Men Who Have Sex With Men, San Francisco, 2008. Sex Transm Dis. 2011;38(7):617-21.
150. Hill C, McKinney E, Lowndes CM, Munro H, Murphy G, Parry JV, et al. Epidemiology of herpes simplex virus types 2 and 1 amongst men who have sex with men attending sexual health clinics in England and Wales: implications for HIV prevention and management. Euro surveillance : bulletin Europeen sur les maladies transmissibles = European communicable disease bulletin. 2009;14(47).
151. Freeman EE, Weiss HA, Glynn JR, Cross PL, Whitworth JA, Hayes RJ. Herpes simplex virus 2 infection increases HIV acquisition in men and women: systematic review and meta-analysis of longitudinal studies. Aids. 2006;20(1):73.
152. Celum C, Wald A, Lingappa JR, Magaret AS, Wang RS, Mugo N, et al. Acyclovir and Transmission of HIV-1 from Persons Infected with HIV-1 and HSV-2. N Engl J Med. 2010;362(5):427-39.
153. Celum C, Wald A, Hughes J, Sanchez J, Reid S, Delany-Moretlwe S, et al. Effect of aciclovir on HIV-1 acquisition in herpes simplex virus 2 seropositive women and men who have sex with men: a randomised, double-blind, placebo-controlled trial. The Lancet. 2008;371(9630):2109-19.
154. Morrow RA, Friedrich D, Krantz E. Performance of the focus and Kalon enzyme-linked immunosorbent assays for antibodies to herpes simplex virus type 2 glycoprotein G in culture-documented cases of genital herpes. J Clin Microbiol. 2003;41(11):5212-4.
155. Copas AJ, Cowan FM, Cunningham AL, Mindel A. An evidence based approach to testing for antibody to herpes simplex virus type 2. Sex Transm Infect. 2002;78(6):430-4.
156. Brook G, Bhagani, S., Kulasegaram, R., et al. United Kingdom National Guideline on the Management of the Viral Hepatitides A, B & C.2015 [cited 2016 15th October]. Available from: https://www.bashh.org/documents/New%20Viral%20Hepatitides%20FINAL%20DRAFT%20MAY15.pdf.
157. BHIVA. BHIVA Guidelines on the Vaccination of Adults with HIV2015.
158. Ross JDC, Ghanem M, Tariq A, Gilleran G, Winter AJ. Seroprevalence of hepatitis A immunity in male genitourinary medicine clinic attenders: a case control study of heterosexual and homosexual men. Sex Transm Infect. 2002;78(3):174-9.
159. Corona R, Stroffolini T, Giglio A, COTICHINI R, TOSTI ME, PRIGNANO G, et al. Lack of evidence for increased risk of hepatitis A infection in homosexual men. Epidemiology and Infection. 1999;123(01):89-93.
160. Beebeejaun K DS, Balogun K, et al.,. Outbreak of Hepatitis A Associated with Men who have sex with men (MSM), England, July 2016 to January 2017. Eurosurveillance. 2017;22(5).
161. Cotter SM, Sansom S, Long T, Koch E, Kellerman S, Smith F, et al. Outbreak of hepatitis A among men who have sex with men: implications for hepatitis A vaccination strategies. J Infect Dis. 2003;187(8):1235-40.
162. Bell A, Ncube F, Hansell A, Davison KL, Young Y, Gilson R, et al. An outbreak of hepatitis A among young men associated with having sex in public venues. Commun Dis Public Health. 2001;4(3):163-70.
163. Riordan M, Goh L, Lamba H. Increasing hepatitis A IgG prevalence rate in men who have sex with men attending a sexual health clinic in London: implications for immunization policy. Int J STD AIDS. 2007;18(10):707-10.
164. Hahné S, Ramsay M, Balogun K, Edmunds WJ, Mortimer P. Incidence and routes of transmission of hepatitis B virus in England and Wales, 1995–2000: implications for immunisation policy. Journal of Clinical Virology. 2004;29(4):211-20.

165. Department of Health. The Green Book, 2013 [Available from: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/263311/Green_Book_Chapter_18_v2_0.pdf.
166. Public Health England. Hepatitis C in the UK 2014 Report[cited 2015 22nd September]. Available from: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/337115/HCV_in_the_UK_2014_24_July.pdf.
167. Jebbari H, Alexander S, Ward H, Evans B, Solomou M, Thornton A, et al. Update on lymphogranuloma venereum in the United Kingdom. 2007;83(4):324-6.
168. Vanhommerig JW, Stolte IG, Lambers FAE, Geskus RB, Van De Laar TJW, Bruisten SM, et al. Stabilizing Incidence of Hepatitis C Virus Infection Among Men Who Have Sex With Men in Amsterdam. JAIDS Journal of Acquired Immune Deficiency Syndromes. 2014;66(5):e111-e5.
169. Gamage DG, Read TRH, Bradshaw CS, Hocking JS, Howley K, Chen MY, et al. Incidence of hepatitis-C among HIV infected men who have sex with men (MSM) attending a sexual health service: a cohort study. BMC infectious diseases. 2011;11(1):39.
170. Raymond HF, Chu P, Nieves-Rivera I, Louie B, McFarland W, Pandori M. Hepatitis C Infection Among Men Who Have Sex With Men, San Francisco, 2011. Sex Transm Dis. 2012;39(12):985-6.
171. Witt MD, Seaberg EC, Darilay A, Young S, Badri S, Rinaldo CR, et al. Incident hepatitis C virus infection in men who have sex with men: a prospective cohort analysis, 1984-2011. Clin Infect Dis. 2013;57(1):77-84.
172. Jin F, Matthews GV, Grulich AE. Sexual transmission of hepatitis C virus among gay and bisexual men: a systematic review. Sex Health. 2016.
173. Scott C, Day S, Low E, Sullivan A, Atkins M, Asboe D. Unselected hepatitis C screening of men who have sex with men attending sexual health clinics. J Infect. 2010;60(5):351-3.
174. Hoornenborg E, Achterbergh RCA, Schim Van Der Loeff MF, Davidovich U, Hogewoning A, Vries HJC, et al. Men who have sex with men starting pre-exposure prophylaxis (PrEP) are at risk of HCV infection: evidence from the Amsterdam PrEP study. Aids. 2017.
175. Tiraboschi J. BL, Brady M., et al, on behalf of the PROUD study. Acute Hepatitis C in the PROUD pilot study. Third Joint Conference of the British HIV Association (BHIVA) with the British Association for Sexual Health and HIV (BASHH); 1-4 April 2014; Liverpool, UK2014.
176. Volk JE, Marcus JL, Phengrasamy T, Hare CB. Incident Hepatitis C Virus Infections Among Users of HIV Preexposure Prophylaxis in a Clinical Practice Setting. Clin Infect Dis. 2015;60(11):1728-9.
177. Linas BP, Wong AY, Schackman BR, Kim AY, Freedberg KA. Cost-effective screening for acute hepatitis C virus infection in HIV-infected men who have sex with men. Clin Infect Dis. 2012;55(2):279-90.
178. Jebbari H, Simms I, Conti S, Marongiu A, Hughes G, Ward H, et al. Variations in the epidemiology of primary, secondary and early latent syphilis, England and Wales: 1999 to 2008. Sex Transm Infect. 2011;87(3):191-8.
179. Simms I, Wallace L, Thomas DR, Emmett L, Shankar AG, Vinson M, et al. Recent outbreaks of infectious syphilis, United Kingdom, January 2012 to April 2014. Euro Surveill. 2014;19(24).
180. Fairley CK, Law M, Chen MY. Eradicating syphilis, hepatitis C and HIV in MSM through frequent testing strategies. Curr Opin Infect Dis. 2014;27(1):56-61.
181. Skingsley A KP, Yin Z, Nardone A, Gill ON, Hughes G, Delpech VC and contributors. HIV new diagnoses, treatment and care in the UK 2015 report: data to end 2014. October 2015. . London: Public Health England; 2015.
182. Aghaizu A, Murphy G, Tosswill J, DeAngelis D, Charlett A, Gill ON, et al. Recent infection testing algorithm (RITA) applied to new HIV diagnoses in England, Wales and Northern Ireland, 2009 to 2011. Euro surveillance : bulletin Europeen sur les maladies transmissibles = European communicable disease bulletin. 2014;19(2).

183. Mustanski BS, Newcomb ME, Du Bois SN, Garcia SC, Grov C. HIV in young men who have sex with men: a review of epidemiology, risk and protective factors, and interventions. Journal of sex research. 2011;48(2-3):218-53.
184. Phillips AN, Cambiano V, Nakagawa F, Brown AE, Lampe F, Rodger A, et al. Increased HIV incidence in men who have sex with men despite high levels of ART-induced viral suppression: analysis of an extensively documented epidemic. PLoS One. 2013;8(2):e55312.
185. BHIVA. British HIV Association guidelines for the treatment of HIV-1-positive adults with antiretroviral therapy 2015.2015 [cited 2015 29th December]. Available from: http://www.bhiva.org/documents/Guidelines/Treatment/2015/2015-treatment-guidelines.pdf.
186. Guideline on when to start antiretroviral therapy and on pre-exposure prophylaxis for HIV. 2015 [cited 2015 29th December]. Available from: http://apps.who.int/iris/bitstream/10665/186275/1/9789241509565_eng.pdf?ua=1.
187. Group ISS, Lundgren JD, Babiker AG, Gordin F, Emery S, Grund B, et al. Initiation of Antiretroviral Therapy in Early Asymptomatic HIV Infection. The New England journal of medicine. 2015;373(9):795-807.
188. Cohen MS, Chen YQ, McCauley M, Gamble T, Hosseinipour MC, Kumarasamy N, et al. Prevention of HIV-1 infection with early antiretroviral therapy. The New England journal of medicine. 2011;365(6):493-505.
189. McDaid LA, A., Frankis, J., Riddell, J., Nardone, A., Mercey, D., Johnson, A., Hart, G.,Flowers, P.,. Frequency of HIV testing among gay and bisexual men in the UK: implications for HIV prevention. HIV Medicine. 2015;In press.
190. Westrop SJ HT, Gill N, Delpech V, Crook P and Nardone A. Addressing Late HIV Diagnosis through Screening and Testing: An Evidence Summary.2014 [cited 2015 29th December]. Available from: http://www.bashh.org/documents/HIV%20Screening%20and%20Testing_Evidence.
191. British HIV Association (BHIVA), British Association of Sexual Health and HIV (BASHH), British Infection Society (BIS). UK National Guidelines for HIV Testing. London: BHIVA; 2008.
192. NICE. Increasing the uptake of HIV testing among men who have sex with men (PH34). London: National Institute for Health and Clinical Excellence; 2011.
193. Freeman-Romilly M, Sheppard P, Desai S, Cooper N, Brady M. Does community-based point-of-care HIV testing reduce late HIV diagnosis? A retrospective cohort study. HIV Medicine. 2014;15:93.
194. Chen MY, Bilardi JE, Lee D, Cummings R, Bush M, Fairley CK. Australian men who have sex with men prefer rapid oral HIV testing over conventional blood testing for HIV. Int J STD AIDS. 2010;21(6):428-30.
195. Lee SJ, Brooks R, Bolan RK, Flynn R. Assessing willingness to test for HIV among men who have sex with men using conjoint analysis, evidence for uptake of the FDA-approved at-home HIV test. AIDS Care - Psychological and Socio-Medical Aspects of AIDS/HIV. 2013;25(12):1592-8.
196. Mimiaga MJ, Goldhammer H, Belanoff C, Tetu AM, Mayer KH. Men who have sex with men: perceptions about sexual risk, HIV and sexually transmitted disease testing, and provider communication. Sex Transm Dis. 2007;34(2):113-9.
197. Flowers P, Knussen C, Li J, McDaid L. Has testing been normalized? An analysis of changes in barriers to HIV testing among men who have sex with men between 2000 and 2010 in Scotland, UK. HIV Medicine. 2013;14(2):92-8.
198. Lorenc T, Marrero-Guillamon I, Llewellyn A, Aggleton P, Cooper C, Lehmann A, et al. HIV testing among men who have sex with men (MSM): systematic review of qualitative evidence. Health education research. 2011;26(5):834-46.
199. Dowson L, Kober C, Perry N, Fisher M, Richardson D. Why some MSM present late for HIV testing: a qualitative analysis. AIDS Care. 2012;24(2):204-9.
200. MacPherson P, Chawla A, Jones K, Coffey E, Spaine V, Harrison I, et al. Feasibility and acceptability of point of care HIV testing in community outreach and GUM drop-in services in the North West of England: a programmatic evaluation. BMC Public Health. 2011;11:419.

