PO3/05

HCV reinfection after cure among people receiving opioid agonist therapy in Ukraine: a 13-clinic cluster trial of onsite simplified care under different provider payment models

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Introduction

Hepatitis C virus (HCV) remains a major public health challenge in Ukraine, where approximately 5% of the population is infected and 3.6% has chronic HCV infection [1]. People who inject drugs (PWID) are disproportionately affected and contribute substantially to ongoing HCV transmission. Globally, modelling suggests that eliminating the increased transmission risk associated with injecting drug use could prevent 43% of new HCV infections between 2018 and 2030 [2].

Integrating simplified HCV testing and treatment into opioid agonist maintenance therapy (OAMT) clinics can improve access to care and support HCV elimination efforts. However, reinfection following successful direct-acting antiviral (DAA) treatment remains a concern, particularly among individuals with ongoing injecting risk behaviors [3–5]. Understanding reinfection patterns and associated factors is essential to sustaining treatment benefits and informing post-treatment surveillance and harm reduction strategies among OAMT patients.

Objectives

The primary objective of this secondary analysis was to estimate the incidence of HCV reinfection following sustained virological response (SVR) among people receiving OAMT in Ukraine who underwent HCV treatment as part of the pragmatic trial "*The Simplified HCV Integrated Management Model in Methadone Clinics in Ukraine*."
Although simplified onsite HCV care can improve access to treatment and cure rates among people who inject drugs, reinfection following successful treatment may undermine its long-term population-level benefits.

Methods

In a pragmatic 13-clinic cluster trial conducted in Ukraine between February 2023 and December 2024, participants who achieved SVR at 12 weeks after completing HCV treatment (SVR12) underwent HCV RNA testing to assess reinfection 12 months after treatment completion.
Trial arms included simplified onsite care with upfront bundled provider payment (ACCESS-HCV), the same care model with provider payment linked to performance milestones (ACCESS-HCV-P4P), and case-management referral with the same pay-for-performance payment model (CMR).
We primarily aimed to estimate HCV reinfection incidence following SVR and identify associated factors, particularly ongoing injecting drug use and other individual characteristics. Additionally, we explored differences in reinfection incidence across the three care delivery models and whether these differences could be explained by individual risk factors or variation between clinical settings.
Reinfection was treated as current-status interval-censored data, with incidence expressed per 100 person-years (PY). Multivariable Poisson regression with cluster-robust (CR2) standard errors was used to assess associations, adjusting for trial arm, age, sex, recent injecting drug use, OAMT dose and dispensing, alcohol use, and HIV status.

Results

Among 422 participants who achieved SVR12 and completed reinfection assessment, 26 reinfections were identified, corresponding to an overall incidence of 8.6 per 100 person-years (PY; 95% CI 5.6–12.6).

Reinfection incidence varied across trial arms, ranging from 4.3/100 PY in ACCESS-HCV (95% CI 1.6–9.5) to 7.3/100 PY in CMR (95% CI 1.5–21.4) and 13.9/100 PY in ACCESS-HCV-P4P (95% CI 8.1–22.2). However, differences between care delivery models were not statistically significant after adjustment for individual-level factors.

Recent injecting drug use was the only independently associated factor (adjusted IRR 2.4, 95% CI 1.2–4.8; p=0.023). Age, sex, OAMT parameters, alcohol use, and HIV status were not independently associated with reinfection.

Between-clinic variability in reinfection was negligible (ICC≈0), whereas completion of reinfection assessment showed substantial clinic-level clustering (ICC≈0.33).

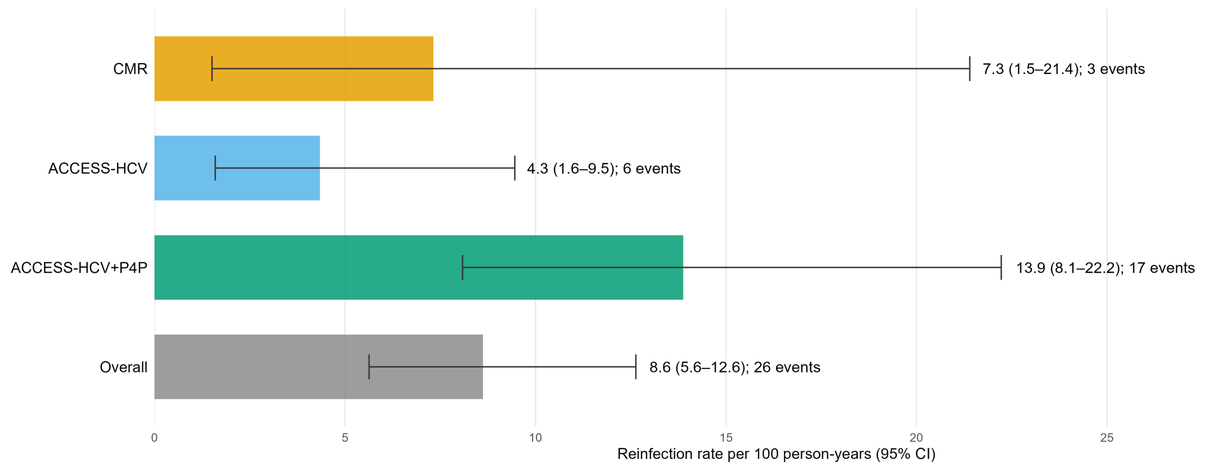

Figure 1. HCV reinfection rates by study arm.

