Facilitators of and barriers to buprenorphine initiation in the emergency department: a scoping review

Nikki Bozinoff,[a,b,*] Erin Grennell,[b,c] Charlene Soobiah,[d] Zahraa Farhan,[e] Terri Rodak,[f] Christine Bucago,[g] Katie Kingston,[h] Michelle Klaiman,[i] Brittany Poynter,[g,j] Dominick Shelton,[k] Elizabeth Schoenfeld,[l] and Csilla Kalocsai[j,m]

[a]Campbell Family Mental Health Research Institute, Centre for Addiction and Mental Health, 1001 Queen Street W, Toronto, Ontario, Canada
[b]Department of Family and Community Medicine, University of Toronto, 500 University Avenue, Toronto, Ontario, Canada
[c]Temerty School of Medicine, University of Toronto, 1 King's College Circle, Toronto, Ontario, Canada
[d]Institute for Health Policy, Management and Evaluation, University of Toronto, 155 College Street, Toronto, Ontario, Canada
[e]Major Program in Mental Health Studies, University of Toronto, 1265 Military Trail, Scarborough, Ontario, Canada
[f]CAMH Mental Health Sciences Library, Department of Education, Centre for Addiction and Mental Health, 1025 Queen Street W, Toronto, Ontario, Canada
[g]Gerald Sheff and Shanitha Kachan Emergency Department, Centre for Addiction and Mental Health, 1051 Queen Street W, Toronto, Ontario, Canada
[h]Youth Advisory Group, Margaret and Wallace McCain Centre for Child, Youth & Family Mental Health and the Child, Youth and Emerging Adult Program, Centre for Addiction and Mental Health, 80 Workman Way, Toronto, Ontario, Canada
[i]Department of Emergency Medicine, Unity Health Toronto-St. Michael's Hospital, 30 Bond Street, Toronto, Ontario, Canada
[j]Department of Psychiatry, University of Toronto, 250 College Street, Toronto, Ontario, Canada
[k]Department of Emergency Medicine, Sunnybrook Health Sciences Centre, 2075 Bayview Ave, Toronto, Ontario, Canada
[l]Department of Emergency Medicine, Department of Healthcare Delivery and Population Science UMass Chan- Baystate, 3601 Main St, Springfield, MA, United States
[m]Sunnybrook Research Institute, Sunnybrook Health Sciences Centre, 2075 Bayview Ave, Toronto, Ontario, Canada

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Summary

Buprenorphine initiation in the Emergency Department (ED) has been hailed as an evidence-based strategy to mitigate the opioid overdose crisis, but its implementation has been limited. This scoping review synthesizes barriers and facilitators to buprenorphine initiation in the ED, and uses the Consolidated Framework for Implementation Research and a critical lens to analyze the literature. Results demonstrate an immense effort across the U.S. and Canada to implement ED-initiated buprenorphine. Facilitators include multidisciplinary addiction teams and co-located, low-barrier, harm reduction-informed services to support transitions. Barriers include a failure to address structural stigma, client complexity, and an increasingly toxic drug supply. The literature also misses the opportunity to include the perspectives of service users, health administrators, and learners. Increased coordination of implementation efforts, and a shift to equitable and inclusive opioid agonist therapy initiation pathways are needed across the U.S. and Canada.

Keywords: **Buprenorphine; Implementation; Opioid use disorder; Emergency department; Scoping review**

Introduction

Across North America, opioid toxicity deaths remain an urgent public health priority. At present, these deaths are primarily driven by an unregulated drug supply contaminated with highly potent fentanyl analogues.[1] In 2022, there were over 7500 opioid-related deaths in Canada[1] and over 109,000 in the United States.[2]

Buprenorphine is a first-line treatment for opioid use disorder (OUD),[3] and its use is associated with reductions in morbidity and mortality.[3,4] In 2015, a high-quality randomized controlled trial demonstrated that buprenorphine initiation in the emergency department (ED) compared with brief intervention and referral to treatment was associated with improved engagement in treatment and reduced self-reported opioid use at 30 days[5] and 2 months (but not 6 and 12 months)[6] and was cost effective.[7] Since then, both the American College of Emergency Physicians and the Canadian Association of Emergency Physicians have recommended ED-initiated buprenorphine as the standard of care for persons with untreated OUD presenting to ED.[8,9] Simultaneously, buprenorphine induction pathways—care pathways aimed at identifying clients with OUD in the ED, initiating treatment with buprenorphine, and connecting

*Corresponding author. 100 Stokes Street, Toronto, Ontario, M6J 1H4, Canada.
E-mail address: Nikki.bozinoff@camh.ca (N. Bozinoff).

them with ongoing treatment in community—have been implemented in many sites across North America.[10–12] Although ED-initiated buprenorphine has been increasing,[13] data from multiple jurisdictions across the U.S. and Canada indicates that only 3–15% of individuals treated in ED for opioid-related overdose fill a prescription for buprenorphine on discharge.[14–16] This research suggests that barriers to implementation of buprenorphine initiation in the ED persist.

Recently, the National Institute on Drug Abuse convened a meeting to identify research priorities related to ED-initiated buprenorphine.[17] Participants identified implementation-related research gaps including a need to understand "who are the critical personnel for scale-up," and "what are the common characteristics or contextual factors that predict successful adoption of ED-initiated BUP".[17] Existing syntheses of barriers to buprenorphine induction have identified difficulty with screening, stigma, provider inexperience and discomfort, and limited referral networks, but have been limited by lack of systematic search strategies, and lack of critical analysis of the structural factors that influence implementation.[18–21] To date, therefore, no comprehensive review has been published, without which there is a risk of devoting additional resources to the description of individual hospital or health system-level challenges and successes.

Simultaneously, there is an emerging critical literature that considers how structures of oppression and relations of power shape and constrain policy, clinical, community-led, and public health approaches to opioid use and opioid toxicity deaths. Some critical scholars, for example, have argued that opioid and buprenorphine-related stigma is enacted at multiple levels (intrapersonal, interpersonal, and structural), which perpetuates health inequities along race, gender, and class lines.[22,23] Other scholars have noted that biomedical understandings of OUD have been propagated to destigmatize addiction, however, they can operate at times to entrench stigma and marginalization.[22,24] Interrogation of the regulatory history of buprenorphine suggests it has been compromised by economic imperatives, keeping the medication at a high cost and thus limiting access.[25,26] Scholars have also called upon hospitals to adopt harm reduction-informed approaches to care,[27,28] while highlighting that the way services are implemented in institutionalized settings can lead to the reproduction of power, excluding diverse groups of service users, and silencing the pleasure of drug use.[29]

To bridge the gap in the implementation science literature and to join the conversation led by critical scholars, we conducted a scoping review 1) to synthesize the current literature related to the complex factors that facilitate and challenge buprenorphine initiation in the ED and 2) to identify its gaps or limitations. Coupling implementation science with a critical lens has the potential to push the needle on a persistent implementation problem, and to challenge the power structures that may undergird buprenorphine induction in ED.

