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Low Prevalence of HCV-Infection Among MSM in an Intervention for HCV Micro-Elimination in Rome Urge a Focus on High Risk Behaviours

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Abstract

Background/Objectives: HCV prevalence among men who have sex with men (MSM) is not negligible, but information in Italy is scarce, particularly for HIV-uninfected MSM. We report data from an HCV screening program targeted to MSM in Rome started in 2019 in two hospital settings and in four urban community-based (CB) settings run by NGOs. **Methods**: Adult MSM (>18 years old) presenting for HIV or Sexually transmitted infection testing or attending CB activities, have been invited to undergo, after providing informed consent, a free-of-charge rapid HCV Antibody test (OraQuick HCV®). For all participants, demographic, clinical and behavioural data using an anonymous questionnaire were collected. Free confirmatory standard serology tests were offered for those found reactive at rapid HCV test and then individuals with confirmed chronic HCV-infection, were referred though a dedicated "fast track" pathway for further clinical and laboratory assessment and DAA-treatment according to the national treatment guidelines. **Results**: From July 2019 and July 2023, 2.714 MSM agreed to be screened for HCV infection. Median age was 36 years (IRQ=29-46), 91.0% were Italians, 58,0% enrolled in the two clinical centers and 10,7% reported to be person living with HIV (PLWH). Overall, 9 (0,33%) MSM were found to be reactive for HCV-Ab at rapid test. Eight MSM were retested and 7 were confirmed as having chronic HCV infection (HCV viremia range: $8x10^3$-$23x10^6$ IU/mL). The prevalence of confirmed cases was 0.26% (7/2,714; 95%CI: 0.10-0.53), higher in PLWH compared to those not reporting HIV infection (1.04% vs. 0.17, p=0.03). High-risk behaviours for HCV infection and/or history of Sexual Transmitted infection (STI) were recorded in all HCV confirmed cases. All seven persons were linked to care, clinically assessed and started DAA treatment, with sustained viral response (SVR) in all cases. **Conclusions**: These data suggest feasibility and potential effectiveness of a preventive program targeting MSM living in Rome, which combines HCV screening, case finding and linkage to prompt care. HCV-prevalence in the screened population, however, was quite low, although it is significantly higher in PLWH and in those with high-risk behaviours, suggesting that targeted screening of PLWH and individuals with high-risk behaviours may be more effective to achieve HCV eradication than universal screening.

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1. Introduction

Viral Hepatitis C represents a significant public health problem with an estimated 50 million people living with infection [WHO 2024]. Since newly discovered HCV infections are typically asymptomatic, most HCV infections go undiagnosed until chronic HCV causes morbidity and severe consequences such as liver cirrhosis and hepatocellular carcinoma (HCC) [Taylor 2014].

The availability of Direct-acting antiviral agents (DAAs) in the last ten years is changing HCV from a chronic and serious infection to a curable disease, leading the World Health Organization (WHO) to propose a target to eliminate HCV by 2030, aiming for this date to be able to diagnose at least 90% of all infected people and treat at least 80% of them [WHO 2016]. However, the important number of deaths due to HCV, estimated in 242,000 people in 2022 [WHO 2024] mostly from cirrhosis and hepatocellular carcinoma, suggests that even if diagnosed, the number of people receiving treatment for HCV remains too low, highlighting the opportunity for improving linkage from diagnosis to provision of care [WHO 2016; WHO 2022].

A micro-elimination approach to HCV elimination has been proposed by the European Association for the Study of the Liver's (EASL) International Liver Foundation. In this approach, national elimination objectives are dived into smaller, population-specific targets, where treatment and prevention efforts can be implemented more rapidly and effectively through tailored strategies [Lazarus 2017].

It has long been known that MSM represent a target population at greater risk of spreading HCV infection, especially among people living with HIV through sexual transmission [Hagan 2015; Kaplan 2015], and interventions directed to this population have been proposed as a part of micro-elimination strategy

Risk factors for HCV transmission in MSM, are linked to unsafe sexual practices and associated with a mix of clinical and behavioural aspects that increase the risk of infection, such as co-infection with HIV or other Sexual Transmitted Infection (STI), unprotected anal intercourse with multiple partners, participating in group sex, sharing sex toys, unprotected fisting and the practice of consuming drugs to enhance sexual activity (Chemsex) [Hoornenborg 2017; Ghisla 2017; Midgard 2016; Nijmeijer 2019; Breskin 2015].

