

Colocalization in Hepatitis C Virus Infection Care: The Role of Opioid Agonist Therapy Clinics

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PWID carry the highest burden of hepatitis C virus (HCV) infection, with almost half of PWID worldwide living with HCV.¹⁻⁵ Injection drug use is the main route of transmission in middle- and high-income regions.¹⁻⁵ In the United States, HCV incidence tripled from 2010 to 2015, primarily because of opioid injection.⁶ High levels of HCV treatment and cure for PWID can reduce HCV incidence and prevalence.⁷⁻¹⁰ Compelling evidence demonstrates that direct-acting antiviral (DAA) agents are effective for PWID. Two recent meta-analyses indicate high sustained virological response (SVR) rates among PWID regardless of whether they were receiving opioid agonist therapy (OAT).^{11,12} For all of these reasons, international guidelines support prioritization and HCV treatment scale-up for this population.^{13,14}

Nevertheless, the HCV cascade to cure has not reached PWID in sufficient numbers.¹⁵ Barriers are many and include, at the patient level, stigma, difficulty navigating conventional health settings, and fragmented care.¹⁶ At the provider level, there is reluctance to treat PWID.^{17,18} At the

system level, prescribing restrictions may bar drug-involved patients from receiving DAAs.¹⁹ Delivering all elements of care at a single site, as well as streamlining care to reduce time from infection to cure, may be accomplished with collocation of HCV and addiction care. Integrated, multidisciplinary care unites expertise in both HCV and addiction.

Colocation can be physical. There are a growing number of successful models of HCV care for PWID, on-site at accessible venues welcoming to this population, or where PWID may congregate or are already accessing services, including needle syringe programs (NSP) and centers for people experiencing homelessness.^{20,21} Colocation at OAT programs is critical, because 83% of PWID mainly inject opioids.¹ OAT, the fundamental treatment for opioid use disorder (OUD), reduces illicit opioid use, craving, and death.²² With integrated OAT/HCV care, a population already engaged in treatment for the chronic disease of addiction is available for DAAs. OAT facilitates HCV screening, treatment uptake, and SVR, and can reduce incidence and reinfection.^{1,23-25} Colocated OAT can improve retention in HCV care. Without a vaccine,

Abbreviations: DAA, direct-acting antiviral; HAT, heroin-assisted treatment; HCV, hepatitis C virus; NSP, needle syringe program; OAT, opioid agonist therapy; OUD, opioid use disorder; PWID, people who inject drugs; SVR, sustained virological response.

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prevention benefits are greatest when DAAs are delivered with OAT and high-coverage NSP.²⁶⁻²⁸

In the United States, federal regulations limit access to the two OATs, methadone (μ -receptor full agonist) and buprenorphine (μ -receptor partial agonist often paired with the antagonist naloxone). For methadone, this became law with the 1974 Narcotic Addict Treatment Act, mandating that for methadone maintenance, patients must attend a federally licensed clinic. This created a methadone clinic system organizationally and often physically separate from mainstream health care.²⁹ Methadone maintenance programs are highly structured. A physician evaluates patients; then nurses administer methadone daily under observation. Take-home doses, freeing patients from daily visits, are contingent on criteria, including toxicology results, time in treatment, and attendance.

The methadone clinic infrastructure can be leveraged for colocated HCV care. At minimum, there is opportunity for a supportive environment for drug-involved populations, that is, staff familiar with psychosocial needs not typically addressed in tertiary care and a setting in which patients receive care without shame. The attendance required provides occasion for daily or at least frequent contact with clinicians, enhancing support and establishing the option of directly observed therapy to bolster DAA adherence. Prevention incorporates providing naloxone, sterile injection equipment, hepatitis A and B vaccination, and HIV pre-exposure prophylaxis. Services may include counseling, peer support, and housing assistance. This lays the foundation for universal HCV “Test to Treat,” beginning with opt-out HCV screening on entry into OAT treatment, via the most efficient method

available (dried blood spot sampling, point-of-care fingerstick HCV RNA testing, or venous HCV antibody with reflex HCV RNA viral load). The path to cure is accelerated with simplified pretreatment assessment, HCV education, serum biomarkers to stage fibrosis, and minimal on-treatment monitoring. Posttreatment care encompasses obtaining SVR, management of cirrhosis, ongoing harm reduction, and routine testing for reinfection. Facilitators include a low-threshold, flexible configuration respectful of patients’ preferences, accommodating walk-in visits, and the ability to be a place of last resort where patients can remain in HCV care no matter the number of late or missed visits. Ideally, the bedrock of this approach is primary care, plus psychiatry and care for comorbidities such as HIV. A challenge in the United States is that typically, methadone clinics are not ambulatory care centers and do not provide primary care.