Methods

A scoping review, drawing on social constructionist research paradigm, was conducted.[30–32] Our protocol was registered in Open Science Framework (available at: https://osfio/9zvc7/) and subsequently published.[33] The reporting of this review is adherent to the Preferred Reporting Items Systematic Review and Meta-analysis extension statement for scoping reviews (PRISMA-ScR).

This scoping review is built on our shared commitment to make this evidence-based treatment accessible to all service providers and service users. Our core research team includes an addiction physician (NB), a critical cultural anthropologist (CK), a librarian (TR), a medical student (EG), a research analyst (ZF) and a systematic review methodologist (CS). Our advisory panel, consists of two service users with lived or living experience of opioid and buprenorphine use, and five emergency clinicians who provided oversight on the search strategy, eligibility criteria, data abstraction items, and interpretation of findings. We bring our heterogenous positionalities, academic backgrounds, and lived experiences into this work.

Search strategy and selection criteria

Publications reporting on barriers or facilitators to the initiation of buprenorphine for OUD in ED were included, specifically when used as opioid agonist therapy (also known as medication assisted therapy (MAT), or medications for opioid use disorder, or as a harm reduction strategy. Studies focused solely on outpatient initiation of buprenorphine or naloxone distribution were excluded. No limitations were placed on study design, publication type or population characteristics and we included all conference abstracts (even when full texts were available), reviews of primary literature, commentaries, letters to the editor, as well as newsletters, even where these discussed the same primary literature. The review was restricted to English and French studies due to limited funding. The librarian (TR) developed the systematic search strategy with input from our advisory panel. The search strategies were peer reviewed utilizing the PRESS checklist and were published with our protocol.[33] Five electronic bibliographic databases (Medline, APA PsycInfo, CINAHL, Embase, and IBSS) were searched from 1995 to March 4 2021. We re-ran the searches on June 21, 2022 to capture additional articles published during the review process. In April and May 2023, we attempted to contact one author per conference abstract to provide full texts where available. Where corresponding author contact information was available, we used that. Otherwise, we attempted to find an email address for the first author,

then last author, then second author, and so on. If there was no response after the first e-mail, we sent a second and final email 2 weeks later. We were unable to find contact information for any authors for four conference abstracts. Citations were uploaded to Covidence systematic review management software where title and abstract screening, as well as full text review, were conducted by four reviewers (NB,CS,CK,EG). Following a calibration exercise, two reviewers independently assessed each citation against the eligibility criteria.[33] Discrepancies were resolved through group discussion. The same process was followed for full text screening.

Data analysis

Data abstraction was conducted independently by CS, EG, NB, CK in NVivo, a qualitative software that enables organization of multiple sources of information. ZF systematically captured study attributes including country of conduct and study design. Using a hybrid, inductive-deductive approach to thematic analysis, we broadly categorized the included studies to understand what they considered barriers and facilitators (inductive coding), and whose perspectives they reported (i.e., service user, healthcare provider, learners, and policy makers or organizational leaders (hereinafter healthcare administrators)). To further interpret the noted barriers and facilitators, we then organized them using the Consolidated Framework for Implementation Research (CFIR)[34] (deductive coding), an implementation science framework that provides a guide for systematically assessing barriers and facilitators to implementing complex, multi-faceted innovations. To complement our analysis and interpretation, we also used critical theory—especially drawing on Foucauldian understanding of power as relational[35] and critical feminist theories of positionality and intersectionality[36,37]—to understand how power is addressed in this literature—how the social positions of service users (race, ethnicity etc.), service user-service provider interactions, and stigma are discussed in various ED contexts, and whose perspectives and experiences are presented. Assessment of the methodological quality of the included studies was not conducted, as this is a scoping review.

Results

We included 361 articles in our review (Fig. 1, Table 1 in the Supplement). Most included studies were conducted in the USA (89.5%, n = 323), followed by Canada (9.7%, n = 35), Australia (0.5%, n = 2), and France (0.3%, n = 1). Most were journal articles (n = 155) or conference abstracts (n = 101), while the rest (n = 105) were newsletters, commentaries, letters to the editor, position statements, a thesis, white papers, and descriptive reports. The journal articles, conference abstracts, two of the position statements, and thesis, used a variety of study designs including cohort studies (n = 84), mixed methods studies (n = 34), qualitative studies (n = 32), cross-sectional surveys (n = 32), reviews (n = 25), other types of quantitative studies (n = 22), Randomized Controlled Trials (n = 10), case series (n = 7), pilot studies (n = 6), protocols (n = 5) and cost-analysis (2). We found an increase in publication around this topic since 2014 (Supplementary Figure S1). Our analysis suggests a high volume of publications and collaboration among authors in the U.S. The smaller number of authors writing from Canada demonstrates collaboration, but among the included studies there was no collaboration between U.S. and Canada-based authors (Fig. 2). Healthcare providers' perspectives were most