In Italy, it was estimated that by January 2020 approximately 400,000 people in the general population were actively infected with (overall prevalence 0.66%), of which approximately 280,000 infected people were undiagnosed and not connected to care [Kondili 2021; Kondili 2022].

Even though HCV prevalence among HIV-uninfected MSM in Italy should not be considered negligible, information on this topic is scarce. Few interventions have been implemented to identify and treat undiagnosed HCV infection among MSM who are either HIV-negative or have an unknown HIV status [d'Arminio Monforte 2017]. In the absence of recent studies, we hypothesized that in Italy a sizeable population of MSM with undiagnosed HCV infection may exist and that these individuals may be identified through targeted screening initiatives and linked to care.

Taken together, the information gathered in this project may provide a "Micro-elimination" model for implementing effective interventions to pursue HCV elimination among MSM in Italy. To achieve this goal, we designed and tested an intervention to actively screen MSM for HCV infection, linking to care and treating with DAA, in the metropolitan area of Rome.

2. Materials and Methods

Study Design and Population

A prospective observational study, called CHIME (Conquering Hepatitis vIa Micro-Elimination) was conducted from 2019 to 2023 in six different settings in the metropolitan area of Rome: 2 clinical centers (the National Institute for Infectious Disease – INMI, and the San Gallicano Institute - ISG)

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and in 4 community-based (CB) testing sites run by Non-governmental organizations (NGOs) ("Circolo di Cultura Omosessuale Mario Mieli", "Associazione Nazionale Lotta contro l'AIDS – ANLAIDS Lazio", Checkpoint Plus Roma and Arcigay Roma Center). Enrolment was carried out in one clinical Centre (INMI) among patients presenting at the HIV Voluntary Counselling and Testing (VCT) site. In the second clinical center (ISG), HCV testing was offered at the Sexual Transmitted Infections outpatient clinic to individuals presenting for STI testing or clinical evaluation.

Enrolment was carried out by NOGs at community-based HIV testing sites or during special events of testing offer in gay venues (gay saunas and cruising bars) in Rome.

The protocol for the study named CHIME was approved by the INMI Lazzaro Spallanzani Ethical Committee (approval number: 41z, Register of Non-Covid Trials 2018). The aim of the project was communicated through a promotional campaign called "ZeroC", advertised through posters and brochures at testing locations (Clinical centers and CB sites) and promoted through a dedicated website, where it was possible to find informational material and additional details about the project.

HCV Risk Assessment and Rapid Test Offer

Individuals who self-identified as MSM were offered to perform a HCV rapid test in occasion of their contact with the different setting in which the study was conducted. The inclusion criteria were: male gender, age 18 years or older, reporting same gender-sex in the previous 12 months and being able to provide a valid consent. Exclusion criterium was considered having an HCV positive test or an HCV negative test in the previous 6 months. All participants received complete information on the project finalities and signed the informed consent, receiving informative materials on the risk of HCV infection and the correct behaviour to follow to avoid infection with STIs and HCV in particular.

Data about risk factors on sexual behaviours and about clinical history (previous HCV testing, the result of HIV test if available, the presence of coinfections, previous STIs) was collected by a self-administered anonymous questionnaire which includes those factors identified by Dutch MOSAIC study as linked to HCV acquisition, such as receptive condomless anal intercourse, group sex, sharing of sex toys and number of sexual partners in the last 6 months [Newsum 2017].

HCV rapid test was performed using the OraQuick® HCV Rapid Antibody Test (OraSure Technologies, Bethlehem, PA, USA), a single-use immunoassay for qualitative detection of antibodies to HCV (anti-HCV) in oral fluid, fingerstick whole blood, venepuncture or whole blood specimens, with a response readable in 20-40 minutes, characterized by a high sensitivity (97.8%) and 100% specificity [Cha, 2013]. In our study, the test was performed mainly on capillary blood obtained through fingerstick using a sterile lancet or on the oral fluid using the swab included in the test device applied to the gums (3.1% of the overall sample) following the manufacturer's instructions.

