

# PrEP implementation: Viral hepatitis C screening required?

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# Outline

1. Epidemiology of HCV in MSM
2. HCV infections and PrEP Users
3. PrEP guidelines and HCV testing
4. Conclusion

Persons at risk for HCV infection might also be at risk for infection with hepatitis B virus (HBV) or HIV.

### Recommendations for Testing Based on Risk for HCV Infection

<b>PERSONS</b>	<b>RISK OF INFECTION</b>	<b>TESTING RECOMMENDED?</b>
Injecting drug users	High	Yes
Recipients of clotting factors made before 1987	High	Yes
Hemodialysis patients	Intermediate	Yes
Recipients of blood and/or solid organs before 1992	Intermediate	Yes
People with undiagnosed liver problems	Intermediate	Yes
Infants born to infected mothers	Intermediate	After 12-18 mos. old
Healthcare/public safety workers	Low	Only after known exposure
People having sex with multiple partners	Low	No*
People having sex with an infected steady partner	Low	No*

# The ABCs of Hepatitis

	<b>HEPATITIS A</b> is caused by the Hepatitis A virus (HAV)	<b>HEPATITIS B</b> is caused by the Hepatitis B virus (HBV)	<b>HEPATITIS C</b> is caused by the Hepatitis C virus (HCV)
<b>U.S. Statistics</b>	<ul style="list-style-type: none"> <li>Estimated 2,500 new infections in 2014</li> </ul>	<ul style="list-style-type: none"> <li>Estimated 19,200 new infections in 2014</li> <li>Estimated 850,000–2.2 million people with chronic HBV infection</li> </ul>	<ul style="list-style-type: none"> <li>Estimated 30,500 new infections in 2014</li> <li>Estimated 2.7–3.9 million people with chronic HCV infection</li> </ul>
<b>Routes of Transmission</b>	<p>Ingestion of fecal matter, even in microscopic amounts, from:</p> <ul style="list-style-type: none"> <li>Close person-to-person contact with an infected person</li> <li>Sexual contact with an infected person</li> <li>Ingestion of contaminated food or drinks</li> </ul>	<p>Contact with infectious blood, semen, and other body fluids primarily through:</p> <ul style="list-style-type: none"> <li>Birth to an infected mother</li> <li>Sexual contact with an infected person</li> <li>Sharing of contaminated needles, syringes, or other injection drug equipment</li> <li>Needlesticks or other sharp instrument injuries</li> </ul>	<p>Contact with blood of an infected person primarily through:</p> <ul style="list-style-type: none"> <li>Sharing of contaminated needles, syringes, or other injection drug equipment</li> </ul> <p>Less commonly through:</p> <ul style="list-style-type: none"> <li>Sexual contact with an infected person</li> <li>Birth to an infected mother</li> <li>Needlestick or other sharp instrument injuries</li> </ul>
<b>Persons at Risk</b>	<ul style="list-style-type: none"> <li>Travelers to regions with intermediate or high rates of Hepatitis A</li> <li>Sex contacts of infected persons</li> <li>Household members or caregivers of infected persons</li> <li>Men who have sex with men</li> <li>Users of certain illegal drugs (injection and non-injection)</li> <li>Persons with clotting-factor disorders</li> </ul>	<ul style="list-style-type: none"> <li>Infants born to infected mothers</li> <li>Sex partners of infected persons</li> <li>Persons with multiple sex partners</li> <li>Persons with a sexually transmitted disease (STD)</li> <li>Men who have sex with men</li> <li>Injection drug users</li> <li>Household contacts of infected persons</li> <li>Healthcare and public safety workers exposed to blood on the job</li> <li>Hemodialysis patients</li> <li>Residents and staff of facilities for developmentally disabled persons</li> <li>Travelers to regions with intermediate or high rates of Hepatitis B (HBsAg prevalence of ≥2%)</li> </ul>	<ul style="list-style-type: none"> <li>Current or former injection drug users</li> <li>Recipients of clotting factor concentrates before 1987</li> <li>Recipients of blood transfusions or donated organs before July 1992</li> <li>Long-term hemodialysis patients</li> <li>Persons with known exposures to HCV (e.g., healthcare workers after needlesticks, recipients of blood or organs from a donor who later tested positive for HCV)</li> <li>HIV-infected persons</li> <li>Infants born to infected mothers</li> </ul>
<b>Incubation Period</b>	15 to 50 days (average: 28 days)	45 to 160 days (average: 120 days)	14 to 180 days (average: 45 days)
<b>Symptoms of Acute Infection</b>	<p><b>Symptoms of all types of viral hepatitis are similar and can include one or more of the following:</b></p> <ul style="list-style-type: none"> <li>Fever</li> <li>Fatigue</li> <li>Loss of appetite</li> <li>Nausea</li> <li>Vomiting</li> <li>Abdominal pain</li> <li>Gray-colored bowel movements</li> <li>Joint pain</li> <li>Jaundice</li> </ul>		
<b>Likelihood of</b>	< 10% of children < 6 years	< 1% of infants < 1 year develop symptoms	20%–30% of newly infected persons

## Viral Hepatitis - CDC Recommendations for Specific Populations and Settings

- Populations and Settings
- Asian American and Pacific Islander
- People Born 1945-1965
- Sexual Transmission
- HIV/AIDS
- Health Care Settings
- People who Inject Drugs
- Men Who Have Sex With Men**
- Diabetes
- Quick Links to Hepatitis ...

