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The Impact of Access to Addiction Specialist on Attitudes, Beliefs and Hospital-Based Opioid Use Disorder Related Care: A Survey of Hospitalist Physicians

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Abstract

Background: Hospitalizations for complications related to opioid use disorder (OUD) are increasing. Hospitalists care for most hospitalized patients in the United States, yet little is known about their attitudes, beliefs, and clinical practices regarding OUD-related care.

Methods: We distributed an online survey to hospitalists in the United States to measure how access to addiction specialists affected attitudes and beliefs regarding hospital-based OUD care, OUD screening practices, naloxone prescribing, and buprenorphine initiation.

Results: Among 262 respondents, 67.9% (n=178) reported having access to addiction specialists. While 84.5% (n=221) reported often or always caring for patients with OUD, 48.2% (n=126) rarely or never screened for OUD, 57.1% (n=149) rarely or never prescribed or recommended naloxone as harm reduction, and 88.9% (n=233) rarely or never initiated buprenorphine. In multivariable analyses, compared to hospitalists without access to addiction specialists, hospitalist with access to addiction specialists were more likely to feel supported to screen and refer patients to treatment (aOR = 4.4, 95% CI 2.1 – 9.1; $p < 0.001$), to be aware of local treatment resources

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(aOR = 3.4, 95% CI 1.8 – 6.3; $p < 0.001$), and refer patients to treatment (aOR = 3.0, 95% CI 1.7 – 5.6; $p < 0.001$).

Conclusions: Many hospitalists do not provide life-saving treatment to patients with OUD. Access to addiction specialists may increase provision of OUD-related care by hospitalists.

Keywords

addiction; hospitalists; opioid use disorder (OUD); naloxone; buprenorphine

Background

In 2017, 72,000 overdose deaths occurred and 2.1 million Americans ($\approx 1\%$) aged 12 years and older were estimated to meet criteria for opioid use disorder (OUD).^{1,2} People with opioid and heroin use have high rates of hospitalization.³ In 2012, there were an estimated 527,000 hospitalizations due to the consequences of opioid use, which cost more than \$15 billion in medical care.⁴ Methadone and buprenorphine are standard-of-care medications for OUD⁵ and are associated with increased treatment retention, reduced illicit opioid use, and reduced mortality compared to non-pharmacological therapies alone.^{6–9} In addition, provision of naloxone for opioid reversal has saved many lives^{10–13} and its use is endorsed by the Centers for Disease Control and Prevention,¹⁴ the American Society of Addiction Medicine,¹⁵ and the Substance Abuse and Mental Health Services Administration,¹⁶ among others. Despite the high prevalence of OUD among hospitalized patients, and the benefits of these interventions, medications for OUD treatment are not routinely prescribed to people with OUD,¹⁷ even following an overdose event.^{8,18} This may be due to a lack of buprenorphine waiver clinicians and a lack of uptake to incorporate OUD treatment in clinical practice.^{19,20} This treatment deficit results in a missed opportunity to engage patients in life-saving care.²¹

One approach to expand OUD treatment, and addiction more broadly, among patients admitted to inpatient units is the implementation of the hospital-based addiction consult model.^{22–25} To date, implementation of these consult services has been limited and are predominantly restricted to academic medical centers in urban settings where addiction-trained physicians provide specialty care.²⁶ Thus, this model may not be generalizable to hospitals with limited resources, including community hospitals in rural settings. A more generalized approach to increase OUD treatment in hospitals is to utilize addiction specialists to support existing hospitalists to incorporate evidence-based OUD treatment into their routine hospital practice. Such practices would include the initiation of buprenorphine with linkage to ongoing addiction treatment following discharge, the use of methadone for prevention of opioid withdrawal, and routine prescribing of naloxone at discharge for patients with OUD.²⁷ There are no restrictions to the initiation of methadone or buprenorphine for the prevention of opioid withdrawal in the hospital.²⁸ Under the Drug Addiction Treatment Act (DATA) of 2000, non-addiction practitioners who complete eight hours of training and obtain a buprenorphine waiver are permitted to prescribe buprenorphine to patients with OUD at hospital discharge.²⁹ Through this mechanism, hospitalists could initiate and prescribe buprenorphine to hospitalized patients with OUD in combination with direct linkage to addiction care following hospital discharge.

Although hospitalists care for most hospitalized patients in the United States, little is known about their attitudes, beliefs, and clinical practices regarding OUD treatment.³⁰ To leverage this capable workforce, we must first understand hospitalists' attitudes and beliefs about patients with OUD, to determine current OUD-related care provision in the hospital, and to explore hospital systems and processes that support OUD-related care among a sample of hospitalists primarily working in academic medicine. We hypothesized that hospitalists with access to an addiction specialist would be more likely to provide OUD-related care in the hospital due to the diffusion of knowledge regarding evidence-based practices in addiction treatment.

Methods

Respondents and Procedures

From October 2018 to March 2019, we conducted an anonymous online survey of hospitalists. We recruited a convenience sample of potential participants by using listservs for the Society of General Internal Medicine (SGIM), the Society of Hospital Medicine (SHM), and the American Hospital Association (AHA) Hospital Improvement Innovation Network (HIIN). We also contacted division and department heads of hospital medicine and internal medicine and requested they disseminate the survey to their hospital medicine colleagues. Based upon hospitalist membership numbers from SGIM, SHM, and AHA-HIIN, and the number of hospitalist physicians employed at institutions where division heads were contacted, we estimated approximately 14,377 hospitalists were eligible for the survey. Recruitment emails included a brief description of the study with a hyperlink to the survey (Appendix 1). Eligible study respondents were hospitalists practicing in academic, nonacademic, urban, suburban, or rural setting across the United States. The study was approved by the Colorado Multiple Institutional Review Board.

