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Caring for Hospitalized Adults With Opioid Use Disorder in the Era of Fentanyl
A Review

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IMPORTANCE The rise of fentanyl and other high-potency synthetic opioids across US and Canada has been associated with increasing hospitalizations and unprecedented overdose deaths. Hospitalization is a critical touchpoint to engage patients and offer life-saving opioid use disorder (OUD) care when admitted for OUD or other medical conditions.

OBSERVATIONS Clinical best practices include managing acute withdrawal and pain, initiating medication for OUD, integrating harm reduction principles and practices, addressing in-hospital substance use, and supporting hospital-to-community care transitions. Fentanyl complicates hospital OUD care. Fentanyl's high potency intensifies pain, withdrawal, and cravings and increases the risk for overdose and other harms. Fentanyl's unique pharmacology has rendered traditional techniques for managing opioid withdrawal and initiating buprenorphine and methadone inadequate for some patients, necessitating novel strategies. Further, co-use of opioids with stimulants drugs is common, and the opioid supply is unpredictable and can be contaminated with benzodiazepines, xylazine, and other substances. To address these challenges, clinicians are increasingly relying on emerging practices, such as low-dose buprenorphine initiation with opioid continuation, rapid methadone titration, and the use of alternative opioid agonists. Hospitals must also reconsider conventional approaches to in-hospital substance use and expand clinicians' understanding and embrace of harm reduction, which is a philosophy and set of practical strategies that supports people who use drugs to be safer and healthier without judgment, coercion, or discrimination. Hospital-to-community care transitions should ensure uninterrupted access to OUD care after discharge, which requires special consideration and coordination. Finally, improving hospital-based addiction care requires dedicated infrastructure and expertise. Preparing hospitals across the US and Canada to deliver OUD best practices requires investments in clinical champions, staff education, leadership commitment, community partnerships, quality metrics, and financing.

CONCLUSIONS AND RELEVANCE The findings of this review indicate that fentanyl creates increased urgency and new challenges for hospital OUD care. Hospital clinicians and systems have a central role in addressing the current drug crisis.

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We are amid an unrelenting drug crisis across North America, with the highest number of opioid-related deaths worldwide.[1] While prescription opioids and heroin contributed to earlier waves of morbidity and mortality, illicitly manufactured fentanyl, fentanyl analogs, and other novel synthetic opioids (referred to as *fentanyl*) now dominate the unregulated drug supply.[2] More than 80% of opioid overdose deaths in the US and Canada involve fentanyl.[3,4] Fentanyl's high potency and unpredictability, rising co-use of psychostimulants,[2] and a persistent lack of treatment access[5] for people with opioid use disorder (OUD) are associated with unprecedented overdose deaths and complicate clinical care. Across the US and Canada, opioid-related hospitalizations continue to rise.[6] While alarming, these trends underscore the central role that hospitals might play in addressing the current drug crisis.[7,8]

Hospitalized adults with OUD are at high risk for overdose and death.[9,10] Hospitalization presents a critical touchpoint[7,10-12] to engage, assess, and treat OUD and facilitate connection to longitudinal care.[11] Hospital addiction care can increase patients' trust in hospital physicians,[13] increase adoption of life-saving OUD medications,[14] increase posthospital OUD treatment engagement,[11] reduce stigma,[15] improve patient and clinician experiences,[15,16] and reduce mortality.[17] Historically, hospitals have been unprepared to deliver high-quality OUD care.[7] Patients commonly report negative hospital experiences,[16,18] which are followed by delayed presentation,[19] conflicts with staff, premature discharges,[20] and high morbidity and mortality.[9] Meanwhile,

hospital staff report moral distress when caring for patients without necessary training or resources.[15,21] Combined, these challenges can perpetuate harmful stereotypes and contribute to mutual mistrust between patients and staff.[13,16,22,23] Fentanyl exacerbates these challenges and heightens the urgency that hospital clinicians and systems respond.

Hospital-based OUD care is increasingly complex in the fentanyl era. Fentanyl's high potency (approximately 50-100 times that of morphine) is associated with high opioid tolerance, which intensifies patients' pain, withdrawal, and cravings.[2,24] Its potency and pharmacology has rendered traditional techniques for managing withdrawal and initiating treatment with buprenorphine and methadone inadequate for some patients, necessitating novel strategies.[25,26] Moreover, the drug supply is unpredictable[2] and often contaminated with adulterants, such as benzodiazepines or xylazine, that also complicate management.[27] Finally, the COVID-19 pandemic and associated socioeconomic effects have affected patients and hospitals [28]; community resources are strained and hospital staff are exhausted.[28]

We present a narrative review that summarizes existing evidence and offers guidance for generalists caring for hospitalized patients with OUD in the fentanyl era. While most existing evidence derives from heroin and other opioids, we highlight evidence and novel approaches specific to fentanyl when possible. We focused on hospital OUD care because it presents unique opportunities for intervention and challenges for clinicians and hospital systems.

Methods

The author team included a peer mentor with lived experience of addiction, addiction medicine physicians, health services researchers, and educators with expertise in OUD and hospital care in US and Canada. We took 3 complementary approaches to reviewing the literature for this review. To review the evidence for pharmacotherapy, the topic with the highest-quality evidence, we surveyed 3 guidelines[29-31] and 1 textbook[32] and searched 3 online databases.[33-35] To prepare sections on psychosocial interventions and harm reduction, we referenced published expert guidance[36-38] and available systematic reviews[36,37,39-41] and augmented that guidance with a targeted literature search focused on acute care environments. To review the evidence for transforming hospital systems, we built on the synthesis from a recent taxonomy and scoping review,[42] updating the search and expanding scope to include Canada. The eAppendix in the Supplement details the search strategies. Given the value of a topic overview and the varied level of evidence within subtopics, we present a narrative review, offering a synthesis and focusing on practice-relevant questions. We focused on the care of hospitalized adults, excluding literature focused solely on emergency department (ED) or pediatric populations.

OUD Care as Part of General Hospital Care

People with OUD are commonly admitted for general medical and surgical conditions, including skin and soft tissue infections, serious bacterial infections (eg, endocarditis, osteomyelitis), and physical trauma.[43-45] OUD can complicate general hospital care for many reasons, including harms of mutual mistrust between patients and clinicians; unmet needs associated with pain, withdrawal, and craving; and premature discharge.[13,16,20,22,23,46] Effectively addressing OUD is critical to delivering quality hospital care.

Initial Assessment

An initial OUD assessment should include a history and physical examination that prioritizes early identification and treatment of withdrawal and acute pain and builds trust with patients. Eventually, clinicians should diagnose and treat OUD according to patients' goals, preferences, and available community resources.[29,47] **Figure 1** describes a clinical road map of hospital care for patients with OUD.

Patient-Centered Approach to Care

Clinicians should recognize that patients with OUD may have heightened anxiety and pain, isolation, fear, and prior negative experiences with health care.[18,19,22] To address these challenges and build trust, clinicians should ask permission when asking about substance use, offer choices, honor patient expertise and preferences, and communicate care plans consistently and reliably.[13,18] Furthermore, hospital clinicians should recognize that all patients, regardless of their interest in discontinuing use, are worthy of compassionate, high-quality care.[48] Clinicians should use patient-first, nonstigmatizing language, avoiding terms like *abuse* or *dirty*, which are associated with negative judgment and punishment.[49]

OUD Diagnosis

OUD is a treatable health condition with biological, psychological, and social underpinnings.[50] A formal diagnosis of mild, moderate, or severe OUD relies on 11 criteria defined by the *Diagnostic and Statistical Manual of Mental Disorders* (Fifth Edition).[51] These criteria group into the "4 Cs:" craving (an intense desire to use opioids), compulsion (using for longer than intended or difficulty cutting back), adverse consequences (eg, continued use despite physical or social harms), and loss of control, plus opioid tolerance and withdrawal. While accurately diagnosing and addressing OUD is critical, evidence does not support screening in asymptomatic hospitalized patients.[47]