Viral Hepatitis > Populations and Settings

### Viral Hepatitis And Men Who Have Sex with Men

#### Key Facts about Viral Hepatitis in Men Who Have Sex with Men (MSM)

- MSM are at increased risk for Hepatitis C if they are involved in high-risk behaviors.
- There is no vaccine for Hepatitis C and testing for Hepatitis C is not recommended for MSM unless they were born from 1945 through 1965, have HIV, or are engaging in risky behaviors. The best way to prevent Hepatitis C is by avoiding behaviors that can spread the disease, especially sharing needles or other equipment to inject



#### Hepatitis A and Hepatitis B Vaccine Recommendation for Men Who Have Sex with Men

CDC and the Advisory Committee on Immunization Practices (ACIP) recommend Hepatitis A and Hepatitis B vaccination for MSM.

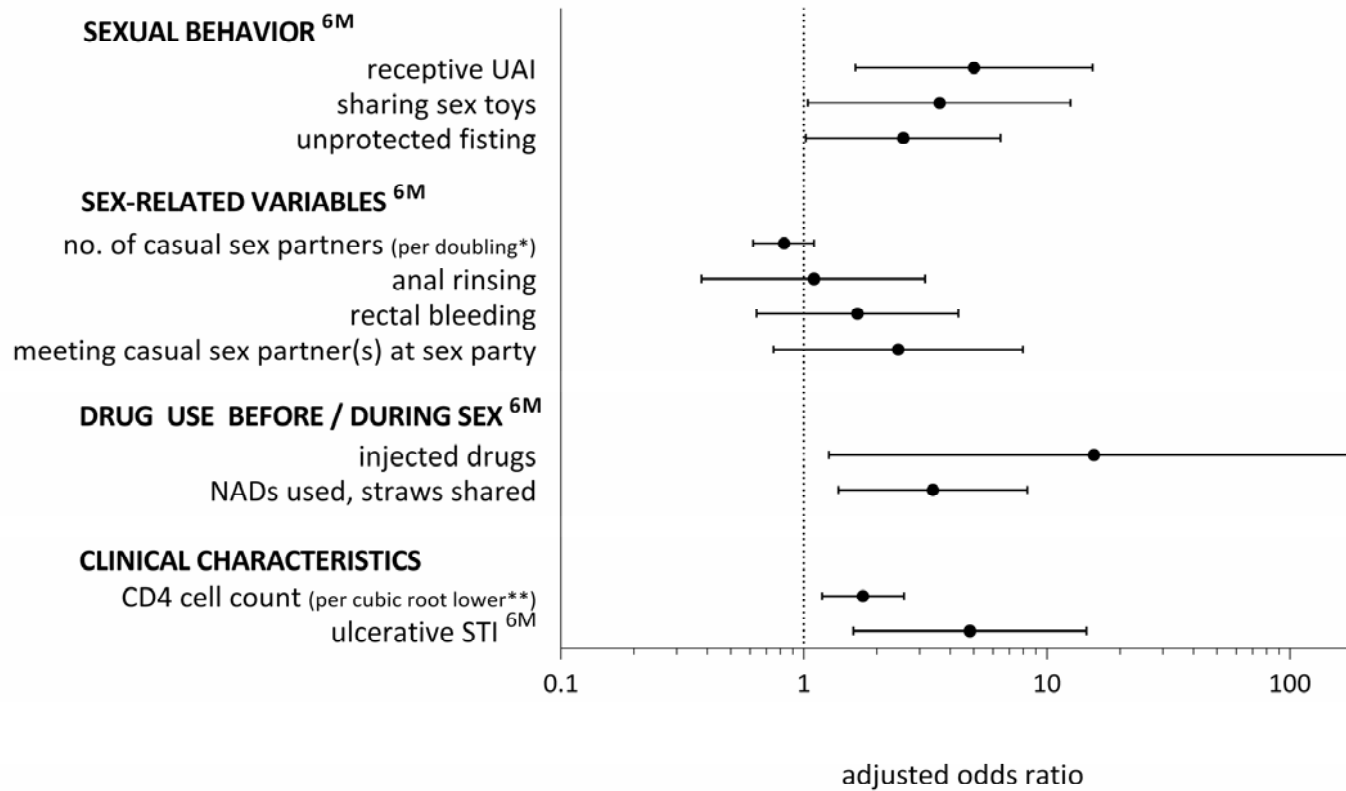
- The Hepatitis A and B vaccines can be given separately or as a combination vaccine using a [recommended schedule](#).