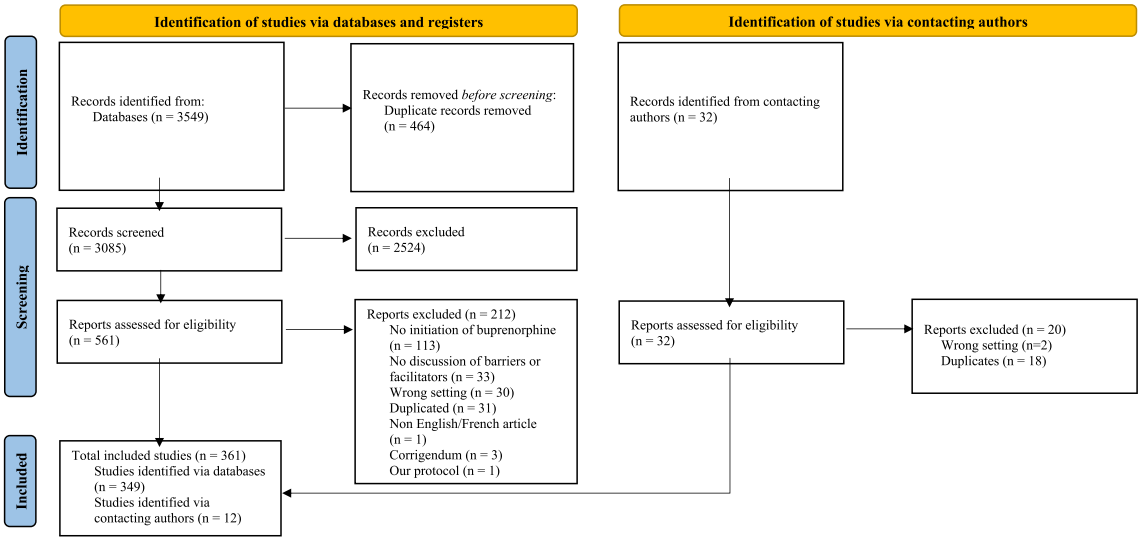

Fig. 1: **PRISMA flow diagram of included studies.**

	Facilitators	Barriers
I. Innovation domain		
A. Innovation evidence-base	Research and evidence to support intervention	Criticisms of initial study: • Short-term outcomes measured with absence of differences at 6 and 12 months • Self-reported outcome (opioid use) with no difference in positive urine toxicology Implementation evidence may not be generalizable to other settings Lag between research and implementation Challenges doing research with people who use drugs
B. Innovation cost	Cost savings (hospital/state) or cost neutral	High up-front investment
C. Innovation complexity		Complexity of multiple parts of the pathway
D. Innovation relative advantage	The innovation is better than current practice	
E. Innovation design		Problems with traditional induction • Waiting for withdrawal in persons not presenting in withdrawal • Does not address withdrawal management • Uncertainty about dosing post-naloxone • Issues in persons using fentanyl Lack of consideration of youth-specific issues Narrow focus on one disease and one treatment Short engagement window available in ED
II. Outer setting domain		
A. Critical incidents	Covid-19-related regulatory relaxation • Virtual x-waiver training • Removal of DEA requirement for in-person exam	Covid-19-related • Reduced hours, temporary closures, negative covid test requirements • ED was less user-friendly during covid (restrictions on visitors, distancing, s taff attitudes, some staff were remote) • Institutional focus on covid-19 paused other initiatives • Reduced ED presentations overall • Changes in local drug supply Environmental disaster (Hurricane Sandy) • Outpatient clinic relocation • Staff shortage due to redeployment • Lack of ability to verify dose
B. Local attitudes	Chronic disease model of addiction Public appreciation and acknowledgement of HCP buprenorphine prescription	Stigma • Toward patients with substance use disorders • Toward buprenorphine itself Structural stigma • Media perpetuating opioid and OAT-related stigma • Stigma exacerbated by structural factors, such as race and class
C. Local conditions	Metropolitan areas Academic centres	Rurality Low-resource settings, community-based EDs Lack of accessible transportation Socio-Economic factors identified as barriers for individuals who may benefit from buprenorphine • Lack of housing • Poverty • Lack of health insurance • Lack of personal identification
D. Partnerships & connections	Connections with outpatient clinics for referral • Established outpatient care pathways (e.g. RAAM clinics, Bridge clinics detox) • Integrated health system • Timely access to follow-up • Low barrier follow up (drop in, no referral required etc.) Partnerships with community agencies • Overcoming resource limitations through partnership (community agencies, pharmacies) Follow up via telemedicine	Barriers related to outpatient clinic • Clinic hours • Clinic location • Long wait limes • No HCP continuity Clinic operational issues • Requirement for insurance coverage • Limited capacity in outpatient clinics • High no-show rate difficult to manage for outpatient providers

(Table 1 continues on next page)

	Facilitators	Barriers
(Continued from previous page)		
E. Policies & laws	X-waiver policies	X-waiver policies
	• 72 h rule • Removal of x-waiver requirement	• Requirement for x waiver training • Training time • Stigma and uncertainty created by requiring specialized training
	Insurance-related	Insurance-related
	• Affordable Care Act Medicaid expansion • Insurance coverage inclusion of buprenorphine in ED	• Requirement for buprenorphine pre-authorization
	Rescinding of the Ryan Haight Act (removal of DEA requirement for in-person exam prior to prescribing a controlled substance)	Ryan Haight Act (DEA requirement for in-person exam prior to prescribing a controlled substance)
	Inclusion of buprenorphine in EMS medication formulary	Policies limiting paramedic use of controlled substances
	Policy incentives to implement buprenorphine in ED	Regulatory barriers to buprenorphine provision
	Legislating access to treatment	Legislating access to treatment
	• State legislation stating all hospitals with EDs must be able to offer OAT and addiction treatment • Creation of minimum standards of care	• Lack of consideration of youth in policies • Lack of enforcement
	Clinical care guidelines	Lack of guidelines for post-overdose/post-naloxone buprenorphine initiation
	Decriminalization of buprenorphine diversion	Criminalization of buprenorphine diversion
	Endorsement by professional medical societies	Structural stigma—excessive regulations, documentations, and other forms of bureaucratization in healthcare harm patients
	State support of harm reduction	
	Policies increasing the number of disciplines able to prescribe buprenorphine (e.g. nurse practitioners, physician assistants, EMS, pharmacists)	
F. Financing	Sustainable grants/reimbursement	Patchwork funding
	• New billing codes and reimbursement pathways • Grant to support possible increase in uninsured patients • Reimbursement of stakeholder groups	• Non-billable services (harm reduction counselling; linkage, peer recovery services, naloxone prescription etc.)
G. External pressure		
1. Societal pressure	Lack of opposition	
	Physician advocacy	
	Opioid crisis	
2. Performance-measurement pressure	Quality or benchmarking metrics	
	Financial incentives for performance	
III. Inner setting domain		
A. Infrastructural characteristics[a]	Buprenorphine induction protocols	Lack of buprenorphine induction protocols
1. Physical infrastructure	Spatial changes to support buprenorphine initiation	Lack of space in ED
	• Observation unit • Space for substance use consultation team in ED	• Limited ability to counsel patients privately • Taking up a bed to wait for withdrawal and to perform induction
2. Information technology infrastructure	EHR tools	EHR tools
	• Embedded screening tools • Order sets • EHR-embedded clinical decision support tools • Automated referral system • Automated data collection • Communication tools in EHR	• Incomplete prescription monitoring program • Challenges with EHR embedded clinical decision support tool
	Telemedicine	Telemedicine-related barriers
	• Improved access to care or prescribers	• Limited access to video-enabled phone or computer for PWUD • Limited ability to build relationships with providers
3. Work infrastructure	Strategies for screening and patient identification	Difficulty screening for OUD
	• Universal screening	• Lack of integration of screening into HER • Lack of validated screening tools in ED setting

(Table 1 continues on next page)

	Facilitators	Barriers
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	Internal factors supporting transition to outpatient treatment
	• Prescription-related
	  • Longer initial buprenorphine prescription
	  • Buprenorphine XR Buprenorphine to-go kits
	Referral-related
	  • Streamlined referral process
	• Bridge Clinics or Rapid Access Addiction Medicine Clinics
	  • Continuity of location
	  • HCP continuity
	• SAMHSA treatment-finder website
	Care coordination-related Insurance-related
	  • ED diagnosis to support insurance pre-authorization
	  • Referral that aligns with patient's insurance
	  • Verifying medication is covered
	  • Registering clients for public insurance while in ED
	• Care navigator or peer navigator
	• Facilitating transportation
		Internal factors impacting transition to outpatient treatment
		Prescription-related
		• Short buprenorphine prescription
		Referral-related
		• Challenges with warm handoff
		  • Difficulty communicating with outpatient providers
		  • Difficulty communicating outside of office hour
		  • Requiring referral process to meet with a peer
		• Referral incoordination
		  • Multiple steps required for referral
		• Outpatient clinic location
		• Clinic hours
		Care coordination-related
		• Transportation to clinic
		• Inability to contact client (due to lack of phone, lack of fixed address)
		• Lack of case management
		Difficulty in handoff to inpatient care
		Delays in ED care (due to waiting for UDS, covid test etc.)