A representative model of ideal, comprehensive health care for PWID under one roof is Switzerland’s Arud (Fig. 1).³⁰ Arud is a primary care–based addiction medicine institute with integrated HCV and psychiatric services, delivered by a multidisciplinary team. Arud provides prevention and treatment for the broader scope of infectious diseases afflicting PWID, and supplies free sterile injection equipment. OUD therapy includes methadone, buprenorphine, long-acting morphine, and heroin-assisted treatment (HAT). In 1994, Switzerland became the first country to establish a widespread, government-funded program of heroin prescription, under a policy aimed to curb overdose and HIV. HAT is designed to treat a minority of people who do not respond successfully to other therapies. Patients inject heroin under medical supervision at ARUD. To date, SVR rate is 92%; excluding treatment completers

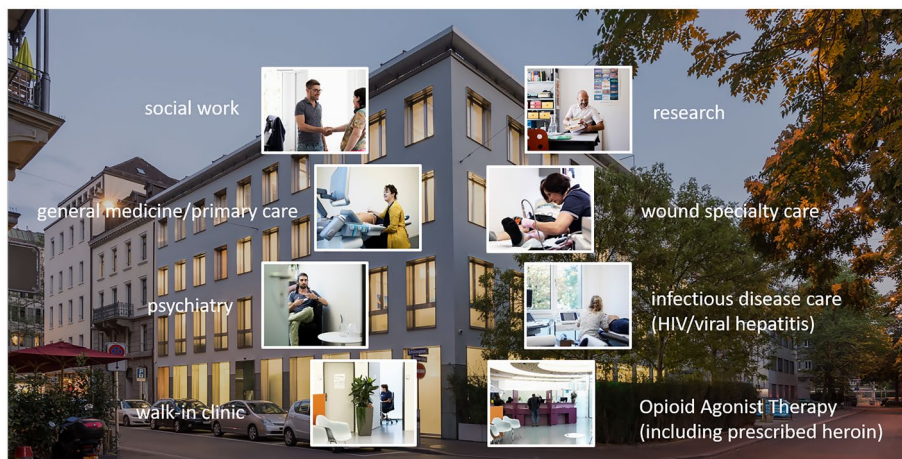


FIG 1 Arud, Switzerland. Colocated HCV and OUD care: a representative model of ideal, comprehensive, whole-person health care for PWID under one roof.

lost to follow-up prior to 12-week testing yields a modified intention-to-treat SVR of 97%.

How can we expand capacity in the United States given the myriad challenges to inserting HCV management into 1613 methadone clinics?³¹ One hurdle is the complicated insurance and payment structure with insufficient reimbursement for HCV outpatient services without supporting income from endoscopy, colonoscopy, and radiology. This can make HCV care nonsustainable at nonprofit and public methadone clinics when state and federal support for OUD does not cover HCV care. Meanwhile, the for-profit methadone programs increase while their HCV screening declines.³² Virtual colocation can aid in HCV treatment rollout. Telemedicine uses technological advances to bridge geographic separation between the HCV expert and methadone clinic with two-way videoconferencing between patient and specialist. This imports HCV management into locales convenient and familiar to patients, but lacking HCV expertise, infrastructure, and resources. For example, off-site hepatologist Dr. Andrew Talal provided telemedicine-based HCV care to New York City methadone patients via the PET-C (Prevention, Evaluation and Treatment of HCV) Study.³³ At their methadone clinic, patients were screened for HCV and shown a video on telehealth. Patients had initial evaluation and HCV discussion with pretreatment laboratory tests collected on-site, including FibroSure to stage fibrosis. The specialist documented the visit in the electronic health record, collaborating with an on-site physician assistant, and submitted a bill. DAAs were dispensed with daily methadone. SVR was 93%. Dr. Talal is now conducting a randomized trial comparing telemedicine with usual care at 12 methadone clinics throughout New York state.

To achieve HCV elimination, PWID must be engaged in care. HCV and OAT care plus NSP provision are the necessary trifecta to facilitate prevention and the path to cure via physical or virtual colocation. Further research to inform the design, optimize outcomes, and evaluate these embedded care models is needed, along with attention to alternative payment and financing models.³⁴ Expanding methadone availability across diverse clinical settings including primary care and integrating HCV services with methadone maintenance are key steps in the worldwide public health response to the HCV epidemic.

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