201. Wood M, Ellks R, Grobicki M. Outreach sexual infection screening and postal tests in men who have sex with men: are they comparable to clinic screening? Int J STD AIDS. 2014.
202. Milligan C, Cuneo CN, Rutstein SE, Hicks C. "Know Your Status": results from a novel, student-run HIV testing initiative on college campuses. AIDS education and prevention : official publication of the International Society for AIDS Education. 2014;26(4):317-27.
203. Galvan FH, Bluthenthal RN, Ani C, Bing EG. Increasing HIV testing among latinos by bundling HIV testing with other tests. Journal of Urban Health. 2006;83(5):849-59.
204. Purcell DW, Mizuno Y, Smith DK, Grabbe K, Courtenay-Quick C, Tomlinson H, et al. Incorporating couples-based approaches into HIV prevention for gay and bisexual men: opportunities and challenges. Archives of sexual behavior. 2014;43(1):35-46.
205. Boydell N, Buston K, McDaid L. HIV risk management in the context of relationships: An exploratory qualitative study with young gay and bisexual men in Scotland. HIV Medicine. 2014;15:52.
206. Mitchell JW, Horvath KJ. Factors associated with regular HIV testing among a sample of US MSM with HIV-negative main partners. Journal of acquired immune deficiency syndromes (1999). 2013;64(4):417-23.
207. Wagenaar BH, Christiansen-Lindquist L, Khosropour C, Salazar LF, Benbow N, Prachand N, et al. Willingness of US men who have sex with men (MSM) to participate in Couples HIV Voluntary Counseling and Testing (CVCT). PLoS One. 2012;7(8):e42953.
208. Sullivan PS, Wall KM, O'Hara B, Jones J, Barnes J, DiClemente R, et al. The prevalence of undiagnosed HIV serodiscordance among male couples presenting for HIV testing. Archives of sexual behavior. 2014;43(1):173-80.
209. Reeves I, Hodson M, Figueroa J, Horne P. "A Great way of doing it from the comfort of my home": Expanding opportunities for HIV testing through home sampling. HIV Medicine. 2014;15:93.
210. Brady M, Nardone A, Buenaventura E, Kelly P, Edwardes D, Qureshi F, et al. Acceptability of home HIV sampling and testing: A user survey. HIV Medicine. 2014;15:89-90.
211. Elliot E, McCowan A, McCormak S, Rossi M, Van Every T. Home sampling through social network websites: Can we reduce undiagnosed HIV? Sexually Transmitted Infections. 2012;88.
212. Department of Health. Modernisation of HIV rules to better protect public: Department of Health; 2013 [Available from: https://www.gov.uk/government/news/modernisation-of-hiv-rules-to-better-protect-public.
213. AIDSMAP. First HIV home test approved for sale in UK 2015 [Available from: http://www.aidsmap.com/First-HIV-home-test-approved-for-sale-in-UK/page/2964537/.
214. Flowers P, Knussen, C, Frankis, J, Young, I., Park, C., Ahmed, B. and McDaid, L. . HIV testing: barriers and facilitators to effective implementation in MSM. British Association of Sexual Health and HIV Annual Conference; Glasgow,Scotland2015.
215. Technologies O. OraQuick® In-Home HIV Test Summary of Safety and Effectiveness 2012 [cited 2016 11th January]. Available from: http://www.fda.gov/downloads/BiologicsBloodVaccines/BloodBloodProducts/ApprovedProducts/PremarketApprovalsPMAs/UCM312534.pdf.
216. Katz DA, Cassels SL, Stekler JD. Replacing clinic-based tests with home-use tests may increase HIV prevalence among seattle men who have sex with men: Evidence from a mathematical model. Sexually Transmitted Diseases. 2014;41(1):2-9.
217. Han L BCea. HIV Self-Testing Among Online MSM in China: Implications for Expanding HIV Testing Among Key Populations. Journal of acquired immune deficiency syndromes. 2014(2014 Jul2).
218. Marlin R, Young S, Wilson G, Rodriguez JP, Montes J, Ortiz J, et al. Feasibility of HIV Self-Test Vouchers To Raise Community-Level Serostatus Awareness, Los Angeles. Topics in Antiviral Medicine. 2014;22 (e-1):508.
219. Sharma A, Sullivan PS, Khosropour CM. Willingness to take a free home HIV test and associated factors among internet-using men who have sex with men. Journal of the International Association of Physicians in AIDS Care. 2011;10(6):357-64.

220. HIV Scotland. Instant Result self-testing for HIV: Resources for organisations and background reading 2015 [cited 2015 28th October]. Available from: http://www.hivscotland.com/our-policy-work/testing/instant-result-self-testing-for-hiv/.
221. New South Wales STI Programs Unit (STIPU). Australian Sexually transmitted infection and HIV testing guidelines for asymptomatic men who have sex with men.2014 [cited 2015 17th October]. Available from: http://stipu.nsw.gov.au/stigma/sti-testing-guidelines-for-msm/.
222. Farnham PG, Sansom SL, Hutchinson AB. How much should we pay for a new HIV diagnosis? A mathematical model of HIV screening in US clinical settings. Medical decision making : an international journal of the Society for Medical Decision Making. 2012;32(3):459-69.
223. Lucas A, Armbruster B. The cost-effectiveness of expanded HIV screening in the United States. Aids. 2013;27(5):795-801.
224. Hutchinson AB, Farnham PG, Sansom SL, Yaylali E, Mermin JH. Cost-effectiveness of Frequent HIV Testing of High Risk Populations in the United States. Journal of acquired immune deficiency syndromes. 2015.
225. Gray RT, Prestage GP, Down I, Ghaus MH, Hoare A, Bradley J, et al. Increased HIV testing will modestly reduce HIV incidence among gay men in NSW and would be acceptable if HIV testing becomes convenient. PLoS One. 2013;8(2):e55449.
226. Tuite A, Machina M, Burchell A, Bayoumi A, Fisman D. Cost-effectiveness of enhanced syphilis screening among HIV-positive men who have sex with men. Sexually Transmitted Infections. 2013;89.
227. Baker A, Fleury C, Foley E, Samraj S, Rowen D, Patel R. Increasing screening frequency in men who have sex with men (MSM): Impact of explicit guidance on risk profiling on UK service. Sexually Transmitted Infections. 2012;88.
228. Galvin SR, Cohen MS. The role of sexually transmitted diseases in HIV transmission. Nature reviews Microbiology. 2004;2(1):33-42.
229. Sanders EJ, Okuku HS, Smith AD, Mwangome M, Wahome E, Fegan G, et al. High HIV-1 incidence, correlates of HIV-1 acquisition, and high viral loads following seroconversion among MSM. Aids. 2013;27(3):437-46.
230. Solomon MM, Mayer KH, Glidden DV, Liu AY, McMahan VM, Guanira JV, et al. Syphilis predicts HIV incidence among men and transgender women who have sex with men in a preexposure prophylaxis trial. Clin Infect Dis. 2014;59(7):1020-6.
231. Harte D, Mercey D, Jarman J, Benn P. Is the recall of men who have sex with men (MSM) diagnosed as having bacterial sexually transmitted infections (STIs) for re-screening a feasible and effective strategy? Sex Transm Infect. 2011;87(7):577-82.
232. Department of Health. BASHH/EAGA statement on HIV window period 2014 17th March 2017. Available from: https://www.gov.uk/government/publications/time-period-for-hiv-testing-position-statement.
233. Clarke E, Shone E, Broad C, Baker A, Patel R, Rowen D. British co-operative clinical group (BCCG) project - How often are men who have sex with men (MSM) advised to attend for repeat sexual health screening in the UK? Sex Transm Inf. 2013;89.
234. Templeton DJ, Read P, Varma R, Bourne C. Australian sexually transmissible infection and HIV testing guidelines for asymptomatic men who have sex with men 2014: a review of the evidence. Sex Health. 2014;11(3):217-29.
235. Centers for Disease Control and Prevention (CDC). Preexposure Prophylaxis for the Prevention of HIV Infection in the United States – 2014 Clinical Practice Guideline. . US Public Health Service; 2014.
236. Menza TW, Hughes JP, Celum CL, Golden MR. Prediction of HIV acquisition among men who have sex with men. Sex Transm Dis. 2009;36(9):547-55.
237. CDC. HIV Testing Among Men Who Have Sex with Men --- 21 Cities, United States, 2008

MMWR. 2011;60(21):694-9.