B. Relational connections	Interdepartmental collaboration	
C. Compatibility		Incompatibility with ER workflow • Difficulty finding time and space to counsel • Taking up a bed both to wait for withdrawal onset and for buprenorphine induction
D. Culture		
1. Human equality-centeredness "There are shared values, beliefs, and norms about the inherent equal worth and value of all human beings"	Structural normalization of OUD care • "This is part of emergency medicine now" • Responsibility to care for people with OUD • Endorsement of standards of care by professional medical bodies Non-judgmental care	Beyond 'scope of practice' or 'not the right setting' Sense that clients with OUD are a burden on ED Patient characteristics impacting treatment • Concurrent substance use disorders • Concurrent chronic pain • Treatment history • Concurrent mental health disorders • Legal system involvement • Pregnancy • Gender • OUD severity • Race and ethnicity • Poor social support • Unemployment • Unstable housing • Uninsured • Age
2. Recipient-Centeredness "There are shared values, beliefs, and norms around caring, supporting, and addressing the needs and welfare of recipients."	Harm reduction-approach • Abstinence not required • Overdose prevention and safer-use counselling • Naloxone provided Adequate withdrawal management	Lack of harm reduction programs or approach • Emphasis on abstinence • Emphasis on employment Anticipation of poor hospital care by patients • Inadequate withdrawal management and treatment of substance use disorders • Poor care for unrelated medical problems • Low rates of addiction consultation • Perceptions of 'illegitimate' pain in persons on OAT • Stigma associated with being on OAT • Labelling PWUD 'difficult to treat' or 'drug seeking'

(Table 1 continues on next page)

	Facilitators	Barriers
(Continued from previous page)		
	Mental health services	Lack of mental health support
	Addressing basic needs (food, housing etc.)	
	Provider continuity	
	Low barrier care • Self-referral • Home induction • Drop in	
	Use of patient-centered language	
E. Tension for change	The current situation needs to change • Patient stories • Pervasive nature of opioid crisis • Sense of urgency	
F. Relative priority	Consistent with organizational priorities	'You've got a million things going on at once" Prioritization of 'more acute illness'
G. Incentive systems	Incentives to complete x-waiver training • Reimbursement for time spent training • Individual performance metrics • Adequate reimbursement	Paucity of financial compensation
H. Mission alignment	In line with the overarching commitment, purpose, or goals in the hospital	
I. Available resources		
1. Funding	Funding is available to implement and deliver the innovation	Lack of sustainable funding
2. Space	Offer services in triage to decrease wait times	
3. Time	Adequate time	Busy ED workflow
4. Materials & Equipment	Adding buprenorphine to the formulary Pre-packed prescription kits Patient-facing education materials	Buprenorphine not on formulary
5. Staff	Multidisciplinary team • Addiction medicine consultation • Peer recovery specialists • Pharmacists • Social workers • Nurse • Sense of shared responsibility	Human resource issues • Lack of trained buprenorphine prescribers (particularly in rural areas) • Lack of multidisciplinary team (e.g. peer recovery specialists, social workers) • Lack of 24/7 staff
	Adequate staffing resources	High staff turnover
J. Access to knowledge & information	HCP (physician, nurses, navigators etc.) training and education • Training on implicit bias, motivational interviewing, harm reduction principles, • Mandatory training • Site for medical learners • Curriculum for EM residents • Regular trainings for knowledge consolidation • Competency-based training • Training developed with people with lived experience of substance use • Training and knowledge increases provider comfort Modes of training staff • Just-in-time training • Mentorship • Teaching up • Simulation	Lack of HCP training and education on buprenorphine, OUD and substance use disorders generally • Lack of physician expertise in addiction • Lack of knowledge about treatment options • Lack of faculty/preceptors trained • Lack of formal training during residency • Lack of training reinforces stigma
IV. Individuals domain		
A. High-level leaders	Support from hospital leadership	Lack of support from hospital leadership (fears of risk, and patient safety)
B. Opinion leaders	Support from Emergency Medicine Leadership	

(Table 1 continues on next page)

	Facilitators	Barriers
(Continued from previous page)		
C. Innovation deliverers	Capability	Capability

	• High volumes of clients with overdose
	• Openness toward evidence-based practice
	• Increased healthcare provider comfort associated with training and experience
	  • Seeing it prescribed in residency
	• Skill in treating opioid withdrawal
	• Ability to build rapport
	• Trauma-informed approach
		• Lack of training and experience in OUD treatment
		  • Fear of precipitating withdrawal
		  • Lack of experience recognizing and treating opioid withdrawal
		  • Undertreatment
		  • Giving too much naloxone
		  • Lack of confidence
		  • Difficulty building rapport/lack of skills in MI
		  • Provider knowledge about buprenorphine initiation
		  • Inability to address contributing social factors
		  • Unaware of community resources for follow up

	Motivation	Motivation
	• Physician interest • 'Another tool in the toolbox' • Positive experiences starting clients on buprenorphine • Frees up time • Understanding OUD as a chronic, relapsing condition • Harm-reduction approach to care • Possible harms of not prescribing buprenorphine • Peer-comparison data	• Compassion fatigue • Negative interactions with clients • Not standard of care • Beyond scope of practice ("not the role of the ED") • Not viewing OUD like other chronic diseases • Fear of misuse (or harms of prescribing buprenorphine) • Fear up buprenorphine diversion • Fear of attracting more patients with OUD to the ED • Delayed gratification
D. Innovation recipients	Capabilities	Capability
	• Knowledge and understanding of medication-assisted treatment	• Lack of knowledge and understanding of OAT • Inability to afford medication
	Motivation	Motivation

	• Motivation to reduce or stop using opioids
	• Convenience
	• Past experiences of sobriety
	• Importance of family and meaningful relationships
	• Overdose event
	• Perceived medication effectiveness
	• Presence of a trusted adult
	• Previous treatment experiences
	• Identity as a person with chronic pain
	• Cost
	• Treatment readiness
		• Frustration post naloxone
		• Negative attitudes toward OAT
		  • Belief they could not use while on OAT
		• Lack of interest in OAT
		  • Patient preference for alternative treatment
		• Negative past experiences in hospital
		• Fear of withdrawal
		• Physiological symptoms of withdrawal disrupt motivation
		• Focus on present rather than the future
		• Mistrust in the system
		• Stigmatized identity/self-stigma disincentivize people to access treatment
		• Lack of readiness to engage in treatment
		• Low sense of self-efficacy
		• Unable to access sober housing if on OAT

	Opportunity	Opportunity
	• Knowledge that buprenorphine is prescribed in ED	• Lack of knowledge about how to access OAT
V. **Implementation process domain**		
A. Teaming	Bringing people together	Unsuccessful stakeholder engagement
	Partnering with researchers	
	Consensus building	
	Interdisciplinary leadership team	
B. Assessing context	Assessing context as part of readiness planning	
C. Planning	Development of standard resources for implementation (ie. order sets, algorithms, training materials)	
	Coordination of medication use processes	
	Coordination of multiple stakeholders	
	Provincial coordination to avoid duplication, alleviate staffing pressures	
	Performing a needs assessment	
D. Tailoring strategies	Site-specific adaptations (e.g. to protocols)	Failure to tailor induction protocols to ED setting
	OAT training program tailored for ED setting	Failure to tailor buprenorphine training to ED setting