Laboratory Procedures for the Confirmation Test and Molecular Characterization

In case of HCV reactive rapid test, HCV confirmation was performed using the ARCHITECT Anti-HCV assay, a chemiluminescent microparticle immunoassay (CMIA) designed for the qualitative detection of anti-HCV antibodies in human serum and plasma, processed on the fully automated system ARCHITECT i2000SR (Abbott Diagnostics, Wiesbaden, Germany). In case of a negative result at confirmation test, a validation through a secondary platform based on a more HCV IG immunoblot was performed as previously described [Kodani 2019].

Subsequently, for all cases where HCV infection could not be excluded, HCV RNA was assessed using the Abbott RealTime HCV RNA assay (Abbott Molecular Inc, Des Plaines, Il, USA) with features a lower limit of quantitation and detection of 12 IU/mL. For sample that tested positive for HCV-RNA, HCV genotype was determined by Abbott RealTime HCV Genotype II (Abbott Molecular, Abbott Park, IL, USA). This assay applies a dual-target real-time PCR approach, using the 5′ UTR region to discriminate between HCV genotypes and the NS5B gene for subtyping 1a and 1b.

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Clinical Evaluation and DAA Treatment

Individuals diagnosed with a new untreated HCV infection were referred through a dedicated Fast-track assessment (FTA) to INMI Hepatology Unit, or INMI HIV Unit if co-infected, for pre-treatment evaluation. Where indicated, patients benefited from a prompt initiation of DAA-treatment and were monitored during therapy according to the current Italian Guidelines [AISF 2020].

Statistical Analysis

Data were described as count and percentages for categorical variables and as Median and interquartile range (IQR) for continuous variables. Significant differences between groups of interest were assessed using Chi Square test, or Fisher's Exact test in the case of categorical variables, and t-test and Mann-Whitney U-test for continuous variables.

Logistic regression models were used to investigate associations of relevant variables with being previously tested for HCV, and with having a confirmed reactive HCV test in the current study. The candidate predictors were chosen based on clinical and epidemiological considerations, as well as established associations found in literature. For the first outcome (being previously tested for HCV), variables significant ($p \leq 0.05$) in the univariable analysis were included in the multiple regression models to adjust for possible confounding effects and assess the overall robustness of the newfound associations. Significance level was set at 0.05.

All statistical analysis were performed using Stata release 17 (StataCorp LLC, 2021; College Station, TX) and R version 4.4 (R Foundation for Statistical Computing, Vienna, Austria) or SPSS version 29 (IBM Corp. Released 2023. Armonk, NY: IBM Corp).

3. Results

Two thousand and seven hundred and fourteen (2,714) MSM took part in the study, of which 1,567 (57.7%) tested in the two clinical centers and the remaining 1,147 (42.3%) in the four community-based centers (see Table 1). The vast majority of participants were born in Italy (n=2469, 91.0%) and overall median age was 36 years (IQR 29-46). 291 subjects (10.7%) identified as PLWH, and overall, around 48% of participants referred to have been previously tested for HCV.

Table 1. Baseline characteristics of the study population (n = 2,714).

Characteristics	N (%)
All	2,714 (100)
Age, Median (IQR)	36 (29-46)
Country of origin	
Italy	2,469 (91.0)
Place of enrollment (setting)	
VCT site	923 (34.0)
STI Clinic	644 (23.7)
Community based VCT (CBVCT)	1,147 (42.3)
People Living with HIV	291 (10.7)
Previously tested for HCV	1,299 (47.9)

IQR: Interquartile range; VCT: Voluntary Counselling and Testing; STI: Sexually Transmitted Infection.

