

# Awareness of chronic hepatitis B and C in men who have sex with men in Belgium: epidemiological survey and on-site screening

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## ABSTRACT

**Objectives** To eliminate hepatitis B and C virus (HBV/HCV) as a public health threat by 2030, the WHO focuses on screening key populations, including men who have sex with men (MSM).

This study aims to assess HBV and HCV knowledge and awareness and HCV prevalence in MSM in Belgium.

**Methods** First, a questionnaire was designed to assess MSM's knowledge of HBV and HCV infection (disease process, vaccination, treatment and transmission routes). This questionnaire was conducted online, and by means of a tablet-based face-to-face questionnaire at the Antwerp and Belgian Pride. Second, HCV and HIV prevalence data were collected during outreach projects and office screening for sexually transmitted infections (STIs) organised by Sensoa and Exaequo, a Flemish and Walloon sexual health organisation.

**Results** 300 MSM completed the questionnaire (median age 36 years; 7.7% HIV+). Mean overall survey scores were low (HBV: 41.1%; HCV: 39.8%). Few participants identified all transmission routes correctly (HBV: 15%; HCV 1%).

The degree of education was significantly correlated with HBV knowledge and showed a trend towards correlation with HCV knowledge. HCV knowledge was significantly correlated with high-risk sexual behaviour.

The prevalence of HCV and HIV was 0.3% and 1.0%, respectively, in MSM attending commercial gay venues and 0% and 1.9% in MSM attending office STI screening.

**Conclusions** Knowledge of HBV and HCV infection in MSM is poor. More awareness campaigns are needed, focusing on frequent HCV risk factors (group sex, chemsex, receptive fisting, and sharing of anal toys and anal douching devices), especially targeting low-educated MSM. HBV vaccination of MSM requires continued attention.

The prevalence of HCV and HIV was remarkably low in commercial gay venues and may be higher in older MSM or in subcultures where risk factors coexist (eg, chemsex). The cost-effectiveness of internet-based approaches with subsequent at-home testing needs to be evaluated in the future.

## BACKGROUND

Hepatitis B and C viruses (HBV and HCV) are two major pathogens that are more (HBV) or less (HCV) commonly sexually transmitted in men who have sex with men (MSM). Today, effective preventive and therapeutic measures for HBV infections exist and direct-acting antivirals (DAAs) have made

## KEY MESSAGES

- ⇒ Knowledge of hepatitis B and C virus (HBV/HCV) infections among men who have sex with men (MSM) is poor.
- ⇒ Awareness campaigns for MSM need to focus on HBV vaccination, on all HCV risk factors (group sex, chemsex, receptive fisting, and sharing of anal toys and anal douching devices) and on low-educated MSM.
- ⇒ An HCV on-site screening approach in commercial gay venues was not cost-effective.

HCV infection a curable disease. However, global viral hepatitis mortality rates continued to rise in 2015.<sup>1</sup> Therefore, the WHO targets elimination of viral hepatitis as a public health threat by 2030, focusing on key populations including MSM.<sup>1</sup>

In the early 2000s, there was a rapid expansion of the HCV epidemic among HIV+ MSM. The advent of DAAs has counteracted the rising HCV incidence, but ongoing sexual risk behaviour (ie, chemsex, group sex) continues to fuel the epidemic through reinfection. In essence, behavioural interventions play a key role in achieving elimination.<sup>2</sup> Therefore, this study aims to assess knowledge of HBV/HCV infections in MSM to identify potential targets for awareness campaigns. In addition, we need to assess the current state of the HCV epidemic among MSM attending commercial gay venues, as there are no large European data on this topic.

## METHODS

### Survey on HBV and HCV knowledge and awareness

#### Survey design

We used an online questionnaire (online supplemental table 1) in Dutch, taking 5–10 min to complete. Demographics were recorded, as well as the level of education (online supplemental table 2) and self-reported HIV, HBV and HCV infection. Presence of risky sexual practices (group sex, threesomes, chemsex, receptive fisting, sharing of anal toys, sharing of anal douching devices) and absolute number of sexual partners in the last 6 months were documented, as well as responses to 14 knowledge items on HBV and 15 on HCV. Correct answers to preventive questions were considered essential

for prevention of getting HBV/HCV infected (figure 1, questions in boxes).

### Survey dissemination

The online questionnaire was promoted through Facebook, the website of OutTV and Sensoa (the Flemish expertise centre of sexual health), and promotional cards at the Belgian and Antwerp Gay Pride and in commercial gay clubs and saunas (from September to December 2017). Furthermore, we employed a face-to-face questionnaire using a tablet at the Belgian and Antwerp Pride (in May and August of 2018, respectively).

