Heroin-Assisted Treatment (HAT)

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Drug replacement and maintenance therapies have a long history of providing individuals struggling with problematic drug use with legal access to drugs that would otherwise be obtained through illegal means. More than a half dozen countries in Europe and Canada have implemented heroin-assisted treatment (HAT) programs. Under HAT, pharmacological heroin is administered under strict controls in a clinical setting to those who have failed in other treatments like methadone. Every published evaluation of HAT has shown extremely positive outcomes: major reductions in illicit drug use, crime, disease and overdose; and improvements in health, wellbeing, social reintegration and treatment retention. The U.S. should implement this innovative health-centered model.

HAT: A Successful Second-Line Treatment

Several countries have gone beyond methadone and adopted heroin-assisted treatment (HAT) programs, which have proven enormously successful and now operate in Switzerland,[1] Netherlands,[2] United Kingdom,[3] Germany,[4] Spain,[5] Denmark,[6] Belgium,[7] Canada,[8] and Luxembourg.[9] Also known as heroin maintenance, HAT allows for the provision of pharmacological grade heroin[10] (diacetylmorphine) to select heroin-dependent people who have not previously responded to other forms of treatment. Typically, patients receive injectable or inhalable heroin 2-3 times per day from a doctor in a clinic setting under strict controls.

HAT Improves Health, Social Functioning and Quality of Life

Peer-reviewed studies around the world have found that HAT is associated with decreased illicit drug use, crime, overdose fatalities, and risky injecting, as well as improvements in physical and mental health, employment and social relations.[11] In contrast, few reports have appeared in the scientific literature demonstrating any harmful consequences of HAT.

HAT Significantly Reduces Illicit Heroin Use

E*very HAT trial* has shown a marked decrease in illicit 'street' heroin use. A 2015 systematic review and meta-analysis published in the *British Journal of Psychiatry* reviewed six randomized controlled trials of HAT and found that, across all trials, there was a greater reduction in the use of illicit heroin among HAT patients compared to the control groups (who generally only received methadone). The authors concluded that "heroin-prescribing, as a part of highly regulated regimen, is a feasible and effective treatment for a particularly difficult-to-treat group of heroin-dependent patients."[12]

Similarly, a 2011 *Cochrane* systematic review concluded, "Each study found a superior reduction in illicit drug use in the heroin arm rather than in the methadone arm…the measures of effect obtained are consistently statistically significant."[13]

The first Canadian HAT trial reported a two-thirds (67 percent) reduction in illicit drug use or other illegal activity among HAT participants.[14] Similar reductions in illicit heroin use were reported from HAT trials in the UK (72 percent)[15] and Germany (69 percent).[16] HAT patients experience less (and less severe) cravings, helping to explain their decreased use.[17] HAT has also demonstrated an added benefit of reducing participants' use of alcohol and other drugs.[18]

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HAT is Cost-Effective
HAT is not just more effective at reducing street drug use than methadone,[19] but it has also proven to be more cost-effective.[20] While HAT does cost more than methadone initially, cost-benefit studies demonstrate that these higher costs are more than offset by savings in criminal justice and health care.[21]

HAT has been restricted to those who have not responded to other forms of treatment; although evidence now shows HAT is effective even for people with no previous methadone experience or those who switch from methadone to HAT – suggesting that it could easily be scaled up.[22]

HAT Improves Treatment Retention
Once someone begins a HAT program, they are likely to stick around. Retention rates in HAT programs dwarf those of convention treatments.[23] A 2016 systematic review of the past five years of research, for example, found that "heroin-assisted treatment was associated with better retention than methadone among treatment-refractory patients" at 12 month follow-up.[24]

Patients express a strong preference for HAT over methadone or other standard treatments.[25] Moreover, those who end up dropping out of HAT usually do not relapse, but rather tend to freely choose to switch to another form of treatment (like methadone) or to abstinence;[26] while others continue to receive HAT on a long-term basis, with lasting positive results.[27]

HAT Decreases Crime
HAT participants are also much less likely to commit acquisitive crimes and other non-drug offenses. As a result, HAT programs have been shown to decrease crime in areas where they are situated – leading to additional cost savings of the HAT model.[28]

HAT Reduces Demand and Shrinks Drug Markets
Substitution therapies like HAT represent the most effective approaches to demand reduction because they acknowledge that many dependent or serious drug consumers simply cannot or will not cease using their preferred substance of choice (or a close substitute) – regardless of its legal status or the impact their consumption might have on other countries. HAT programs have been so successful precisely because they focus on reducing *illicit* demand – not demand per se – and channeling this demand towards a *licit*, regulated supply.[29]

HAT programs currently serve a subsection of the using population that is small, but which consumes a disproportionate amount of heroin.