(Table 1 continues on next page)

	Facilitators	Barriers
(Continued from previous page)		
F. Engaging		
1. Innovation deliverers	Climate of innovation	
	Identify, equip and coordinate champions	
	Peer to peer administrator learning	
	Engage stake holders who may have misinformation about OUD pharmacotherapy (i.e. abstinence-based programs or providers)	
	Engagement of residency leadership	
2. Innovation recipients	Adequately treat opioid withdrawal symptoms	
	Brief negotiation interview/Motivational interviewing	Lack of recruitment of patients willing to be induced
	Community outreach	EMS transport refusals
	Peer navigators	
	Program marketing	
	Patient education about OAT	
	Support for basic needs (housing, employment etc.)	
E. Doing	Problem solving • Flexibility • Creativity	
F. Reflecting & Evaluating	Data collection process for QI	
	Pioneers sharing their tools	
	Feedback on patient success	
	Quality metrics for QI	
G. Adapting	Novel or flexible induction strategies • Home induction • Macrodosing • Microdosing	Failure to adapt to evolving drug supply
	Buprenorphine XR inductions	
	Guidance on initiating buprenorphine in pregnant patients and immediately after naloxone reversal	
	Expansion of personnel involved in buprenorphine induction	

CFIR, Consolidated Framework for Implementation Research; HCP, Healthcare provider; OAT, Opioid agonist therapy; XR, Extended-release; QI, Quality Improvement. [a]Note we have changed the name of this domain to differentiate it from the meaning of structural in social sciences literature.

Table 1: **Facilitators and barriers to buprenorphine induction in the emergency department mapped to the Consolidated Framework for Implementation Research (CFIR).**

prominent in the literature, while healthcare administrators, service users and learners were included less often (Supplementary Table S2).

Table 1 categorizes all barriers and facilitators identified using the CFIR framework and its five domains, "Outer Setting", "Inner Setting", "Innovation", "Individuals" and "Implementation Process". Relevant subdomains have been organized to be in conversation with one another such that a facilitator of a given subdomain will appear beside a barrier of the same subdomain. Below we highlight the more commonly reported barriers and facilitators appearing in the literature.

Outer setting

The Outer Setting was used to refer to barriers or facilitators at the level of the health system, state, or country. The Covid-19 pandemic emerged as an important 'Critical Incident', and barriers included reduced hours, temporary closures, requirements for negative tests prior to accessing care.[38,39] EDs were less user-friendly during the pandemic, with changes that led to restrictions on visitors, requirements for physical distancing, increased stress among staff and having key staff working remotely.[38–41] The health system focus on Covid-19 led to a pause of other health promotion initiatives, and was also accompanied by changes in unregulated drug prices and supply hypothesized to be related to border closures.[39,40] Facilitators related to Covid-19 included regulatory relaxation in the U.S. allowing virtual x-waiver training (mandatory training prior to provision of buprenorphine), and repealing the Ryan Haight Act that previously required an in person exam for the prescription of controlled substances, thereby facilitating telemedicine-based treatment.[42,43] These regulatory innovations were echoed under 'Policies & Laws' domain that constrained or supported buprenorphine induction in the ED. X-waiver training was perceived in the literature to be a major barrier[11,21] and conversely, following the x-waiver elimination on December 29, 2022 its removal was noted to be a facilitator.[15]

Other policy-level facilitators included legislating access to treatment in the ED,[44] for example Massachusetts' CARE Act[44] and the Rhode Island's Levels of Care

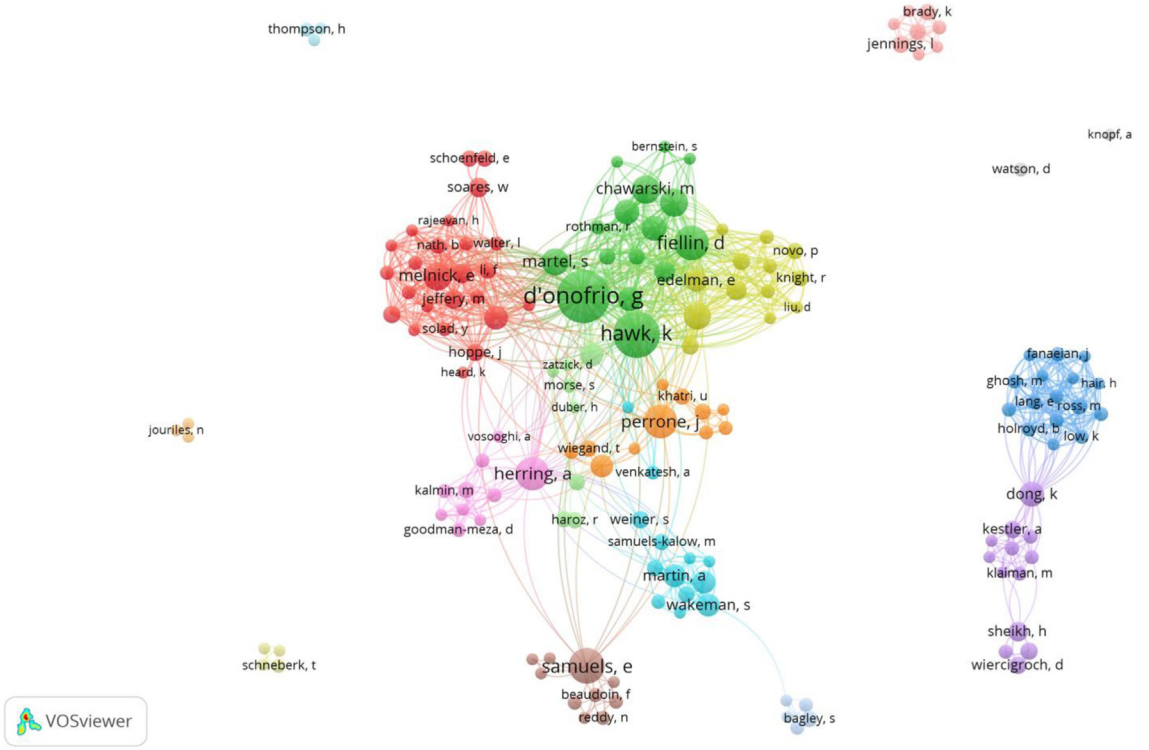

Fig. 2: **Bibliometric co-authorship visualization among authors with at least 3 included publications**. Included are authors with a minimum of three included publications. The size of the dot represents the number of publications per author, the colour of a researcher represents the cluster to which a researcher belongs. The thickness of a link between two researchers and the distance between them represents the degree of collaboration between them as evident by the number of documents co-authored by the researchers. The large number of clusters on the left are researchers publishing from the U.S., while the clusters on the right (purple and blue) are researchers publishing from Canada.

legislation,[45] both of which use legal means to try to improve access to buprenorphine in EDs. Legislation allowing paramedics to carry or administer buprenorphine was noted to be a facilitator,[46] as were inclusive insurance-related policies such as the Affordable Care Act Medicaid Expansion.