Survey Development

The survey was informed by a literature review of clinicians' attitudes and beliefs,^{31,32} clinical practices,^{33,34} and practice recommendations for OUD treatment and overdose prevention.^{5,13,14,27,35} Survey development was intended to obtain information on four domains: respondent and practice characteristics, self-rated attitudes and beliefs regarding caring for patients with OUD,^{31,36,37} current clinical practice regarding opioid-related care, and hospital systems and process to support OUD-related care.^{38–40} SLC developed the survey instrument. Survey content and questions were iteratively refined following feedback from addiction physicians and hospitalists involved in clinical research. Questions regarding practice characteristics, referral to treatment, perception of the use of medications for OUD treatment, and satisfaction to care for patients with OUD were informed by a previously published survey.³¹ The final 39-item survey was delivered in English.

Data Collection

Study data were collected and managed using REDCap (Research Electronic Data Capture) electronic data capture tools.^{41,42} REDCap is a secure, web-based software platform designed to support data capture for research studies. Surveys were sent via an anonymous, online link.

Measures

Predictor variables.—Access to an addiction specialist with prescriptive authority was based on participant's affirmative response to at least one of the following survey questions: "I have access to an addiction specialist to assist with challenging patients" or "Are there addiction specialists in your hospital who initiate medications for opioid use disorder and arrange for post discharge treatment?"

Outcomes of Interest.—To assess attitudes and beliefs regarding OUD-related care, we asked hospitalists about their perception that OUD treatment should be an outpatient issue, that the use of methadone or buprenorphine is replacing one addiction for another, and that caring for patients with OUD is as satisfying as caring for as other clinical activities. To assess OUD-care provision, we asked about hospitalists' OUD screening practices, buprenorphine initiation, naloxone provision, and treatment referral. Finally, we included outcomes related to hospital systems and process of OUD care provision including feeling supported to screen for OUD and refer patients to treatment and awareness of local treatment resources, among others.

Attitudes and beliefs of caring for patients with OUD, and hospital systems and processes for OUD treatment, were measured on a four-point Likert scale (strongly agree / somewhat agree / somewhat disagree / strongly disagree). Frequency of clinical practice behaviors were measured on a four-point Likert scale (always / often / rarely / never). One question included a multiple-choice answer, "Helpful staff to screen and to refer patients to treatment may include: nurse care manager, social worker, pharmacist, psychiatrist, other". Other questions had yes / no answer options. Branching logic was used for questions addressing ancillary support availability, availability of an addiction specialist, and status of buprenorphine waiver.

Statistical Analysis

We first characterized the sample using descriptive statistics. To compare characteristics between hospitalists with and without access to an addiction specialist, we used chi-square tests and Fisher's exact tests. To test the association between access to an addiction specialist and eleven outcomes of interest, we performed logistic regression. Unadjusted odds ratios and 95% confidence intervals were estimated using univariable logistic regression. Our numeric variables were not normally distributed so we combined four-point Likert scale responses into dichotomous outcomes, such as "always / often *or* rarely / never" and "strongly agree / somewhat agree *or* somewhat disagree / strongly disagree". Each model was adjusted for gender, years in practice, academic (teaching) hospital, personal experience with addiction for self, friend or family member, and residence. We considered all independent variables with $p < 0.05$ in the final models as significant. The association between access to an addiction specialist and outcomes of interest are presented as odds ratios (OR) and 95% confidence intervals (95% CI). Statistical analyses were performed using SAS version 9.4 software.

Results

Respondent Characteristics

Of the 305 initiated surveys, 39 were incomplete and 4 had missing data for the primary composite predictor variable, access to an addiction specialist, yielding 262 eligible surveys and an estimated response rate of 1.8%. Among our sample (N=262), 67.9% (n=178) had access to an addiction specialist, 56.3% (n=146) were female, 48.8% (n=128) had been in clinical practice for 5 years, 51.5% (n=135) lived in the West, and 38.1% (n=99) reported having a personal experience with addiction among themselves, a family member, or friend. Most hospitalists worked in academic (91.5%; n=238) and not-for-profit (92%; n=241) hospitals. Hospitalists reported that their patient population had variable insurance coverage, including state Medicaid, and many patients did not have a primary care clinician (Table 1).

Self-Rated Attitudes and Beliefs Regarding Caring for Patients with OUD

Hospitalists with access to an addiction specialist, compared to hospitalists without access to an addiction specialist, were more likely to ‘strongly agree / somewhat agree’ that caring for patients with OUD was as satisfying as other clinical activities (46.7% vs. 39.3%), were more likely to ‘somewhat disagree / strongly disagree’ that the treatment of OUD is an outpatient issue (76.9% vs. 59.6%) and were more likely to ‘somewhat disagree / strongly disagree’ that the use of methadone or buprenorphine to treat OUD is “replacing one addiction for another” (93.9% vs. 86.9%) (Table 2).

Current Clinical Practice Regarding Opioid-Related Care

Hospitalists with access to an addiction specialist, compared to hospitalists without access to an addiction specialist, were more likely to ‘always / often’ screen for an OUD (55% vs. 44.5%), to initiate buprenorphine (13.5% vs. 6%), to continue prescribed methadone or buprenorphine (92.1% vs. 81.3%), and to refer patients to treatment (74.1% vs. 51.2%) (Table 2).

Hospital Systems and Process to Support Provision of OUD-Related Care

Hospitalists with access to an addiction specialist, compared to hospitalists without access to an addiction specialist, were more likely to feel supported to screen for OUD and refer patients to OUD treatment (46.1% vs. 15.5%), were more likely to ‘strongly agree / somewhat agree’ that they were aware of local treatment resources (70.6% vs. 44.1%), and were more likely to feel their hospital administration valued addiction treatment (60.0% vs. 15.7%).

Association Access to an Addiction Specialist and Outcomes of Interest

In adjusted analyses, having access to an addiction specialist remained positively associated with feeling supported by the hospital to screen for OUD and refer patients to treatment ([adjusted odds ratio] aOR = 4.4, 95% CI 2.1 – 9.1, $p < 0.001$), having a greater awareness of local treatment resources (aOR = 3.4, 95% CI 1.8 – 6.3, $p < 0.001$), and making OUD treatment referrals (aOR = 3.0, 95% CI 1.7 – 5.6, $p < 0.001$) (Table 3).