CDC FACT Sheet for gay and bisexual men:  
“Having a sexually transmitted disease or HIV, sex with multiple partners, or rough sex appears to increase a person’s risk for Hepatitis C”

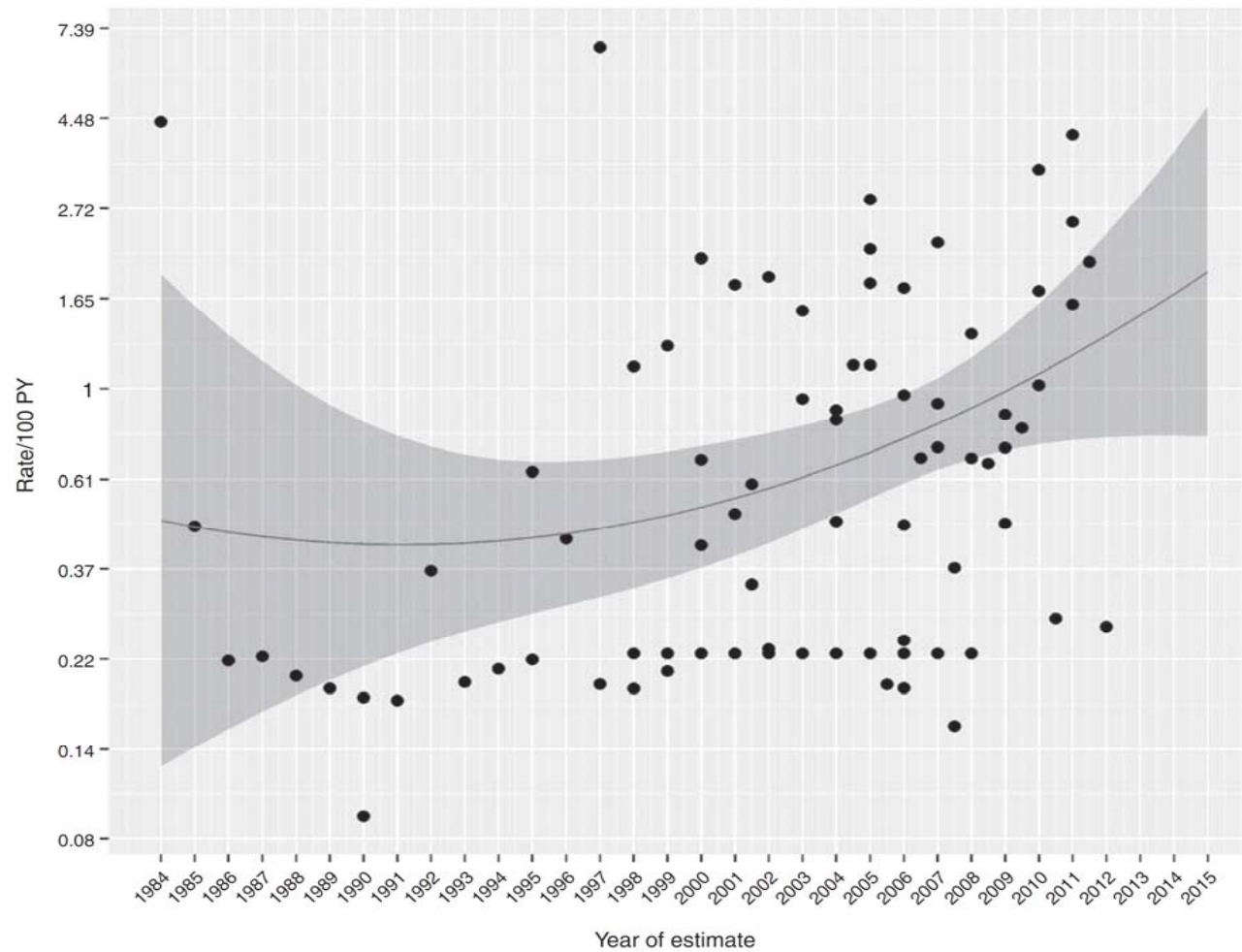
as in the United States and can occur

for infection among this population, CDC also recommends  
been infected with Hepatitis B and if the vaccine series is needed for