### Prevalence study in MSM visiting commercial gay venues

#### Study design

We joined Sensoa in outreach projects and voluntarily tested visitors at peak times in 10 commercial gay bars and saunas in Antwerp, Brussels, Avelgem and Bekkevoort (where sex was possible) and during two editions of a gay fetish event in Antwerp (2019–2020).

Additional HCV test results were collected in cooperation with Exaequo (a Walloon non-profit sexual health organisation) during sexually transmitted infection (STI) screening in Exaequo offices and during outreach projects in commercial gay venues in Brussels and Wallonia in 2019.

During outreach projects, a team of three investigators (study team member, Sensoa/Exaequo member and volunteer) recruited MSM at random. MSM who agreed to participate completed the informed consent and performed an HCV and HIV test. During STI screening in offices, MSM presented at their own initiative.

#### Testing

During Sensoa's prevalence study, an oral quick test for HCV (OraQuick, rapid HCV antigen test by OraSure Technologies, Bethlehem, Pennsylvania, USA) was used. A DPP HIV 1/2 Assay on saliva (Chembio Diagnostics, Medford, New York, USA) was sampled and analysed in the laboratory of the Institute of Tropical Medicine in Antwerp. Test results were available online 3 days later.

TOYO VHC (Turkclab, Izmir, Turkey) and Multiplex HIV-1/HIV-2/Syphilis Antibody Test (INSTI, Biolytical Laboratories, Richmond, British Columbia, Canada) were used for the determination of HCV and HIV status on capillary blood by Exaequo. Tests were performed on-site and results were immediately communicated to the patient.

### Statistical analysis

Statistical analysis was performed using IBM SPSS Statistics V.25.0.<sup>3</sup> Descriptive statistics, independent t-tests and bivariate Spearman rank-order correlation coefficients were computed based on total knowledge scores (TS) and knowledge scores on prevention questions (PS). The latter was applied given that the three assumptions were met (ordinal variables, paired observations and monotonic relationship between the two variables). Missing data were not analysed. A *p* value less than 0.05 was considered statistically significant.

## RESULTS

### Survey on HBV and HCV knowledge and awareness

#### Population

300 MSM completed the questionnaire (median age 36 years; 40.3% no higher education; 7.7%, 3.7% and 2.0% self-reported HIV, HBV and HCV infection, respectively) (online supplemental table 3).

#### Sexual risk behaviour

The most reported sexual risk behaviours were group sex ( $\geq 3$  partners: 24.7% including threesomes 17.7%) and chemsex

(11.0%), next to sharing anal toys (6.7%), receptive fisting (5.0%) and sharing anal douching devices (1.0%). One-third of respondents (29.3%) had sex with one partner in the last 6 months ( $\leq 5$  partners: 56.0%; 6–10 partners: 11.3%;  $> 10$  partners: 27.0%).

### HBV and HCV knowledge items

Mean overall survey scores were low (HBV: 41.1%; HCV: 39.8%). Few participants identified all transmission routes correctly (HBV: 15%; HCV: 1%) and few participants answered all questions on prevention correctly (HBV: 42.7%; HCV: 33.3%).

Figure 1 displays the percentage of correctly answered survey questions.

### Associations between scores on HBV and HCV knowledge items and influencing factors

The degree of education was significantly correlated with the total HBV knowledge scores (TS  $p < 0.001$ ,  $r_s = 0.209$ ; PS  $p = 0.074$ ,  $r_s = 0.107$ ) and showed a trend towards correlation with the HCV knowledge scores (TS  $p = 0.057$ ,  $r_s = 0.110$ ; PS  $p = 0.052$ ,  $r_s = 0.119$ ). The number of risky sexual practices (TS  $p < 0.0001$ ,  $r_s = 0.205$ ; PS  $p = 0.002$ ,  $r_s = 0.192$ ) and sexual partners (TS  $p = 0.024$ ,  $r_s = 0.131$ ; PS  $p = 0.158$ ,  $r_s = 0.087$ ) was significantly correlated with total HCV knowledge scores. MSM who reported having engaged in group sex ( $p < 0.001$  (1.41–3.58)), threesomes ( $p = 0.005$  (0.60–3.25)) and chemsex ( $p = 0.023$  (0.18–2.46)) had higher total HCV knowledge scores (online supplemental table 4).

62% of MSM are interested in improving their knowledge, preferably online (82.3%).

### Prevalence study in MSM visiting commercial gay venues

A total of 471 MSM participated in the prevalence study (online supplemental table 5). Screening visits (outreach setting, 315 MSM, median age 38 years) took place on weekdays (12.0%), Fridays (19.8%) and weekends (68.2%). At the Exaequo offices (156 MSM, median age 31 years), participants were mainly screened because of risky sexual behaviour (56.1%) or regular monitoring (41.5%) and much less often because of symptoms (0.6%).

