

# Risk Factors Associated with Hepatitis C Virus Acquisition in HIV-Infected Men who have Sex with Men: a Systematic Review

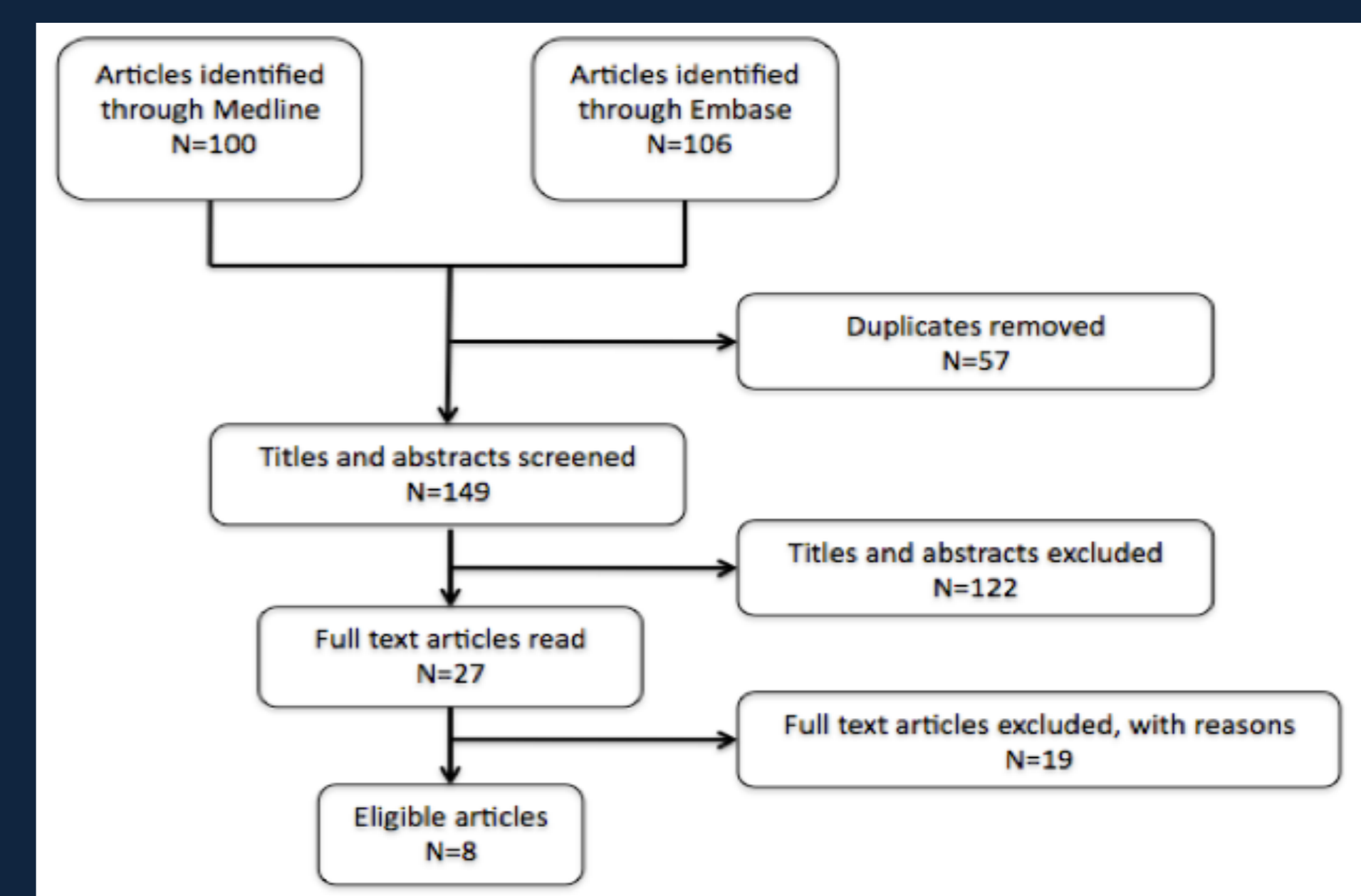
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## Background

There is an international epidemic of Hepatitis C Virus (HCV) infection among Human Immunodeficiency Virus (HIV)-infected men who have sex with men (MSM). It seems that injection drug use (IDU) is not the major mode of transmission in this population and that emerging risk factors are playing a dominant role. A systematic review was undertaken to identify risk factors associated with HCV acquisition in HIV-infected MSM.