Within Outer Setting, CIFR describes 'Local Attitudes' as sociocultural values and beliefs that support or constrain the innovation. Stigma as a form of negative attitudes towards patients with OUD and toward buprenorphine itself was one of the most commonly cited barriers.[47–50] Stigma was often reduced to a personal attitude, shaping service providers' interactions both with service users and buprenorphine. Some articles, however, acknowledged that stigmatized perceptions of service users are rooted in socio-cultural understandings of morality,[39,47] for example, the perception that people who use drugs are "untrustworthy, incompetent, or criminal"[47] and thus less deserving of care.[39]

A large literature described barriers and facilitators related to connecting clients initiated on buprenorphine in the ED to outpatient setting (Fig. 3) which straddles the Inner and Outer Setting domains. Those factors related to outpatient clinics were captured in the 'Partnerships and Connections' subdomain of the Outer Setting while internal factors supporting or limiting the transition to outpatient care were captured within the Inner Setting subdomain, 'Infrastructure Characteristics'.

Within 'Partnerships and Connections', barriers were related to a lack of outpatient follow-up[51,52] or clinic operational issues (clinic hours,[11,53] clinic location/lack of transportation,[12,47,48] long wait times,[49,54] no healthcare provider continuity,[55] requirements for insurance coverage,[47–49] limited capacity,[48,55] high no-show rates.[11,12] Conversely, connections with outpatient clinics for referral (established pathways,[18,56–58] integrated health systems,[57] timely follow up,[58,59] and low barrier care[11,58,59] were noted to be facilitators as were partnerships with community agencies[58–60] and pharmacies.[59]

Inner setting

The Inner Setting domain typically described a single Emergency Department setting and was heavily discussed in the literature. Within its 'Infrastructure

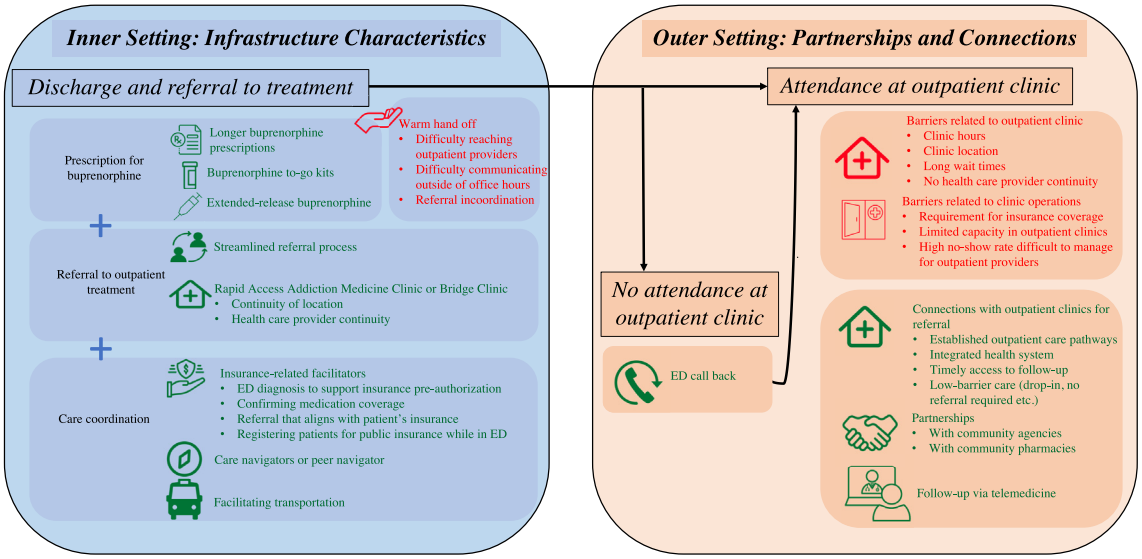

***Fig. 3:* Barriers of and facilitators to linkage to outpatient treatment**. Barriers of and facilitators to linkage to outpatient treatment were found within the Inner and Outer Setting domains. Blue represents the Inner Setting, 'Infrastructure Characteristics' subdomain. Orange represents the Outer Setting, 'Partnerships and Connections' subdomain. Facilitators are denoted in green. Barriers are denoted in red. Arrows represent the treatment path of the service user. The full list of barriers and facilitators in these domains are listed in Table 1. ED: Emergency Department.

Characteristics' subdomain, facilitators related to transition to outpatient treatment can be grouped into prescription-related (longer prescriptions,[60,61] extended-release formulations[54,62] and to-go kits[54,63] and referral-related factors (streamlined referral process,[11,53,54,58,64] embedded/affiliated clinics[53,55,65] with continuity of location[55] and providers.[55,65] Other factors relevant to transition to outpatient treatment are care coordination-related (facilitation of transportation,[60,66] care coordinators[10,60] and insurance-related ones (ED diagnosis to support insurance pre-authorization,[8] registering patients for public insurance during the ED visit, referrals to outpatient care that align with a patient's insurance,[8] and verifying insurance coverage for outpatient prescription of buprenorphine[65]). A persistent barrier straddling the Inner and Outer setting were difficulties with warm handoff.[11,41,53,61]

Within the Inner Setting, the 'Culture' subdomain included a construct 'human equality-centeredness' which described "shared values, beliefs, and norms about the inherent equal worth and value of all human beings."[34] Among the facilitators was organizational normalization of OUD care through protocols and practices within the hospital, including induction protocols,[11,47,54,55,58] order sets,[12,58,65] streamlined referral pathways,[11,53,54,58,64] and creation of physical space such as observation units.[54,63] The sentiment that buprenorphine provision is part of the scope of emergency care, and fosters a culture of shared responsibility for the care of persons with OUD was also a facilitator.[51,58] Conversely, barriers to buprenorphine induction included sentiments that OUD care was "beyond scope of practice,"[11] or that the ED was "not the right setting".[57,67]

> "Despite frequently caring for patients with addiction, many emergency providers embraced a 'this isn't my job' attitude; they described OUD as a chronic condition like hypertension and diabetes mellitus, placing it under the purview of primary care and not acute care services."[11]

There was also an emerging literature about sociodemographic characteristics associated with barriers but only in the latest literature in our sample do authors begin to highlight the racial disparities in buprenorphine care.[46,68–70] While the mostly U.S.-based literature focuses on Black and Latinx service users' limited access, Reddy et al. notes that Indigenous people[69] are also experiencing a rise in overdose death, despite the fact that the "opioid crisis is still conceptualized as a White epidemic".[71] Other studies also show how race and other differences, such as age, intersect to constrain buprenorphine access.[70] Only a few articles in the recent literature articulate structural racism as a contributing factor to differential access to buprenorphine in the ED.[71,72]

Within the subdomain 'Recipient-centeredness,' which includes "shared values, beliefs, and norms around caring, supporting, and addressing the needs and welfare of service users,"[34] we included factors that supported patient-centered care for persons with OUD. These included harm reduction approaches[10,42] such as

person-first language,[8] provider continuity to promote trust,[55] adequate withdrawal management,[73] and low-barrier services[10,11,42] such as same day treatment, absence of requirements for counseling or abstinence, self-referral, telemedicine initiation, and home induction.