Multiple Substance Use

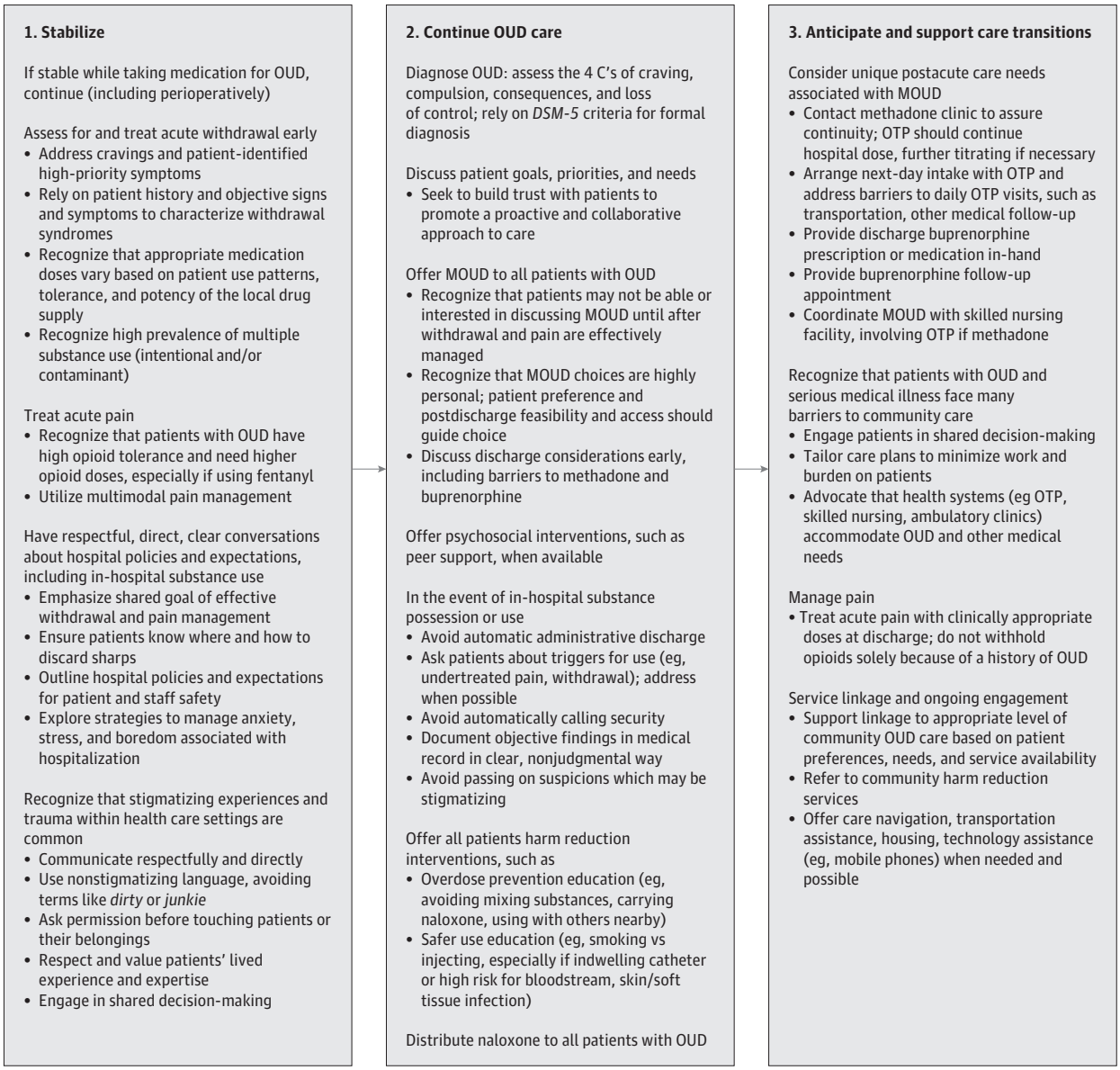
Identifying what substances patients use or are exposed to is more challenging in the fentanyl era. Some people consume fentanyl unintentionally after attempting to purchase heroin or pharmaceuticals. Others have no option but to purchase fentanyl, or they prefer it. People who use opioids commonly report stimulant co-use (ie, using methamphetamine or cocaine to prolong, attenuate, substitute, or enhance the effects of fentanyl).[2] Further, xylazine, nonpharmaceutical benzodiazepines, and other substances are commonly detected in fentanyl products.[52] History, physical examination, and toxicology studies can help identify multiple substance use. However, traditional toxicology tests may not detect these synthetic drugs, yielding false-negative results.[27,53]

Managing Withdrawal and Acute Pain

Opioid Withdrawal

Opioid withdrawal is characterized by physiologic and psychologic symptoms that typically arise 8 to 12 hours after last heroin or oxycodone use and 8 to 24 hours after last fentanyl use (**Figure 2**).[54] Clinicians should ask about and treat opioid withdrawal aggressively. Compared with other opioid withdrawal, fentanyl with-

Figure 1. Clinical Road Map of Hospital Care for Patients With Opioid Use Disorder (OUD)



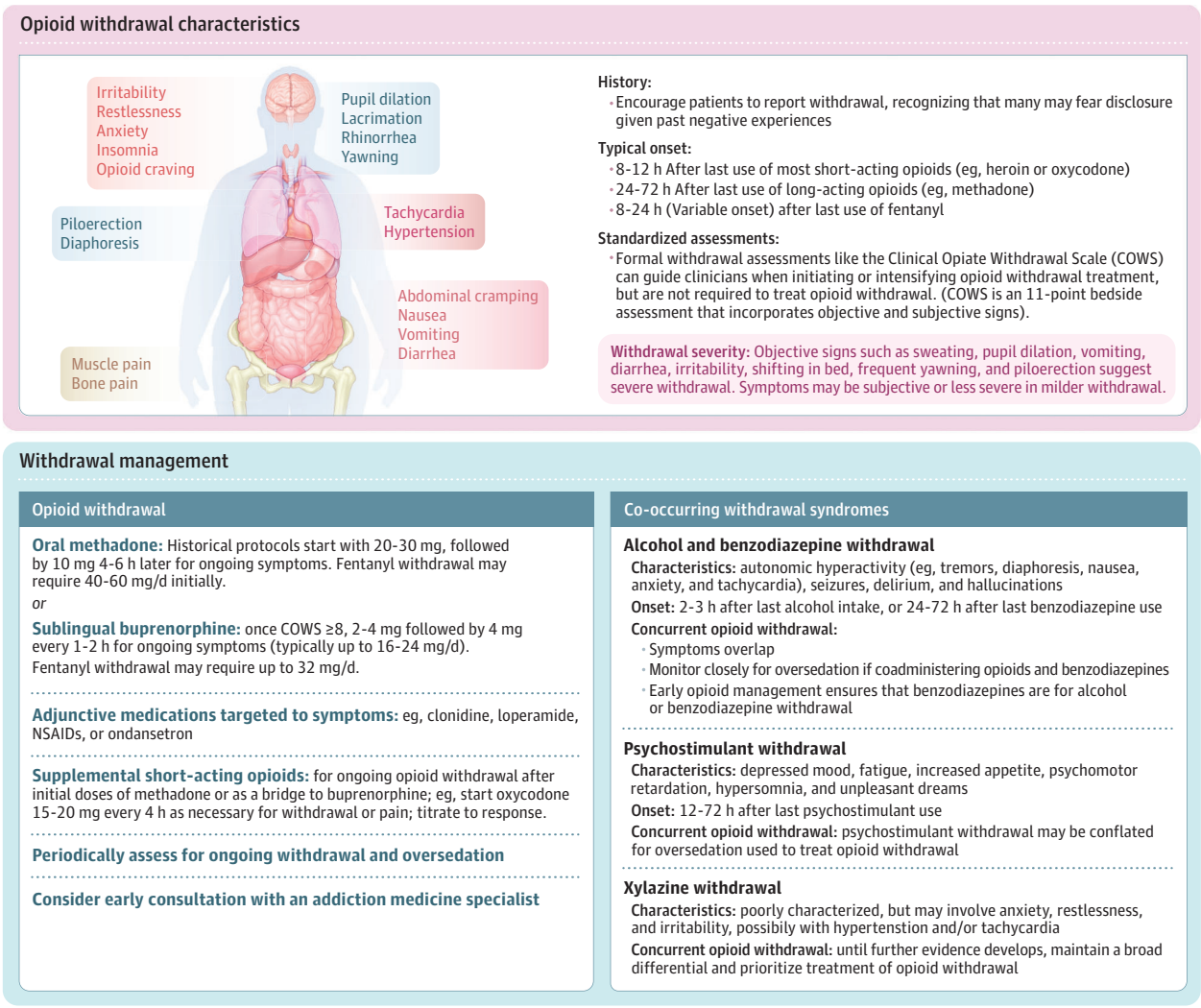
DSM indicates *Diagnostic and Statistical Manual of Mental Disorders* (Fifth Edition); MOUD, medication for OUD; OTP, opioid treatment program.

drawal can be more severe, unpredictable, and distressing to patients and staff.

High-quality evidence supports using buprenorphine or methadone as first-line medications to stabilize acute opioid withdrawal, regardless of patients' intention to continue taking them after discharge.[55] Methadone and buprenorphine have similar efficacy[29,55]; however, important practical differences guide their use, including patient preference, drug-drug interactions, follow-up considerations, and initiation timing (Figure 2). Patients can initiate treatment with methadone before developing withdrawal, whereas buprenorphine only alleviates withdrawal in patients experiencing at least mild to moderate withdrawal.[54] This is because buprenorphine, a high-affinity partial-agonist opioid, can displace full-agonist opioids, a phenomenon called *precipitated withdrawal* that results in severe withdrawal symptoms within 1 hour of buprenorphine administration. In Canada, slow-release oral morphine is another option that is typically initiated in consultation with addiction specialists and reserved for patients for whom methadone and/or buprenorphine are ineffective or contraindicated (eg, prolonged QTc).[55] α-2 Agonists, such as clonidine, also reduce withdrawal symptoms[54,56] and may be particularly important for patients with concurrent xylazine withdrawal. Medications such as ondansetron for nausea, loperamide for diarrhea, and nonsteroidal anti-inflammatory drugs for myalgias can be used as adjuvants but should not be used alone unless patients decline opioids agonists (ie, methadone, buprenorphine, slow-release oral morphine).

