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Commentary on Hsu *et al.* (2017): A systems approach to improving health services for overdose in the hospital and across the continuum of care—an unmet need

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Abstract

Rising opioid overdose hospitalization rates and costs, stagnant in-hospital mortality rates and poor care transitions highlight the need to improve health services for people who use opioids in the hospital and across the continuum of care. A systems approach may identify opportunities to prevent overdoses and improve outcomes from overdose.

Keywords

Continuum of care; economic costs; heroin; hospitalization; opioid; overdose

In the current issue of *Addiction*, Hsu *et al.* [1] describe the rising hospitalization rates and costs for heroin and pharmaceutical opioid overdose observed in the United States since the early 2000s. By 2012, the annual cost of opioid overdose hospitalization was estimated at US\$727 million. Despite increasing hospitalization costs, outcomes, including in-hospital mortality rates for heroin overdose (3–5%) and pharmaceutical opioid overdose (2%), barely improved during more than a decade. Not only were mortality outcomes poor, the high rates of hospital discharges ‘against medical advice’ (‘AMA’) (13–15% for heroin overdoses) suggest lost opportunities to engage patients and ensure successful care transitions. Given the young age of individuals hospitalized for heroin and prescription opioid overdose (mid-30s and mid-40s, respectively) [1], these findings highlight the critical need to improve health service delivery for overdose and other medical complications of opioid use.

Since 2012, the hospitalization costs of overdose and other medical complications of opioid use have probably continued to increase. During the last 5 years, many regions of the United States have experienced unprecedented increases in heroin and illicitly manufactured fentanyl overdose deaths [2,3]; hospitalization rates tend to parallel such rising mortality rates. Although some costs during a hospital admission may be attributable to comorbidities and social factors, such as homelessness, the costs estimated by Hsu *et al.* [1] would have

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been higher if the costs of the entire episode of care for each overdose were included. Episodes may include ambulance care, emergency department care and post-discharge skilled nursing care, rehabilitation and out-patient care, as well as physician services. Even if the overdose hospitalization cost estimates by Hsu *et al.* [1] represent a small fraction of the total health-care expenditures in the United States in 2012 [4], their estimates call attention to the role of hospital systems in the continuum of care for people who use opioids and have opioid use disorders.

Overdose is just one of several serious medical complications of opioid use leading to increasing hospitalization rates and costs; others include infective endocarditis, injection-related skin and soft tissue infection and neonatal abstinence syndrome [5–7]. In-hospital mortality rates for infective endocarditis (13–16%) have also been stagnant, suggesting little improvement in the quality and effectiveness of care provided for this important medical complication of injection opioid use [5]. To prevent future hospital admissions and deaths, contacts with the health-care system for such medical complications should be viewed as sentinel events [8].

In particular, the high rates of hospital discharges ‘AMA’, as documented by Hsu *et al.* [1], suggest failed care transitions. Addressing these high rates of ‘AMA’ discharges may require developing patient-centered approaches to manage the physical symptoms and stigma experienced by people with opioid use disorders, and to offer treatment for the underlying opioid use disorder. ‘AMA’ discharges may be driven by inadequately treated opioid withdrawal symptoms and patients’ perceptions of mistreatment by hospital personnel [9]. Clinicians may also be reluctant to initiate treatment with buprenorphine [10] and methadone in the hospital due to a lack of experience, training and policies which prohibit initiating in-patient treatment. It can also be difficult to link patients with community-based treatment after discharge due to limited access and long waiting-times. With such complex care transitions, it is not surprising that researchers elsewhere have documented high mortality rates soon after hospital discharge for patients with opioid use disorders [11,12].

Alongside hospitalization costs, other economic losses related to opioid overdose include years of potential life lost, lost productivity and criminal justice costs [13,14]. Compared with many other common chronic medical conditions, such as cardiovascular disease, people who develop complications of opioid use are often young. The mortality rate of people who use heroin regularly or have heroin dependence has been estimated at 2.1 per 100 person-years, driven largely by overdose [15]. Reducing these losses will require a systems lens to examine the entire continuum of care for people at risk—from community to hospital and back to community—to identify opportunities for engagement and process improvement.

As part of this care continuum, hospital care can be improved in the following ways. It should be easier for busy hospital-based clinicians to provide evidence-based care for opioid use disorders. Existing pharmacy, hospital, state and national policies that delay or prevent continuing or initiating evidence-based treatment with buprenorphine or methadone in the hospital should be eliminated or revised. Further, naloxone is an effective medication to prevent opioid fatalities that has been shown to be cost-effective for people who use heroin

[16]. Hospital-based clinicians should offer naloxone at discharge after an overdose. Finally, hospitals should consider ways to engage patients who have opioid use disorders to improve the ‘patient-centeredness’ of their care. This is likely to avert more failed transitions. Alongside these efforts, we should monitor outcomes systematically, including in-hospital mortality, continuity of medication treatment, linkage with care after discharge and re-admission. Together, such systems-based strategies may begin to address some of the economic and societal losses associated with overdose and other medical complications of opioid use.

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