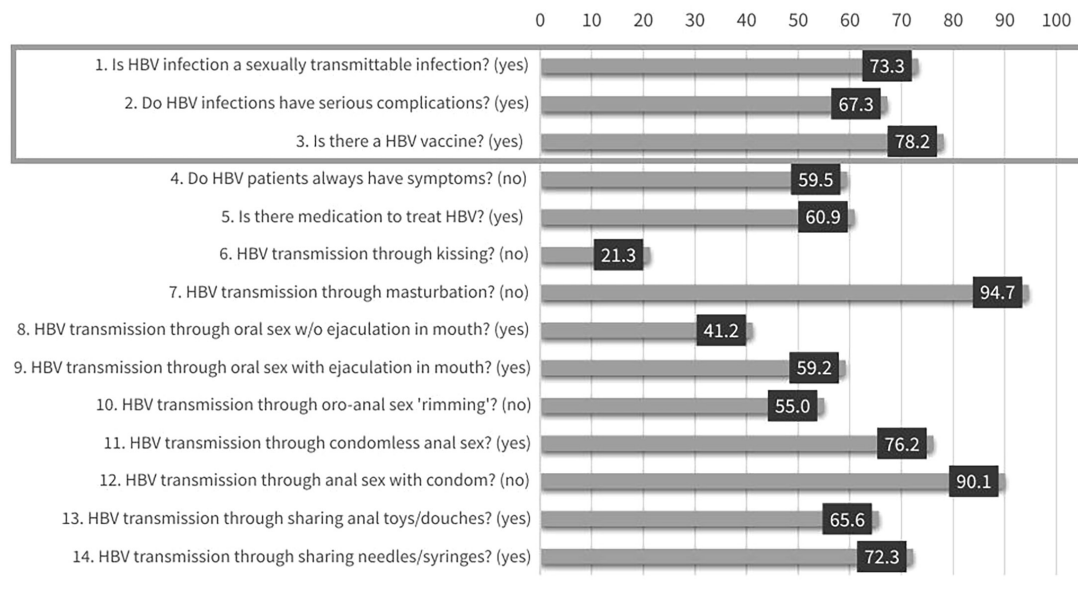
The prevalence of HCV and HIV was 0.3% and 1.0%, respectively, in MSM attending commercial gay venues and 0% and 1.9% in MSM attending office STI screening. The only positive HCV test result was from a known HIV-infected patient.

## DISCUSSION

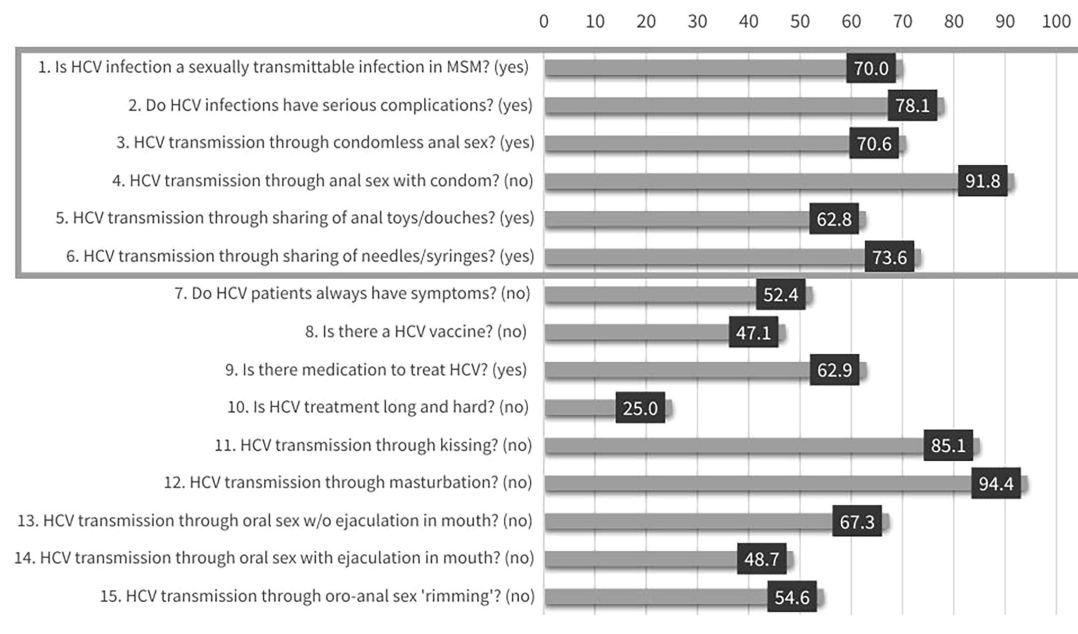
Very little research has been done on HCV awareness among MSM in the DAA era. Our data indicate that HCV awareness is still poor, as they are similar to those of a survey that was conducted among 333 MSM in Flanders in 2010.<sup>4</sup> However, there is a pivotal role for behavioural interventions on the road towards elimination in the DAA era. Over one-fifth of MSM remain unaware of the HBV vaccine that has been available since 1982.