238. Bourne C, Knight V, Guy R, Wand H, Lu H, McNulty A. Short message service reminder intervention doubles sexually transmitted infection/HIV re-testing rates among men who have sex with men. Sex Transm Infect. 2011;87(3):229-31.
239. Zou H, Fairley CK, Guy R, Bilardi J, Bradshaw CS, Garland SM, et al. Automated, computer generated reminders and increased detection of gonorrhoea, chlamydia and syphilis in men who have sex with men. PLoS One. 2013;8(4):e61972.
240. Brook G, Burton J, McSorley J, Murphy S. The effectiveness of SMS texts for reminding patients at high risk of STIs and HIV to return for testing. Sexually Transmitted Infections. 2013;89.
241. Desai M, Burns F, Mercey D, Nardone A, Muniina P, Sharp T, et al. Active recall of men who have sex with men (MSM) for an HIV/STI testing: A feasible and effective strategy? HIV Medicine. 2014;15:109.
242. Ivens D, MacDonald K, Bansi L, Nori A. Screening for rectal chlamydia infection in a genitourinary medicine clinic. International Journal of STD & AIDS. 2007;18:404-6.
243. Manavi K, McMillan A, Young H. The prevalence of rectal chlamydial infection amongst men who have sex with men attending the genitourinary medicine clinic in Edinburgh. International Journal of STD & AIDS. 2004;15:162-4.
244. Simms I, Field N, Jenkins C, Childs T, Gilbart VL, Dallman TJ, et al. Intensified shigellosis epidemic associated with sexual transmission in men who have sex with men - Shigella flexneri and S. sonnei in England, 2004 to end of February 2015. Euro surveillance : bulletin Europeen sur les maladies transmissibles = European communicable disease bulletin. 2015;20(15).
245. Simms I, Gilbart VL, Byrne L, Jenkins C, Adak GK, Hughes G, et al. Identification of verocytotoxin-producing Escherichia coli O117:H7 in men who have sex with men, England, November 2013 to August 2014. Euro surveillance : bulletin Europeen sur les maladies transmissibles = European communicable disease bulletin. 2014;19(43).
246. Nelson M, Dockrell D, Edwards S, Subcommittee BG, Angus B, Barton S, et al. British HIV Association and British Infection Association guidelines for the treatment of opportunistic infection in HIV-seropositive individuals 2011. HIV Med. 2011;12 Suppl 2:1-140.
247. Quinn TC, Corey L, Chaffee RG, Schuffler MD, Brancato FP, Holmes KK. The etiology of anorectal infections in homosexual men. The American Journal of Medicine. 1981;71:395-406.
248. Quinn TC, Stamm WE, Goodell SE, Mkrtichian E, Benedetti J, Corey L, et al. The polymicrobial origin of intestinal infections in homosexual men. The New England journal of medicine. 1983;309:576-82.
249. Rompalo AM. Diagnosis and treatment of sexually acquired proctitis and proctocolitis: an update. Clinical Infectious Diseases: An Official Publication of the Infectious Diseases Society of America. 1999;28 Suppl 1:S84-90.
250. Rompalo AM, Stamm WE. Anorectal and enteric infections in homosexual men. The Western journal of medicine. 1985;142:647-52.
251. de Vries HJ, Zingoni A, White JA, Ross JD, Kreuter A. 2013 European Guideline on the management of proctitis, proctocolitis and enteritis caused by sexually transmissible pathogens. Int J STD AIDS. 2013;25(7):465-74.
252. DuPont HL. Acute Infectious Diarrhea in Immunocompetent Adults. New England Journal of Medicine. 2014;370:1532-40.
253. Farthing M, Feldman R, Finch R, Fox R, Leen C, Mandal B, et al. The management of infective gastroenteritis in adults. A consensus statement by an expert panel convened by the British Society for the Study of Infection. The Journal of infection. 1996;33:143-52.
254. Farthing, Salam M, Lindberg G, Dite P, Khalif I, Ramakrishna B, et al. Acute diarrhea in adults and children: a global perspective. World Gastroenterology Organisation Global Guidelines; 2012.
255. Cresswell FV, Ross S, Booth T, Pinto-Sander N, Alexander E, Bradley J, et al. Shigella flexneri: A Cause of Significant Morbidity and Associated With Sexually Transmitted Infections in Men Who Have Sex With Men. Sex Transm Dis. 2015;42(6):344.

256. Keay R, Singh G, Abdul-Latif M, Rayment M, Nelson M. Shigella flexneri enteritis in risk-taking HIV-infected MSM. The Journal of infection. 2014;68(1):103-4.
257. Aragon TJ, Vugia DJ, Shallow S, Samuel MC, Reingold A, Angulo FJ, et al. Case-control study of shigellosis in San Francisco: the role of sexual transmission and HIV infection. Clinical infectious diseases : an official publication of the Infectious Diseases Society of America. 2007;44:327-34.
258. Goldstone SE, Welton ML. Anorectal sexually transmitted infections in men who have sex with men--special considerations for clinicians. Clinics in Colon and Rectal Surgery. 2004;17:235-9.
259. Baker KS, Dallman TJ, Ashton PM, Day M, Hughes G, Crook PD, et al. Intercontinental dissemination of azithromycin-resistant shigellosis through sexual transmission: a cross-sectional study. The Lancet Infectious diseases. 2015.
260. Gaudreau C, Michaud S. Cluster of erythromycin- and ciprofloxacin-resistant Campylobacter jejuni subsp. jejuni from 1999 to 2001 in men who have sex with men, Quebec, Canada. Clinical infectious diseases : an official publication of the Infectious Diseases Society of America. 2003;37:131-6.
261. Heiman KE, Karlsson M, Grass J, Howie B, Kirkcaldy RD, Mahon B, et al. Notes from the field: Shigella with decreased susceptibility to azithromycin among men who have sex with men - United States, 2002-2013. MMWR Morbidity and mortality weekly report. 2014;63:132-3.
262. Hoffmann C, Sahly H, Jessen A, Ingiliz P, Stellbrink H-J, Neifer S, et al. High rates of quinolone-resistant strains of Shigella sonnei in HIV-infected MSM. Infection. 2013;41:999-1003.
263. Ison CA. Antimicrobial resistance in sexually transmitted infections in the developed world: implications for rational treatment. Current opinion in infectious diseases. 2012;25:73-8.
264. Ison CA, Town K, Obi C, Chisholm S, Hughes G, Livermore DM, et al. Decreased susceptibility to cephalosporins among gonococci: data from the Gonococcal Resistance to Antimicrobials Surveillance Programme (GRASP) in England and Wales, 2007-2011. The Lancet Infectious diseases. 2013;13(9):762-8.
265. Low N, Unemo M, Skov Jensen J, Breuer J, Stephenson JM. Molecular diagnostics for gonorrhoea: implications for antimicrobial resistance and the threat of untreatable gonorrhoea. PLoS medicine. 2014;11(2):e1001598.
266. Pond MJ, Nori AV, Witney AA, Lopeman RC, Butcher PD, Sadiq ST. High prevalence of antibiotic-resistant Mycoplasma genitalium in nongonococcal urethritis: the need for routine testing and the inadequacy of current treatment options. Clin Infect Dis. 2014;58(5):631-7.
267. Shimada Y, Deguchi T, Nakane K, Yasuda M, Yokoi S, Ito S, et al. Macrolide resistance-associated 23S rRNA mutation in Mycoplasma genitalium, Japan. Emerging infectious diseases. 2011;17(6):1148-50.
268. Warren RE. Ano-rectal symptoms of sexually transmitted disease. Canadian family physician Medecin de famille canadien. 1987;33:1859-62.
269. Kazal HL, Sohn N, Carrasco JI, Robilotti JG, Delaney WE. The gay bowel syndrome: clinico-pathologic correlation in 260 cases. Annals of clinical and laboratory science. 1976;6(2):184-92.
270. Sohn N, Robilotti JG, Jr. The gay bowel syndrome. A review of colonic and rectal conditions in 200 male homosexuals. The American journal of gastroenterology. 1977;67(5):478-84.
271. de Vries HJ, Zingoni A, White JA, Ross JD, Kreuter A. 2013 European Guideline on the management of proctitis, proctocolitis and enteritis caused by sexually transmissible pathogens. International journal of STD & AIDS. 2013;25:465-74.
272. Cosentino LA, Campbell T, Jett A, Macio I, Zamborsky T, Cranston RD, et al. Use of nucleic acid amplification testing for diagnosis of anorectal sexually transmitted infections. Journal of Clinical Microbiology. 2012;50:2005-8.
273. Henderson M, Tierney, L. and Smetana, G. . The patient history. . The patient history. New York: McGraw-Hill Medical; 2012. p. 397-406.
274. Radcliffe KF, S. Sexually transmitted infections in men: history and examination. Medicine. 2014;42(6):294-6.

275. McClean H, Radcliffe K, Sullivan A, Ahmed-Jushuf I. 2012 BASHH statement on partner notification for sexually transmissible infections. International Journal of STD & AIDS. 2013;24:253-61.
276. Pallawela S, Dean G, French P, Smith A, MacDonald N, Ward H, et al. Clinical presentation of Lymphogranuloma venereum in a multi-centre case-control study in the UK: LGV-net. HIV Medicine. 2010;11:14.
277. White J. Lymphogranuloma venereum (LGV). Medicine. 2014;42(7):399-402.
278. Raha D. Don't forget to check for STIs.... a report about gonorrhoea proctitis being mistaken for a flare-up of Crohn's Disease. Sex Transm Inf. 2015;91(Suppl 1):A29.
279. Voltaggio L ME, Ali M, Singhi A, Arnold C,. Sex, Lies, and Gastrointestinal Tract Biopsies. Advances In Anatomic Pathology. Advances In Anatomic Pathology. 2014;21(2):83-93.
280. Klausner JD, Kohn R, Kent C. Etiology of Clinical Proctitis among Men Who Have Sex with Men. Clinical Infectious Diseases. 2004;38:300-2.
281. Grover D, Prime KP, Prince MV, Ridgway G, Gilson RJ. Rectal gonorrhoea in men -- is microscopy still a useful tool? Int J STD AIDS. 2006;17(4):277-9.
282. Ross J, Brady M, Clutterbuck D, Doyle T, Hart G, Hughes G, et al. BASHH Recommendations for Testing for Sexually Transmitted Infections in Men who have Sex with Men. Royal Society of Medicine, 1 Wimpole Street, W1G 0AE: British Association of Sexual Health and HIV; 2014 14/02/2014.
283. Department of Health. Health Protection Legislation (England) Guidance 2010. London: DoH; 2010.
284. Herbert S, Hewitt K, Cassell JA. Managing and reporting notifiable disease in the sexual health clinic. Sexually Transmitted Infections. 2014;90:452-4.
285. PHLS Advisory Committee on Gastrointestinal Infections. Preventing person-to-person spread following gastrointestinal infections: guidelines for public health physicians and environmental health officers. Communicable disease and public health / PHLS. 2004;7:362-84.
286. Workowski KA, Berman S, (CDC) CfDCaP. Sexually transmitted diseases treatment guidelines, 2010. MMWR Recommendations and reports: Morbidity and mortality weekly report Recommendations and reports / Centers for Disease Control. 2010;59:1-110.
287. Belderok S-M, van den Hoek A, Kint JA, Schim van der Loeff MF, Sonder GJ. Incidence, risk factors and treatment of diarrhoea among Dutch travellers: reasons not to routinely prescribe antibiotics. BMC infectious diseases. 2011;11:295.
288. De Bruyn G, Hahn S, Borwick A. Antibiotic treatment for travellers' diarrhoea. The Cochrane Database of Systematic Reviews. 2000:CD002242.
289. Farthing MJ. Travellers' Diarrhoea. Medicine. 2003;31:35-40.
290. Jones R, Rubin G. Acute diarrhoea in adults. BMJ (Clinical research ed). 2009;338:b1877.
291. Zollner-Schwetz I, Krause R. Therapy of acute gastroenteritis: role of antibiotics. Clinical Microbiology and Infection: The Official Publication of the European Society of Clinical Microbiology and Infectious Diseases. 2015.
292. Bhattacharya D, Sugunan AP, Bhattacharjee H, Thamizhmani R, Sayi DS, Thanasekaran K, et al. Antimicrobial resistance in Shigella--rapid increase & widening of spectrum in Andaman Islands, India. The Indian Journal of Medical Research. 2012;135:365-70.
293. Wiström J, Gentry LO, Palmgren AC, Price M, Nord CE, Ljungh A, et al. Ecological effects of short-term ciprofloxacin treatment of travellers' diarrhoea. The Journal of antimicrobial chemotherapy. 1992;30:693-706.
294. Agaisse H. Shigella flexneri serotype 3a: the rise of a superbug. The Lancet Infectious diseases. 2015;15(8):867-8.
295. Valcanis M, Brown JD, Hazelton B, O'Sullivan MV, Kuzevski A, Lane CR, et al. Outbreak of locally acquired azithromycin-resistant Shigella flexneri infection in men who have sex with men. Pathology. 2015;47(1):87-8.