Other facilitators that fostered a patient-centered approach were those that addressed service users' concurrent mental health challenges,[50,74] and their basic needs, such as food and housing.[50]

Experience and anticipation of poor quality care was also cited as a barrier by clients including inadequate withdrawal management and forcible detoxification,[73] insufficient addiction medicine expertise or consultation,[41,73,75] poor care for unrelated medical problems,[50] and a lack of mental health supports.[50,71]

Some of the articles also articulated the effects of uneven power dynamics between service users and service providers. They described service users' perspectives and experiences on poor quality care as "more harmful than beneficial,"[73] dehumanizing experiences,[50] "delegitimize [ing] the person"[41] and pointed to a long history of feeling stigmatized while receiving ED care.[75]

In the 'Available Resources' subdomain, there was also an emphasis on the benefits of multidisciplinary teams that included addiction medicine consultants, nurse practitioners, social workers, pharmacists and peers.

> "Peer recovery 'coaches' were consistently characterized by participants [healthcare providers] as integral to post-overdose care. Coaches are individuals in recovery who provide on-call, non-clinical support to patients seeking recovery and treatment assistance, and assisted with connecting patients to community services (e.g. outpatient treatment supports). Participants describes coaches as 'experts in the field,' underscoring how their lived experience allowed them to 'have a different conversation with the patient than the nurse can.'"[49]

Access to specialized human resources was particularly noted by healthcare providers themselves. Having experienced ED staff or specialized team members (e.g. nurses, social workers) as well as access to addiction physicians facilitated buprenorphine prescribing.[39,49,55,58] Conversely, a lack of multidisciplinary staff including a lack of peers and a lack of addiction medicine, as well as the fact that they were often not available 24/7 were cited as barriers.[55,76] Relatedly, within the 'Access to Knowledge and Information' subdomain, a lack of healthcare provider training on buprenorphine, OUD and substance use disorders generally was a frequently cited barrier, again particularly among health care providers.[18,19,41,51] Unsurprisingly therefore, there was a large literature on training initiatives targeted at upskilling ED staff.[39,54,58,60] Aspects of education included training on implicit bias,[77] motivational interviewing,[10] harm reduction,[10,78] and training specifically targeting learners.[65] Modes of training cited as facilitators included just-in-time support,[79] mentorship,[80] and having learners "teach up".[58]

Individuals

Within the Individuals' domain, factors facilitating innovation deliverers' capability included increased healthcare provider comfort associated with training and experience.[48,56,60] Conversely, a lack of training and experience in OUD treatment led to discomfort among providers in their understanding of the benefits and uses of buprenorphine,[49] and reinforced fears of precipitating withdrawal,[49] undertreatment,[75] giving too much naloxone,[73] and difficulty building rapport with clients as identified by both service users and healthcare providers themselves.[41,61] Overall, there was a sense that the EDs did not have the "knowledge, training or resources" to appropriately treat OUD.[75]

The literature also investigated client perspectives on motivation to receive buprenorphine. Barriers noted here included negative attitudes related to buprenorphine,[74] a lack of interest in buprenorphine or a preference for alternatives,[57,64] mistrust of the medical system and negative past experiences as noted above. Much of this literature missed diving deeper into the systemic nature of mistrust and negative attitudes beyond the individual, and how these might be related to structural stigma and inequities of power between service users and providers. Conversely, motivation for opioid agonist therapy was shaped by convenience,[81] past experiences of sobriety,[74] perceived medication effectiveness,[81] an overdose event,[50] past positive treatment experiences[50,74] and involvement of family or other meaningful relations.[22,50]

Innovation

Within the Innovation domain, there was discussion in the literature of barriers to traditional induction such as waiting for withdrawal, management of opioid withdrawal during this period, and buprenorphine initiation post-naloxone.[50,73,74,82] Similarly, in the originally described intervention, a lack of consideration of youth-specific issues was reported.[44] Facilitators directly related to the innovation design were adaptations to the traditional pathway, and were therefore coded within Implementation Process, 'Adaptations' subdomain.

Implementation process

Adaptations included flexible induction strategies (home induction, macrodosing, microdosing,[10,47,53,58,82] extended-release buprenorphine[54,62] and management of concurrent benzodiazepine withdrawal,[41] may be more appropriate in the current context dominated by fentanyl analogues. Finally, the literature highlighted the importance of support from hospital and ED leadership and engaging innovation deliverers, and in

particular identifying, equipping and coordinating champions.[54,56,57]

Discussion

This review highlights the immense human resource, financial, policy, and scholarly effort mobilized across the U.S. and Canada to scale up pathways to buprenorphine induction in the ED. Our results suggest that many individual EDs and health systems are struggling to implement and adapt the intervention in an ad-hoc way with limited evidence of coordination at the national level, and no evidence of scholarly collaboration between the two North American countries hardest-hit by the opioid crisis.

Within the Outer Setting domain, there were a number of examples of policies that significantly supported or constrained buprenorphine prescribing including legislative changes and x-waiver requirements. We note a focus in the literature on barriers and facilitators to the transition to outpatient care (Fig. 3). Within the Inner Setting, models of care that supported buprenorphine initiation included multidisciplinary teams, harm reduction-informed, low-barrier, client-centered approaches and structural normalization of OUD care. Within the Individuals domain, barriers centered on the lack of comfort and capability of healthcare providers to provide buprenorphine and addictions care generally, while client motivation to start treatment was noted to be complex. The Implementation Process domain barriers and facilitators related to having leadership and champions at the table, and being able to adapt the pathway to local settings and the changing context of the drug supply.

Much of the literature falls short of including service users', healthcare administrators', and learners' perspectives and experiences. While healthcare providers addressed a wide range of facilitators and barriers, their perspectives alone were insufficient to understanding persistent implementation gaps. For example, the x-waiver was among the most commonly cited barriers by healthcare providers in our review as well as in others',[19,21] yet data suggests its removal has been associated with only modest increases in waivered providers,[83,84] largely in urban areas with existing coverage,[84] with no impact on the number of unique individuals filling prescriptions.[83] At the same time, mandatory training prior to prescribing buprenorphine does not exist in most parts of Canada,[3] and yet underutilization of buprenorphine in ED persists.[16] Similarly, and consistent with existing literature,[19,21] healthcare providers often pointed to a lack of comfort with buprenorphine and substance use care generally as a barrier, and consequently defaulted to increasing provider training as a solution. This, despite a large literature suggesting that provider opioid agonist therapy training is insufficient in and of itself to result in behaviour change,[85] and requires assessment of learner readiness, motivation, and ongoing supports such as mentorship, communities of practice, and just-in-time training.[85] Specifically, our synthesis highlighted training in implicit bias, motivational interviewing, harm reduction, as well as training developed with individuals with lived experience as exemplified by the CA Bridge training program[10,78] as possible ways forward. Another promising educational approach, we propose, is structural competency training that would foster health professional staff and trainees' ability to recognize and respond to social and structural factors that produce and maintain health disparities.[86] Taken together, our review highlights the limitations of discourse dominated by health care providers. Moving forward, there is an urgent need for research that includes the perspectives of service users, administrators, and learners.