# Factors associated with acute HCV among HIV-infected men who have sex with men: MOSAIC study, the Netherlands

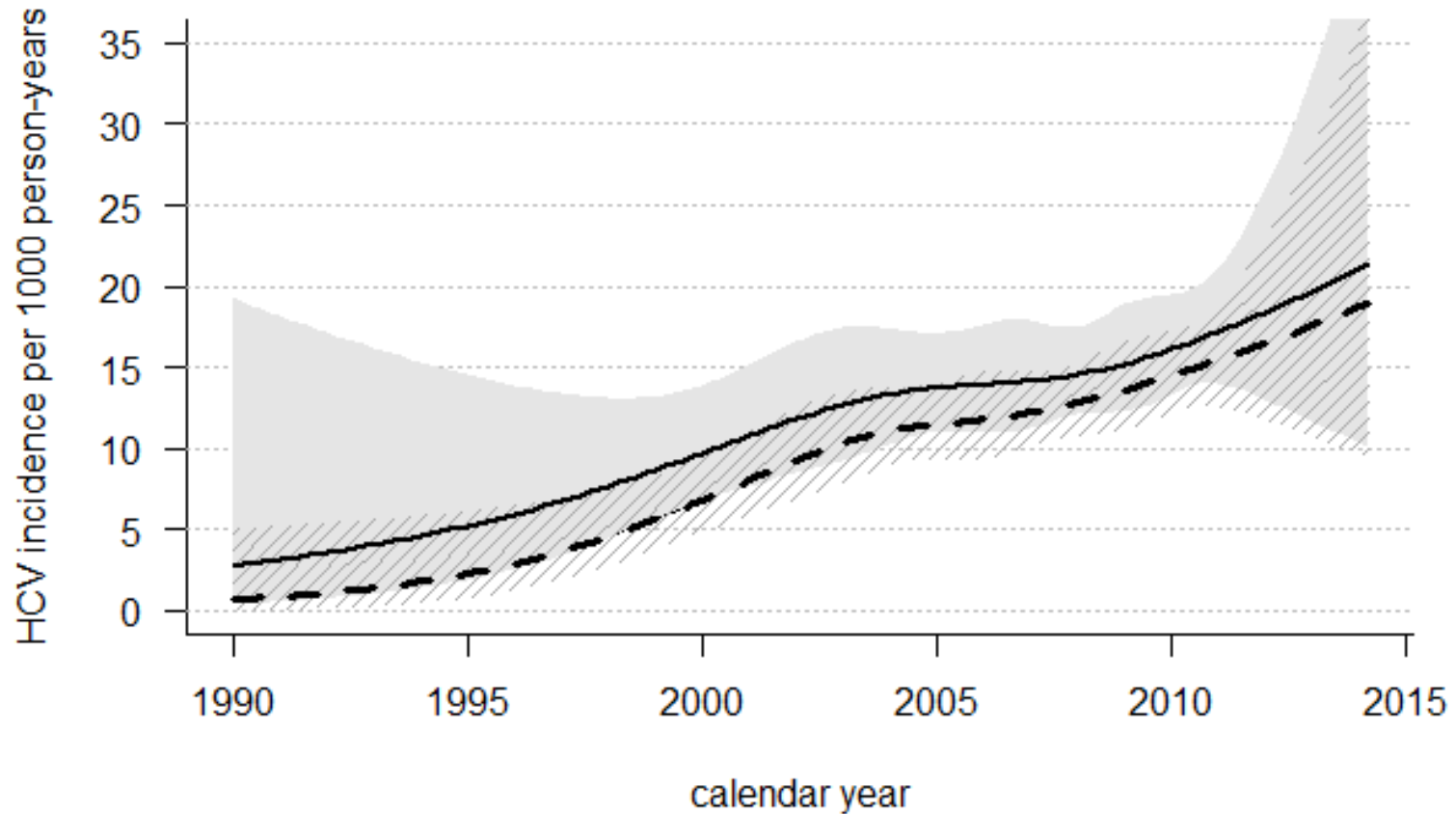


# Predicted HCV incidence in HIV-positive MSM in relation to calendar time: meta-analyses using pooled data





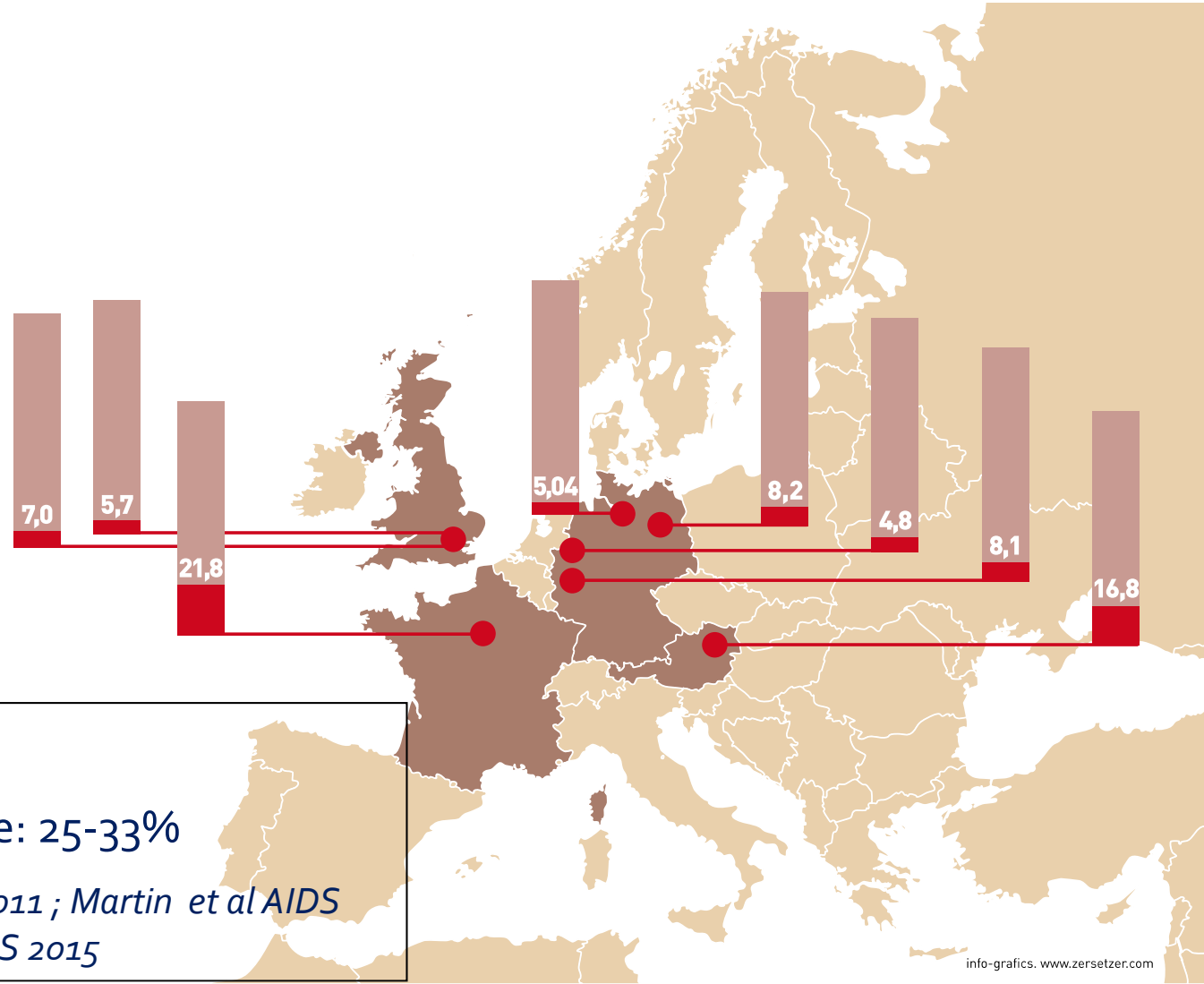
## HCV incidence among MSM with documented dates of HIV seroconversion: CASCADE in EuroCoord study