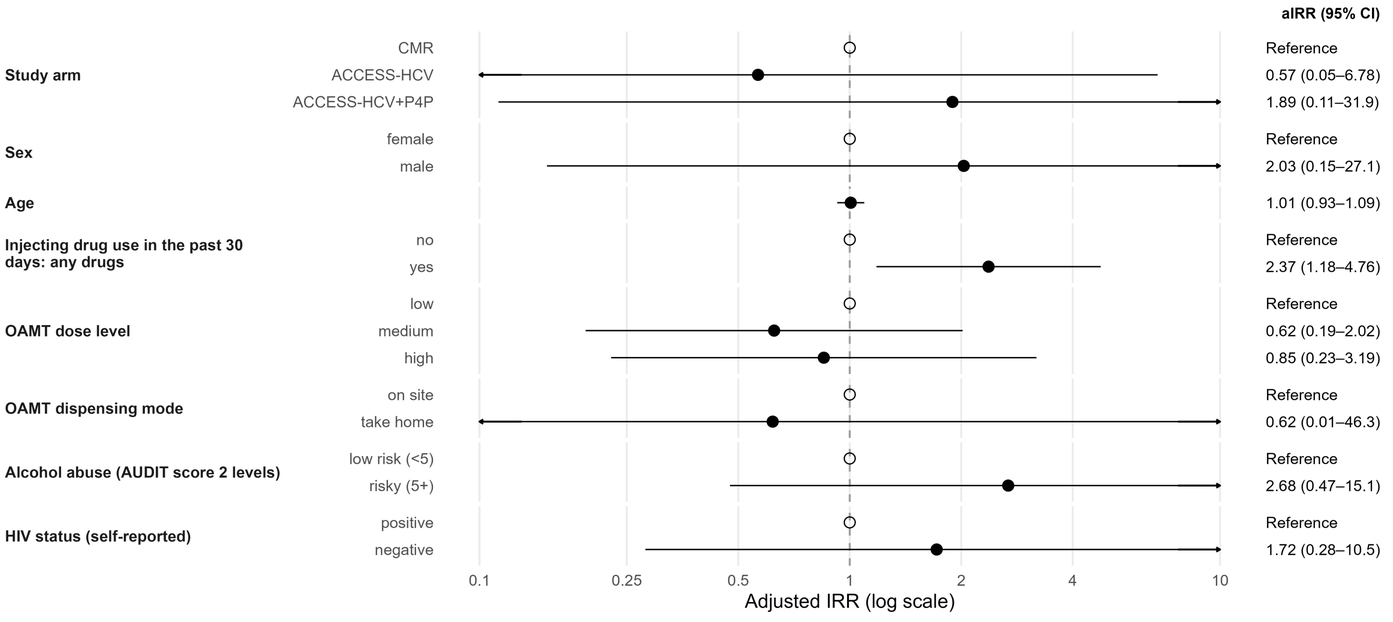

Figure 2. Multivariable regression results (Poisson with cluster-robust standard errors).

Conclusions

HCV reinfection following successful treatment was common among participants receiving OAMT at the 13 study clinics. Recent injecting drug use was the only factor independently associated with reinfection, whereas the model of HCV care delivery was not independently associated with reinfection risk.
The higher reinfection incidence observed in some trial arms may reflect differences in participants' injecting behaviors and local HCV epidemiology, including underlying community HCV prevalence and transmission intensity across clinic catchment areas. These potential explanations require further investigation and should be considered when interpreting differences between care delivery models.
These findings highlight the importance of combining simplified HCV treatment with sustained harm reduction interventions and systematic post-SVR reinfection surveillance. Understanding local epidemiological conditions may also help inform strategies to reduce reinfection and sustain the benefits of HCV treatment across different clinical settings.

IRB: The protocol and informed consent forms were approved by UIPHP IRB#1 on February 03, 2023 (official IRB registration – IRB#00007612, FWA #00029648)

Disclosure of interest statement:
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Literature

1. Cabinet of Ministers of Ukraine. Order No. 1415-r: On approval of the State Strategy in the field of combating HIV/AIDS, tuberculosis and viral hepatitis until 2030. 2019 Nov 27 [cited 2026 Oct 21]. Available from: (official text/document)
2. Trickey A, Fraser H, Lim AG, Peacock A, Colledge S, Walker JG, et al. The contribution of injection drug use to hepatitis C virus transmission globally, regionally, and at country level: a modelling study. Lancet Gastroenterol Hepatol. 2019;4(6):435–444. doi:10.1016/S2468-1253(19)30085-8
3. Rossi C, Butt ZA, Wong S, Buxton JA, Islam N, Yu A, et al. Hepatitis C virus reinfection after successful treatment with direct-acting antiviral therapy in a large population-based cohort. J Hepatol. 2018;69(5):1007–1014. doi:10.1016/j.jhep.2018.07.025
4. Hajarizadeh B, Cunningham EB, Valerio H, Martinello M, Law M, Janjua NZ, et al. Hepatitis C reinfection after successful antiviral treatment among people who inject drugs: a meta-analysis. J Hepatol. 2020;72(4):643–657. doi:10.1016/j.jhep.2019.11.012
5. Akiyama MJ, Lipsey D, Heo M, et al. Low hepatitis C reinfection following direct-acting antiviral therapy among people who inject drugs on opioid agonist therapy. Clin Infect Dis. 2020;70(12):2695–2702. doi:10.1093/cid/ciz693