Available evidence indicates that HAT programs can help destabilize local heroin markets. One published article concluded that HAT participants "accounted for a substantial proportion of consumption of illicit heroin, and that removing them from the illicit market has damaged the market's viability." It further states that "by removing retail workers [who] no longer sold drugs to existing users, and…no longer recruited new users into the market…the heroin prescription market may thus have had a significant impact on heroin markets in Switzerland."[30]

HAT in the United States?
An exploratory analysis of the benefits of implementing HAT in Baltimore concluded, "Enough evidence has emerged in the last 10 years to merit reconsideration of its potential for Baltimore, and the U.S. more generally."[31]

Researchers, harm reduction advocates and health officials have expressed interest in studying and implementing HAT in the U.S., but zero tolerance policies and federal law have stood in the way of this evidence-based method of treatment.

Congress should amend federal law to make clear that cities that want to conduct trial HAT programs can do so without federal interference. Congress should also fund domestic pilot projects to study this life-saving and successful health-centered intervention.

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[1] A. Uchtenhagen, "Heroin-assisted treatment in Switzerland: a case study in policy change," *Addiction* 105, no. 1 (2010); A. A. Uchtenhagen, "Heroin maintenance treatment: From idea to research to practice," *Drug and Alcohol Review* 30, no. 2 (2011).
[2] Peter Blanken et al., "Heroin-assisted treatment in the Netherlands: History, findings, and international context," *European Neuropsychopharmacology* 20(2010).
[3] John Strang et al., "Supervised injectable heroin or injectable methadone versus optimised oral methadone as treatment for chronic heroin addicts in England after persistent failure in orthodox treatment (RIOTT): a randomised trial," *The Lancet* 375, no. 9729 (2010).
[4] U. Verthein et al., "Long-term effects of heroin-assisted treatment in Germany," *Addiction* 103, no. 6 (2008); U. Verthein, C. Haasen, and J. Reimer, "Switching from methadone to diamorphine: 2-year results of the german heroin-assisted treatment trial," *Subst Use Misuse* 46, no. 8 (2011); C. Haasen et al., "Heroin-assisted treatment for opioid dependence: randomised controlled trial," *Br J Psychiatry* 191(2007).
[5] E. Oviedo-Joekes et al., "The Andalusian trial on heroin-assisted treatment: a 2 year follow-up," *Drug Alcohol Rev* 29, no. 1 (2010); E. Perea-Milla et al., "Efficacy of prescribed injectable diacetylmorphine in the Andalusian trial: Bayesian analysis of responders and non-responders according to a multi domain outcome index," *Trials* 10(2009).

