

# HBV, HAV AND HCV INFECTIONS AMONG MEN WHO HAVE SEX WITH MEN AND TRANSGENDER WOMEN IN THE MIDWEST BRAZIL

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## BACKGROUND

Multiple sexual partners, anal intercourse, irregular condom use and co-infection with other sexually transmitted diseases are important factors associated with the risk of hepatitis C virus (HCV), hepatitis B virus (HBV) and hepatitis A virus (HAV) infections among men who have sex with men (MSM). This study aimed to investigate the serological and molecular profile of HBV, HCV and HAV infections in MSM and transgender women (TW) in Campo Grande, Mato Grosso do Sul, Central Brazil.

## METHODS

Between November 2011 to September 2013, 430 MSM/TW in Campo Grande city, Central Brazil were invited to participate in this cross-sectional study. The 430 participants were submitted to an interview and collection of blood samples for the detection of HBV (HBsAg, anti-HBc and Total anti-HBc), HCV (anti-HCV) and HAV (anti-HAV IgM and Total) serological markers using enzyme-linked immunosorbent assay. HBsAg positive samples were screened for the presence of hepatitis B e antigen (HBeAg), antibodies against HBeAg (anti-HBe) and anti-HBc IgM. In addition, HBV vaccine was administered in susceptible MSM and TW using conventional (0, 1, 6 months) or accelerated scheme (0, 1, 2 months). HBV DNA was detected by semi-nested polymerase chain reaction (PCR) in total anti-HBc/HBsAg positive samples and in HBsAg negative samples in order to investigate occult hepatitis B infection (OBI).

## RESULTS

From 430 MSM who participated in the study, 278 (64.7%) were MSM and 152 (35.3%) were TW. The overall prevalence of HBV infection in the studied MSM was 16.6%, varying from 10.5% (CI: 95%: 6.8 - 14.0) in MSM to 27.8% (CI: 95%: 20.5 - 34.7) in TW (Fig. 1). Phylogenetic analysis from S gene revealed the presence of genotypes D (50%), A (25%) and F (25%) (Fig. 2). The prevalence of occult HBV infection in MSM was 4.6%. In order to assess compliance and vaccine response against hepatitis B, 176 MSM were vaccinated using conventional or accelerated schemes. As for the vaccine membership of 176 MSM who received the first dose, only 37 (21.1%) received the full vaccination schedule. Of the 20 MSM contacted to review the vaccine response, 15 (75%) responded to the vaccine with titers higher than 10 mIU/mL. Multivariate analysis of risk factors showed a significant association between infection caused by HBV and positivity for anti-*Treponema pallidum* in MSM and age greater than 25 years, history of blood transfusion, genital ulcer history and positivity for anti-*Treponema pallidum* in TW.

## CONCLUSIONS

The seroepidemiological findings indicate that preventive measures such as education actions in health and vaccination against hepatitis B are necessary for the control and prevention of these infections in the studied population.

## REFERENCES

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**Figure 1. Serological markers for hepatitis B infection and immunity among MSM and TW in Campo Grande, Brazil Central, 2011-2013.**

Variable	Serological Markers	MSM (N=278)		TW (N=152)	
		n (%)	95% CI <sup>1</sup>	n (%)	95% CI <sup>1</sup>
	Anti-HCV	1 (0.4)	0.1 – 0.6	4 (2.7)	1.8 – 3.4
Current infection	HBsAg+, Anti-HBc+	1 (0.4)	0.1 – 0.6	4 (2.7)	1.8 – 3.4
	PastAnti-HBc+	5 (1.8)	1.3 – 2.3	4 (2.7)	1.8 – 3.4
	infection(Anti-HBc alone)				
Immunity due to natural infection	Anti-HBc+, Anti-HBs+	23 (8.3)	5.0 – 11.5	34 (22.4)	15.7 – 29.0
	<b>Total infection</b>	29 (10.5)	6.8 – 14.0	42 (27.8)	20.5 – 34.7
Vaccine-associated immunity	Anti-HBs+	121 (43.6)	37.7 – 49.4	32 (21.1)	14.6 – 27.5
	HBV-Susceptible	128 (46.1)	40.2 – 51.9	78 (51.4)	43.4 – 59.3

## RESULTS

The prevalence of HCV exposure was 1.4% (95% CI: 0.3% - 2.5%). Univariate analysis of risk factors investigated showed a significant association between HCV infection and having 30 years of age or older, HIV-1 infection, alcohol consumption, history of injection drug use and consume of crack or related substances. The prevalence rate of anti-HAV was 69.9% (95% CI: 65.4-74.2). Only one sample was positive to anti-HAV IgM. After univariate analysis, being a sex worker, older age, performing diverse sexual practices, lower family income and education were associated with anti-HAV positivity.

**Figure 2. Serological and molecular characteristics of HBsAg positive samples in Campo Grande, Brazil Central, 2011 - 2013 (n=5).**

Identification	HBeAg	anti-HBe	HBV DNA	Genotype
HSH - 72	+	-	-	-
HSH - 187	+	-	+	A
HSH - 358	-	+	+	F
HSH - 397	+	-	+	D
<b>HSH - 431</b>	-	+	+	<b>D</b>

## CONFLICTS OF INTEREST

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