296. Public Health England & Terrence Higgins Trust. Good session? Bad case of diarrhoea? Maybe it's... Shigella. Public Health England; 2013.
297. Hamlyn E, Taylor C. Sexually transmitted proctitis. Postgraduate Medical Journal. 2006;82:733-6.
298. Hayes R, Watson-Jones D, Celum C, van de Wijgert J, Wasserheit J. Treatment of sexually transmitted infections for HIV prevention: end of the road or new beginning?:. Aids. 2010;24:S15-S26.
299. Ward H, Rönn M. Contribution of sexually transmitted infections to the sexual transmission of HIV:. Current opinion in HIV and AIDS. 2010;5:305-10.
300. White PJ, Ward H, Cassell JA, Mercer CH, Garnett GP. Vicious and virtuous circles in the dynamics of infectious disease and the provision of health care: gonorrhea in Britain as an example. The Journal of Infectious Diseases. 2005;192:824-36.
301. Clinical Effectiveness Group, BASHH. United Kingdom National Guideline on the Management of Anogenital Warts, 2007[cited 2016 12th January]. Available from: http://www.bashh.org/documents/86/86.pdf
302. Park IU, Palefsky JM. Evaluation and management of anal intraepithelial neoplasia in HIV-negative and HIV-positive men who have sex with men. Current Infectious Disease Reports. 2010;12(2):126-33.
303. Hernandez AL, Efird JT, Holly EA, Berry JM, Jay N, Palefsky JM. Incidence of and risk factors for type-specific anal human papillomavirus infection among HIV-positive MSM. Aids. 2014;28(9):1341-9.
304. Videla S, Darwich L, Canadas MP, Coll J, Pinol M, Garcia-Cuyas F, et al. Natural history of human papillomavirus infections involving anal, penile, and oral sites among HIV-positive men. Sex Transm Dis. 2013;40(1):3-10.
305. Ong JJ, Chen M, Grulich AE, Fairley CK. Regional and national guideline recommendations for digital ano-rectal examination as a means for anal cancer screening in HIV positive men who have sex with men: a systematic review. BMC cancer. 2014;14:557.
306. Czoski-Murray C, Karnon J, Jones R, Smith K, Kinghorn G. Cost-effectiveness of screening high-risk HIV-positive men who have sex with men (MSM) and HIV-positive women for anal cancer. Health technology assessment. 2010;14(53):iii-iv, ix-x, 1-101.
307. Goldie SJ, Kuntz KM, Weinstein MC, Freedberg KA, Palefsky JM. Cost-effectiveness of screening for anal squamous intraepithelial lesions and anal cancer in human immunodeficiency virus-negative homosexual and bisexual men. Am J Med. 2000;108(8):634-41.
308. Wiley DJ, Elashoff D, Masongsong EV, Harper DM, Gylys KH, Silverberg MJ, et al. Smoking enhances risk for new external genital warts in men. International journal of environmental research and public health. 2009;6(3):1215-34.
309. Schwartz LM, Castle PE, Follansbee S, Borgonovo S, Fetterman B, Tokugawa D, et al. Risk factors for anal HPV infection and anal precancer in HIV-infected men who have sex with men. J Infect Dis. 2013;208(11):1768-75.
310. van der Snoek EM vdEM, den Hollander JC, Schutten M, Neumann HA, van Doornum GJ. Use of highly active antiretroviral therapy is associated with lower prevalence of anal intraepithelial neoplastic lesions and lower prevalence of human papillomavirus in HIV-infected men who have sex with men. Sex Transm Dis. 2012;39(7):495-500.
311. Piketty C, Darragh TM, Heard I, Da Costa M, Bruneval P, Kazatchkine MD, et al. High prevalence of anal squamous intraepithelial lesions in HIV-positive men despite the use of highly active antiretroviral therapy. Sex Transm Dis. 2004;31(2):96-9.
312. Ho KS, Cranston RD. Anal cytology screening in HIV-positive men who have sex with men: What's new and what's now? Current opinion in infectious diseases. 2010;23(1):21-5.
313. Panther LA, Wagner K, Proper J, Fugelso DK, Chatis PA, Weeden W, et al. High resolution anoscopy findings for men who have sex with men: inaccuracy of anal cytology as a predictor of

histologic high-grade anal intraepithelial neoplasia and the impact of HIV serostatus. Clin Infect Dis. 2004;38(10):1490-2.
314. Ong JJ, Fairley CK, Carroll S, Walker S, Chen M, Read T, et al. Cost-effectiveness of screening for anal cancer using regular digital ano-rectal examinations in men who have sex with men living with HIV. J Int AIDS Soc. 2016;19(1):20514.
315. Read TR, Vodstrcil L, Grulich AE, Farmer C, Bradshaw CS, Chen MY, et al. Acceptability of digital anal cancer screening examinations in HIV-positive homosexual men. HIV Med. 2013;14(8):491-6.
316. Society EAC. EACS Guidelines Version 7.1. European AIDS Clinical Society; 2014.
317. Ong JJ, Temple-Smith M, Chen M, Walker S, Grulich A, Fairley CK. Exploring anal self-examination as a means of screening for anal cancer in HIV positive men who have sex with men: a qualitative study. BMC Public Health. 2014;14:1257.
318. Ong JJ, Read TR, Vodstrcil LA, Walker S, Chen M, Bradshaw CS, et al. Detection of oral human papillomavirus in HIV-positive men who have sex with men 3 years after baseline: a follow up cross-sectional study. PLoS One. 2014;9(7):e102138.
319. Gillison ML, Broutian T, Pickard RK, Tong ZY, Xiao W, Kahle L, et al. Prevalence of oral HPV infection in the United States, 2009-2010. JAMA. 2012;307(7):693-703.
320. Kreimer AR, Pierce Campbell CM, Lin HY, Fulp W, Papenfuss MR, Abrahamsen M, et al. Incidence and clearance of oral human papillomavirus infection in men: the HIM cohort study. Lancet. 2013;382(9895):877-87.
321. Beachler DC, D'Souza G, Sugar EA, Xiao W, Gillison ML. Natural history of anal vs oral HPV infection in HIV-infected men and women. J Infect Dis. 2013;208(2):330-9.
322. Read TR, Hocking JS, Chen MY, Donovan B, Bradshaw CS, Fairley CK. The near disappearance of genital warts in young women 4 years after commencing a national human papillomavirus (HPV) vaccination programme. Sex Transm Infect. 2011;87(7):544-7.
323. Joint Committee on Vaccination and Immunisation (JCVI). Interim position statement on HPV vaccination of men who have sex with men (MSM)2015 [cited 2015 25th October]. Available from: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/373531/JCVI_interim_statement_HPV_vacc.pdf
324. King EM, Gilson R, Beddows S, Soldan K, Panwar K, Young C, et al. Human papillomavirus DNA in men who have sex with men: type-specific prevalence, risk factors and implications for vaccination strategies. Br J Cancer. 2015;112(9):1585-93.
325. Giuliano AR, Palefsky JM, Goldstone S, Moreira ED, Jr., Penny ME, Aranda C, et al. Efficacy of quadrivalent HPV vaccine against HPV Infection and disease in males. The New England journal of medicine. 2011;364(5):401-11.
326. Palefsky JM, Giuliano AR, Goldstone S, Moreira ED, Jr., Aranda C, Jessen H, et al. HPV vaccine against anal HPV infection and anal intraepithelial neoplasia. The New England journal of medicine. 2011;365(17):1576-85.
327. Hillman RJ, Giuliano AR, Palefsky JM, Goldstone S, Moreira ED, Jr., Vardas E, et al. Immunogenicity of the quadrivalent human papillomavirus (type 6/11/16/18) vaccine in males 16 to 26 years old. Clin Vaccine Immunol. 2012;19(2):261-7.
328. Swedish KA, Factor SH, Goldstone SE. Prevention of recurrent high-grade anal neoplasia with quadrivalent human papillomavirus vaccination of men who have sex with men: a nonconcurrent cohort study. Clin Infect Dis. 2012;54(7):891-8.
329. Deshmukh AA, Chhatwal J, Chiao EY, Nyitray AG, Das P, Cantor SB. Long-Term Outcomes of Adding HPV Vaccine to the Anal Intraepithelial Neoplasia Treatment Regimen in HIV-Positive Men Who Have Sex With Men. Clin Infect Dis. 2015;61(10):1527-35.
330. Petrosky E, Bocchini JA, Jr., Hariri S, Chesson H, Curtis CR, Saraiya M, et al. Use of 9-valent human papillomavirus (HPV) vaccine: updated HPV vaccination recommendations of the advisory committee on immunization practices. MMWR Morb Mortal Wkly Rep. 2015;64(11):300-4.

