### Background

Men who have sex with men (MSM) practicing unsafe sex are at risk to become infected with HIV-1 and hepatitis C virus (HCV). MSM infected with HIV/HCV-coinfection may represent high risk core groups and could be drivers of the HIV-epidemic among MSM.

### Methods

**MOSAIC**: The MSM observational study for acute infection with hepatitis C (MOSAIC) was initiated in 2008 to identify the frequency, clinical consequences and determinants of acquiring acute HCV infection among HIV-infected MSM in the Netherlands.

**ATHENA**: the AIDS Therapy Evaluation in the Netherlands (ATHENA) cohort is a national observational study that includes anonymized data from (nearly) all HIV-infected patients, followed longitudinally in one of the 27 Dutch HIV treatment centers since January 1996.

In this study, HIV transmission clusters were selected in an HIV subtype B phylogenetic tree consisting of HIV pol sequences. Cluster composition was then compared between MSM with or without evidence of HCV-coinfection (antibody/RNA). In addition, HIV and HCV phylogenies of HIV/HCV-coinfected MSM were compared for MSM that had an HCV NS5B sequence available.

### Results

Out of a possible 12,900 HIV-infected MSM included in ATHENA, we included 5,038 MSM with HIV pol sequences available, 563 (11%) of whom were (ever) co-infected with HCV. The majority of acute HCV infections were of HCV genotype 1a (59%), 4d (20%), and 2b (7%).

In total, 118 HIV clusters of >10 sequences included 3,084/5,038 (61%) HIV pol sequences, and 97/118 (82%) clusters contained ≥1 HCV infection. In only 5/97 (5%) HIV clusters harboring MSM with evidence of HCV infection, the proportion of HCV-infected individuals exceeded 25%; these specific HIV clusters were relatively small.

HCV sequences were obtained from 150 HCV infections among 126 MSM that participated in the MOSAIC study, 21 of whom had ≥1 reinfection. Ultimately, 19/150 (13%) HCV infections showed overlap in HCV and HIV phylogenetic tree topologies.

### Conclusion

Our results indicate only limited overlap between the HIV and HCV epidemics among MSM. We found no evidence for high-risk core groups of HIV-infected MSM with elevated risk of HCV infection nor of high risk HIV/HCV-coinfected MSM driving the HIV epidemic.