Discussion

Most hospitalist respondents routinely care for hospitalized patients with OUD, however almost half of hospitalists do not screen for OUD, more than half do not prescribe or recommend naloxone at discharge to high risk patients, and the majority do not initiate buprenorphine during hospitalization. In multivariable analysis, hospitalists with access to an addiction specialist were more likely to be aware of OUD treatment resources, to refer patients to treatment, and to feel supported by their hospital administration to care for patients with OUD. Our results suggest that, among hospitalist respondents, there is an interest to expand OUD-related care for hospitalized patients. Furthermore, having access to an addiction specialist facilitated OUD-related care delivery.

Our findings demonstrate that many hospitalists do not prescribe naloxone for overdose reversal at discharge despite frequently caring for patients with OUD. This is concerning because naloxone provision to high risk patients, including those with a history of overdose or a substance use disorder, use of high opioid dosages (> 50 MME/day), or concurrent benzodiazepine use,¹⁴ is associated with a decrease in opioid overdose deaths.¹⁰ The provision of naloxone to people with OUD in the community is a common practice^{43–45} and is increasingly being integrated into primary care and emergency department settings.⁴⁶ Integrating naloxone prescribing into hospital discharge processes for patients at high risk of overdose should be routine practice. Potential hospital-based interventions to increase naloxone prescribing at discharge for high risk patients include integrating naloxone order sets into the electronic health record and recruiting pharmacists to provide overdose education with naloxone distribution at hospital discharge. Automation of naloxone prescribing would likely be adopted by hospitalists because it would benefit a vulnerable patient population while limiting workflow disruption in a busy hospital practice.

While hospitalists with access to an addiction specialist were more likely to continue prescribed buprenorphine or methadone, they were not more likely to be buprenorphine waived or to initiate buprenorphine during hospitalization. Clinician-initiated buprenorphine in the hospital or emergency department with linkage to office-based opioid agonist treatment has been shown to engage hospitalized patients into addiction treatment and to reduce health care costs.^{47–51} While a waiver is not required to dispense buprenorphine during hospitalization,²⁸ it is required to prescribe buprenorphine at discharge.²⁷ Even though increasing numbers of providers have obtained a buprenorphine waiver,^{52,53} many waived physicians do not routinely prescribe it due to lack of institutional support or lack of mental health and psychosocial support to care for this patient population.^{39,54} Physicians have previously reported that inadequate addiction training and limited support structures to care for patients with substance use disorders are significant barriers to provide addiction treatment.⁵⁵ Ongoing efforts to support hospitalists to integrate buprenorphine initiation with treatment linkage would likely expand access to this life-saving treatment for a vulnerable patient population.

They majority of hospitalists reported always or often caring for patients with OUD, but approximately half of hospitalists reported rarely or never screening for OUD. Frequently, an OUD diagnosis can be inferred from the patient's presenting illness, for example, right-

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sided endocarditis or an injection-related abscess, osteomyelitis, or cellulitis and physical exam findings consistent with injection-related trauma or scarring on the arms or legs. Similarly, an OUD diagnosis can be inferred when a patient develops opioid withdrawal symptoms that resolves with methadone or buprenorphine administration and the patient is not prescribed chronic opioid therapy. There are times, however, when screening for OUD may help identify patients who could benefit from addiction treatment. Hospitalized patients who purchase prescription opioids illicitly or who crush and snort or chew opioid pills may be identified early with screening. These patients could benefit from in-hospital buprenorphine or methadone initiation and linkage to treatment post discharge. Hospitalists should be able to provide basic addiction treatment to their patients, to screen for a suspected OUD, and to initiate medications for OUD treatment. Hospitals should provide support for dedicated social workers to identify local addiction treatment resources for ongoing care. Until more support is provided to our frontline clinicians to address OUD in the hospital, patients with OUD will continue to utilize costly, acute healthcare services, and will continue to have high mortality related to their substance use.⁵⁶

Our study findings suggest that hospitalists with access to an addiction specialist were more likely to believe that OUD treatment should be provided to hospitalized patients. Furthermore, more than half of all hospitalists surveyed stated they would screen and refer patients to treatment if they had the necessary support to do so. Screening, brief intervention, and referral to treatment (SBIRT) commonly occurs in the emergency department to identify patients with risky opioid use, to reduce overdose risk behaviors,⁵⁷ and to increase treatment engagement.^{58,59} Expanding SBIRT to identify OUD among hospitalized patients experiencing medical complications related to opioid use presents an opportunity to engage high-risk patients in treatment. Hospitalists surveyed identified social workers, nurses, and care managers as potential staff members to assist with SBIRT. Effective interventions addressing chronic illness rely on multidisciplinary teams including nurses, pharmacists, and social workers.⁶⁰ Hospitals already have existing infrastructure to identify patients with modifiable risks and to facilitate care coordination to reduce readmissions.⁶¹ OUD is a chronic disease and hospitalizations related to opioid use are estimated to cost \$700 million annually.⁶² Despite the expense, hospitals have not responded by hiring or training dedicated staff to address the needs of patients with OUD. Until hospitals invest in the infrastructure necessary to support screening, medication for OUD treatment initiation, and care transitions for OUD, hospitalizations related to OUD will continue to cost millions of dollars annually.