331. Kim JJ. Targeted human papillomavirus vaccination of men who have sex with men in the USA: a cost-effectiveness modelling analysis. The Lancet Infectious diseases. 2010;10(12):845-52.
332. Houlihan CF, Larke NL, Watson-Jones D, Smith-McCune KK, Shiboski S, Gravitt PE, et al. Human papillomavirus infection and increased risk of HIV acquisition. A systematic review and meta-analysis. Aids. 2012;26(17):2211-22.
333. Chin-Hong PV, Husnik M, Cranston RD, Colfax G, Buchbinder S, Da Costa M, et al. Anal human papillomavirus infection is associated with HIV acquisition in men who have sex with men. Aids. 2009;23(9):1135-42.
334. Nadarzynski T, Smith H, Richardson D, Jones CJ, Llewellyn CD. Human papillomavirus and vaccine-related perceptions among men who have sex with men: a systematic review. Sex Transm Infect. 2014;90(7):515-23.
335. Society of Sexual Health Advisers. The Manual for Sexual Health Advisers. . London: SSHA; 2004.
336. Taylor D. Outcomes Related to STI Partner Notification. Canada: National Collaborating Centre for Disease Control; 2013.
337. Steben M, Taylor D, Cheuk E. MSM partner services: What works? Sexually Transmitted Infections. 2013;89.
338. Miller W.R MTB. Eight States in Learning Motivational Interviewing. Journal of Teaching in the addictions. 2006;5(1).
339. Wayal S, Cassell JA, Edwards S, Hart G. Sexual partnership patterns and sexually transmitted infections in HIV positive men who have sex with men: Implications for partner notification. Sexually Transmitted Infections. 2012;88.
340. Anderson H LC, Enum Y, Williams A,. Beyond Medical Management: The value of public health control measures in response to a high risk MSM sexually transmitted infection cluster. Sex Transm Inf. 2015;91(Suppl1):A9.
341. Gourley M. "Syphilis is up"-the effectiveness of a short-term, integrated public information campaign. Sexually Transmitted Diseases. 2014;41:S121.
342. Mark KE, Wald A, Drolette L, Golden MR. Internet and email use among STD clinic patients. Sex Transm Dis. 2008;35(11):960-5.
343. Ogilvie GS, Taylor DL, Trussler T, Marchand R, Gilbert M, Moniruzzaman A, et al. Seeking sexual partners on the internet: a marker for risky sexual behaviour in men who have sex with men. Canadian journal of public health = Revue canadienne de sante publique. 2008;99(3):185-8.
344. Evans AR, Wiggins RD, Mercer CH, Bolding GJ, Elford J. Men who have sex with men in Great Britain: comparison of a self-selected internet sample with a national probability sample. Sex Transm Infect. 2007;83(3):200-5; discussion 5.
345. Elford J, Bolding G, Sherr L. Seeking sex on the Internet and sexual risk behaviour among gay men using London gyms. Aids. 2001;15(11):1409-15.
346. Liau A, Millett G, Marks G. Meta-analytic examination of online sex-seeking and sexual risk behavior among men who have sex with men. Sex Transm Dis. 2006;33(9):576-84.
347. Lee C, Mingal S. New Technologies for Partner Notificationsfor Sexually Transmitted Infections. Canada: National Collaborating Centre for Disease Control; 2013.
348. Vest JR, Valadez AM, Hanner A, Lee JH, Harris PB. Using e-mail to notify pseudanonymous e-mail sexual partners. Sex Transm Dis. 2007;34(11):840-5.
349. Ehlman DC, Jackson M, Saenz G, Novak DS, Kachur R, Heath JT, et al. Evaluation of an innovative internet-based partner notification program for early syphilis case management, Washington, DC, January 2007-June 2008. Sex Transm Dis. 2010;37(8):478-85.
350. Mimiaga MJ, Fair AD, Tetu AM, Novak DS, Vanderwarker R, Bertrand T, et al. Acceptability of an internet-based partner notification system for sexually transmitted infection exposure among men who have sex with men. Am J Public Health. 2008;98(6):1009-11.
351. Bolding G, Davis M, Sherr L, Hart G, Elford J. Use of gay Internet sites and views about online health promotion among men who have sex with men. AIDS Care. 2004;16(8):993-1001.

352. Bilardi JE, Fairley CK, Hopkins CA, Hocking JS, Sze JK, Chen MY. Let Them Know: evaluation of an online partner notification service for chlamydia that offers E-mail and SMS messaging. Sex Transm Dis. 2010;37(9):563-5.
353. LetThemKnow [Available from: https://pn.gmfa.org.uk/partner.
354. Heath D, Wayal S. Introducing a new online partner-notification service for men who have sex with men. HIV Medicine. 2011;12:69-70.
355. Kirby T, Thornber-Dunwell M. Phone apps could help promote sexual health in MSM. The Lancet.384(9952):1415.
356. Morisky DE. Sex on demand: geosocial networking phone apps and risk of sexually transmitted infections among a cross-sectional sample of men who have sex with men in Los Angeles County. Sexually transmitted infections. 2014;90(7):567-72.
357. Lehmiller JJ, Ioerger M. Social networking smartphone applications and sexual health outcomes among men who have sex with men. PLoS ONE. 2014;9(1).
358. Bilardi JE, Fairley CK, Hopkins CA, Hocking JS, Temple-Smith MJ, Bowden FJ, et al. Experiences and outcomes of partner notification among men and women recently diagnosed with Chlamydia and their views on innovative resources aimed at improving notification rates. Sex Transm Dis. 2010;37(4):253-8.
359. Chang LW, Serwadda D, Quinn TC, Wawer MJ, Gray RH, Reynolds SJ. Combination implementation for HIV prevention: moving from clinical trial evidence to population-level effects. The Lancet Infectious diseases. 2013;13(1):65-76.
360. Grant RM, Lama JR, Anderson PL, McMahan V, Liu AY, Vargas L, et al. Preexposure chemoprophylaxis for HIV prevention in men who have sex with men. The New England journal of medicine. 2010;363(27):2587-99.
361. McCormack S, Dunn, D. Pragmatic Open-Label Randomised Trial of Pre-exposure Prophylaxis: The PROUD Study Conference on Retroviruses and Opportunistic Infections (CROI), Seattle, Washington, 23-26 February 2015 23-26 February 2015; Seattle, Washington2015.
362. McCormack S, Dunn DT, Desai M, Dolling DI, Gafos M, Gilson R, et al. Pre-exposure prophylaxis to prevent the acquisition of HIV-1 infection (PROUD): effectiveness results from the pilot phase of a pragmatic open-label randomised trial. Lancet. 2015.
363. Molina J, Capitant, C., Spire, B., et al. On demand PrEP with oral TDF-FTC in MSM: results of the ANRS Ipergay trial. . Conference on Retroviruses and Opportunistic Infections (CROI); 23-26 February 2015; Seattle, Washington2015.
364. McCormack S FS, Fisher M, et al. . Updated BHIVA-BASHH Position Statement on PrEP in the UK. : BASHH; 2015 [Available from: http://www.bashh.org/documents/PreP_BHIVA_BASHH_Update_14June15_for%20consultation.pdf.
365. Grant RM, Anderson PL, McMahan V, Liu A, Amico KR, Mehrotra M, et al. Uptake of pre-exposure prophylaxis, sexual practices, and HIV incidence in men and transgender women who have sex with men: a cohort study. The Lancet Infectious diseases. 2014;14(9):820-9.
366. Liu AY, Vittinghoff E, Sellmeyer DE, Irvin R, Mulligan K, Mayer K, et al. Bone mineral density in HIV-negative men participating in a tenofovir pre-exposure prophylaxis randomized clinical trial in San Francisco. PLoS One. 2011;6(8):e23688.
367. Dolling D, Phillips AN, Delpech V, Pillay D, Cane PA, Crook AM, et al. Evaluating the extent of potential resistance to pre-exposure prophylaxis within the UK HIV-1-infectious population of men who have sex with men. HIV Med. 2012;13(5):309-14.
368. Liu AY, Vittinghoff E, Chillag K, Mayer K, Thompson M, Grohskopf L, et al. Sexual risk behavior among HIV-uninfected men who have sex with men participating in a tenofovir preexposure prophylaxis randomized trial in the United States. Journal of acquired immune deficiency syndromes. 2013;64(1):87-94.
369. Molina J, Charreau, I.,Spire,B., *et al*., ANRS IPERGAY Study Group. Efficacy of on demand PrEP with TDF-FTC in the ANRS IPERGAY open-label extension study. 21st International AIDS Conference (AIDS 2016); 18th -22nd July; Durban2016.

370. Volk JE, Marcus, J,L.,Tony Phengrasamy,T., *et al.* . No New HIV Infections With Increasing Use of HIV Preexposure Prophylaxis in a Clinical Practice Setting. Clin Infect Dis 2015;61(10):1601-3.
371. Young I, McDaid L. How acceptable are antiretrovirals for the prevention of sexually transmitted HIV?: A review of research on the acceptability of oral pre-exposure prophylaxis and treatment as prevention. AIDS and behavior. 2014;18(2):195-216.
372. Aghaizu A, Mercey D, Copas A, Johnson AM, Hart G, Nardone A. Who would use PrEP? Factors associated with intention to use among MSM in London: a community survey. Sex Transm Infect. 2013;89(3):207-11.
373. Young I, Li J, McDaid L. Awareness of and willingness to use HIV pre-exposure prophylaxis among gay and bisexual men in Scotland. International Journal of STD and AIDS. 2013;24:4.
374. Frankis J, , Young , I, Lorimer K, Davis,., and Flowers,P.,. Towards preparedness for PrEP. PrEP awareness and acceptability amongst MSM at high risk of HIV transmission in four Celtic nations - Scotland, Wales, Northern Ireland and the Republic of Ireland: An online survey. Sexually Transmitted Infections. 2015;In Press.
375. Young I, Flowers P, McDaid LM. Barriers to uptake and use of pre-exposure prophylaxis (PrEP) among communities most affected by HIV in the UK: Findings from a qualitative study in Scotland. BMJ open. 2014;4(11).
376. Schneider K, Gray RT, Wilson DP. A cost-effectiveness analysis of HIV preexposure prophylaxis for men who have sex with men in Australia. Clinical infectious diseases : an official publication of the Infectious Diseases Society of America. 2014;58(7):1027-34.
377. Drabo EF, Hay JW, Vardavas R, Wagner Z, Sood N. Rolling out oral pre-exposure prophylaxis (PREP) is a cost-effective HIV prevention strategy among the Los Angeles county (LAC) men who have sex with men (MSM). Value in Health. 2015;18 (3):A237.
378. Chen A, Dowdy DW. Clinical effectiveness and cost-effectiveness of hiv preexposure prophylaxis in men who have sex with men: Risk calculators for real-world decision-making. PLoS ONE. 2014;9(10).
379. Carnegie NB, Goodreau SM, Liu A, Vittinghoff E, Sanchez J, Lama JR, et al. Targeting pre-exposure prophylaxis among men who have sex with men in the United States and Peru: Partnership types, contact rates, and sexual role. Journal of acquired immune deficiency syndromes. 2015;69(1):119-25.
380. Cambiano V, Miners A, Dunn D, McCormack s, Gill N, Nardone A, et al. Is Pre-exposure prophylaxis for HIV prevention cost-effective in men-who-have-sex-with-men who engage in condomless anal sex in the UK? Sex Transm Inf. 2015;91(Suppl1):A1.
381. Ong JK DS, Desai S, Nardone A, van Hoek AJ, Gill ON. Cost and cost-effectiveness of an HIV pre-exposure prophylaxis (PrEP) programme for high-risk men who have sex with men in England: results of a static decision analytical model