# HCV reinfection incidence among HIV-positive MSM

NEAT study, 2002-2014: 7.3/100 py (95% CI 6.2-8.6)



# HCV prevalence among HIV positive MSM

## Results from systematic reviews and meta-analyses

Midpoint prevalence 6.4% (IQR 3.2%-10.0%)

- Odds of HCV antibody in HIV-positive vs. HIV-negative MSM: 7.5 (95% CI 4.4-12.7)

*Platt et al, Lancet Infect Dis 2016*

Pooled anti-HCV prevalence: 8.1%; HCV RNA prevalence 5.3-7.3%

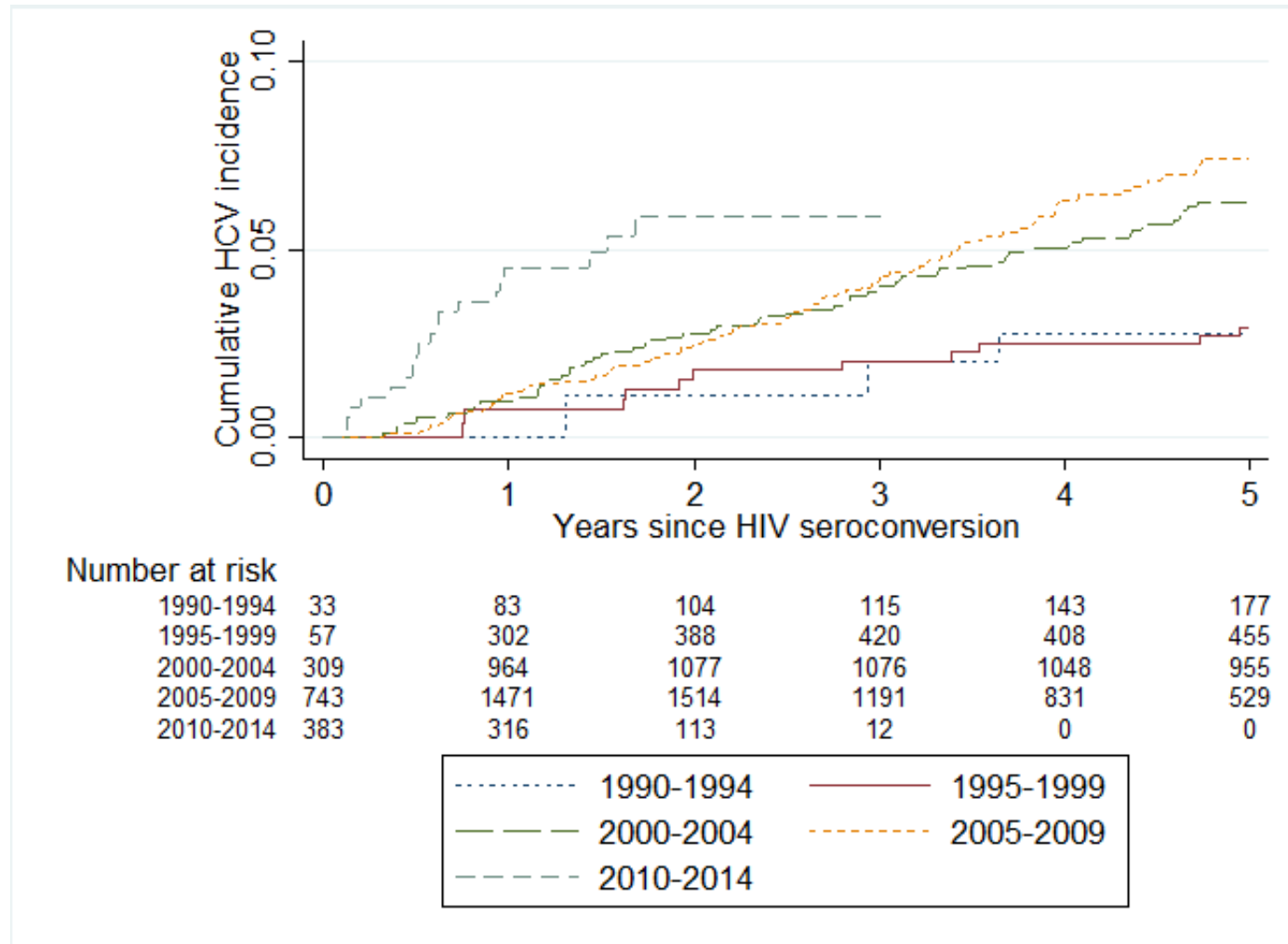
- Non-injecting drug use MSM      6.7%      ↑ increasing prevalence over time
- Injecting drug use MSM      40.0%,      ↓ decreasing prevalence over time