[6] Convinced by the impressive results from other countries, Denmark moved ahead with implementing HAT programs without conducting its own randomized controlled trial. *See* Uchtenhagen, "Heroin maintenance treatment: From idea to research to practice."
[7] I. Demaret et al., "Efficacy of heroin-assisted treatment in belgium: a randomised controlled trial," *Eur Addict Res* 21, no. 4 (2015).
[8] Eugenia Oviedo-Joekes et al., "Diacetylmorphine versus methadone for the treatment of opioid addiction," *N Engl J Med* 361, no. 8 (2009).
[9] European Monitoring Centre on Drugs and Drugs Addiction, "Country overview: Luxembourg," http://www.emcdda.europa.eu/countries/luxembourg.
[10] The Canadian trial involved an arm of the study that received another opioid agonist, hydromorphone, instead of heroin; these subjects showed similarly impressive results. A second randomized trial in Canada currently underway is administering heroin as well as hydromorphone. *See* E. Oviedo-Joekes et al., "Double-blind injectable hydromorphone versus diacetylmorphine for the treatment of opioid dependence: a pilot study," *J Subst Abuse Treat* 38, no. 4 (2010); Providence Health Care, "The Study to Assess Longer-term Opioid Medication Effectiveness (SALOME)," http://www.providencehealthcare.org/salome/index.html.
[11] Marica Ferri, M. Davoli, and C. A. Perucci, "Heroin maintenance for chronic heroin-dependent individuals," *Cochrane Database Syst Rev*, no. 12 (2011); Verthein, Haasen, and Reimer, "Switching from methadone to diamorphine: 2-year results of the german heroin-assisted treatment trial; P. Blanken et al., "Outcome of long-term heroin-assisted treatment offered to chronic, treatment-resistant heroin addicts in the Netherlands," *Addiction* 105, no. 2 (2010); A. Karow et al., "Quality of life under maintenance treatment with heroin versus methadone in patients with opioid dependence," *Drug Alcohol Depend* 112, no. 3 (2010); Uchtenhagen, "Heroin-assisted treatment in Switzerland: a case study in policy change; Oviedo-Joekes et al., "Diacetylmorphine versus methadone for the treatment of opioid addiction; Haasen et al., "Heroin-assisted treatment for opioid dependence: randomised controlled trial; Benedikt Fischer et al., "Heroin-assisted Treatment (HAT) a Decade Later: A Brief Update on Science and Politics," *Journal of Urban Health* 84, no. 4 (2007); M. P. Garcia-Portilla et al., "Long term outcomes of pharmacological treatments for opioid dependence: does methadone still lead the pack?," *Br J Clin Pharmacol* 77, no. 2 (2014); John Strang, Teodora Groshkova, and Nicola Metrebian, *New Heroin-Assisted Treatment: Recent Evidence and Current Practices of Supervised Injectable Heroin Treatment in Europe and Beyond* (Lisbon: European Monitoring Centre for Drugs and Drug Addiction, 2012); M. T. Schechter and P. Kendall, "Is there a need for heroin substitution treatment in Vancouver's Downtown Eastside? Yes there is, and in many other places too," *Can J Public Health* 102, no. 2 (2011); Karow et al., "Quality of life under maintenance treatment with heroin versus methadone in patients with opioid dependence; J. Rehm et al., "Mortality in heroin-assisted treatment in Switzerland 1994-2000," *Drug Alcohol Depend* 79, no. 2 (2005); Robert P Schwartz et al., "Opioid Agonist Treatments and Heroin Overdose Deaths in Baltimore, Maryland, 1995–2009," *American journal of public health* 103, no. 5 (2013); U Verthein, I Schäfer, and P Degkwitz, "[Social Integration after 4 Years of Heroin-Assisted Treatment.]," *Die Rehabilitation* 52, no. 4 (2012); Carlos Nordt and Rudolf Stohler, "Combined effects of law enforcement and substitution treatment on heroin mortality," *Drug and Alcohol Review* 29, no. 5 (2010); B. Nosyk et al., "Health related quality of life trajectories of patients in opioid substitution treatment," *Drug Alcohol Depend* 118, no. 2-3 (2011).
[12] J. Strang et al., "Heroin on trial: systematic review and meta-analysis of randomised trials of diamorphine-prescribing as treatment for refractory heroin addictiondagger," *Br J Psychiatry* 207, no. 1 (2015): 11.
[13] Ferri, Davoli, and Perucci, "Heroin maintenance for chronic heroin-dependent individuals," 10.
[14] Oviedo-Joekes et al., "Diacetylmorphine versus methadone for the treatment of opioid addiction."
[15] Strang et al., "Supervised injectable heroin or injectable methadone versus optimised oral methadone as treatment for chronic heroin addicts in England after persistent failure in orthodox treatment (RIOTT): a randomised trial."
[16] Haasen et al., "Heroin-assisted treatment for opioid dependence: randomised controlled trial."
[17] P. Blanken et al., "Craving and illicit heroin use among patients in heroin-assisted treatment," *Drug Alcohol Depend* 120, no. 1-3 (2012).