To our knowledge, to date, no prospective evidence exists to guide opioid withdrawal management specifically from fentanyl.

Figure 2. Opioid Withdrawal



NSAID indicates nonsteroidal anti-inflammatory drug.

Patients have reported increased risk of buprenorphine-induced precipitated withdrawal from fentanyl despite 12 to 48 hours of abstinence[25]; however, the prevalence remains unclear, and rates in clinical trials are low.[57] Prior experiences or fear of precipitated withdrawal may lead some patients to delay or decline buprenorphine. Moreover, methadone initiation with traditional outpatient doses is often insufficient.[58] In these circumstances, clinicians should consider novel dosing approaches (**Figure 3**) or other opioid agonist medications.[55] Clinicians can also use short-acting opioids safely, feasibly, and legally to treat withdrawal,[59] typically while titrating methadone or as a bridge to buprenorphine via low-dose[60,61] or traditional initiation.[62]

If precipitated withdrawal occurs, first-line management includes administering additional sublingual buprenorphine doses.[62] If not responsive to buprenorphine, clinicians can consider limited use of benzodiazepines.[62]

Withdrawal From Multiple Substances

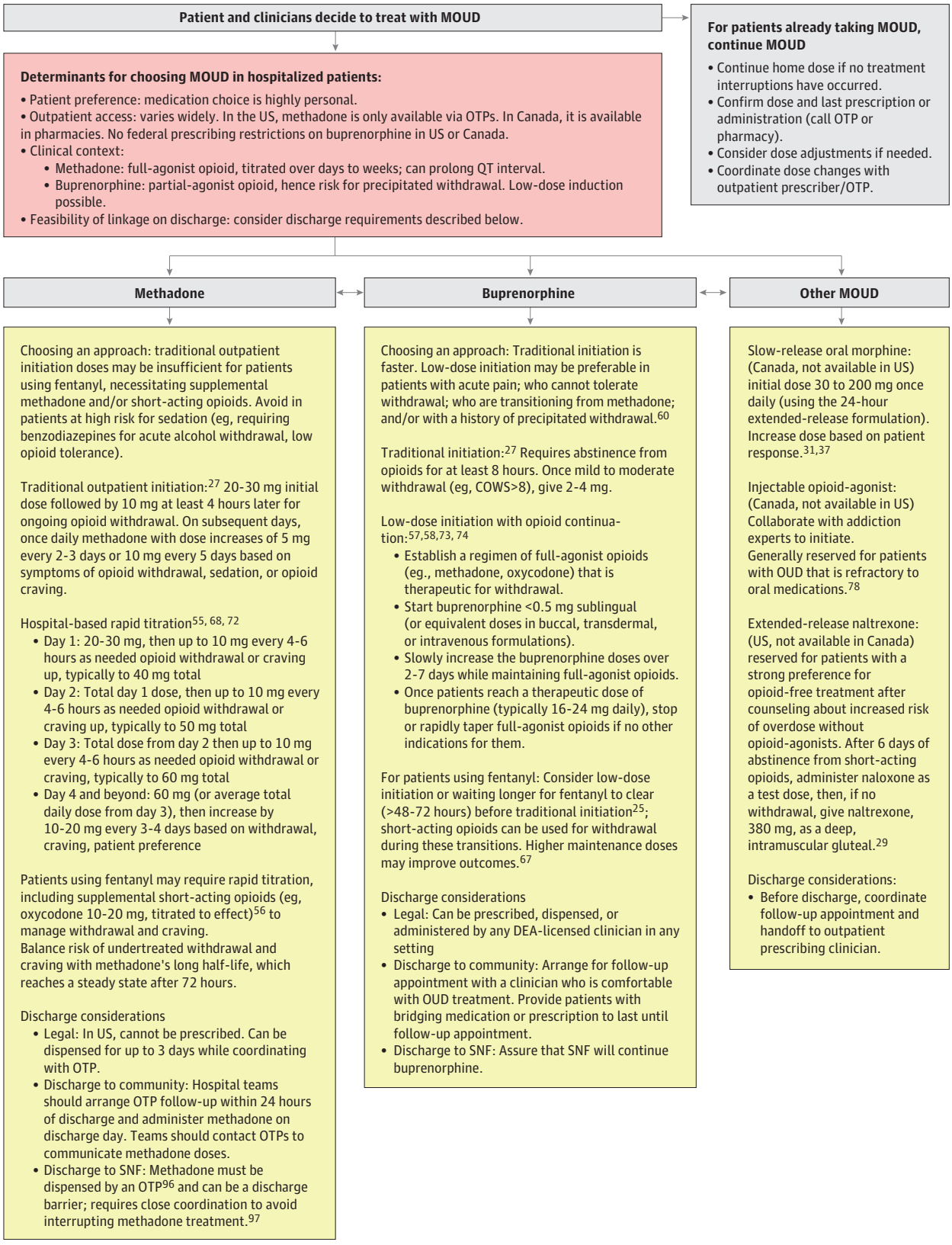
The limited published evidence that exists[63] suggests that opioid withdrawal should still be treated with methadone or buprenorphine, even with concurrent benzodiazepine or alcohol withdrawal. When managing multiple substance withdrawal, clinicians should adopt best practices for monitoring and treating each individual withdrawal syndrome (Figure 2).

Acute Pain Management and Perioperative Care

OUD is associated with increased vulnerability to acute pain through multiple mechanisms: untreated withdrawal heightens pain and anxiety; chronic opioid exposure increases opioid tolerance, rendering standard analgesic doses less effective[64]; and patients with OUD may have increased pain sensitivity.[64] Furthermore, clinicians may not believe patients' reports of pain,[23] or they may mistakenly believe that treating pain enables drug use.[64] In this context, pain is often undertreated, exacerbating mutual mistrust.[13,23,65]

Effective withdrawal management is necessary, but not sufficient, to control pain. One can conceptualize medications for OUD (MOUD) as repleting patients' "opioid debt" (which is higher in patients who consume fentanyl), a prerequisite to then effectively treating acute pain. Beyond that, clinicians should start by trusting patients' self-report of pain and not assume that patients are "opioid

Figure 3. Initiating Medication for Opioid Use Disorder (MOUD)



COWS indicates clinical opioid withdrawal scale; DEA, US Drug Enforcement Administration; OTP, opioid treatment program; SNF, skilled nursing facility.

seeking." Clinicians should use a multimodal approach, including using nonsteroidal anti-inflammatory medications and acetaminophen when not contraindicated, and short-acting opioids for moderate to severe acute pain.[29,64] We recommend initial doses of approximately 15 to 20 mg of oxycodone,[66] noting that patients with heavy fentanyl use may need substantially higher doses and those with frailty or other sedating medications may need less. Clinicians should monitor all patients for ongoing pain, sedation, delirium, and other adverse effects and can use liquid formulations if concerned about diversion.[29]

Perioperatively, clinicians should continue administering methadone and buprenorphine.[67] While to our knowledge prospective trials are lacking, available evidence and multiple expert consensus guidelines suggest that buprenorphine use should be continued, without tapering, and that harms of discontinuation outweigh any theoretical benefit.[29,68] Perioperative guidelines recommend adding higher-potency full-agonist opioids (eg, hydromorphone) and considering increasing and/or dividing methadone or buprenorphine doses to 3 or 4 doses over the course of the day.[29,68] For patients who plan to receive methadone at opioid treatment programs (OTPs) after hospitalization, typically clinicians must consolidate divided doses once daily before discharge.

Medications for Opioid Use Disorder

MOUD are standard of care and should be offered to all hospitalized patients with OUD.[47] MOUD are the most effective OUD treatment.[69] Decades of evidence in ambulatory settings show that they are safe and highly effective for reducing all-cause and OUD-specific morbidity and mortality.[29-31] In the US, MOUD include methadone, buprenorphine, and extended-release naltrexone[29]; in Canada, they include methadone, buprenorphine, slow-release oral morphine, and injectable hydromorphone or diacetylmorphine.[31,37] MOUD can be titrated more rapidly and in novel ways in the hospital compared with community settings owing to increased safety monitoring and the absence of legal restrictions around administering methadone.

Few data exist about dosing for patients using fentanyl; however, clinical experience and emerging evidence suggests that patients may need higher doses of methadone and buprenorphine.[58,70,71] The heterogenous and rapidly changing drug supply[2] means any specific dosing guidance (including the guidance outlined in this review) will likely change over time and may need to be modified to adapt to the current local drug supply, patient use patterns, and emerging evidence. Nevertheless, innovative approaches to MOUD in hospital are developing and can guide clinical practice.