Table 2 shows the factors associated with being previously tested for HCV. At the univariate analysis, an increased age (OR=1.17 per 5 years of increase), being PLWH (OR=6.22), having a present or former IDU sexual partner (OR=1.89), practicing chemsex (OR=1.60), engaging in groupsex (OR=1.30), having any history of STI (OR=1.89) and usage of Pre-Exposure Prophylaxis (PrEP) (OR=1.72) were associated with a higher likelihood of being tested for HCV. Considering the setting, those enrolled at STI clinic site were more likely to have been previously tested for HCV (56.5%). In the multivariate analysis, increasing age, being a PLWH, history of STI, use of PrEP and engaging in

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groupsex were confirmed as factors independently associated to having been already tested for HCV (see Table 2).

Table 2. Factors associated with previous HCV test.

Characteristic	All (N=2,714)	Already tested (N=1,299)	Never tested (N=1,415)	OR (IC 95%)	aOR (IC 95%)
Age (per 5 yrs increase) – median (IQR)	36 (29 - 46)	39 (31 - 48)	34 (27 - 43)	**1.17 (1.13-1.21)**	**1.11 (1.07-1.15)**
Foreign born, n (%)	245 (9.0)	118 (8.1)	127 (9.0)	1.03 (0.79-1.34)	
To be PLWH, n (%)	291 (10.7)	241 (18.6)	50 (3.5)	**6.22 (4.54-8.52)**	**5.72 (4.03-8.24)**
Sexual partners in the last year – median (IQR)	8 (3-20)	5 (2-10)	4 (2-10)	1.00 (1.00-1.01)	
Present or former IDU, n (%)	27 (1.0)	18 (1.4)	9 (0.6)	2.20 (0.98-4.90)	
IDU sexual partner, n (%)	65 (2.4)	41 (3.2)	24 (1.7)	**1.89 (1.14-3.14)**	1.49 (0.87-2.58)
Fisting, n (%)	226 (8.3)	100 (7.7)	126 (8.9)	0.85 (0.65-1.12)	
Chemsex, n (%)	191 (7.0)	112 (8.6)	79 (5.6)	**1.60 (1.18-2.15)**	1.27 (0.91-1.77)
Groupsex, n (%)	680 (25.1)	359 (27.6)	321 (22.7)	**1.30 (1.09-1.55)**	**1.20 (1.00-1.45)**
Unprotected last anal intercourse with occasional partner, n (%)	725 (26.7)	329 (25.3)	396 (28.0)	0.87 (0.74-1.04)	
Previous STI, n (%)	1,488 (54.8)	818 (63.0)	670 (47.3)	**1.89 (1.62-2.20)**	**1.28 (1.08-1.52)**
Previous PrEP, n (%)	147 (5.4)	89 (6.8)	58 (4.1)	**1.72 (1.23-2.42)**	**1.65 (1.16-2.35)**
Recreational drugs, n (%)	910 (33.5)	454 (34.9)	456 (32.2)	1.03 (0.88-1.21)	
Setting (VCT site)	923 (34.0)	406 (31.3)	517 (36.5)	1	1
STI Clinic	644 (23.7)	364 (28.0)	280 (19.8)	**1.66 (1.35-2.03)**	0.81 (0.63-1.03)
Community based VCT (CBVCT)	1147 (42.3)	529 (40.7)	618 (43.7)	1.09 (0.92-1.30)	1.09 (0.92-1.31)

IQR: Interquartile range; PLWH: People living with HIV; IDU: Injecting Drugs Users; STI: Sexually Transmitted Infection; PrEP: Pre-Exposure Prophylaxis; VCT: Voluntary Counselling and Testing; OR with p-value<0.05 are highlighted in bold.

Among all the 2,714 tested individuals, nine persons (0.33%) had a reactive test at enrolment. Eight out of nine individuals returned for confirmatory testing, with seven of them (87.5%) resulting in confirmed HCV infections, all with chronic infection and viremia ranging from $8.6x10^3$ to $23.7x10^6$ log UI/ml. The single person with a reactive HCV rapid test and with a negative confirmatory test, was retested after six-months with the same result (reactive at rapid test but negative at laboratory confirmatory test).

Table 3 shows the characteristics of the seven identified confirmed HCV-infections, resulting in an overall prevalence of confirmed (chronic) HCV-infection of 0.26% (95% confidence interval, CI: 0.10%–0.53%).