Our review extends the literature and suggests that the pathway, as originally described, does not reflect the current complexity of clients presenting to the ED in the era of fentanyl. Echoing critical scholars' focus on inequities in receipt of buprenorphine[24] and the importance of harm reduction in acute care settings,[27] EDs that took a harm reduction approach and addressed service users' medical and psychosocial complexity including offering mental health support, care coordination, and attended to the social and structural forces that shape their lives, reported success in engaging diverse clients in care.[10,41,66] Simultaneously, adaptations to meet the needs of an evolving and increasingly potent drug supply were described as important, and included practices such as home induction, macrodosing, microdosing[10,47,53,58,82] and management of concurrent benzodiazepine withdrawal.[41]

It is also worth highlighting that this extensive infrastructure is being built for a single drug in the U.S., due to restrictive prescribing/dispensing policies of other medications. This is concerning, given the historically documented harms of market exclusivity, including cost[25] and that methadone may better retain people who use fentanyl in treatment. Buprenorphine is but one option for persons with OUD. ED-based harm reduction and treatment pathways should be re-framed as opioid agonist therapy initiation pathways offering the full spectrum of OUD care including methadone, sustained-release oral morphine, and harm reduction. Future research should explore the efficacy and cost-effectiveness of methadone initiation in the ED compared with sublingual and extended-release buprenorphine for persons who use fentanyl.

To answer the question posed at the outset, 'who are the critical personnel for scale-up' our review points to the importance of multidisciplinary teams including experts in addiction medicine, social workers, nurses, pharmacists and peers to support ED-based buprenorphine induction.[39,49,55,58,80] Given that these teams are also likely to have downstream benefits for clients with other substance use disorders, national efforts to fund,

provide coordination, and support the creation of multidisciplinary teams is needed.

Taken together, our review suggests that "the common characteristics or contextual factors that predict successful adoption of ED-initiated buprenorphine," are related to structural normalization of OUD care in multiple domains including via processes such as induction protocols,[11,47,54,55,58] order sets,[12,58,65] streamlined referral pathways,[11,53,54,58,64] physical space such as observation units,[54,63] the aforementioned availability of multidisciplinary teams with addiction medicine expertise,[39,49,55,58,80] institutional support, robust processes for transition to outpatient care, and a shift in culture from one of 'beyond scope of practice'[11,57,67] to untreated OUD as an emergent medical condition that is amenable to evidence-based intervention in the ED.[51,58] Our review also highlights the limits of the CFIR framework in substance use implementation science. Our critical lens enables us to understand the limited ways in which stigma, an important contextual factor, is conceptualized within CFIR. CFIR does not clearly lend itself to examine structures and relations of power, and therefore often leaves structural issues, such as stigma and racism, unexamined. While we celebrate the race (ism)-conscious adaption of CFIR that is able to systematically examine how structural and other forms of racism interact with implementation[87] we believe further adaptation of CFIR is needed to incorporate intersectionality theory[37] so that we can better understand how interlocking structures of power and oppression influence inequitable access to the implementation.

Limitations

It must be highlighted that those programs/centres that produce scholarly work associated with their implementation efforts are likely only the 'tip of the iceberg' and therefore the scale of EDs and health systems implementing this intervention is even greater than what is described in our synthesis. Reviewing the grey literature as well as articles in languages other than French or English could have allowed us to better understand the span of buprenorphine implementation across different jurisdictions, but our limited resources constrained the scope of this review. Our search strategy focused on barriers and facilitators to buprenorphine initiation in the ED and therefore may have missed barriers that affect buprenorphine receipt regardless of the source of the prescription. For example, existing literature suggests that finding an outpatient pharmacy that dispenses buprenorphine may be more of a barrier than did our review.[88,89] Additionally, pertinent participant characteristics or social positions, including race, gender, sex, sexuality, housing status and rurality, were not well reported in the literature, which may limit interpretation of findings. Lastly, as we included all conference abstracts (even where full texts were available), reviews, commentaries, letters to the editor and newsletters discussing primary literature, our review may be subject to double counting.[90] Since our stated goal however, was to map the breadth of the literature around barriers and facilitators, and its gaps, on balance, we felt that this approach best suited our purposes.

Conclusion

This review demonstrates the immense effort to implement buprenorphine induction across North America at a time of urgent public health need. Our results highlight innovations that are building capacity to deliver high-quality care including multidisciplinary substance use teams and co-located low-barrier, harm reduction-informed services to support transitions. Our results also shed light on possible reasons for incomplete integration of this important intervention including a failure in some cases to address structural stigma, client complexity, and an increasingly toxic drug supply, while highlighting the urgent need for research that explores service user perspectives. We hope our findings will support the optimization of ED-based buprenorphine and opioid agonist therapy initiation as a treatment and harm reduction strategy, and contribute to the creation of a more robust, multifaceted, accessible, equitable and inclusive ED response across North America and beyond.

Contributors

NB and CK conceived of the idea for the review and obtained funding for the project. All authors participated in defining the specific research questions and methodology. TR designed the search strategy with input from all team members and ran the searches. CS,NB,CK, and EG were involved in article screening. CS,NB,CK,EG and ZF abstracted the data. CS,NB,CK and EG analyzed the data and all team members participated in interpretation of the results. NB and CK drafted the manuscript, and all authors reviewed and provided edits to the manuscript. NB, CK and EG had full access to the data and take responsibility for its accuracy.

Declaration of interests

NB has received research grant support from the Canadian College of Family Physicians, Womenmind, the Academic Health Sciences Innovation Fund, and salary support from U.S. National Institute on Drug Abuse (NIDA) grant R25-DA037756 outside of the submitted work. She has received honoraria for creation and delivery of continuing professional development activities, some related to opioid agonist therapy, from the Centre for Addiction and Mental Health and the Ontario College of Family Physicians. CK has received funding from the Ministry of Health and Long Term Care's AFP Innovation Fund. EG has received a research stipend from the Comprehensive Research Experience for Medical Students (CREMS) through the University of Toronto Temerty School of Medicine. ZF has received support from BioTalent Canada–Student Work Placement Program. DS reports remuneration from the Canadian Medical Protective Agency for expert testimony. ES has received funding from the Agency for Healthcare Research and Quality 1K08HS025701. Outside of the submitted work, ES reports grant funding from NIDA and the RIZE foundation. BP, CB, CS, MK, KK, and TR report no conflicts of interest.

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Appendix A. Supplementary data

Supplementary data related to this article can be found at https://doi.org/10.1016/j.lana.2024.100899.

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