Initiating MOUD

Methadone and buprenorphine are first-line OUD treatments.[29-31] For patients, medication choice is highly personal and can have profound implications on their experiences[66,72-74]; thus, patient preferences and community treatment access should guide medication choice. Figure 3 summarizes MOUD initiation in the hospital.

Rapid methadone titration is one MOUD initiation strategy. The traditional methadone initiation approach was developed decades ago in ambulatory settings and is often insufficient to manage severe withdrawal and craving from regular fentanyl use. Clinical experience and early evidence from hospital addiction consultation services has demonstrated that patients, especially those using fentanyl, can undergo more rapid dose titration while hospitalized.[58,71,75] Clinicians should consider harms of untreated or undertreated OUD with potential harms of rapid methadone titration. Clinicians should monitor patients for symptom relief and may consider reassessing patients 3 to 4 hours after oral methadone administration when methadone has its peak effect. Generally, clinicians do not need to use clinical opiate withdrawal scale (patient reports suffice) or telemetry. Methadone's long half-life means that doses take 72 hours to reach a steady state. Clinicians should use extra caution in higher-risk patients, including those with co-occurring alcohol withdrawal, benzodiazepine use, or advanced age.

Increasing fentanyl prevalence has also prompted new strategies for initiating treatment with buprenorphine. Low-dose buprenorphine initiation with other opioid continuation allows patients to initiate buprenorphine use without a period of opioid abstinence and with minimal risk of precipitating withdrawal.[76] Using this approach, patients continue taking full-agonist opioids while taking small and gradually increasing buprenorphine doses, typically starting at 0.5 mg or fewer sublingually (or equivalent in transdermal, buccal, or intravenous formulations) administered every 3 to 12 hours, with dose increases every 2 to 6 doses.[60,61,76,77] Low-dose initiation has advantages for patients who need ongoing opioid analgesia for acute pain, cannot tolerate withdrawal symptoms, are transitioning from methadone use, or have a history of precipitated withdrawal. Low-dose induction is feasible and, with expert guidance, 80% to 92% of hospitalized patients successfully transition to buprenorphine without moderate or severe opioid withdrawal.[60,61,77] High-dose buprenorphine initiation is another alternative in which patients who reach a clinical opiate withdrawal scale score of 8 or greater after a period of abstinence are given an initial dose of 8 mg or more of sublingual buprenorphine, with up to 16 to 32 mg over 1 to 2 initial doses.[62] Alhough not well described among inpatients, it is used in some urgent care and EDs.[62] In Canada, slow-release oral morphine and injectable opioid agonist treatment are alternatives typically initiated by addiction medicine experts in collaboration with community prescribers who can continue treatment after discharge.[78]

Clinicians should ensure that patients understand the requirements for continuing MOUD in community settings, which may vary widely by region and clinic.[79] Currently, in US community settings, methadone for OUD must be dispensed from federally licensed OTPs. In Canada, methadone can be dispensed at pharmacies. In both countries, patients must present in-person multiple days per week early in treatment.[74] In the US, as of December 2022, any clinician with an active US Drug Enforcement Administration license can prescribe buprenorphine. In Canada, buprenorphine prescribing restrictions (if any) are determined by provincial medical regulators.

Psychosocial Interventions

Many psychosocial interventions exist to treat OUD, but to our knowledge, few studies document their delivery to hospitalized patients.[39] When psychosocial interventions are used in the hospital, they tend to consist of brief (<1 hour) counseling often delivered as part of screening, brief intervention, and referral to treatment approaches.[40] However, a 2022 meta-analysis of 116 trials demonstrated that screening, brief intervention, and referral to treatment is likely not associated with reduced drug use in hospitalized adults, suggesting that hospitals should invest in other OUD interventions. Peer ser-

vices are a promising intervention from ambulatory settings being adopted by hospitals.[41,80-82] Peers can share their own lived experiences of addiction, provide social and emotional support, and serve as liaisons between patients and health care professionals.[82,83] In hospitals, peer services may be especially useful for engaging patients and mitigating mutual mistrust between patients with OUD and clinicians.[41,82,83] Hospitals seeking to implement peer services should recognize that integrating peers within a rigid professional hierarchy of hospitals requires intention, planning, and support to ensure the success of peer programs and peers' wellness.[38]

Addressing In-Hospital Substance Use

Even in the context of optimal pain and withdrawal management and MOUD initiation, some patients continue to use drugs while hospitalized. Many patients are not ready, able, or wanting to engage in treatment, and even those who are may continue use while initiating MOUD. Research with people who use drugs indicates that anxiety, stress, boredom, and stigma can all be precursors to in-hospital drug use.[18,84,85] These factors may be particularly salient during prolonged hospitalizations.[86]

Hospitals have traditionally required patients to abstain from in-hospital substance use.[87] These policies are enacted with the goal of preventing drug use and overdose, protecting staff from needle sticks, and protecting clinicians and hospitals from medical-legal liability. However, despite these policies, many patients report continued use while hospitalized.[88] Research documents how zero-tolerance policies can be associated with patients using drugs alone in locked washrooms or other unsafe spaces; sharing or reusing syringes and other equipment; injecting in vascular access devices; or leaving the hospital before completing necessary medical care.[18,89] Formal and informal bans on substance use can also position clinicians and other staff in opposition to patients, forcing them to choose between "turning a blind eye" or actively policing patient activity.[84,90] Ignoring ongoing use represents a missed opportunity to engage patients in appropriate care, while constant surveillance fuels mutual mistrust and encourages stigma and discrimination.

There is a need to move beyond this impasse. At minimum, clinicians should seek to build trust with patients and promote a proactive and collaborative approach to addressing unmet pain, withdrawal, and cravings. This is especially important in the fentanyl era, in which higher tolerance and unrecognized withdrawal syndromes can contribute to continued discomfort and in-hospital substance use. Further, hospital clinicians and systems should embrace harm reduction as an overarching principle of all hospital-based OUD care.[48] Within a harm reduction approach, abstinence is not a precondition of care. Harm reduction and treatment are not mutually exclusive; instead, they are complementary approaches in which people are supported to achieve positive change without judgment, coercion, or discrimination.[91] A large international body of research describes harm reduction in community settings. Some hospitals are extrapolating this evidence (**Table 1**[37,87,89,91-101]) to implement policies that disallow premature discharge solely on the grounds of suspected or confirmed substance use,[87,97,101] providing access to sterile syringes and naloxone kits[44,84,87,95] and giving staff training that engages people with lived experience of OUD in content delivery.[94]

Hospital-based supervised consumption services, which provide patients with a sterile, monitored space to use drugs, are a promising intervention that can improve patient safety and engagement.[86,92-94] Early experiences with these interventions are promising, but future work is needed to evaluate their implementation and effectiveness.

Table 1. Implementation Principles and Example Practices for Integrating Harm Reduction in Hospital Care

Definition: what is harm reduction?	Harm reduction is a philosophy of care and set of practical strategies that support all people who use drugs to be safer and healthier without judgment coercion or discrimination.[91]
Implementation principles	Abstinence is not a precondition of care. Patients are worthy, regardless of their ability, readiness, or willingness to stop using drugs.[37] A harm reduction approach may be at odds with hospital norms around substance use, particularly given staff assumptions about patients' best interest and safety, and fears of relinquishing control. Recognizing these sources of difficulty may aid progress.[92] Provide staff training on harm reduction practices and policies.[93] Include patients with lived experience in staff education, program, and policy design.[94] Work within applicable drug laws and policies.
Example clinical practices	Acknowledge patients as experts in their own lives. Believe their concerns regarding pain, withdrawal, and drug use.[95] Be familiar with, and provide information on, community-based harm reduction resources, such as syringe service programs and hepatitis C, HIV, and sexual health programs.[37] Provide naloxone kits and training to all patients with OUD.[96] Ensure patients know where and how to discard sharps (eg, used syringes).[37] Avoid automatically discharging patients for in-hospital substance use; respond with supportive interventions that preserve dignity and help patients complete their hospitalization.[97] Counsel patients on safer drug use practices, such as sterile injection techniques and smoking to reduce blood borne infection risk, avoiding mixing substances, carrying naloxone, and not using alone to reduce overdose risk.[37] Distribute harm reduction kits (eg, syringes, pipes, cottons)[98] in jurisdictions where legal.
Example organizational strategies	Equip security and other staff with trauma-informed care training, naloxone, and overdose response training.[99] Provide staff training that engages people with lived experience of OUD in content delivery.[94] Provide secure storage in hospital rooms so patients can safely store their personal belongings. Offer supervised consumption services for hospital patients[89,100] in jurisdictions where legal.
Example policies	Ensure standard hospital policies on medication administration, visitors, time off of the hospital ward, and personal belongings that do not single out patients with OUD.[97,101] Develop organizational substance use policies that do not make admission contingent on abstinence from drugs.[87,97,101]

Abbreviation: OUD, opioid use disorder.