As also shown in a Dutch survey, most participants correctly identified sharing needles as an HCV transmission route, but other risk factors were far less well-known.<sup>5</sup> As HCV is a bloodborne pathogen, it is well-known that direct blood exposure leads to HCV transmission. However, during group sex, a blood-contaminated penis, condom, fist or toy of an insertive partner can act as a vector for

## Percentage of correctly answered survey questions on HBV



## Percentage of correctly answered survey questions on HCV



**Figure 1** Percentage of correctly answered survey questions and transmission routes on HBV and HCV in a setting with two sexual partners (correct answer between brackets, preventive questions in the boxes, no weighting applied in score calculations). HBV, hepatitis B virus; HCV, hepatitis C virus; MSM, men who have sex with men.

subsequent receptive partners, and blood contact may go unnoticed.<sup>6,7</sup> As we showed that many MSM engage here, we advocate that HCV awareness campaigns focus on all HCV risk factors, and not just on overt blood contact or condom use.

This study confirms a positive association between HCV knowledge and risky sexual behaviour, and between HBV and HCV knowledge and educational attainment.<sup>8</sup> Therefore, awareness campaigns need to target low-educated MSM.

A time location-based HCV prevalence study among MSM in France showed higher chronic HCV prevalence (0.7% in all MSM; 3.0% in HIV+ MSM; 14.3% HIV+).<sup>9</sup> Surprisingly, no new HCV cases were detected here. Possibly, MSM nowadays more often meet via internet-based partner selection.<sup>10</sup>

Every study has its limitations. As the survey was conducted in Dutch, MSM with a migrant background may be under-represented. Survey questions are simplified to be clear to

participants. An on-site screening approach may have induced selection bias. MSM already engaged in HIV clinics are less likely to participate.

## CONCLUSION

In the HIV pre-exposure prophylaxis and DAA era, there is a pivotal role for behavioural interventions to prevent HCV (re) infection in MSM. Awareness campaigns are urgently needed, addressing frequent and poorly known HCV risk factors (group sex, chemsex, receptive fisting, and sharing of anal toys and anal douching devices) and targeting low-educated MSM. HBV vaccination of MSM requires continued attention.

An HCV on-site screening in MSM visiting commercial gay venues was not cost-effective. In the future, internet-based approaches with subsequent at-home testing need to be evaluated.

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## REFERENCES

- 1 World Health Organization. Global hepatitis report 2017. 2017. Available: <https://www.who.int/publications-detail-redirect/global-hepatitis-report-2017> [accessed 8 Mar 2022]
- 2 van de Laar TJ, Richel O. Emerging viral Stis among HIV-positive men who have sex with men: the era of hepatitis C virus and human papillomavirus. *Sex Transm Infect* 2017;93:368–73.
- 3 IBM Corp. IBM SPSS statistics for Macintosh, version 25.0. Armonk, NY. 2017.
- 4 De Ryck I, Berghe VW, Antonneau C, et al. Awareness of hepatitis C infection among men who have sex with men in Flanders, Belgium. *Acta Clin Belg* 2011;66:46–8.
- 5 Lambers FAE, Prins M, Davidovich U, et al. High awareness of hepatitis C virus (HCV) but limited knowledge of HCV complications among HIV-positive and HIV-negative men who have sex with men. *AIDS Care* 2014;26:416–24.
- 6 Schmidt AJ, Rockstroh JK, Vogel M, et al. Trouble with bleeding: risk factors for acute hepatitis C among HIV-positive gay men from Germany--a case-control study. *PLoS One* 2011;6:e17781.
- 7 Apers L, Vanden Berghe W, De Wit S, et al. Risk factors for HCV acquisition among HIV-positive MSM in Belgium. *J Acquir Immune Defic Syndr* 2015;68:585–93.
- 8 Lea T, Hopwood M, Aggleton P. Hepatitis C knowledge among gay and other homosexually active men in Australia. *Drug Alcohol Rev* 2016;35:477–83.
- 9 Vaux S, Chevaliez S, Saboni L, et al. ANRS-Prevagay group. prevalence of hepatitis C infection, screening and associated factors among men who have sex with men attending gay Venues: a cross-sectional survey (PREVAGAY). *BMC Infect Dis* 2019;19:315.
- 10 Prinsenbergh T, Schinkel J, Zantkuij P, et al. Internet-guided HCV-RNA testing: a promising tool to achieve hepatitis C micro-elimination among men who have sex with men. *J Viral Hepat* 2022;29:677–84.