Table 3. Overview of patients with positive HCV antibody results during screening.

#	HIV	High-risk behaviours	Viremia (UI/ml)	Genotype	Days from testing to DAA Treatment	Outcome
#1	Neg	GS-F-pSTI	$5.4x10^6$	1a	35	SVR
#2	Pos	GS-pSTI	$1.7x10^6$	4	88	SVR
#3	Pos	GS-F-UAI-pSTI	$3.1x10^6$	1a	47	SVR
#4	Pos	UAI	$23.7x10^6$	1a	67	SVR
#5	Neg	UAI-pSTI	$4.3x10^6$	1a	42	SVR
#6	Neg	pSTI	$8.6x10^3$	4	25	SVR
#7	Neg	GS-IDU-Chem-UAI-pSTI	$8.7x10^6$	4	80	SVR

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GS: Groupsex; F: Fisting; UAI: Unprotected last Anal Intercourse with an occasional partner; IDU: Injecting drug user; Chem: Chemsex; pSTI: previous Sexual transmitted infection; SVR: Sustained Virologic Response;

All HCV-positive persons referred at least one high risk behaviour or history of relevant clinical condition: one person reported a history of intravenous drug use, four having engaged in groupsex in the last 6 months, four having had a condomless anal intercourse with the last occasional partner, one practicing chemsex, two practicing fisting and six out of seven reporting a previous sexual transmitted infection (Table 3).

Three out of seven HCV confirmed infection were identified in PLWH, with an overall prevalence among HIV-positive persons of 1.03% (95% CI: 0.21%-2.98%), higher than what was observed among HIV-negative persons (0.17% prevalence, 95% CI: 0.04%-0.42%). The identified genotypes were 1a (four patients) and 4 (three patients).

Following diagnosis, all individuals with confirmed chronic infection received clinical evaluation and DAA treatment was initiated (Glecaprevir/pibrentasvir for 8 weeks according to current guidelines) within an average of 64 days (range 25-80). All treated persons successfully achieved a sustained virologic response (SVR), defined as undetectable HCV-RNA levels 12 weeks after completing DAA according to the above-mentioned Italian Guidelines [AISF 2020].

The main factors associated with confirmed HCV-infection are shown in Table 4.

Table 4. Factors associated with positive HCV result.

Characteristics	All (N=2,713)[a]	HCV-pos (N=7)	HCV-neg (N=2,706)	OR (IC 95%)
Age (per 5 years increase) – median (IQR)	36 (29 – 46)	46 (42 - 48)	36 (29 - 46)	1.29 (0.96, 1.72)
To be PLWH, n (%)	291 (10.7)	3 (42.9)	288 (10.7)	**6.30 (1.40-28.30)**
Foreign born, n (%)	2,468 (91.0)	5 (71.4)	2463 (91.0)	4.09 (0.79-21.21)
Sexual partners in the last year – median (IQR)	8 (3-20)	40 (10-55)	8 (3-20)	1.01 (0.99-1.02)
Present or former IDU, n (%)	27 (1.0)	1 (14.3)	26 (1.0)	**17.02 (2.00-147.80)**
IDU sexual partner, n (%)	65 (2.4)	1 (14.3)	64 (2.4)	6.88 (0.82-58.00)
Fisting, n (%)	225 (8.3)	2 (28.6)	223 (8.2)	4.43 (0.86-22.98)
Chemsex, n (%)	191 (7.0)	1 (14.3)	190 (7.0)	2.21 (0.26-18.43)
Groupsex, n (%)	680 (25.1)	4 (57.1)	676 (25.0)	4.01 (0.89, 17.94)
Unprotected last anal intercourse with occasional partner	725 (26.7)	4 (57.1)	721 (26.6)	3.67 (0.82-16.45)
Previous STI, n (%)	1,488 (54.9)	6 (85.7)	1,482 (54.8)	4.96 (0.60-41.23)
Previous HCV-negative test, n (%)	1,299 (47.9)	3 (42.9)	1,296 (47.9)	0.82 (0.18-3.65)
Use of recreational drugs, n (%)	909 (33.5)	4 (57.1)	905 (33.4)	2.29 (0.51-10.27)
Setting (VCT site)	923 (34.0)	1 (14.3)	922 (34.1)	1
STI Clinic	644 (23.7)	4 (57.1)	640 (23.6)	5.76 (0.64-51.67)
Community based VCT (CBVCT)	1146 (42.2)	2 (28.6)	1144 (42.3)	1.61 (0.15-17.79)