Hospital to Community Care Transitions

Hospital care transitions are high-risk periods for overdose and care discontinuity. Care teams should ensure uninterrupted access to MOUD after discharge for patients who want them. Methadone and buprenorphine transitions warrant special consideration (Figure 3). Before discharge, hospital teams should contact a local OTP to arrange a next-day intake appointment and communicate the patient's discharge treatment plan, including current dose and the timing of last methadone administration in the hospital. This information should also be included in discharge paperwork.[47] Best

Table 2. Organizational Domains for Implementing Hospital-Based Addiction Care

Domain and rationale	Example(s)
Clinical champions: effective, supported clinical champions are critical to driving hospital change.	Clinical champions can conduct formal or informal local needs assessments, engage diverse stakeholders and leaders, and spearhead quality improvement efforts. As early adopters of best practices, they can set an example and serve as a local resource.[42] Effective champions have strong communication and organizational skills, and are respected in the organization. Champions provide day-to-day leadership, energy, and enthusiasm.[111]
Clinical infrastructure: many hospitals lack basic clinical infrastructure to deliver evidence-based OUD care.[112]	All hospitals should stock methadone and buprenorphine. Interprofessional teams can integrate clinical tools within the local clinical infrastructure (eg, buprenorphine initiation order sets).
Staff education and culture: many staff have limited OUD knowledge or training and may not consider addressing OUD part of their job.[15,21]	Hospitals should provide training about new OUD-related practices, programs, and policies. Hospitals can leverage staff newsletters, meetings, and events to promote a visible commitment to high-quality OUD care.
Community partnerships and treatment pathways: hospitals should be access points to support patients to meaningfully engage in longer-term OUD care.	Hospitals should offer coordinated, timely referrals to community OUD care. Referrals should account for nuances of community OUD care (eg, that OTPs are closed on Sundays and may have specific days for new-patient intakes). Community partnerships can inform hospital teams' understanding of patient-level and program-level needs. Partners can leverage their relationships to address individual patient needs and inform quality improvement efforts.[12]
Hospital leaders: leaders can support innovation and help overcome implementation barriers.	Hospital leaders can dedicate resources, including information technology, quality improvement infrastructure, access to population health data, and funding for clinical initiatives.[113] Leaders can incentivize improvement (eg, reporting local quality metrics), engage nonclinical leaders (eg, legal, public safety officers), and help develop relationships with community partners, including OUD treatment and harm reduction organizations.
Policies: hospital policies inform access to care, staff practices, and hospital culture.	Policies meant to prevent people from accessing or using substances are common. While intended to promote patient and staff safety, they should be balanced with potential unintended harms for patients, staff, and the patient-staff relationship.[87] Examples of harmful policies include forcing nonconsensual searches of patients' belongings, visitors, or bodies; disallowing patients from leaving the unit because of their OUD; or discharging patients for drug possession. Such policies can place patients and staff in untenable positions in which patients feel discriminated against and staff feel required to police patients or withhold life-saving medical care.[97,101] Instead, hospitals can implement harm-reduction oriented policies (Table 1).
Incentives and metrics: incentives and metrics can promote and sustain adoption of OUD best practices.	Aligning quality metrics and financial incentives with OUD best practices promotes and sustains best practice and communicates organizational priority of delivering high-quality care for patients with OUD.[7] Examples of quality metrics include rates of medication for OUD and naloxone prescribing (during admission or at discharge) and rates of patient-directed discharge within 48 h of admission. Examples of process metrics include rates of order sets use or staff participation in OUD continuing education.

Abbreviations: OUD, opioid use disorder; OTP, opioid treatment program.

practice is that OTPs continue administering hospital methadone doses, further titrating as needed. Hospitalists should be aware that currently, US skilled nursing facilities can only administer methadone for OUD that has been dispensed from an OTP.[102] While challenging, hospitals can develop relationships with OTPs and skilled nursing facilities to support posthospital methadone access[103,104] and develop processes to dispense up to 72 hours of methadone at discharge as a bridge to community treatment.[105] In contrast to methadone, buprenorphine is more widely available in community settings; however, not all US pharmacies stock buprenorphine, and patients may struggle to access prescribers.[106] Patients in rural areas[106] or carceral settings[107] have added challenges. Hospital care teams should identify ambulatory buprenorphine prescribers, arrange follow-up, and discharge patients with enough medication to last at least until their first posthospital follow-up visit.

Beyond MOUD, hospital clinicians can refer patients to many OUD treatment services, including outpatient, intensive outpatient, residential, and withdrawal management.[108] These settings differ widely, and not all offer or allow patients to continue using methadone or buprenorphine.[109] Patients may also benefit from other supports, such as peers,[82] mutual aid groups (eg, Narcotics Anonymous, SMART Recovery), and harm reduction services. Ultimately, clinicians should tailor referrals to patients' preferences, needs, and local service availability.[47]

Finally, hospital clinicians should recognize that patients with OUD and serious medical illness face many barriers to accessing community care, including limited OTP availability, transportation challenges, and difficulty coordinating daily OTP visits with personal obligations and other medical care.[74] Patients may be denied access to residential addiction treatment because of medical needs, such as wound care or oxygen, or, despite being a violation of the Americans with Disabilities Act, patients may be denied skilled nursing facility care because they take MOUD.[74,110] While individual clinicians may not be able to dismantle such entrenched system-level challenges, clinicians should engage patients in shared decision-making, address barriers like transportation and insurance during hospitalization, tailor care plans to minimize the burden on patients, and advocate for nondiscriminatory, equitable care.[74,110] Clinicians can also be drivers for change.[8,42]

Transforming Hospital Systems

Implementing OUD best practices relies on prepared hospital environments. Improvement efforts often include educating staff, engaging diverse leaders, revising hospital policies, developing community partnerships, and building responsive interprofessional teams (**Table 2**[12,15,21,29,42,87,97,101,111-113]).[42] These efforts require implementation expertise and infrastructure and often rely on strong clinical champions.[42]

Multiple approaches to delivering hospital-based OUD care exist, including consultation models led by addiction specialists who are often working as part of interprofessional teams; practice-based models, in which generalists deliver OUD care as part of usual practice; and in-reach models, in which community clinicians offer guidance and posthospital follow-up.[42] Of these, interprofessional addiction medicine consultation services are the most rigorously studied and comprehensive. They promote change through clinical innovation, education, research, and quality improvement.[42]

However, widespread adoption of hospital-based OUD improvements are stymied without a prepared workforce, quality metrics, dedicated funding, and supportive payment models.[7,8,42] To advance practice, hospital clinicians can participate in addiction

mentoring or training programs and serve as local champions and advocates.[8] Hospital leaders and policymakers can advocate for payment and policy reforms to drive education, research, innovation, and widespread change across all US and Canadian hospitals.[7]

Conclusions

Hospital clinicians and systems have a critical role in treating OUD and reducing morbidity and mortality in the fentanyl era.

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REFERENCES

1. Global Burden of Disease Collaborative Network. Global Burden of Disease Study 2019 (GBD 2019) results. Accessed October 20, 2023. https://ghdx.healthdata.org/gbd-results-tool

2. Friedman J, Shover CL. Charting the fourth wave: Geographic, temporal, race/ethnicity and demographic trends in polysubstance fentanyl overdose deaths in the United States, 2010-2021. *Addiction*. 2023;118(12):2477-2485. Published online September 13, 2023. doi:10.1111/add.16318

3. Public Health Agency of Canada. Opioid- and stimulant-related Harms in Canada. Accessed October 5, 2023. https://health-infobase.canada.ca/substance-related-harms/opioids-stimulants/

4. Spencer MR, Miniño AM, Warner M. Drug overdose deaths in the United States, 2001-2021. Accessed October 5, 2023.

5. Krawczyk N, Rivera BD, Jent V, Keyes KM, Jones CM, Cerdá M. Has the treatment gap for opioid use disorder narrowed in the U.S.? a yearly assessment from 2010 to 2019". *Int J Drug Policy*. 2022;110:103786. doi:10.1016/j.drugpo.2022.103786

6. Singh JA, Cleveland JD. National U.S. time-trends in opioid use disorder hospitalizations and associated healthcare utilization and mortality. *PLoS One*. 2020;15(2):e0229174. doi:10.1371/journal.pone.0229174

7. Englander H, Davis CS. Hospital standards of care for people with substance use disorder. *N Engl J Med*. 2022;387(8):672-675. doi:10.1056/NEJMp2204687

8. Englander H, Priest KC, Snyder H, Martin M, Calcaterra S, Gregg J. A call to action: hospitalists' role in addressing substance use disorder. *J Hosp Med*. 2020;15(3):184-187. doi:10.12788/jhm.3311

9. King C, Cook R, Korthuis PT, Morris CD, Englander H. Causes of death in the 12 months after hospital discharge among patients with opioid use disorder. *J Addict Med*. 2022;16(4):466-469. doi:10.1097/ADM.0000000000000915

10. Larochelle MR, Bernstein R, Bernson D, et al. Touchpoints—opportunities to predict and prevent opioid overdose: a cohort study. *Drug Alcohol Depend*. 2019;204:107537. doi:10.1016/j.drugalcdep.2019.06.039

11. Liebschutz JM, Crooks D, Herman D, et al. Buprenorphine treatment for hospitalized, opioid-dependent patients: a randomized clinical trial. *JAMA Intern Med*. 2014;174(8):1369-1376. doi:10.1001/jamainternmed.2014.2556

12. Englander H, Weimer M, Solotaroff R, et al. Planning and designing the Improving Addiction Care Team (IMPACT) for hospitalized adults with substance use disorder. *J Hosp Med*. 2017;12(5):339-342. doi:10.12788/jhm.2736

13. King C, Collins D, Patten A, Nicolaidis C, Englander H. Trust in hospital physicians among patients with substance use disorder referred to an addiction consult service: a mixed-methods study. *J Addict Med*. 2022;16(1):41-48.