Lancet Meeting Abstracts2015.
382. NHS England. News: NHS England announces major extension of national HIV prevention programme with Public Health England and funding for ten new specialised treatments 2016 [Available from: https://www.england.nhs.uk/2016/12/hiv-prevention-pregramme/.
383. I Want PrEP Now 2016 [cited 2016 12th February]. Available from: www.iwantprepnow.co.uk.
384. i-base. PrEP,PEP and PEPSE 2015 [cited 2016 12th February]. Available from: http://i-base.info/pep-and-prep/.
385. i-Base Q&As on PrEP: How do I safely use PrEP if I buy it online? Can I check PrEP from the Internet is genuine? Can I get PrEP privately in the UK?

http://i-base.info/qa/category/prep 2015 [Available from: http://i-base.info/qa/category/prep.
386. BASHH Guideline Writing Group. Draft UK Guideline for the use of HIV post-exposure prophylaxis following sexual exposure (PEPSE).2015 [cited 2016 16th January]. Available from: http://www.bashh.org/documents/PEPSE%202015%20guideline%20final_NICE.pdf.

387. Fernandez-Balbuena S, Belza MJ, Castilla J, Hoyos J, Rosales-Statkus ME, Sanchez R, et al. Awareness and use of nonoccupational HIV post-exposure prophylaxis among people receiving rapid HIV testing in Spain. HIV Med. 2013;14(4):252-7.
388. Mehta SA, Silvera R, Bernstein K, Holzman RS, Aberg JA, Daskalakis DC. Awareness of post-exposure HIV prophylaxis in high-risk men who have sex with men in New York City. Sex Transm Infect. 2011;87(4):344-8.
389. Joshi M, Basra A, McCormick C, Webb H, Pakianathan M. Post-exposure prophylaxis after sexual exposure (PEPSE) awareness in an HIV-positive cohort. Int J STD AIDS. 2014;25(1):67-9.
390. de Silva S, Miller RF, Walsh J. Lack of awareness of HIV post-exposure prophylaxis among HIV-infected and uninfected men attending an inner London clinic. Int J STD AIDS. 2006;17(9):629-30.
391. Beymer MR, Bolan RK, Flynn RP, Kerrone DR, Pieribone DL, Kulkarni SP, et al. Uptake and repeat use of postexposure prophylaxis in a community-based clinic in Los Angeles, California. AIDS research and human retroviruses. 2014;30(9):848-55.
392. Armishaw J, Hoy JF, Watson KM, Wright EJ, Price BG, Pierce AB. Non-occupational post-exposure prophylaxis in Victoria, Australia: responding to high rates of re-presentation and low rates of follow-up. Int J STD AIDS. 2011;22(12):714-8.
393. Fletcher JB, Rusow JA, Le H, Landovitz RJ, Reback CJ. High-risk Sexual Behavior is Associated with Post-Exposure Prophylaxis Non-adherence among Men who have Sex with Men Enrolled in a Combination Prevention Intervention. Journal of sexually transmitted diseases. 2013;2013:210403.
394. Heuker J, Sonder GJ, Stolte I, Geskus R, van den Hoek A. High HIV incidence among MSM prescribed postexposure prophylaxis, 2000-2009: indications for ongoing sexual risk behaviour. Aids. 2012;26(4):505-12.
395. Pierce AB, Yohannes K, Guy R, Watson KM, Armishaw J, Price B, et al. HIV seroconversions among male non-occupational post-exposure prophylaxis service users: a data linkage study. Sex Health. 2011;8(2):179-83.
396. Mitchell H FM, Hughes G, Field N, Mohammed H,, Nardone A. An epidemiological analysis of men who have sex with men (MSM) who are prescribed HIV post-exposure prophylaxis: Implications for wider pre-exposure prophylaxis policy. STI. 2015;91(Suppl1):A1.
397. Wait B, Flanagan S, Reeves I, Battison T, Whitlock G. Post-exposure prophylaxis - a cross discipline regional online survey to explore decision-making. HIV Medicine. 2015;16:23.
398. McFaul K, Rowley D, O'Reilly A, Clarke S. Access to post-exposure prophylaxis following sexual exposure for men who have sex with men in an Irish healthcare setting. Int J STD AIDS. 2014.
399. Rodriguez AE, Castel AD, Parish CL, Willis S, Feaster DJ, Kharfen M, et al. HIV medical providers' perceptions of the use of antiretroviral therapy as nonoccupational postexposure prophylaxis in 2 major metropolitan areas. Journal of acquired immune deficiency syndromes. 2013;64 Suppl 1:S68-79.
400. Asboe D, Aitken C, Boffito M, Booth C, Cane P, Fakoya A, et al. British HIV Association guidelines for the routine investigation and monitoring of adult HIV-1-infected individuals 2011. HIV Med. 2012;13(1):1-44.
401. Fakoya A, Lamba H, Mackie N, Nandwani R, Brown A, Bernard E, et al. British HIV Association, BASHH and FSRH guidelines for the management of the sexual and reproductive health of people living with HIV infection 2008. HIV Med. 2008;9(9):681-720.
402. Nandwani R, Clinical Effectiveness Group of the British Association for Sexual Health & HIV. 2006 United Kingdom national guideline on the sexual health of people with HIV: sexually transmitted infections. Int J STD AIDS. 2006;17(9):594-606.
403. Gorbach PM, Weiss RE, Jeffries R, Javanbakht M, Drumright LN, Daar ES, et al. Behaviors of recently HIV-infected men who have sex with men in the year postdiagnosis: effects of drug use and partner types. Journal of acquired immune deficiency syndromes. 2011;56(2):176-82.
404. Dombrowski JC, Harrington RD, Golden MR. Evidence for the long-term stability of HIV transmission-associated sexual behavior after HIV diagnosis. Sex Transm Dis. 2013;40(1):41-5.

405. Fisher M, Pao D, Brown AE, Sudarshi D, Gill ON, Cane P, et al. Determinants of HIV-1 transmission in men who have sex with men: a combined clinical, epidemiological and phylogenetic approach. Aids. 2010;24(11):1739-47.
406. Malek R, Mitchell H, Furegato M, Simms I, Mohammed H, Nardone A, et al. Contribution of transmission in HIV-positive men who have sex with men to evolving epidemics of sexually transmitted infections in England: an analysis using multiple data sources, 2009-2013. Euro surveillance : bulletin Europeen sur les maladies transmissibles = European communicable disease bulletin. 2015;20(15).
407. Cohen MS, McCauley M, Gamble TR. HIV treatment as prevention and HPTN 052. Current opinion in HIV and AIDS. 2012;7(2):99-105.
408. Rodger AJ, Cambiano V, Bruun T, Vernazza P, Collins S, van Lunzen J, et al. Sexual Activity Without Condoms and Risk of HIV Transmission in Serodifferent Couples When the HIV-Positive Partner Is Using Suppressive Antiretroviral Therapy. JAMA. 2016;316(2):171-81.
409. Baggaley RF, White RG, Boily MC. Systematic review of orogenital HIV-1 transmission probabilities. International journal of epidemiology. 2008;37(6):1255-65.
410. Campo J, Perea MA, del Romero J, Cano J, Hernando V, Bascones A. Oral transmission of HIV, reality or fiction? An update. Oral diseases. 2006;12(3):219-28.
411. Writing G, Williams I, Churchill D, Anderson J, Boffito M, Bower M, et al. British HIV Association guidelines for the treatment of HIV-1-positive adults with antiretroviral therapy 2012 (Updated November 2013. All changed text is cast in yellow highlight.). HIV Med. 2014;15 Suppl 1:1-85.
412. Cambiano V. Cost-effectiveness of ART as prevention. BHIVA Spring Conference 2016; Manchester, UK2016.
413. NHS England. NHS Commissioning National Programmes of Care and Clinical Reference Groups F03.HIV 2015 [cited 2016 12th February]. Available from: https://www.england.nhs.uk/commissioning/spec-services/npc-crg/blood-and-infection-group-f/f03/.
414. Peters L, Hughes G, Brown A, Delpech V, Kinghorn G, Gill ON. Incidence of acute STIs in HIV-infected persons receiving HIV care - Prevention failure? HIV Medicine. 2010;11:17.
415. Keaveney S, Sadlier C, O'Dea S, Delamere S, Bergin C. High prevalence of asymptomatic sexually transmitted infections in HIV-infected men who have sex with men: a stimulus to improve screening. Int J STD AIDS. 2014;25(10):758-61.
416. Paparello J, Chilton D. Sexually transmitted infection (STI) screening in an inner London HIV outpatient unit: Positivity, partner notification (PN), and public health. HIV Medicine. 2014;15:102.
417. Carpenter RJ, Refugio ON, Adams N, O'Brien KP, Johnson MD, Groff HL, et al. Prevalence and factors associated with asymptomatic gonococcal and chlamydial infection among US Navy and Marine Corps men infected with the HIV: A cohort study. BMJ open. 2013;3(5).
418. Toby M, White J, De Ruiter A, Chilton D. A retrospective analysis of HIV-positive patients diagnosed with sexually transmitted infection (STI) on asymptomatic screening: the risk to public health. HIV Medicine. 2011;12:6.
419. Brook G, McSorley J, Shaw A. Retrospective study of the effect of enhanced systematic sexually transmitted infection screening, facilitated by the use of electronic patient records, in an HIV-infected cohort. HIV Medicine. 2013;14(6):347-53.
420. Winston A, Hawkins D, Mandalia S, Boag F, Azadian B, Asboe D. Is increased surveillance for asymptomatic syphilis in an HIV outpatient department worthwhile? Sex Transm Infect. 2003;79(3):257-9.
421. Fernandez-Davila P, Folch C, Ferrer L, Soriano R, Diez M, Casabona J. Hepatitis C virus infection and its relationship to certain sexual practices in men-who-have-sex-with-men in Spain: Results from the European MSM internet survey (EMIS). Enfermedades Infecciosas y Microbiologia Clinica. 2015;33(5):303-10.