*Jordan et al. Int J of STD&AIDS*



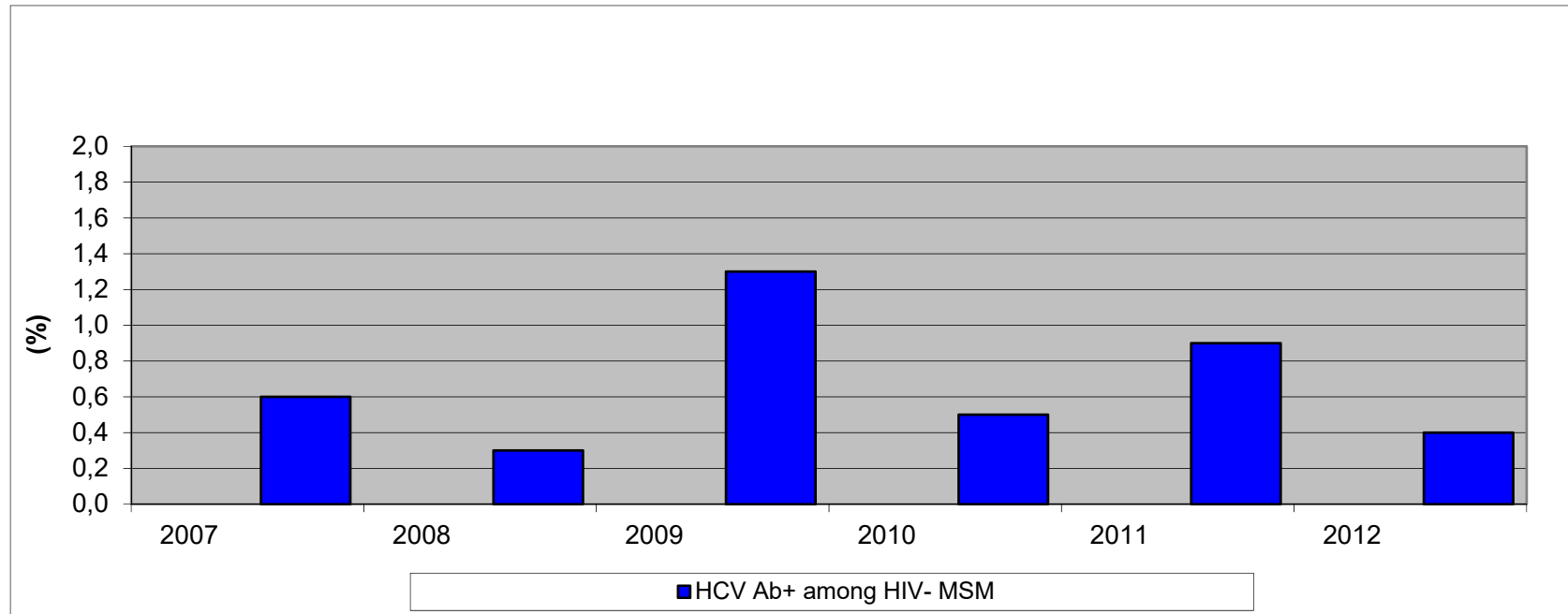
# Time from HIV seroconversion to HCV infection

## CASCADE in EuroCoord study



## Anti-HCV prevalence among HIV-negative MSM

Biannual cross-sectional surveys, STI Clinic Amsterdam, The Netherlands, 2007-2012



*Update Urbanus et al, AIDS 2014*

**0.4% -1.2%**

*Tseng et al J Formos Med Assoc 2012; Price et al HIV Med 2013; Blaxhult et al Int J STD AIDS 2013; Schmidt et al BMC Public Health 2014; Tsai et al BMJ Open 2015*

**3.4% (Toronto, strongly associated with lifetime IDU)**

*Remis et al PloS One 2016*

## HCV incidence in HIV negative MSM

Individual studies (restricted to studies with data > 2005)