There are several study limitations. This was an anonymous online survey. To calculate a rough response rate, we estimated the total number of eligible hospitalists using data from society memberships and academic hospitalist groups. We do not know the actual number of hospitalists who received the survey and declined to participate versus those who did not receive the survey and were unable to participate. This was a convenience sample of hospitalists which underrepresents hospitalists practicing in nonacademic and private hospitals and overrepresents hospitalists with access to addiction specialists. We distributed the survey to the American Hospital Association Hospital (AHA) Improvement Innovation Network (HIIN) which includes physicians working in over 1,600 hospitals across 34 states, however we did not have a robust response rate from nonacademic and private hospitalists. Many of the respondents reported having access to an addiction specialist,

which is likely atypical among hospitalists practicing in nonacademic, private, community, or rural hospitals. Furthermore, the presence or distribution of addiction consult services across hospitals is not known. Thus, our study results likely overestimates national OUD treatment practices provided by hospitalists and may not be generalizable to nonacademic or rural hospitals. Our survey questions were pilot tested among research experts in hospital medicine and addiction medicine and iteratively refined based on their feedback. Survey questions were not comprehensively evaluated for validity, reliability, sensitivity, or specificity. We did not include survey questions addressing geographic variation (i.e., urban vs. rural, variations in hospital referral region) nor did we assess for variation in board certification (i.e., internal medicine vs. family medicine) which may affect reported associations. Our responses to our survey questions were dichotomized from Likert scale responses to a binary outcome which can lead to a loss of variability. This study relies on hospitalists' self-reported attitudes, beliefs, and clinical practices related to the care of patients with OUD which may not reflect the reality of the actual care provided. Finally, while we noted correlation between access to an addiction specialist and specific outcomes, we cannot assume causation. There may be unmeasured confounders including facility-level differences in culture, patient population, community needs, hospital leadership, and investment in the treatment of OUD which confounded these associations.

Our results identified a treatment gap in OUD care currently provided to hospitalized patients with OUD, including a lack of naloxone provision to patients at high risk of overdose and a lack of buprenorphine initiation, both lifesaving medications for patients with OUD. Despite this, hospitalists reported a willingness to integrate OUD care into their practice if they were supported by hospital staff to provide the nonmedical care required for addiction care transitions. Hospitalists have an opportunity to narrow the OUD treatment gap by becoming waived to prescribe buprenorphine to patients with OUD. Hospitals should support hospitalists to provide OUD care by hiring and training staff dedicated to managing addiction treatment care transitions.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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References

1. Ahmad FB RL, Spencer MR, Warner M, Sutton P. Provisional drug overdose death counts. National Center for Health Statistics;2018.
2. Administration SAaMHS. Key substance use and mental health indicators in the United States: Results from the 2017 National Survey on Drug Use and Health (HHS Publication No. SMA 17–

- 5068, NSDUH Series H-53). In: Center for Behavioral Health Statistics and Quality SAaMHSA, ed. Rockville, Maryland 2018.
3. Unick GJ, Rosenblum D, Mars S, Ciccarone D. Intertwined Epidemics: National Demographic Trends in Hospitalizations for Heroin- and Opioid-Related Overdoses, 1993–2009. *PloS one* 2013;8(2):e54496. [PubMed: 23405084]
 4. Ronan MV, Herzig SJ. Hospitalizations related to opioid abuse/dependence and associated serious infections increased sharply, 2002–12. *Health Affairs*. 2016;35(5):832–837. [PubMed: 27140989]
 5. Abuse S. Medications for opioid use disorder. Treatment Improvement Protocol (TIP) Series 63, Full Document: Substance Abuse and Mental Health Services Administration Rockville, MD; 2018.
 6. Mattick RP, Breen C, Kimber J, Davoli M. Methadone maintenance therapy versus no opioid replacement therapy for opioid dependence. *Cochrane Database of Systematic Reviews* 2009(3).
 7. Sordo L, Barrio G, Bravo MJ, et al. Mortality risk during and after opioid substitution treatment: systematic review and meta-analysis of cohort studies. *BMJ (Clinical research ed)* 2017;357:j1550.
 8. Larochelle MR, Bernson D, Land T, et al. Medication for opioid use disorder after nonfatal opioid overdose and association with mortality: A cohort study. *Annals of Internal Medicine*. 2018;169(3):137–145. [PubMed: 29913516]
 9. Hser YI, Saxon AJ, Huang D, et al. Treatment retention among patients randomized to buprenorphine/naloxone compared to methadone in a multi-site trial. *Addiction (Abingdon, England)* 2014;109(1):79–87.
 10. Walley AY, Xuan Z, Hackman HH, et al. Opioid overdose rates and implementation of overdose education and nasal naloxone distribution in Massachusetts: interrupted time series analysis. *BMJ (Clinical research ed)*. 2013;346:f174–f174.
 11. Wheeler E, Jones TS, Gilbert MK, Davidson PJ. Opioid Overdose Prevention Programs Providing Naloxone to Laypersons - United States, 2014. *MMWR Morb Mortal Wkly Rep* 2015;64(23):631–635. [PubMed: 26086633]
 12. Mueller SR, Walley AY, Calcaterra SL, Glanz JM, Binswanger IA. A Review of Opioid Overdose Prevention and Naloxone Prescribing: Implications for Translating Community Programming Into Clinical Practice. *Substance abuse*. 2015;36(2):240–253. [PubMed: 25774771]
 13. Kampman K, Jarvis M. American Society of Addiction Medicine (ASAM) National Practice Guideline for the Use of Medications in the Treatment of Addiction Involving Opioid Use. *J Addict Med*. 2015;9(5):358–367. [PubMed: 26406300]
 14. Dowell D, Haegerich TM, Chou R. CDC Guideline for Prescribing Opioids for Chronic Pain - United States, 2016. *MMWR Recommendations and reports : Morbidity and mortality weekly report Recommendations and reports*. 2016;65(1):1–49.
 15. Medicine ASoA. Public Policy Statement on the Use of Naloxone for the Prevention of OpioidOverdose Deaths. Chevy Chase, MD 2010 2010, revised 2014, revised 2016.
 16. Administration SAaMHS. SAMHSA Opioid Overdose Prevention Toolkit. Rockville, MD 2018.
 17. Rhee TG, Rosenheck RA. Use of Drug Treatment Services Among Adults With Opioid Use Disorder: Rates, Patterns, and Correlates. *Psychiatric services (Washington, DC)*. 2019;70(11):992–999.
 18. Frazier W, Cochran G, Lo-Ciganic W-H, et al. Medication-Assisted Treatment and Opioid Use Before and After Overdose in Pennsylvania Medicaid. *Jama*. 2017;318(8):750–752. [PubMed: 28829862]
 19. Andrilla CHA, Moore TE, Patterson DG, Larson EH. Geographic Distribution of Providers With a DEA Waiver to Prescribe Buprenorphine for the Treatment of Opioid Use Disorder: A 5-Year Update. *The Journal of rural health : official journal of the American Rural Health Association and the National Rural Health Care Association*. 2019;35(1):108–112.
 20. Mojtabai R, Mauro C, Wall MM, Barry CL, Olfson M. Medication Treatment For Opioid Use Disorders In Substance Use Treatment Facilities. *Health affairs (Project Hope)*. 2019;38(1):14–23. [PubMed: 30615514]
 21. Rosenthal ES, Karchmer AW, Theisen-Toupal J, Castillo RA, Rowley CF. Suboptimal addiction interventions for patients hospitalized with injection drug use-associated infective endocarditis. *The American journal of medicine*. 2016;129(5):481–485. [PubMed: 26597670]