## Methods

MEDLINE and Embase databases were searched for published literature. Search terms used were: Hepatitis C Virus, Human Immunodeficiency Virus, Men, Sex, Risk Factor and their related MeSH terms. The reference lists of identified articles were also scanned. Prospective and retrospective studies determining a relative risk measure for factors associated with HCV acquisition in HIV-infected MSM were included. Prospective and retrospective studies determining a relative risk measure for factors associated with HCV acquisition in HIV-infected MSM were included. Data extraction was performed using predefined data fields, including study quality indicators.



## Results

A number of risk factors were identified with statistically significant associations with HCV infection on multivariable analysis. Factors identified to have significant, independent associations were: IDU, unprotected anal intercourse, fisting, group sex, syphilis infection and non-injection recreational drug use.

Author, Year	Receptive UAI		Syphilis		Sex Toys		Fisting		Rectal Trauma		Group Sex		Insertive UAI		Recreational Drug Use (not IDU)	
	AOR	P Value	AOR	P Value	AOR	P Value	AOR	P Value	AOR	P Value	AOR	P Value	AOR	P Value	AOR	P Value
Danta <sup>a</sup> 2007	2.27 <sup>a</sup>	<0.05	2.25 <sup>a</sup>	<0.05	1.81 <sup>a</sup>	<0.05	4.57 <sup>a</sup>	<0.05	-	-	1.67 <sup>a</sup>	<0.05	1.75 <sup>a</sup>	<0.05	1.36 <sup>a</sup>	<0.05
Fierer, 2011	<b>23.00</b> (2.17-243.84)	<0.05	8.80 <sup>a</sup>	<0.05	4.38 <sup>a</sup>	<0.05	10.08 <sup>a</sup>	<0.05	-	-	19.28 <sup>a</sup>	<0.05	8.13	<0.05	11.37	<0.05
Schmidt, 2011	2.25 <sup>a</sup>	<0.05	2.69 <sup>a</sup>	>0.05	3.13 <sup>a</sup>	<0.05	5.71	<0.05	6.19	<0.05	3.5	<0.05	2.89 <sup>a</sup>	<0.05	3.25	<0.05

Values in brackets are the 95% confidence interval  
AOR: adjusted odds ratio  
UAI: unprotected anal intercourse  
A dash (-) indicates the factor was not explored in the study  
<sup>a</sup>Matched odds ratio on univariable analysis (AOR not provided)  
<sup>b</sup>Confidence interval not provided

Author, Year	IDU		UAI		Older Age		Higher CD4 Count		Syphilis		Fisting		Recreational drug use	
	Summary measure	P Value	Summary measure	P Value	Summary measure	P Value	Summary measure	P Value	Summary measure	P Value	Summary measure	P Value	Summary measure	P Value
Turner <sup>a</sup> , 2007	1.24 <sup>a</sup>	>0.05	4.11	<0.05	0.93 <sup>a</sup>	>0.05	1.00 <sup>a</sup>	>0.05	2.65 <sup>a</sup>	>0.05	6.27 <sup>a</sup>	<0.05	3.42 <sup>a</sup>	<0.05
Taylor <sup>a</sup> , 2011	6.12	<0.05	-	-	-	-	0.75	>0.05	-	-	-	-	-	-
Wandeler <sup>a</sup> , 2012	-	-	2.09	<0.05	0.60	>0.05	0.88	>0.05	2.11	<0.05	-	-	0.74	>0.05
Witt <sup>a</sup> , 2013	4.17	<0.05	3.12	<0.05	1.44	<0.05	0.93	<0.05	2.75	<0.05	-	-	-	-
Nishijima <sup>a</sup> , 2013	4.672	<0.05	-	-	0.99	>0.05	1.00	>0.05	1.14	>0.05	-	-	3.01	<0.05

Values in brackets are the 95% confidence interval  
IDU: injection drug use  
UAI: unprotected anal intercourse  
A dash (-) indicates the value was not explored in the study  
<sup>a</sup>Poisson regression analysis to generate an incidence rate ratio  
<sup>b</sup>Cox regression analysis to generate a hazard ratio  
<sup>c</sup>Confidence interval not provided

## Conclusion

This review reiterates that IDU is not the dominant route of transmission in this epidemic. Many of the risk factors identified in this review are sexual practices, and it seems that there are a number of ways that HCV can be transmitted through sex. The findings of this review will be useful to clinicians, researchers and public health authorities concerned with the prevention of sexually transmitted HCV.