[18] Blanken et al., "Outcome of long-term heroin-assisted treatment offered to chronic, treatment-resistant heroin addicts in the Netherlands; F. J. Eiroa-Orosa et al., "Benzodiazepine use among patients in heroin-assisted vs. methadone maintenance treatment: findings of the German randomized controlled trial," *Drug Alcohol Depend* 112, no. 3 (2010); C. Haasen et al., "Effects of heroin-assisted treatment on alcohol consumption: findings of the German randomized controlled trial," *Alcohol* 43, no. 4 (2009).
[19] Verthein, Haasen, and Reimer, "Switching from methadone to diamorphine: 2-year results of the german heroin-assisted treatment trial."
[20] B. Nosyk et al., "Cost-effectiveness of diacetylmorphine versus methadone for chronic opioid dependence refractory to treatment," *CMAJ* 184, no. 6 (2012); Sarah Byford et al., "Cost-effectiveness of injectable opioid treatment v. oral methadone for chronic heroin addiction," *The British Journal of Psychiatry* (2013).
[21] Marcel G.W. Dijkgraaf et al., "Cost Utility Analysis of Co-Prescribed Heroin Compared With Methadone Maintenance Treatment in Heroin Addicts in Two Randomised Trials," *BMJ* 330, no. 1297 (2005).
[22] C. Haasen et al., "Is heroin-assisted treatment effective for patients with no previous maintenance treatment? Results from a German randomised controlled trial," *Eur Addict Res* 16, no. 3 (2010).
[23] Ferri, Davoli, and Perucci, "Heroin maintenance for chronic heroin-dependent individuals; Blanken et al., "Outcome of long-term heroin-assisted treatment offered to chronic, treatment-resistant heroin addicts in the Netherlands; B. Nosyk et al., "The effect of motivational status on treatment outcome in the North American Opiate Medication Initiative (NAOMI) study," *Drug Alcohol Depend* 111, no. 1-2 (2010); Oviedo-Joekes et al., "Diacetylmorphine versus methadone for the treatment of opioid addiction; Haasen et al., "Heroin-assisted treatment for opioid dependence: randomised controlled trial."
[24] C. Timko et al., "Retention in medication-assisted treatment for opiate dependence: A systematic review," *J Addict Dis* 35, no. 1 (2016): 22.
[25] L. K. Bald et al., "Heroin or Conventional Opioid Maintenance? The Patients' Perspective," *J Addict Med* (2013); K. I. Marchand et al., "Client satisfaction among participants in a randomized trial comparing oral methadone and injectable diacetylmorphine for long-term opioid-dependency," *BMC Health Serv Res* 11(2011).
[26] Jürgen Rehm et al., "Feasibility, safety, and efficacy of injectable heroin prescription for refractory opioid addicts: a follow-up study," *The Lancet* 358, no. 9291 (2001); Peter Reuter, *Can Heroin Maintenance Help Baltimore?: What Baltimore Can Learn from the Experience of Other Countries* (Abell Foundation, 2009).
[27] Blanken et al., "Outcome of long-term heroin-assisted treatment offered to chronic, treatment-resistant heroin addicts in the Netherlands," 300; Verthein et al., "Long-term effects of heroin-assisted treatment in Germany," 960; Oviedo-Joekes et al., "The Andalusian trial on heroin-assisted treatment: a 2 year follow-up; Garcia-Portilla et al., "Long term outcomes of pharmacological treatments for opioid dependence: does methadone still lead the pack?; U. Frick et al., "Long-Term Follow-Up of Orally Administered Diacetylmorphine Substitution Treatment," *European Addiction Research* 16, no. 3 (2010); F. Güttinger et al., "Evaluating Long-Term Effects of Heroin-Assisted Treatment: The Results of a 6-Year Follow-Up," *European Addiction Research* 9, no. 2 (2003).
[28] B. P. van der Zanden et al., "Patterns of acquisitive crime during methadone maintenance treatment among patients eligible for heroin assisted treatment," *Drug Alcohol Depend* 86, no. 1 (2007); Martin Killias et al., "Effects of Drug Substitution Programs on Offending Among Drug-Addicts: A Systematic Review," (2009); R. Lobmann and U. Verthein, "Explaining the effectiveness of heroin-assisted treatment on crime reductions," *Law Hum Behav* 33, no. 1 (2009); Garcia-Portilla et al., "Long term outcomes of pharmacological treatments for opioid dependence: does methadone still lead the pack?; Frick et al., "Long-Term Follow-Up of Orally Administered Diacetylmorphine Substitution Treatment; I Demaret et al., "Reduction in Acquisitive Crime During a Heroin-Assisted Treatment: a Post-Hoc Study," *J Addict Res Ther* 6, no. 208 (2015).
[29] Daniel Robelo, "Demand Reduction or Redirection? Channeling Illicit Drug Demand towards a Regulated Supply to Diminish Violence in Latin America," *Or. L. Rev.* 91(2013).
[30] Martin Killias, Marcelo Fernando Aebi, and Kriminologe Jurist, "The impact of heroin prescription on heroin markets in Switzerland," *Crime Prevention Studies* 11(2000).
[31] P. Reuter, "Can Heroin Maintenance Help Baltimore," *Baltimore, MD: Abell Foundation* (2009): 32.