22. Englander H, Weimer M, Solotaroff R, et al. Planning and designing the Improving Addiction Care Team (IMPACT) for hospitalized adults with substance use disorder. *Journal of hospital medicine*. 2017;12(5):339. [PubMed: 28459904]
23. Trowbridge P, Weinstein ZM, Kerensky T, et al. Addiction consultation services. Linking hospitalized patients to outpatient addiction treatment. *J Subst Abuse Treat*. 2017;79:1–5. [PubMed: 28673521]
24. Wakeman SE, Metlay JP, Chang Y, Herman GE, Rigotti NA. Inpatient Addiction Consultation for Hospitalized Patients Increases Post-Discharge Abstinence and Reduces Addiction Severity. *Journal of general internal medicine*. 2017;32(8):909–916. [PubMed: 28526932]
25. Weinstein ZM, Wakeman SE, Nolan S. Inpatient Addiction Consult Service: Expertise for Hospitalized Patients with Complex Addiction Problems. *Med Clin North Am*. 2018;102(4):587–601. [PubMed: 29933817]
26. Priest KC, McCarty D. Role of the Hospital in the 21st Century Opioid Overdose Epidemic: The Addiction Medicine Consult Service. *Journal of Addiction Medicine*. 2019;13(2):104–112. [PubMed: 30608266]
27. Theisen-Toupal J, Ronan MV, Moore A, Rosenthal ES. Inpatient Management of Opioid Use Disorder: A Review for Hospitalists. *Journal of hospital medicine*. 2017;12(5):369–374. [PubMed: 28459909]
28. Justice USDo. Title 21 Code of Federal Regulations. §1306.07 Administering or dispensing of narcotic drugs 2005; https://www.deadiversion.usdoj.gov/21cfr/cfr/1306/1306_07.htm.
29. Administration SAaMHS. Buprenorphine Waiver Management. 2018; <https://www.samhsa.gov/programs-campaigns/medication-assisted-treatment/training-materials-resources/buprenorphine-waiver>. Accessed 11/13/2018.
30. Wachter RM, Goldman L. Zero to 50,000—the 20th anniversary of the hospitalist. *New England Journal of Medicine*. 2016;375(11):1009–1011.
31. Wakeman SE, Pham-Kanter G, Donelan K. Attitudes, practices, and preparedness to care for patients with substance use disorder: Results from a survey of general internists. *Substance abuse*. 2016;37(4):635–641. [PubMed: 27164025]
32. Wakeman SE, Baggett MV, Pham-Kanter G, Campbell EG. Internal medicine residents' training in substance use disorders: a survey of the quality of instruction and residents' self-perceived preparedness to diagnose and treat addiction. *Substance abuse*. 2013;34(4):363–370. [PubMed: 24159907]
33. Blackstock OJ, Moore BA, Berkenblit GV, et al. A Cross-Sectional Online Survey of HIV Pre-Exposure Prophylaxis Adoption Among Primary Care Physicians. *Journal of general internal medicine*. 2017;32(1):62–70. [PubMed: 27778215]
34. Behar E, Rowe C, Santos G-M, et al. Acceptability of Naloxone Co-Prescription Among Primary Care Providers Treating Patients on Long-Term Opioid Therapy for Pain. *Journal of general internal medicine*. 2017;32(3):291–295. [PubMed: 27815762]
35. Bruneau J, Ahamad K, Goyer M-È, et al. Management of opioid use disorders: a national clinical practice guideline. *Canadian Medical Association Journal*. 2018;190(9):E247–E257. [PubMed: 29507156]
36. van Boekel LC, Brouwers EP, van Weeghel J, Garretsen HF. Stigma among health professionals towards patients with substance use disorders and its consequences for healthcare delivery: systematic review. *Drug and alcohol dependence*. 2013;131(1–2):23–35. [PubMed: 23490450]
37. Wakeman SE, Kanter GP, Donelan K. Institutional Substance Use Disorder Intervention Improves General Internist Preparedness, Attitudes, and Clinical Practice. *Journal of addiction medicine*. 2017;11(4):308–314. [PubMed: 28375881]
38. Hutchinson E, Catlin M, Andrilla CH, Baldwin LM, Rosenblatt RA. Barriers to primary care physicians prescribing buprenorphine. *Annals of family medicine*. 2014;12(2):128–133. [PubMed: 24615308]
39. Kissin W, McLeod C, Sonnefeld J, Stanton A. Experiences of a national sample of qualified addiction specialists who have and have not prescribed buprenorphine for opioid dependence. *Journal of addictive diseases*. 2006;25(4):91–103. [PubMed: 17088229]

