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## Commentary

# Joint Trajectories of Heroin Use and Treatment Utilisation: Who Will Benefit in the Long Term?

Huiru Dong<sup>a,b</sup>, Thomas Kerr<sup>a,c,\*</sup><sup>a</sup> British Columbia Centre on Substance use, Vancouver, British Columbia, Canada<sup>b</sup> School of Population and Public Health, University of British Columbia, Vancouver, British Columbia, Canada<sup>c</sup> Department of Medicine, University of British Columbia, Vancouver, British Columbia, Canada

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Heroin use continues to result in significant harm to the health of individuals, including dependence, blood borne viral infection transmission [1], and fatal and non-fatal overdose [2]. The steep rise in opioid use and related overdose deaths has rendered the “opioid epidemic” a major public health challenge in various settings. In 2017, the annual prevalence of opioid (mainly heroin) use in North America is estimated to be 0.7% [3]. In Europe, with nearly 3.8 million opioid users, heroin remains the main drug type for which people receive treatment [3]. In response to this ongoing crisis, a range of various pharmacological treatments (e.g., methadone, buprenorphine/naloxone) and other psychosocial interventions are being implemented with the aim of decreasing opioid use and thereby limiting overdose risk, reducing criminal activity, and improving quality of life [4].

It has been well-established that heroin dependence is a chronic relapsing condition [5], and there is considerable variation in treatment seeking behaviour and related outcomes at the individual level. While there is value in assessing the effectiveness of single-treatment episode, studies that evaluate patterns and outcomes of multiple, sequential interventions can provide better understanding of the natural history of heroin dependence and the impacts of treatment in the long term.

Marel and colleagues [6] are among the first to provide meaningful insight into the relationship between trajectories of heroin use and treatment utilisation over a period of 10–11 years among a cohort of Australians with heroin dependence. Adding to the growing evidence of the effectiveness of treatment for opioid use disorder, the authors revealed considerable heterogeneity regarding the long-term joint trajectories. It is particularly interesting to learn that approximately 13% of study participants achieved and maintained abstinence without

ongoing treatment; however, roughly an equal number of people continued using heroin even after engaging in long-term treatment. Discovering these distinct trajectories can improve our understanding of heroin use progression and treatment responses, and also point to future areas for research. For example, increasing attention has been given to “natural recovery” processes and more work is now needed to better understand how some people achieve sustained abstinence without the aid of treatment, and what other facilitating factors may be involved in such processes [7]. These findings should also be interpreted in the context of specific treatment settings and other social-structural conditions (e.g., availability of harm reduction programs and other social and health supports) operating in the study setting. Future studies in other settings can thus hopefully improve our understanding of the long-term treatment effect on heroin use patterns.

Early detection of individuals who are not responsive to available treatments or who are at high risk of relapse is crucial. Such information can provide valuable information for clinical practice in targeting those with the greatest need for treatment. However, as demonstrated in Marel et al. [6], while entering methadone/buprenorphine therapy and residential rehabilitation at baseline could potentially help predict the joint trajectories, no baseline demographic, drug use history, physical or mental health factors were predictive of the patterns. Therefore, in light of dynamic drug-use behaviours and treatment process, recognizing the early signs of such trajectories is challenging. However, given a recent review conducted by Hser and colleagues [8] indicating that longer treatment retention and multiple treatment episodes are associated with a greater likelihood of abstinence and eventual cessation, treatment engagement is clearly something that should continue to be encouraged and facilitated.

These findings from Marel et al. [6] raise many interesting questions for future research. For example, it is critical to investigate the reasons for poor treatment outcomes. Research has indicated that inadequate dosing in the context of opioid agonist therapy may result in the use of substances during treatment [9]. Additionally, can intensity of heroin use, routes of administration, past treatment experience, treatment timing be predictive of distinct trajectories? How do life-changing events, such as loss of key relationships, overdose, and incarceration, influence trajectory patterns? In the context of the continuing opioid overdose crisis, how are the trajectories different for people who misuse opioids other than heroin?

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E-mail address: [bccsu-tk@bccsu.ubc.ca](mailto:bccsu-tk@bccsu.ubc.ca) (T. Kerr).<https://doi.org/10.1016/j.eclinm.2019.08.001>2589-5370/© 2019 Published by Elsevier Ltd. This is an open access article under the CC BY-NC-ND license. (<http://creativecommons.org/licenses/by-nc-nd/4.0/>)

In summary, the study by Marel and colleagues [6] in this issue of *EClinicalMedicine* takes an important first step in examining the relationship between patterns of heroin use and treatment utilisation, predictors of the joint trajectories, and their results highlight the benefits of treatment engagement. At the same time, their findings underscore the importance of identifying and attending to diversity during the treatment process, and highlight the need for adopting patient-centered strategies for treating heroin dependence.

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