[a]The analysis was conducted on 2,713 persons, after exclusion of the participant with a non-confirmed HCV test. IQR: Interquartile range; PLWH: People Living With HIV; IDU: Injecting Drugs Users; STI: Sexually Transmitted Infection; PrEP: Pre-Exposure Prophylaxis; VCT: Voluntary Counselling and Testing; OR with p-value<0.05 are highlighted in bold.

As shown in Table 4 being PLWH (OR=6.30) and being a present or former IDU (OR=17.02) was significantly associated with HCV infection, while the proportion of previously tested for HCV was not different among the two groups.

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Moreover, other high-risk behaviours (such as fisting, groupsex, chemsex, condomless last anal intercourse) or history of STI were more prevalent in HCV-infected subjects with OR greater than 2, even if probably due to the limited number of events, they did not result to be significantly associated with HCV (see Table 4).

4. Discussion

In this paper we report the results of an extensive screening program for HCV targeting MSM with unknown HCV infection in the metropolitan area of the capital of Italy, Rome. To the best of our knowledge, this is the first study conducted in Italy reporting on HCV prevalence in MSM. Out of 2714 individuals tested, we found 7 HCV positive patients (0.3% prevalence), which were all linked to care and successfully treated. It has to be noted that even if the prevalence of HCV in this population is lower than previously reported in other international experiences [Han 2019], it's in line with the pooled HCV prevalence reported by Traeger et al. (0.38% HCV-RNA baseline prevalence among HIV-negative MSM accessing PrEP) [Traeger, 2023]. For what concerns PLWH, HCV prevalence was higher in this subpopulation compared to HIV-negative people (1.03% vs. 0.17%, $p<0.001$).

The population under study was characterized by a high rate of previous HCV testing (1299/2714, 48%), likely due to clinical conditions (e.g. PLWH), to an increased awareness of the risks associated with their sexual behaviour (e.g. group sex), or to having been already included in screening programs, such as those provided in the context of STI-PrEP clinics.

In our population, 5.4% (N=147) of individuals reported having used PrEP at least once. The study began in 2019 and ended in 2023, before full reimbursability of PrEP in Italy (may 2023) [AIFA 2023], which could explain the lower percentage of PrEP users among tested persons than recently reported [Nozza 2024]. Interestingly, in our study none of the seven confirmed HCV-infection cases reported any history of PrEP usage.

A non-negligible number of study participants reported a behavioural risk factor such as history of STI (54.8%), having engaged in groupsex (25.1%), fisting (8.3%) and chemsex (7.0%), all factors previously found to be associated with HCV infection [Urbanus 2014; Pyziak-Kowalska 2021; Hoornenborg 2020; Midgard 2016].

It's worth mentioning that since the information concerning the above-mentioned risky behaviours was obtained via a self-administered questionnaire, responses may be influenced by the stigma that still surrounds these sexual practices, especially when it comes to PLWH [Dessie 2024], even if the questionnaire was anonymous.

Even those tested reactive for HCV and subsequently confirmed positive by laboratory (Table 3) reported engaging in high-risk behaviours, particularly participating in groupsex (4/7). Interestingly, 6 out of 7 had a history of STIs. Despite the small number of HCV-positive individuals identified in our study, these findings appear to support the approach of implementing HCV screening activities targeted subpopulations with specific risk factors—in this case, sexual behaviours that increase the risk of HCV infection and reinfection [Newsum, 2021].

The identified HCV genotypes (1a and 4) are those more frequently found worldwide in MSM, a condition that seems to suggest shared international transmission routes of MSM specific clusters [van de Laar, 2010]. Phylogenetic studies showed links between local HCV infections and European clusters, highlighting the need for phylogenetic analysis of outbreaks, contact tracing, targeted testing, and rapid treatment at a European level to meet WHO elimination goals [Popping 2020; Koopsen 2021].