40. Andrilla CHA, Coulthard C, Larson EH. Barriers Rural Physicians Face Prescribing Buprenorphine for Opioid Use Disorder. *Annals of family medicine*. 2017;15(4):359–362. [PubMed: 28694273]
41. Harris PA, Taylor R, Thielke R, Payne J, Gonzalez N, Conde JG. Research electronic data capture (REDCap)—a metadata-driven methodology and workflow process for providing translational research informatics support. *Journal of biomedical informatics*. 2009;42(2):377–381. [PubMed: 18929686]
42. Harris PA, Taylor R, Minor BL, et al. The REDCap consortium: Building an international community of software platform partners. *Journal of biomedical informatics*. 2019;95:103208. [PubMed: 31078660]
43. Mueller SR, Walley AY, Calcaterra SL, Glanz JM, Binswanger IA. A review of opioid overdose prevention and naloxone prescribing: implications for translating community programming into clinical practice. *Substance abuse*. 2015;36(2):240–253. [PubMed: 25774771]
44. Kaucher KA, Acquisto NM, Broderick KB. Emergency department naloxone rescue kit dispensing and patient follow-up. *Am J Emerg Med*. 2018;36(8):1503–1504. [PubMed: 29237542]
45. Dwyer K, Walley AY, Langlois BK, et al. Opioid education and nasal naloxone rescue kits in the emergency department. *West J Emerg Med*. 2015;16(3):381–384. [PubMed: 25987910]
46. Behar E, Bagnulo R, Coffin PO. Acceptability and feasibility of naloxone prescribing in primary care settings: A systematic review. *Prev Med*. 2018;114:79–87. [PubMed: 29908763]
47. Liebschutz JM, Crooks D, Herman D, et al. Buprenorphine treatment for hospitalized, opioid-dependent patients: a randomized clinical trial. *JAMA internal medicine*. 2014;174(8):1369–1376. [PubMed: 25090173]
48. D’Onofrio G, Chawarski MC, O’Connor PG, et al. Emergency Department-Initiated Buprenorphine for Opioid Dependence with Continuation in Primary Care: Outcomes During and After Intervention. *J Gen Intern Med*. 2017;32(6):660–666. [PubMed: 28194688]
49. D’Onofrio G, O’Connor PG, Pantalon MV, et al. Emergency department-initiated buprenorphine/naloxone treatment for opioid dependence: a randomized clinical trial. *JAMA: Journal of the American Medical Association*. 2015;313(16):1636–1644. [PubMed: 25919527]
50. Busch S, Hawk K, Fiellin D, et al. Health service use in a randomized clinical trial comparing three methods of emergency department interventions for opioid dependence. *Drug and alcohol dependence*. 2015;156:e32.
51. Busch SH, Fiellin DA, Chawarski MC, et al. Cost-effectiveness of emergency department-initiated treatment for opioid dependence. *Addiction*. 2017;112(11):2002–2010. [PubMed: 28815789]
52. Wen H, Borders TF, Cummings JR. Trends In Buprenorphine Prescribing By Physician Specialty. *Health affairs (Project Hope)*. 2019;38(1):24–28. [PubMed: 30615523]
53. Stein BD, Gordon AJ, Dick AW, et al. Supply of buprenorphine waived physicians: the influence of state policies. *J Subst Abuse Treat*. 2015;48(1):104–111. [PubMed: 25218919]
54. Hutchinson E, Catlin M, Andrilla CHA, Baldwin L-M, Rosenblatt RA. Barriers to primary care physicians prescribing buprenorphine. *Annals of family medicine*. 2014;12(2):128–133. [PubMed: 24615308]
55. Van Boekel LC, Brouwers EP, Van Weeghel J, Garretsen HF. Stigma among health professionals towards patients with substance use disorders and its consequences for healthcare delivery: systematic review. *Drug and alcohol dependence*. 2013;131(1–2):23–35. [PubMed: 23490450]
56. Englander H, Priest KC, Snyder H, Martin M, Calcaterra S, Gregg J. A Call to Action: Hospitalists’ Role in Addressing Substance Use Disorder. *Journal of hospital medicine*. 2019;14:E1–e4.
57. Bohnert AS, Bonar EE, Cunningham R, et al. A pilot randomized clinical trial of an intervention to reduce overdose risk behaviors among emergency department patients at risk for prescription opioid overdose. *Drug and alcohol dependence*. 2016;163:40–47. [PubMed: 27062245]
58. D’Onofrio G, O’Connor PG, Pantalon MV, et al. Emergency department-initiated buprenorphine/naloxone treatment for opioid dependence: a randomized clinical trial. *Jama*. 2015;313(16):1636–1644. [PubMed: 25919527]

59. Coffin PO, Santos GM, Matheson T, et al. Behavioral intervention to reduce opioid overdose among high-risk persons with opioid use disorder: A pilot randomized controlled trial. *PloS one*. 2017;12(10):e0183354. [PubMed: 29049282]
60. Wagner EH. The role of patient care teams in chronic disease management. *BMJ (Clinical research ed)*. 2000;320(7234):569–572.
61. Services CfMM. Hospital Readmissions Reduction Program (HRRP). 2019; <https://www.cms.gov/medicare/medicare-fee-for-service-payment/acuteinpatientpps/readmissions-reduction-program.html>. Accessed Fuly 19, 2019.
62. Hsu DJ, McCarthy EP, Stevens JP, Mukamal KJ. Hospitalizations, costs and outcomes associated with heroin and prescription opioid overdoses in the United States 2001–12. *Addiction (Abingdon, England)*. 2017;112(9):1558–1564.

Table 1.