- Europe/North America/China: 0-0.11 per 100 py
- Taiwan: 0.32-0.49 per 100 py

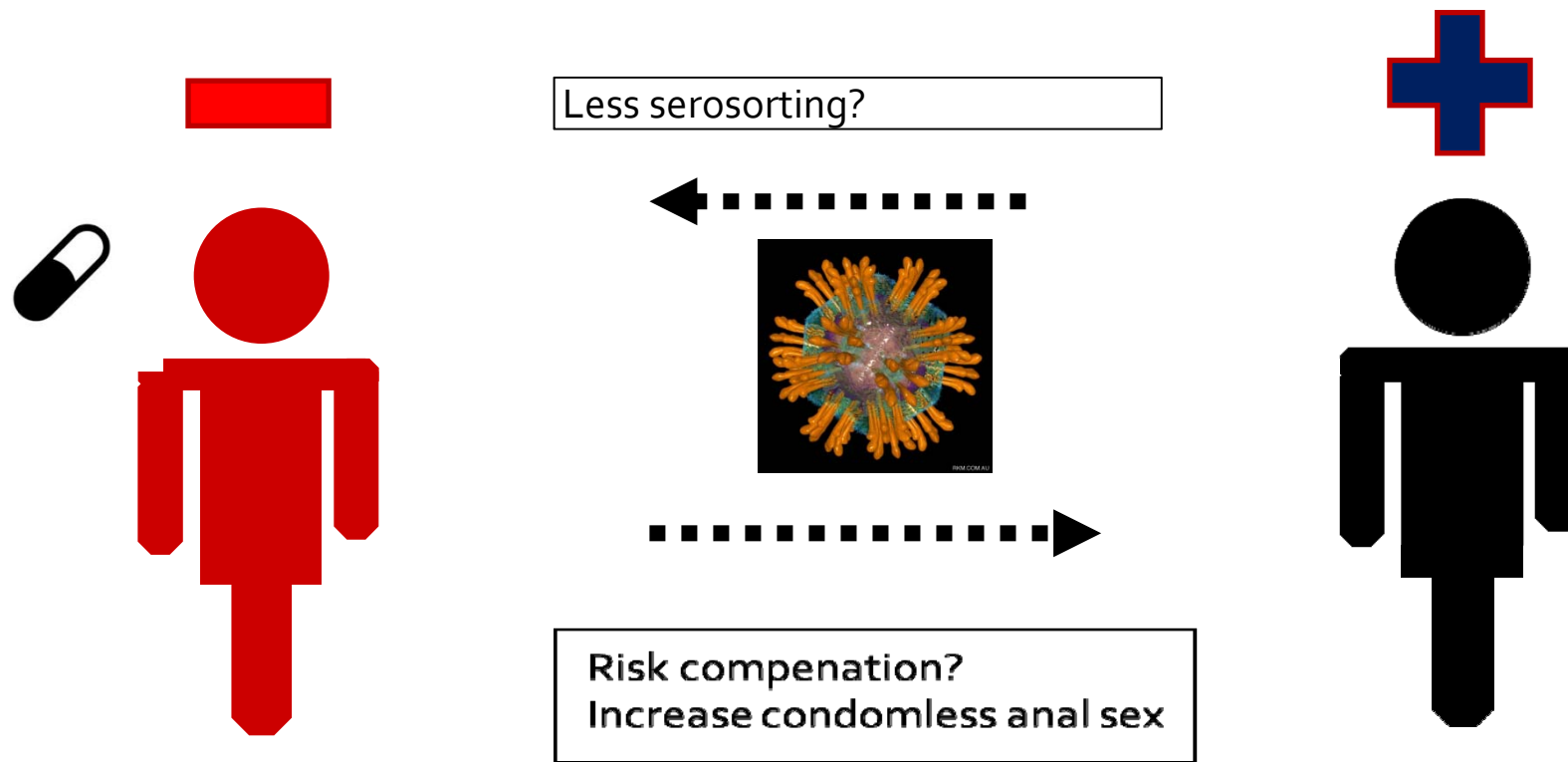
*Richardson et al JID 2008 ; Ruan JAIDS 2009 ; Jin et al Sex Transm Infect 2010; Witt et al Clin Infect Dis 2013; Vanhommerig JAIDS 2014; Tsai et al BMJ open 2015,*

Meta-analysis

- pooled incidence: 0.15 per 100 py (95% CI 0.08 - 0.22)

*Yaphe et al, Sex Transm Infect 2012*

## 2. HCV infections and PrEP users



## HCV infections among PrEP users

### Previous PrEP trials and demonstration projects

- excluded MSM with HCV
- tested only a subset of the participants at baseline
- did not report on HCV prevalence

### During PrEP follow-up

- HCV incidence rate: **about 0.7-1.3/100 py**

*McCormack et al Lancet 2015; Volk Clin Infect Dis 2015;  
Molina N Eng J Med 2015*

# Amsterdam PreP (AMPrEP) demonstration project

PrEP is being offered

- To MSM and transgender people as part of an integrated prevention package at a large and free-of charge STI clinic, 2015-2018
- Choice: daily or event-driven PrEP

Baseline characteristics of 376 individuals starting PrEP, 2015-2016

- Majority (73%) chose daily PrEP
- HCV (antibodies and/or RNA) prevalence (before PrEP start)  
**4.8% (95% CI 2.9%-7.5%) Higher than expected**
- Two third was unaware of their HCV infection
- Those with HCV: younger age, more partners with whom rCAS was reported, recent IDU, an STI, and chemsex (univariate)