All confirmed HCV-infected cases were chronically infected with high viremia (6 out of 7, with more than 10^6 UI/ml), despite mild or no symptoms, supporting the important role of these types of screening programs in diagnosing highly viremic subjects unaware of their status, and thus able to spread the infection, given that untreated HCV can quickly spread within the MSM community, leading to a rise in new cases.

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In our study, all confirmed cases were effectively linked to treatment, which resulted in a definitive and permanent HCV-infection resolution in 100% of subjects treated.

Our study has some limitations. Due to COVID-19 restrictions and/or for a lower propensity to testing especially in the first pandemic period, we had fewer participants than expected, requiring us to extend the enrollment period of further 18 months and extend the opportunity to enroll subjects to other non-healthcare settings (CB Checkpoint Plus Roma; Arcigay and ANLAIDS) with the help of an advertising campaign conducted through posters, postcards, and a specific website page.

Furthermore, we cannot exclude that the change in sexual behaviour among MSM occurred during the SARS-CoV-2 pandemic when the investigation was carried out, resulting in a lower than expected HCV prevalence [Williams 2022; Gómez-Castro 2022; Ingiliz 2024].

Besides, HCV testing was performed with an antibody-based test (HCV-IgG), meaning that very recent HCV infections that were still in the seroconversion window may have gone undetected. However, the project allowed to be retested at least six-months after a previous HCV-negative test, and no seroconversion was observed in 282 out of 2714 persons enrolled (10.4%) which we were able to retest during the campaign.

This study identifies a subgroup of MSM engaging in high-risk behaviour (e.g. those practicing group sex, chemsex, unprotected anal intercourse or those with an history of STI), which could benefit from a dedicated HCV screening activity.

Combining DAAs with behavioural interventions specifically aimed at MSM who are HIV-negative could play a crucial role in reaching the WHO elimination targets [Martin 2019]. Several studies have shown that early treatment, alongside health promotion efforts focused on reducing high-risk behaviours, is an effective strategy to controlling the HCV epidemic within the MSM population [Salazar 2018].

In the face of this scenario, a more structured and efficient approach would be to restrict screening to the highest-risk population since HCV annual screening, based on sexual risk factors and carried out on a population of HIV-negative MSM, has not always been effective in identifying new HCV positivity [Robinson 2017]. These considerations underscore the importance of maintaining a targeted approach by concentrating on subgroups within the MSM population with extremely high-risk behaviour, rather than extending HCV screening to individuals with lower-risk behaviour attending STI clinics [Popping 2023].

Focusing on subgroups of individuals who consistently engage in high-risk behaviours and have a history of HCV infection, given that reinfection rates remain high among MSM, may be a more effective approach [Martinello, 2023], developing a comprehensive strategy designed to increase HCV knowledge and awareness, encourage regular testing, ensure rapid linkage to care, support risk-reduction behaviours, and strengthen partner notification efforts among MSM [Prinsenberg 2022].

Moreover, modeling studies indicate that targeted HCV screening among MSM, especially when integrated into HIV care or PrEP settings, can be highly cost-effective [Macgregor 2021; Krauth 2019], especially an approach of “test-and-treat” linked to risk reduction interventions, targeted to high-risk individuals. [Castry 2022]

These considerations are in line with those expressed by WHO [WHO 2021], according to general HCV screening is recommended when the prevalence is 2% or more. Since in our study the prevalence of HCV infection is well below 2, in line with findings from other European studies [Hage 2025], HCV screening among HIV-negative MSM should likely be offered based on an assessment of individual risk behaviours rather than conducted systematically.

In conclusion, the results of this project confirm the feasibility and potential effectiveness of a Micro-elimination program targeting high risk MSM, combining HCV screening and linkage to care with prevention strategies that include behavioural interventions, needed to achieve the goal of micro-elimination among MSM. Although the overall prevalence is very low, it is important to continue screening MSM, HIV-positive or not, with a particular focus on those who, despite engaging in high-risk behaviours, do not attend STI clinics, including those not yet on PrEP.

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