Respondent and Practice Characteristics by Access to an Addiction Specialist *

	Total Sample	Access to an Addiction Specialist		p-Value
		No (n=84)	Yes (n=178)	
Gender, n (%) Female	147 (56.3)	47 (18.0)	100 (38.3)	0.93
Years in practice, n (%)				
5	128 (48.8)	36 (13.7)	92 (35.1)	0.40
6–10	72 (27.4)	23 (8.7)	49 (18.7)	
11–15	31 (11.9)	12 (4.6)	19 (7.3)	
>15	31 (11.8)	13 (4.9)	18 (6.9)	
Academic (teaching) hospital, n (%)	238 (91.5)	67(81.7)	171(96.1)	<0.01
Hospital type, n (%)				
Private	11 (4.2)	7 (8.3)	4 (2.2)	0.07
Not-for-profit	241 (92.0)	73 (86.9)	168 (94.4)	
I don't know	10 (3.8)	4(4.8)	6 (3.4)	
Patients uninsured or have Medicaid, n (%)				
≈10%	21 (8.2)	5 (6.2)	16 (9.2)	0.03
≈25%	79 (31.0)	36 (44.4)	43 (24.7)	
≈50%	94 (36.9)	25 (30.9)	69 (39.7)	
≈75%	49 (19.2)	11 (13.6)	38 (21.8)	
≈100%	12 (4.7)	4 (5.0)	8 (4.6)	
Patients with a primary care provider, n (%)				
≈10%	1 (0.4)	0 (0)	1 (0.6)	0.93
≈25%	27 (10.4)	9 (10.8)	18 (10.2)	
≈50%	101 (39.0)	31 (37.4)	70 (40.0)	
≈75%	124 (47.7)	40 (48.2)	84 (47.5)	
≈100%	7 (2.7)	3 (3.6)	4 (2.3)	
Personal experience with addiction, n (%) [‡]	99 (38.1)	25 (29.8)	74 (42.05)	0.06
Residence, n (%)				
Midwest	50 (19.1)	15 (17.9)	35 (19.7)	0.01
Northeast	31 (11.8)	4 (4.8)	27 (15.2)	
South	20 (7.6)	6 (7.1)	14 (7.9)	
Southwest	26 (9.9)	1 (17.9)	11 (6.2)	
West	135 (51.5)	44 (53.4)	91 (51.1)	

* Maximum N missing for survey response was 11/262

[‡] Survey question, “I, or a friend or a family member have/has struggled with an addiction.”

Table 2.

Attitudes and Beliefs Current Clinical Practices, and Hospital Systems and Processes for Providing OUD-Related Care

	Total Sample	Access to an Addiction Specialist		p-Value
		No (n=84)	Yes (n=178)	
Attitudes and Beliefs Regarding Caring for Patients with OUD				
Patients with OUD more challenging, n (%)				
Strongly agree	82 (31.3)	31 (36.9)	51 (28.7)	0.22
Somewhat agree	156 (59.5)	43 (51.2)	113 (63.5)	
Somewhat disagree	21 (8.0)	9 (10.7)	12 (6.7)	
Strongly disagree	3 (1.1)	1 (1.2)	2 (1.1)	
Patients with OUD are as satisfying to care for as other clinical activities, n (%)				
Strongly agree	32 (12.2)	5 (6.0)	27 (15.2)	0.07
Somewhat agree	84 (32.1)	28 (33.3)	56 (31.5)	
Somewhat disagree	111 (42.4)	35 (41.7)	76 (42.7)	
Strongly disagree	35 (13.4)	16 (19.0)	19 (10.7)	
OUD is an outpatient issue, n (%)				
Strongly agree	10 (3.8)	6 (7.1)	4 (2.2)	0.004
Somewhat agree	65 (24.8)	28 (33.3)	37 (20.8)	
Somewhat disagree	110 (42.0)	35 (41.7)	75 (42.1)	
Strongly disagree	77 (29.4)	15 (17.9)	62 (34.8)	
Addiction is a choice, n (%)				
Strongly agree	2 (0.8)	1 (1.2)	1 (0.6)	0.54
Somewhat agree	13 (5.0)	3 (3.6)	10 (5.6)	
Somewhat disagree	64 (24.4)	24 (28.6)	40 (22.5)	
Strongly disagree	183 (69.8)	56 (66.7)	127 (71.4)	
Methadone/buprenorphine is replacing one addiction for another, n (%)				
Strongly agree	3 (1.1)	0 (0)	3 (1.7)	0.05
Somewhat agree	19 (7.3)	11 (13.1)	8 (4.5)	
Somewhat disagree	60 (22.9)	21 (25.0)	39 (22.0)	
Strongly disagree	180 (68.7)	52 (61.9)	128 (71.9)	
People who use illicit opioids are committing a crime and deserved to be punished, n (%)				
Strongly agree	0	0	0	0.80
Somewhat agree	18 (6.9)	6 (7.1)	12 (6.8)	
Somewhat disagree	56 (21.5)	20 (23.8)	36 (20.3)	
Strongly disagree	187 (71.6)	58 (69.0)	129 (72.9)	
Current Clinical Practice Regarding Opioid-Related Care				
Cares for patients with OUD, n (%)				
Always	34 (13.1)	7 (8.3)	27 (15.2)	0.13
Often	187 (71.4)	59 (70.2)	128 (72.0)	