14. Nordeck CD, Welsh C, Schwartz RP, Mitchell SG, O'Grady KE, Gryczynski J. Opioid agonist treatment initiation and linkage for hospitalized patients seen by a substance use disorder consultation service. *Drug Alcohol Depend Rep*. 2022;2:100031. doi:10.1016/j.dadr.2022.100031

15. Englander H, Collins D, Perry SP, Rabinowitz M, Phoutrides E, Nicolaidis C. "We've learned it's a medical illness, not a moral choice": qualitative study of the effects of a multicomponent addiction intervention on hospital providers' attitudes and experiences. *J Hosp Med*. 2018;13(11):752-758. doi:10.12788/jhm.2993

16. Hoover K, Lockhart S, Callister C, Holtrop JS, Calcaterra SL. Experiences of stigma in hospitals with addiction consultation services: a qualitative analysis of patients' and hospital-based providers' perspectives. *J Subst Abuse Treat*. 2022;138:108708. doi:10.1016/j.jsat.2021.108708

17. Wilson JD, Altieri Dunn SC, Roy P, Joseph E, Klipp S, Liebschutz J. Inpatient addiction medicine consultation service impact on post-discharge patient mortality: a propensity-matched analysis. *J Gen Intern Med*. 2022;37(10):2521-2525. doi:10.1007/s11606-021-07362-8

18. McNeil R, Small W, Wood E, Kerr T. Hospitals as a 'risk environment': an ethno-epidemiological study of voluntary and involuntary discharge from hospital against medical advice among people who inject drugs. *Soc Sci Med*. 2014;105:59-66. doi:10.1016/j.socscimed.2014.01.010

19. Biancarelli DL, Biello KB, Childs E, et al. Strategies used by people who inject drugs to avoid stigma in healthcare settings. *Drug Alcohol Depend*. 2019;198:80-86. doi:10.1016/j.drugalcdep.2019.01.037

20. Simon R, Snow R, Wakeman S. Understanding why patients with substance use disorders leave the hospital against medical advice: a qualitative study. *Subst Abus*. 2020;41(4):519-525. doi:10.1080/08897077.2019.1671942

21. Wakeman SE, Kanter GP, Donelan K. Institutional substance use disorder intervention improves general internist preparedness, attitudes, and clinical practice. *J Addict Med*. 2017;11(4):308-314. doi:10.1097/ADM.0000000000000314

22. Velez CM, Nicolaidis C, Korthuis PT, Englander H. "It's been an experience, a life learning experience": a qualitative study of hospitalized patients with substance use disorders. *J Gen Intern Med*. 2017;32(3):296-303. doi:10.1007/s11606-016-3919-4

23. Merrill JO, Rhodes LA, Deyo RA, Marlatt GA, Bradley KA. Mutual mistrust in the medical care of drug users: the keys to the "narc" cabinet. *J Gen Intern Med*. 2002;17(5):327-333. doi:10.1007/s11606-002-0034-5

24. Frank D, Elliott L, Cleland CM, et al. "As safe as possible": a qualitative study of opioid withdrawal and risk behavior among people who use illegal opioids. *Harm Reduct J*. 2023;20(1):158. https://link.springer.com/article/10.1186/s12954-023-00893-9?utm_source=rct_congratemailt&utm_medium=email&utm_campaign=oa_20231027&utm_content=10.1186%2Fs12954-023-00893-9&s=09. doi:10.1186/s12954-023-00893-9

25. Varshneya NB, Thakrar AP, Hobelmann JG, Dunn KE, Huhn AS. Evidence of buprenorphine-precipitated qwithdrawal in persons who use fentanyl. *J Addict Med*. 2022;16(4):e265-e268. doi:10.1097/ADM.0000000000000922

26. Sue KL, Cohen S, Tilley J, Yocheved A. A plea from people who use drugs to clinicians: new ways to initiate buprenorphine are urgently needed in the fentanyl era. *J Addict Med*. 2022;16(4):389-391. https://journals.lww.com/journaladdictionmedicine/fulltext/2022/07000/a_plea_from_people_who_use_drugs_to_clinicians_.5.aspx. doi:10.1097/ADM.0000000000000952

27. Alexander RS, Canver BR, Sue KL, Morford KL. Xylazine and overdoses: trends, concerns, and recommendations. *Am J Public Health*. 2022;112(8):1212-1216. doi:10.2105/AJPH.2022.306881

28. Harris MTH, Peterkin A, Bach P, et al. Adapting inpatient addiction medicine consult services during the COVID-19 pandemic. *Addict Sci Clin Pract*. 2021;16(1):13. doi:10.1186/s13722-021-00221-1

29. American Society of Addiction Medicine. The ASAM national practice guideline for the treatment

of opioid use disorder: 2020 focused update. Accessed September 24, 2020. https://www.asam.org/docs/default-source/quality-science/npg-jam-supplement.pdf?sfvrsn=a00a52c2_2

30. US Department of Veterans Affairs, US Department of Defense. VA/DOD clinical practice guideline for the management of substance use disorders, version 4.0. Accessed July 21, 2023. https://www.healthquality.va.gov/guidelines/MH/sud/VADoDSUDCPG.pdf

31. British Columbia Centre on Substance Use and B.C. Ministry of Health. A guideline for the clinical management of opioid use disorder. Accessed August 10, 2023. https://www.bccsu.ca/care-guidance-publications/

32. Miller S; American Society of Addiction Medicine. *The ASAM Principles of Addiction Medicine*. 6th ed. Wolters Kluwer; 2019.

33. National Library of Medicine, National Institutes of Health, US Department of Health and Human Services. PubMed. Accessed August 10, 2023. https://pubmed.ncbi.nlm.nih.gov/

34. John Wiley & Sons, Inc. Cochrane library. Accessed August 10, 2023. https://www.cochranelibrary.com

35. National Library of Medicine, National Institutes of Health. ClinicalTrials.gov. Accessed August 10, 2023. https://clinicaltrials.gov/

36. Dong K, Meador K, Hyshka E, et al. Supporting people who use substances in acute care settings during the COVID-19 pandemic: CRISM—interim guidance document. Accessed. https://crism.ca/wp-content/uploads/2021/02/Supporting-people-who-use-substances-in-acute-care-settings-during-the-COVID-19-pandemic-V2-18-Feb-2021.pdf

37. Canadian Research Initiative in Substance Misuse. Guidance document on the management of substance use in acute care. Accessed August 10, 2023. https://crismprairies.ca/management-of-substance-use-in-acute-care-settings-in-alberta-guidance-document/

38. Englander H, Gregg J, Gullickson J, et al. Recommendations for integrating peer mentors in hospital-based addiction care. *Subst Abus*. 2020;41(4):419-424. doi:10.1080/08897077.2019.1635968

39. Wild TC, Hammal F, Hancock M, et al. Forty-eight years of research on psychosocial interventions in the treatment of opioid use disorder: aA scoping review. *Drug Alcohol Depend*. 2021;218:108434. doi:10.1016/j.drugalcdep.2020.108434

40. Tanner-Smith EE, Parr NJ, Schweer-Collins M, Saitz R. Effects of brief substance use interventions delivered in general medical settings: a systematic review and meta-analysis. *Addiction*. 2022;117(4):877-889. doi:10.1111/add.15674

41. Eddie D, Hoffman L, Vilsaint C, et al. Lived experience in new models of care for substance use disorder: a systematic review of peer recovery support services and recovery coaching. *Front Psychol*. 2019;10:1052. doi:10.3389/fpsyg.2019.01052

42. Englander H, Jones A, Krawczyk N, et al. A taxonomy of hospital-based addiction care models: a scoping review and key informant interviews. *J Gen Intern Med*. 2022;37(11):2821-2833. doi:10.1007/s11606-022-07618-x

43. Bhatraju EP, Ludwig-Barron N, Takagi-Stewart J, Sandhu HK, Klein JW, Tsui JI. Successful engagement in buprenorphine treatment among hospitalized patients with opioid use disorder and trauma. *Drug Alcohol Depend*. 2020;215:108253. doi:10.1016/j.drugalcdep.2020.108253

44. Capizzi J, Leahy J, Wheelock H, et al. Population-based trends in hospitalizations due to injection drug use-related serious bacterial infections, Oregon, 2008 to 2018. *PLoS One*. 2020;15(11):e0242165. doi:10.1371/journal.pone.0242165