422. Urbanus AT, Van De Laar TJ, Stolte IG, Schinkel J, Heijman T, Coutinho RA, et al. Hepatitis C virus infections among HIV-infected men who have sex with men: An expanding epidemic. Aids. 2009;23(12):F1-F7.
423. De Vrieze NHN, Mooij SH, De Vries HJC, Van Rooijen M, Heijman T, Van Eeden A, et al. Sexually transmitted infections in HIV-infected men who have sex with men (MSM), can we predict a new episode of STI? Nederlands Tijdschrift voor Dermatologie en Venereologie. 2014;24 (1):51-2.
424. Katz D, Dombrowski J, Golden M. Predicting acquisition of asymptomatic bacterial sexually transmitted infections among HIV-infected men who have sex with men. Sexually Transmitted Diseases. 2014;41:S35.
425. Mayer KH, O'Cleirigh C, Skeer M, Covahey C, Leidolf E, Vanderwarker R, et al. Which HIV-infected men who have sex with men in care are engaging in risky sex and acquiring sexually transmitted infections: Findings from a Boston community health centre. Sexually Transmitted Infections. 2010;86(1):66-70.
426. Soni S, Dosekun O, Hains M, Fox J. Sexual behaviour is inadequately assessed in the routine clinical care of HIV-positive patients. HIV Medicine. 2010;11:50-1.
427. Wielding S, Wilks D, Panton L, Clutterbuck D. Development and use of an HIV outpatient integrated care pathway. HIV Medicine. 2014;15:26.
428. Bolan RK, Beymer M, Klausner JD, Flynn R, Leibowitz A. Doxycycline prophylaxis for syphilis in a persistently high risk HIV infected population. Sexually Transmitted Infections. 2013;89.
429. Hirshfield S, Chiasson MA, Wagmiller RL, Jr., Remien RH, Humberstone M, Scheinmann R, et al. Sexual dysfunction in an Internet sample of U.S. men who have sex with men. The journal of sexual medicine. 2010;7(9):3104-14.
430. Cove J, Petrak J. Factors associated with sexual problems in HIV-positive gay men. Int J STD AIDS. 2004;15(11):732-6.
431. Mao L, Newman CE, Kidd MR, Saltman DC, Rogers GD, Kippax SC. Self-reported sexual difficulties and their association with depression and other factors among gay men attending high HIV-caseload general practices in Australia. The journal of sexual medicine. 2009;6(5):1378-85.
432. Scanavino Mde T. Sexual Dysfunctions of HIV-Positive Men: Associated Factors, Pathophysiology Issues, and Clinical Management. Advances in urology. 2011;2011:854792.
433. Bourne A, Hickson F, Keogh P, Reid D, Weatherburn P. Problems with sex among gay and bisexual men with diagnosed HIV in the United Kingdom. BMC Public Health. 2012;12:916.
434. Peixoto MN, P. . Prevalence of sexual problems and associated distress among gay and heterosexual men. Sex Rel Therapy. 2015;30(2):211-5.
435. Shindel AW, Vittinghoff E, Breyer BN. Erectile dysfunction and premature ejaculation in men who have sex with men. The journal of sexual medicine. 2012;9(2):576-84.
436. Jones M, Klimes I, Catalan J. Psychosexual problems in people with HIV infection: controlled study of gay men and men with haemophilia. AIDS Care. 1994;6(5):587-93.
437. Richardson D, Lamba H, Goldmeier D, Nalabanda A, Harris JR. Factors associated with sexual dysfunction in men with HIV infection. Int J STD AIDS. 2006;17(11):764-7.
438. Shindel AW, Horberg MA, Smith JF, Breyer BN. Sexual dysfunction, HIV, and AIDS in men who have sex with men. AIDS Patient Care STDS. 2011;25(6):341-9.
439. Asboe D, Catalan J, Mandalia S, Dedes N, Florence E, Schrooten W, et al. Sexual dysfunction in HIV-positive men is multi-factorial: a study of prevalence and associated factors. AIDS Care. 2007;19(8):955-65.
440. Campbell. T WC. Working clinically with gay men with sexual performance problems. . Sex Rel Therapy 2006;21(4):419-28.
441. Bourne A, Hammond G, Hickson F, Reid D, Schmidt AJ, Weatherburn P, et al. What constitutes the best sex life for gay and bisexual men? Implications for HIV prevention. BMC Public Health. 2013;13:1083.

442. Berner M, Gunzler C. Efficacy of psychosocial interventions in men and women with sexual dysfunctions--a systematic review of controlled clinical trials: part 1-the efficacy of psychosocial interventions for male sexual dysfunction. The journal of sexual medicine. 2012;9(12):3089-107.
443. Montorsi F, Adaikan G, Becher E, Giuliano F, Khoury S, Lue TF, et al. Summary of the recommendations on sexual dysfunctions in men. The journal of sexual medicine. 2010;7(11):3572-88.
444. Althof SE, McMahon CG, Waldinger MD, Serefoglu EC, Shindel AW, Adaikan PG, et al. An Update of the International Society of Sexual Medicine's Guidelines for the Diagnosis and Treatment of Premature Ejaculation (PE). Sexual medicine. 2014;2(2):60-90.
445. McMahon CG. Management of ejaculatory dysfunction. Internal medicine journal. 2014;44(2):124-31.
446. NICE. Premature ejaculation: dapoxetine 2014 [Available from: http://www.nice.org.uk/advice/esnm40.
447. Richardson D, Goldmeier D, Green J, Lamba H, Harris JR, Dysfunction BSIGfS. Recommendations for the management of premature ejaculation: BASHH Special Interest Group for Sexual Dysfunction. Int J STD AIDS. 2006;17(1):1-6.

Statement of editorial independence

This guideline was commissioned, edited and endorsed by the BASHH CEG without external funding being sought or obtained.

All members of the guideline writing committee completed the BASHH conflicts of interest declaration detailed below at the time the guideline's final draft was submitted to the CEG. The details of any actual or potential conflicts of interest will be documented by the CEG at this point in the guideline.

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The BASHH Clinical Effectiveness Group (CEG) receives funding exclusively from BASHH for room hire and refreshments and for travel from either BASHH or from member's employers. The professional activities of BASHH are funded by membership fees from the health care professionals subscribing to the organisation. The recommendations made in the clinical guidelines commissioned by the CEG are based on evidence from the medical literature synthesised according to the guideline production manual. The CEG functions independently of the BASHH board and so we believe that the no views or interests of the funding body influence the final guideline recommendations.

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Whenever possible, members should not have CoI relevant to their role and members with CoI should represent not more than a minority of the group. The chair or co-chairs should not be a person(s) with a CoI.

For CEG members the guideline CoI form is completed at least every 3 years and for authors before they commence work on a guideline. If an individual's circumstances regarding CoI change a new form should be submitted as soon as possible.

All CoI of each member should be reported and discussed openly by the prospective development group prior to the onset of the work. Each panel member should explain how their CoI could influence the guideline development process or specific recommendations. Chairs and vice chairs should not have any personal professional financial interests that are relevant to guideline production. 22

Potential for bias should be taken into account through a combination of factors, for example, systematic literature review, critical appraisal, peer review, editorial independence and a conflicts-of-interest policy. Details on the credibility and any potential bias of the guidance in general, and the conclusions and recommendations in particular should be stated in the guideline in question.

As a current member of the CEG, or as an author involved in guideline production for the BASHH CEG I declare that:

Prior to accepting the invitation to participate in the BASHH CEG or a guideline development group I declared all interests and activities potentially resulting in conflicts of interest (CoI) with development group activity, by written disclosure to those convening the group. This disclosure reflects all current and planned commercial, non-commercial, intellectual, institutional, and patient/public activities pertinent to the potential scope of the guideline. If my circumstances with regard to this change during guideline production I will inform the BASHH CEG editor and lead guideline author.

Any CoI s have been clearly declared and the impact they may have on the guidance process and development of recommendations has been stated and considered by the CEG.

I have divested myself of financial investments I or my family have in, and not participate in marketing activities or advisory boards of those whose interests could be affected by the guideline recommendations

Any relevant personal professional interests are declared here including personal professional financial interests:

Name:

Signature:

Guideline group: UK National guideline on the sexual health of MSM

BASHH CEG Composition

From January 2015 the membership of the CEG is:
Dr Keith Radcliffe (Chair)
Dr Darren Cousins
Dr Mark FitzGerald
Dr Deepa Grover
Dr Sarah Hardman
Dr Stephen Higgins
Dr Margaret Kingston
Dr Michael Rayment
Dr Ann Sullivan

Appendix 1. Search terms:

Section 1:

MSM AND Access to care, Outreach, generic, Service, Primary Care. MSM OR Gay AND Proctoscopy, Sexual History, Examination, Hepatitis

Section 2.1

MSM AND Chlamydia, Gonorrhoea, Lymphogranuloma venereum, Mycoplasma genitalium, HSV, Syphilis

Section 2.2

Men who have sex with men OR MSM OR gay men AND HIV, HIV seroconversion, acute seroconversion, HIV testing, HIV AND Home sampling, HIV AND home testing, MSM AND couples AND HIV testing

Section 3

PubMed Search up to December 2014 using MeSH terms:
(((((("colitis"[MeSH Major Topic] OR "enterocolitis"[MeSH Major Topic]) OR "proctocolitis"[MeSH Major Topic]) OR "proctitis"[MeSH Major Topic]) OR "gastroenteritis"[MeSH Major Topic])) AND (((gay[MeSH Major Topic]) OR homosexual[MeSH Major Topic]) OR MSM[MeSH Major Topic])

(((((((dysentry[Title/Abstract]) OR diarrhoea[Title/Abstract]) OR shigella[Title/Abstract]) OR ETEC[Title/Abstract]) OR EHEC[Title/Abstract]) OR vero[Title/Abstract]) OR VTEC[Title/Abstract])) AND (((MSM[Title/Abstract]) OR gay[Title/Abstract]) OR sexual[Title/Abstract])

(((((("colitis"[MeSH Major Topic] OR "enterocolitis"[MeSH Major Topic]) OR "proctocolitis"[MeSH Major Topic]) OR "proctitis"[MeSH Major Topic]) OR "gastroenteritis"[MeSH Major Topic])) AND "Disease transmission, infectious"[MeSH Major Topic]

(((((("colitis"[MeSH Major Topic] OR "enterocolitis"[MeSH Major Topic]) OR "proctocolitis"[MeSH Major Topic]) OR "proctitis"[MeSH Major Topic]) OR "gastroenteritis"[MeSH Major Topic])) AND "Therapeutics"[MeSH Major Topic]

(((((("colitis"[MeSH Major Topic] OR "enterocolitis"[MeSH Major Topic]) OR "proctocolitis"[MeSH Major Topic]) OR "proctitis"[MeSH Major Topic]) OR "gastroenteritis"[MeSH Major Topic])) AND "Diagnosis"[MeSH Major Topic]

i. 2013 European Guideline on the management of proctitis, proctocolitis and enteritis caused by sexually transmissible pathogens
ii. Sexually Transmitted Diseases Treatment Guidelines, 2010. Centers for Disease Control and Prevention

iii. Clinical Knowledge Summaries, National Institute for Health and Care Excellence (http://cks.nice.org.uk/)
iv. Cochrane Collaboration Databases (www.cochrane.org)