	Total Sample	Access to an Addiction Specialist		p-Value
		No (n=84)	Yes (n=178)	
Rarely	36 (13.7)	15 (17.9)	21 (11.8)	
Never	5 (1.9)	3 (5.6)	2 (1.1)	
Screens for OUD, n (%) *				
Always	34 (13.0)	9 (10.8)	25 (14.0)	0.03
Often	101 (38.7)	28 (33.7)	73 (41.0)	
Rarely	104 (39.8)	33 (39.8)	71 (39.9)	
Never	22 (8.4)	13 (15.6)	9 (5.1)	
Patient, family of patient, or patient's friend request treatment help, n (%)				
Always	2 (0.8)	0 (0)	2 (1.1)	0.23
Often	71 (27.2)	17 (20.5)	54 (30.3)	
Rarely	154 (59.0)	52 (62.7)	102 (57.3)	
Never	34 (13.0)	14 (16.9)	20 (11.2)	
Initiate buprenorphine, n (%)				
Always	2 (0.8)	0 (0)	2 (1.1)	0.004
Often	27 (10.3)	5 (6.0)	22 (12.4)	
Rarely	70 (26.7)	14 (16.7)	56 (31.5)	
Never	163 (62.2)	65 (77.4)	98 (55.1)	
Prescribe/recommend naloxone for overdose reversal, n (%)				
Always	25 (9.6)	6 (7.2)	19 (10.7)	0.51
Often	87 (33.3)	25 (30.1)	62 (34.9)	
Rarely	106 (40.6)	35 (42.2)	71 (39.9)	
Never	43 (16.5)	17 (20.5)	26 (14.6)	
Continue prescribed methadone/buprenorphine, n (%)				
Always	140 (53.4)	35 (42.0)	105 (59.0)	0.01
Often	92 (35.1)	33 (39.3)	59 (33.1)	
Rarely	15 (5.7)	7 (8.3)	8 (4.5)	
Never	13 (5.0)	7 (8.3)	6 (3.4)	
Refer patients to treatment, n (%)				
Always	44 (16.8)	11 (13.1)	33 (18.5)	<0.01
Often	131 (50.0)	32 (38.1)	99 (55.6)	
Rarely	77 (29.4)	36 (42.9)	41 (23.0)	
Never	10 (3.8)	5 (6.0)	5 (2.8)	
Hospital Systems and Processes for Providing OUD-Related Care				
Feel supported to screen & refer to treatment	95 (36.3)	13 (15.5)	82 (46.1)	<0.001
If I had support to screen & refer to treatment, I would do so routinely *	151 (90.0)	66 (93.0)	85 (89.0)	0.34
Aware of local treatment resources				
Strongly agree	37 (14.2)	5 (6.0)	32 (18.1)	<0.01

	Total Sample	Access to an Addiction Specialist		p-Value
		No (n=84)	Yes (n=178)	
Somewhat agree	125 (47.9)	32 (38.1)	93 (52.5)	
Somewhat disagree	69 (26.4)	30 (35.7)	39 (22.0)	
Strongly disagree	30 (11.5)	17 (20.2)	13 (7.3)	
Addiction specialist consults on most patients with OUD [†]				
Strongly agree		n/a	57 (38.0)	
Somewhat agree		n/a	43 (29.0)	
Somewhat disagree		n/a	31 (21.0)	
Strongly disagree		n/a	18 (12.0)	
I am X-waivered to prescribe buprenorphine	19 (17)	20 (13)	39 (15)	0.29
I know who to contact if I want to start buprenorphine [‡]	31 (34)	102 (80)	133 (61)	<0.01
I have access to an addiction specialist to assist with challenging patients ³				
Yes	31 (34)	102 (80)	133 (61)	<0.01
If had access to an addiction specialist, I would routinely screen, diagnose and initiated OUD treatment ³				
Yes	72 (88)	12 (75)	84 (86)	0.22
Helpful staff to screen and refer patients to treatment may include:				
Nurse Care Manager	179 (68.3)	60 (71.4)	119 (66.9)	0.46
Social Worker	239 (91.2)	75 (89.3)	164 (92.1)	0.45
Pharmacists	169 (64.5)	57 (67.9)	112 (62.9)	0.44
Psychiatrist	200 (76.3)	70 (83.3)	130 (73.0)	0.07
Other	48 (18.3)	12 (14.3)	36 (20.2)	0.25
Our hospital administration values addiction treatment by providing the necessary clinical and staff support required to screen, diagnose and refer patients to ongoing treatment.				
Yes	118 (45.7)	13 (15.7)	105 (60)	<0.01

* N missing response 99/262

[†] N missing response 29/262

[‡] N missing response 48/262, all other missing responses were 8/262

Table 3.

Models to Assess Odds of Selected Outcome with Access to an Addiction Specialist (versus lack of access to an Addiction Specialist (ref=0))

Outcome Assessed	Crude OR; 95% CI	Crude p- value*	Adjusted OR; 95% CI [†]	Adjusted p- value
Attitudes and Beliefs Regarding Caring for Patients with OUD				
OUD is an outpatient issue	0.4 (0.3, 0.8)	0.004	0.5 (0.3, 1.0)	0.05
Methadone/buprenorphine is replacing one addiction for another	0.4 (0.2, 1.1)	0.07	0.8 (0.3, 2.2)	0.60
Patients with OUD are as satisfying to care for as other clinical activities	1.4 (0.8, 2.3)	0.27	1.1 (0.6, 2.0)	0.67
Current Clinical Practice Regarding Opioid-Related Care				
Screen for OUD	1.5 (0.9, 2.6)	0.12	1.4 (0.8, 2.5)	0.23
Initiate buprenorphine	2.5 (0.9, 6.7)	0.08	2.7 (0.9, 8.5)	0.09
Continue prescribed methadone or buprenorphine	2.4 (1.1, 5.3)	0.03	1.8 (0.7, 4.7)	0.23
Prescribe/recommend naloxone	1.4 (0.8, 2.4)	0.22	1.1 (0.6, 2.0)	0.71
Refer patients to treatment	2.7 (1.6, 4.7)	<0.001	3.0 (1.7, 5.6)	<0.001
Hospital Systems and Processes for Providing OUD-Related Care				
Feel supported to screen and to refer to treatment	4.7 (2.4, 9.1)	<0.001	4.4 (2.1, 9.1)	<0.001
Aware of local treatment resources	3.1 (1.8, 5.2)	<0.001	3.4 (1.8, 6.3)	<0.001
X-waivered to prescribe buprenorphine	1.5 (0.7, 3.3)	0.29	1.3 (0.6, 3.1)	0.49

* P-values are based on dichotomized outcome variables

[†] Each model is adjusted for the following variables reported in Table 1: residence (ref=western US); academic vs. non-academic institution (ref=academic); personal experience with addiction (ref=yes); gender (ref=male); years in practice (ref=1–5 years)