45. Gomes T, Kitchen SA, Tailor L, et al. Trends in hospitalizations for serious infections among people with opioid use disorder in Ontario, Canada. *J Addict Med*. 2022;16(4):433-439. doi:10.1097/ADM.0000000000000928

46. Thakrar AP, Lowenstein M, Greysen SR, Delgado MK. Trends in before medically advised discharges for patients with opioid use disorder, 2016-2020. *JAMA*. 2023;330(23):2302-2304. doi:10.1001/jama.2023.21288

47. Calcaterra SL, Martin M, Bottner R, et al. Management of opioid use disorder and associated conditions among hospitalized adults: a consensus statement from the Society of Hospital Medicine. *J Hosp Med*. 2022;17(9):744-756. doi:10.1002/jhm.12893

48. Chan CA, Canver B, McNeil R, Sue KL. Harm reduction in health care settings. *Med Clin North Am*. 2022;106(1):201-217. doi:10.1016/j.mcna.2021.09.002

49. P Goddu A, O'Conor KJ, Lanzkron S, et al. Do words matter? stigmatizing language and the transmission of bias in the medical record. *J Gen Intern Med*. 2018;33(5):685-691. doi:10.1007/s11606-017-4289-2

50. Lie AK, Hansen H, Herzberg D, et al. The harms of constructing addiction as a chronic, relapsing brain disease. *Am J Public Health*. 2022;112(S2):S104-S108. doi:10.2105/AJPH.2021.306645

51. American Psychiatric Association. *Diagnostic and Statistical Manual of Mental Disorders: DSM-5*. American Psychiatric Publishing; 2013.

52. D'Orazio J, Nelson L, Perrone J, Wightman R, Haroz R. Xylazine adulteration of the heroin-fentanyl drug supply: a narrative review. *Ann Intern Med*. 2023;176(10):1370-1376. doi:10.7326/M23-2001

53. Weiss ST, Chinn M, Veach L. Reconsidering reliance on confirmatory drug testing in a patient with repeated positive urine drug screen results: a teachable moment. *JAMA Intern Med*. 2021;181(12):1637-1638. doi:10.1001/jamainternmed.2021.6215

54. Torres-Lockhart KE, Lu TY, Weimer MB, Stein MR, Cunningham CO. Clinical management of opioid withdrawal. *Addiction*. 2022;117(9):2540-2550. doi:10.1111/add.15818

55. Bruneau J, Ahamad K, Goyer MÈ, et al; CIHR Canadian Research Initiative in Substance Misuse. Management of opioid use disorders: a national clinical practice guideline. *CMAJ*. 2018;190(9):E247-E257. doi:10.1503/cmaj.170958

56. Nielsen S, Larance B, Degenhardt L, Gowing L, Kehler C, Lintzeris N. Opioid agonist treatment for pharmaceutical opioid dependent people. *Cochrane Database Syst Rev*. 2016;(5):CD011117. doi:10.1002/14651858.CD011117.pub2

57. D'Onofrio G, Hawk KF, Perrone J, et al. Incidence of precipitated withdrawal during a multisite emergency department–initiated buprenorphine clinical trial in the era of fentanyl. *JAMA Netw Open*. 2023;6(3):e236108-e236108. doi:10.1001/jamanetworkopen.2023.6108

58. Racha S, Patel SM, Bou Harfouch LT, Berger O, Buresh ME. Safety of rapid inpatient methadone initiation protocol: a retrospective cohort study. *J Subst Use Addict Treat*. 2023;148:209004. doi:10.1016/j.josat.2023.209004

59. Thakrar AP, Uritsky TJ, Christopher C, et al. Safety and preliminary outcomes of short-acting opioid agonist treatment (sOAT) for hospitalized patients with opioid use disorder. *Addict Sci Clin Pract*. 2023;18(1):13. doi:10.1186/s13722-023-00368-z

60. Button D, Hartley J, Robbins J, Levander XA, Smith NJ, Englander H. Low-dose buprenorphine initiation in hospitalized adults with opioid use disorder: a retrospective cohort analysis. *J Addict Med*. 2022;16(2):e105-e111. doi:10.1097/ADM.0000000000000864

61. Sokolski E, Skogrand E, Goff A, Englander H. Rapid low-dose buprenorphine initiation for hospitalized patients with opioid use disorder. *J Addict Med*. 2023;17(4):e278-e280. doi:10.1097/ADM.0000000000001133

62. Weimer MB, Herring AA, Kawasaki SS, Meyer M, Kleykamp BA, Ramsey KS. ASAM clinical considerations: buprenorphine treatment of opioid use disorder for individuals using high-potency synthetic opioids. *J Addict Med*. 2023. doi:10.1097/ADM.0000000000001202

63. Center for Drug Evaluation and Research. FDA Drug safety communication: FDA urges caution about withholding opioid addiction medications from patients taking benzodiazepines or CNS depressants: careful medication management can reduce risks. Accessed August 9, 2023. from: https://www.fda.gov/drugs/drug-safety-and-availability/fda-drug-safety-communication-fda-urges-caution-about-withholding-opioid-addiction-medications

64. Alford DP, Compton P, Samet JH. Acute pain management for patients receiving maintenance methadone or buprenorphine therapy. *Ann Intern Med*. 2006;144(2):127-134. doi:10.7326/0003-4819-144-2-200601170-00010

65. Compton P, Aronowitz SV, Klusaritz H, Anderson E. Acute pain and self-directed discharge among hospitalized patients with opioid-related diagnoses: a cohort study. *Harm Reduct J*. 2021;18(1):131. doi:10.1186/s12954-021-00581-6

66. Thakrar AP, Pytell JD, Stoller KB, Walters V, Weiss RD, Chander G. Transitioning off methadone: a qualitative study exploring why patients discontinue methadone treatment for opioid use disorder. *J Subst Use Addict Treat*. 2023;150:209055. doi:10.1016/j.josat.2023.209055

67. Buresh M, Ratner J, Zgierska A, Gordin V, Alvanzo A. Treating perioperative and acute pain in patients on buprenorphine: narrative literature review and practice recommendations. *J Gen Intern Med*. 2020;35(12):3635-3643. doi:10.1007/s11606-020-06115-3

68. Kohan L, Potru S, Barreveld AM, et al. Buprenorphine management in the perioperative period: educational review and recommendations from a multisociety expert panel. *Reg Anesth Pain Med*. 2021;46(10):840-859. doi:10.1136/rapm-2021-103007

69. Wakeman SE, Larochelle MR, Ameli O, et al. Comparative effectiveness of different treatment pathways for opioid use disorder. *JAMA Netw Open*. 2020;3(2):e1920622. doi:10.1001/jamanetworkopen.2019.20622

70. Chambers LC, Hallowell BD, Zullo AR, et al. Buprenorphine dose and time to discontinuation among patients with opioid use disorder in the era of fentanyl. *JAMA Netw Open*. 2023;6(9):e2334540-e2334540. doi:10.1001/jamanetworkopen.2023.34540

71. Klaire S, Fairbairn N, Ryan A, Nolan S, McLean M, Bach P. Safety and efficacy of rapid methadone titration for opioid use disorder in an inpatient

setting: a retrospective cohort study. *J Addict Med*. Published online August 7, 2023. doi:10.1097/ADM.0000000000001207

72. Checkley L, Steiger S, Knight KR. "I wanted something that was more flexible": a qualitative study of patient preferences on choosing buprenorphine over methadone in a large, safety-net hospital opioid treatment program. *Subst Abus*. 2022;43(1):767-773. doi:10.1080/08897077.2021.2010251

73. Simon C, Vincent L, Coulter A, et al. The methadone manifesto: treatment experiences and policy recommendations from methadone patient activists. *Am J Public Health*. 2022;112(S2):S117-S122. doi:10.2105/AJPH.2021.306665

74. Englander H, Gregg J, Levander XA. Envisioning minimally disruptive opioid use disorder care. *J Gen Intern Med*. 2023;38(3):799-803. doi:10.1007/s11606-022-07939-x

75. Martin M, Englander H, Calcaterra SL. Things we do for no reason: avoiding methadone for opioid withdrawal. *J Hosp Med*. 2023;18(11):1034-1037. doi:10.1002/jhm.13138

76. Cohen SM, Weimer MB, Levander XA, Peckham AM, Tetrault JM, Morford KL. Low dose initiation of buprenorphine: a narrative review and practical approach. *J Addict Med*. 2022;16(4):399-406. doi:10.1097/ADM.0000000000000945

77. Jablonski LA, Bodnar AR, Stewart RW. Development of an intravenous low-dose buprenorphine initiation protocol. *Drug Alcohol Depend*. 2022;237:109541. doi:10.1016/j.drugalcdep.2022.109541

78. Fairbairn N, Ross J, Trew M, et al. Injectable opioid agonist treatment for opioid use disorder: a national clinical guideline. *CMAJ*. 2019;191(38):E1049-E1056. doi:10.1503/cmaj.190344