Section 4

Men who have sex with men OR MSM OR gay men AND HPV OR genital warts. Imiquimod AND anal warts

Section 5

MSM AND Partner Notification, Apps, Online

Section 6

Men who have sex with men OR MSM OR gay men AND HIV, HIV seroconversion, acute seroconversion, PEP, PrEP, HIV prevention, MSM or Men who have sex with men AND HIV infected AND STI

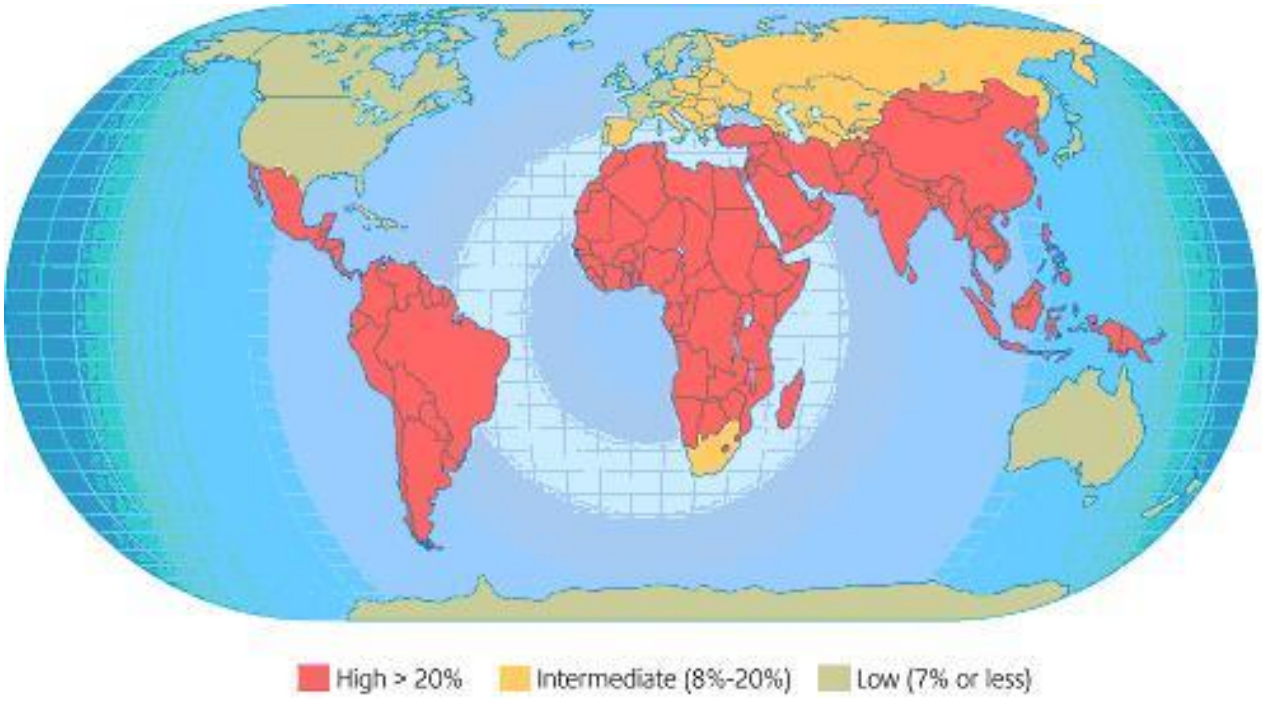
Section 7

MSM AND sexual, psychosexual, difficulties, premature ejaculation, erectile dysfunction, (low) sexual desire, sexual compulsion

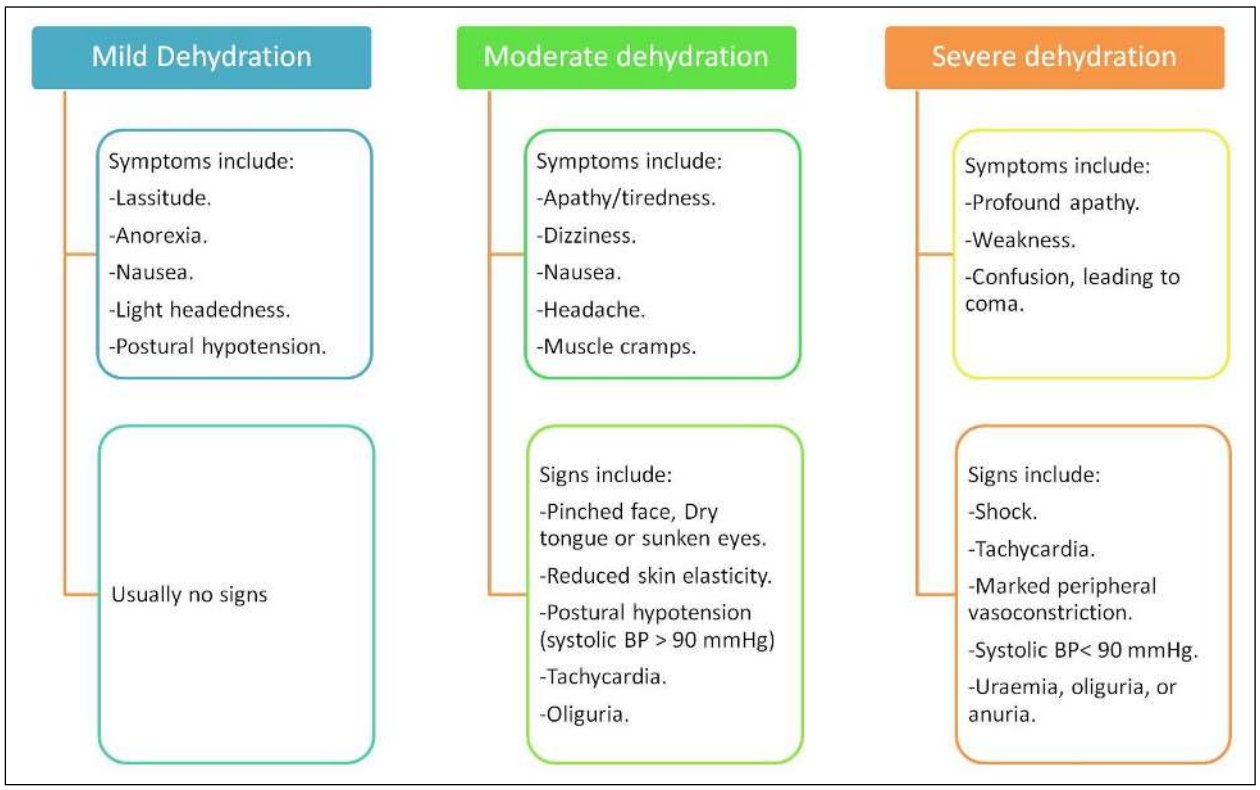
Appendix 2: Additional Information on symptomatic gastrointestinal infections.

Appendix 2.1: Map

Appendix 1.3: Map showing risk zones for travellers' diarrhoea (from: NATHANC *https://www.nathnac.org/travel/factsheets/travellersdiarrhoea.htm)*



Appendix 2.2: Assessment of severity of dehydration


Mild Dehydration
Symptoms include:
-Lassitude.
-Anorexia.
-Nausea.
-Light headedness.
-Postural hypotension.
Usually no signs
Moderate dehydration
Symptoms include:
-Apathy/tiredness.
-Dizziness.
-Nausea.
-Headache.
-Muscle cramps.
Signs include:
-Pinched face, Dry tongue or sunken eyes.
-Reduced skin elasticity.
-Postural hypotension (systolic BP > 90 mmHg)
-Tachycardia.
-Oliguria.
Severe dehydration
Symptoms include:
-Profound apathy.
-Weakness.
-Confusion, leading to coma.
Signs include:
-Shock.
-Tachycardia.
-Marked peripheral vasoconstriction.
-Systolic BP< 90 mmHg.
-Uraemia, oliguria, or anuria.

Appendix 2.3: Guidance on collecting a faecal specimen for microbiological examination

Collecting a stool specimen for microbiological examination

1. DO NOT mix urine with the stool sample. If you need to pass water, do so first.
2. Place a wide mouth container (potty, empty plastic food container e.g. 1 litre ice cream carton) in the bowl, or put clean newspaper or plastic wrap over the toilet seat opening (this prevents the faecal/stool specimen from falling into the toilet bowl. (Collection container does not have to be sterile, but must be clean).
3. Pass stool onto the potty, plastic container, newspaper or plastic wrap.
4. Using the spoon built into the lid of the collection tube (or the wooden sticks, if supplied), place small scoopfuls of stool from areas which appear bloody, slimy or watery into the tube. DO NOT OVERFILL. Try not to spill stool on the outside of the tube.
5. Replace the collection tube lid and screw on tightly.
6. Dispose of remaining stool in your potty, plastic container or newspaper down the toilet. Clean potty with hot soapy water. Wrap plastic container, newspaper or plastic wrap in newspaper and dispose of in normal refuse in a plastic bag.
7. Label the collection tube with your name, date of birth and the date of collection
8. Place the container in the plastic bag attached to the specimen request form.
9. Wash your hands thoroughly in hot running water with soap.
10. Deliver to the surgery/laboratory as soon as possible.
11. If specimen cannot be delivered immediately, refrigerate in surgery fridge until delivery.

Appendix 2.4: Advice on preventing spread of infection (285)

- Hands should be washed thoroughly with (preferably liquid) soap in warm running water and dried after going to the toilet and before preparing or serving food or eating meals.
- Towels and flannels should not be shared.
- A flush toilet should be used if possible. If a commode or bedpan must be used, it should be handled with gloves, the contents disposed of into the toilet, and the container then washed with hot water and detergent and allowed to dry.
- Soiled clothing and bed linen should be washed separately from other clothes and at the highest temperature they will tolerate (for example 60°C or higher for linen), after removal of excess faecal matter into the toilet. Soaking in disinfectant is not necessary. The washing machine should not be more than half full to allow for adequate washing and rinsing.
- Toilet seats, flush handles, basin taps, surfaces, and toilet door handles should be cleaned at least once daily with hot water and detergent. A disinfectant (if available) and a disposable cloth (or one dedicated for toilet use) should be used to clean toilets.
- They should not go to work or other institutional settings until at least 48 hours after diarrhoea has stopped. Public health authorities will advise if a pathogen is isolated from the person's stool sample: longer periods of exclusion are required in some circumstances.
- They should avoid entering swimming pools for 2 weeks after the last episode of diarrhoea.