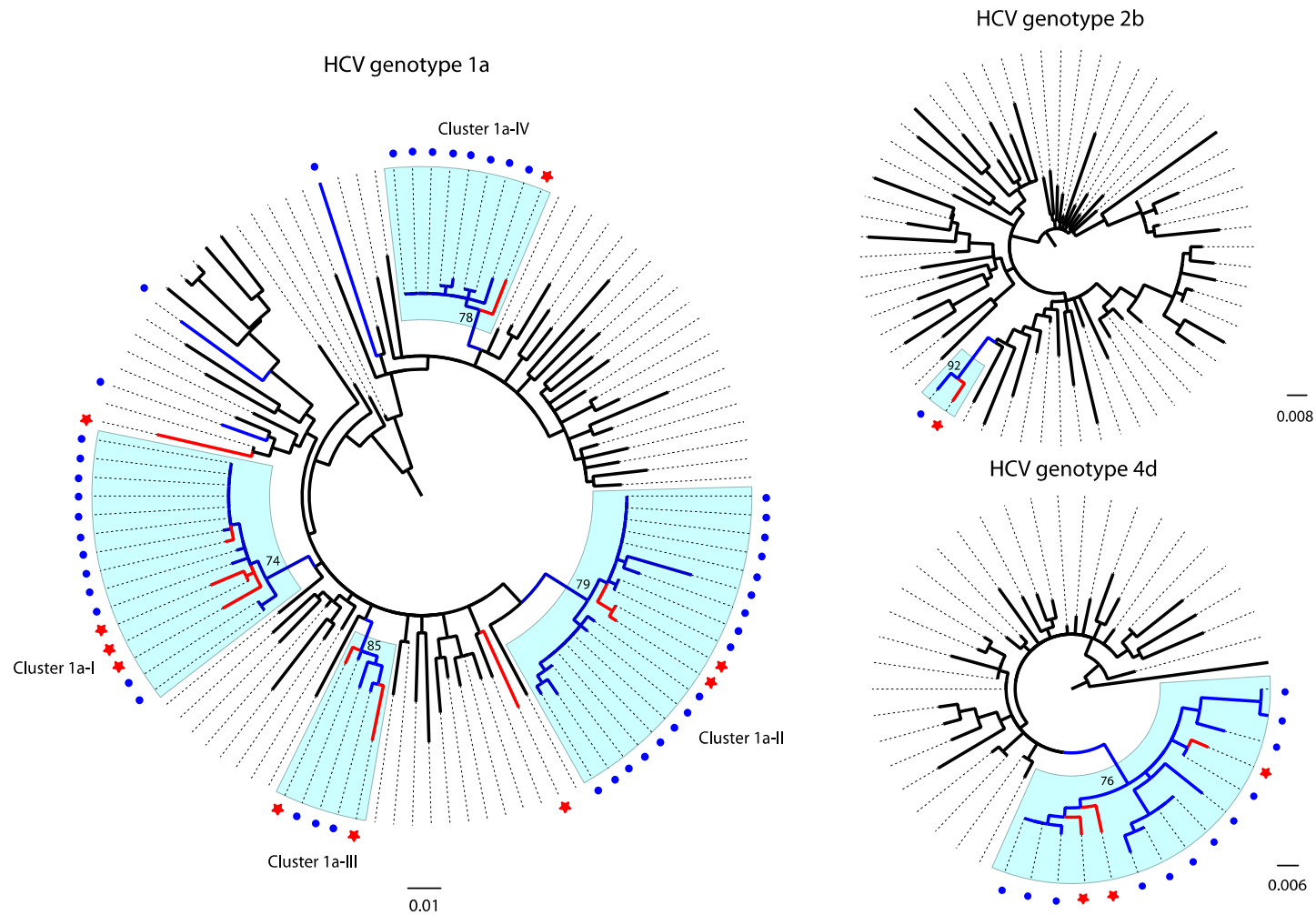


## AMPrEP Demonstration project

The vast majority of HIV-negative MSM were infected with HCV subtype 1a (73%), followed by subtype 4d (20%) and 2b (7%)

All HCV mono-infected MSM were part of robust MSM-specific HCV clusters containing predominantly MSM with HIV infection

# HCV infections at baseline, AMPrEP



*Hoornenborg et al. AIDS2016, Durban July 2016; CROI 2017*

### 3. PrEP guidelines and HCV testing

Most guidelines on the use of PrEP are not specific on whether or not to test for HCV infection

- **PrEP Baseline screening**

*CDC 2014:*

*'HBV and HCV infection status should be documented by screening serology before TDF/FTC is prescribed as PrEP'*

- **PrEP follow-up screening**

Idem: STI clinic testing guidelines

*See e.g. CDC, WHO guidelines*

## 4. Conclusions

PrEP implementation: Viral hepatitis C screening required?

HCV prevalence is still modest and HCV incidence of primary infection relatively low among HIV-positive MSM when compared to PWID

- **HCV incidence is not decreasing in HIV positive MSM (data until 2015)**
- **Reinfection rates are high**

HCV prevalence seems low and stable among HIV negative MSM

- **Recent data suggest that MSM starting PrEP and MSM on PrEP are at risk of HCV infection**

HCV sequences obtained from HIV-negative MSM starting PrEP are highly interspersed with HCV sequences obtained from HIV-positive MSM

- **PrEP users with HCV infection might act as a key bridge population to the larger population of HIV negative individuals**

# Recommendations

PrEP implementation: Viral hepatitis C screening required

?

These recent developments highlight the importance of

- Increased engagement in existing HCV testing guidelines for HIV-positive MSM
- Increased HCV treatment uptake (DAA)
- Developing effective behavioural interventions to prevent primary infections and reinfections
- Offering routine HCV testing to MSM at PrEP enrollment and follow-up visits
- Including HCV testing recommendations in PrEP guidelines
- Besides education and behavioral interventions, continued real-time monitoring of HCV infection among the larger HIV-negative MSM for timely detection of potential HCV spread

A close-up photograph of a hand holding a dandelion seed head. A semi-transparent circular overlay is centered over the seed head, containing the text "MAKE A WISH" in a white, sans-serif font. The background is a soft-focus outdoor scene with green foliage and a bright sky.

MAKE A WISH

## Acknowledgements

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