79. Russoniello K, Harrington C, Beydoun S, Borrego L. State-specific barriers to methadone for opioid use disorder treatment. *J Law Med Ethics*. 2023;51(2):403-412. doi:10.1017/jme.2023.73

80. Cupp JA, Byrne KA, Herbert K, Roth PJ. Acute care utilization after recovery coaching linkage during substance-related inpatient admission: results of two randomized controlled trials. *J Gen Intern Med*. 2022;37(11):2768-2776. doi:10.1007/s11606-021-07360-w

81. Jack HE, Denisiuk ED, Collins BA, et al. Peer providers and linkage with buprenorphine care after hospitalization: a retrospective cohort study. *Subst Abus*. 2022;43(1):1308-1316. doi:10.1080/08897077.2022.2095078

82. Stack E, Hildebran C, Leichtling G, et al. Peer recovery support services across the continuum: in community, hospital, corrections, and treatment and recovery agency settings—a nNarrative review. *J Addict Med*. 2022;16(1):93-100. doi:10.1097/ADM.0000000000000810

83. Collins D, Alla J, Nicolaidis C, et al. "If it wasn't for him, I wouldn't have talked to them": qualitative study of addiction peer mentorship in the hospital. *J Gen Intern Med*. 2019;12:12. doi:10.1007/s11606-019-05311-0

84. Pauly BB, McCall J, Browne AJ, Parker J, Mollison A. Toward cultural safety: nurse and patient perceptions of illicit substance use in a hospitalized setting. *ANS Adv Nurs Sci*. 2015;38(2):121-135. doi:10.1097/ANS.0000000000000070

85. Szott K. Remaking hospital space: the health care practices of injection drug users in New York City. *Int J Drug Policy*. 2014;25(3):650-652. doi:10.1016/j.drugpo.2013.12.010

86. Rosenthal ES, Karchmer AW, Theisen-Toupal J, Castillo RA, Rowley CF. Suboptimal addiction interventions for patients hospitalized with injection drug use–associated infective endocarditis. *Am J Med*. 2016;129(5):481-485. doi:10.1016/j.amjmed.2015.09.024

87. Huxley-Reicher Z, Puglisi LB, Tetrault JM, et al. Response to substance use during hospitalization: a survey study of current and ideal policies and practices. *J Hosp Med*. 2023;18(9):829-834. doi:10.1002/jhm.13162

88. Parmar GS, Hayashi K, Nolan S, et al. Non-medical prescription opioid use and in-hospital illicit drug use among people who use drugs. *Drug Alcohol Rev*. 2021;40(6):959-963. doi:10.1111/dar.13246

89. Kosteniuk B, Salvalaggio G, McNeil R, et al. "You don't have to squirrel away in a staircase": patient motivations for attending a novel supervised drug consumption service in acute care. *Int J Drug Policy*. 2021;96:103275. doi:10.1016/j.drugpo.2021.103275

90. Pauly B, Wallace B, Barber K. Turning a blind eye: implementation of harm reduction in a transitional programme setting. *Drugs Educ Prev Policy*. 2018;25(1):21-30. doi:10.1080/09687637.2017.1337081

91. Harm Reduction International. What is harm reduction? Accessed July 11, 2023. https://hri.global/what-is-harm-reduction/

92. Heller D, McCoy K, Cunningham C. An invisible barrier to integrating HIV primary care with harm reduction services: philosophical clashes between the harm reduction and medical models. *Public Health Rep*. 2004;119(1):32-39. doi:10.1177/003335490411900109

93. Hyshka E, Morris H, Anderson-Baron J, Nixon L, Dong K, Salvalaggio G. Patient perspectives on a harm reduction-oriented addiction medicine consultation team implemented in a large acute care hospital. *Drug Alcohol Depend*. 2019;204:107523. doi:10.1016/j.drugalcdep.2019.06.025

94. Adams A, Ferguson M, Greer AM, et al. Guideline development in harm reduction: considerations around the meaningful involvement of people who access services. *Drug Alcohol Depend Rep*. 2022;4:100086. doi:10.1016/j.dadr.2022.100086

95. Marchand K, Beaumont S, Westfall J, et al. Conceptualizing patient-centered care for substance use disorder treatment: findings from a systematic scoping review. *Subst Abuse Treat Prev Policy*. 2019;14(1):37. doi:10.1186/s13011-019-0227-0

96. Nguyen TT, Applewhite D, Cheung F, Jacob S, Mitchell E. Implementation of a multidisciplinary inpatient opioid overdose education and naloxone distribution program at a large academic medical center. *Am J Health Syst Pharm*. 2022;79(24):2253-2260. doi:10.1093/ajhp/zxac252

97. Martin M, Snyder HR, Otway G, Holpit L, Day LW, Seidman D. In-hospital substance use policies: an opportunity to advance equity, reduce stigma, and offer evidence-based addiction care. *J Addict Med*. 2023;17(1):10-12. doi:10.1097/ADM.0000000000001046

98. Brooks HL, O'Brien DC, Salvalaggio G, Dong K, Hyshka E. Uptake into a bedside needle and syringe program for acute care inpatients who inject drugs. *Drug Alcohol Rev*. 2019;38(4):423-427. doi:10.1111/dar.12930

99. Buchheit BM, Crable EL, Lipson SK, Drainoni ML, Walley AY. "Opening the door to somebody who has a chance."—the experiences and perceptions of public safety personnel towards a public restroom overdose prevention alarm system. *Int J Drug Policy*. 2021;88:103038. doi:10.1016/j.drugpo.2020.103038

100. Nolan S, Kelian S, Kerr T, et al. Harm reduction in the hospital: An overdose prevention site (OPS) at a Canadian hospital. *Drug Alcohol Depend*. 2022;239:109608. doi:10.1016/j.drugalcdep.2022.109608

101. Lennox R, Martin L, Brimner C, O'Shea T. Hospital policy as a harm reduction intervention for people who use drugs. *Int J Drug Policy*. 2021;97:103324. doi:10.1016/j.drugpo.2021.103324

102. Pytell JD, Sharfstein JM, Olsen Y. Facilitating methadone use in hospitals and skilled nursing facilities. *JAMA Intern Med*. 2020;180(1):7-8. doi:10.1001/jamainternmed.2019.5731

103. Tassey TE, Ott GE, Alvanzo AAH, Peirce JM, Antoine D, Buresh ME. OUD MEETS: A novel program to increase initiation of medications for opioid use disorder and improve outcomes for hospitalized patients being discharged to skilled nursing facilities. *J Subst Abuse Treat*. 2022;143:108895. doi:10.1016/j.jsat.2022.108895

104. Calcaterra SL, Saunders S, Grimm E, et al. In-hospital methadone enrollment: a novel program to facilitate linkage from the hospital to the opioid treatment program for vulnerable patients with opioid use disorder. *J Gen Intern Med*. 2023. Published online September 15, 2023. doi:10.1007/s11606-023-08411-0

105. Skogrand E, Sharpe J, Englander H. Dispensing methadone at hospital discharge: one hospital's approach to implementing the "72-hour rule" change. *J Addict Med*. 2023. Published online November 22, 2023. doi:10.1097/ADM.0000000000001246

106. Lister JJ, Weaver A, Ellis JD, Himle JA, Ledgerwood DM. A systematic review of rural-specific barriers to medication treatment for opioid use disorder in the United States. *Am J Drug Alcohol Abuse*. 2020;46(3):273-288. doi:10.1080/00952990.2019.1694536

107. Binswanger IA. Opioid use disorder and lincarceration—hope for ensuring the continuity of treatment. *N Engl J Med*. 2019;380(13):1193-1195. doi:10.1056/NEJMp1900069

108. American Society of Addiction Medicine. About the ASAM criteria. Accessed August 9, 2023. https://www.asam.org/asam-criteria/about-the-asam-criteria

109. Beetham T, Saloner B, Gaye M, Wakeman SE, Frank RG, Barnett ML. Therapies offered at residential addiction treatment programs in the United States. *JAMA*. 2020;324(8):804-806. doi:10.1001/jama.2020.8969

110. Cohen SM, Joab R, Bolles KM, Friedman S, Kimmel SD. Ending medical complicity with skilled-nursing facility discrimination against people with opioid use disorder. *Ann Intern Med*. 2023;176(3):410-412. doi:10.7326/M22-3049

111. Network for the Improvement of Addiction Treatment. Workbook: an introduction to the NIATx model of process improvement. Accessed August 11, 2023. https://niatx.wisc.edu/wp-content/uploads/sites/1871/2023/02/NIATxWorkbook_2.pdf

112. Pham S, Haigh A, Barrett E. Statewide availability of buprenorphine/naloxone in acute care hospitals. *J Addict Med*. 2022;16(1):e48-e51. doi:10.1097/ADM.0000000000000833

113. Priest KC, Englander H, McCarty D. "Now hospital leaders are paying attention": a qualitative study of internal and external factors influencing addiction consult services. *J Subst Abuse Treat*. 2020;110:59-65. doi:10.1016/j.jsat.2019.12.003