

COLORADO ACEP

2017 Opioid Prescribing & Treatment Guidelines



Confronting the Opioid Epidemic in
Colorado's Emergency Departments

DISCLAIMER AND COPYRIGHT NOTICE

The Colorado Chapter of the American College of Emergency Physicians (COACEP) makes every effort to ensure that contributors to its publications are knowledgeable subject matter experts. Readers are nevertheless advised that the statements and opinions expressed in this publication are provided as the contributors' recommendations at the time of publication and should not be construed as official College policy. ACEP recognizes the complexity of emergency medicine and makes no representation that this publication serves as an authoritative resource for the prevention, diagnosis, treatment, or intervention for any medical condition, nor should it be the basis for the definition of, or standard of care that should be practiced by all health care providers at any particular time or place. Drugs are generally referred to by generic names. In some instances, brand names are added for easier recognition. COACEP received no commercial support for this publication. To the fullest extent permitted by law, and without limitation, COACEP expressly disclaims all liability for errors or omissions contained within this publication, and for damages of any kind or nature, arising out of use, reference to, reliance on, or performance of such information.

Copyright 2017, COACEP. All rights reserved. Except as permitted under the US Copyright Act of 1976, no part of this publication may be reproduced, stored, or transmitted in any form or by any means, electronic or mechanical, including storage and retrieval systems, without permission in writing from the publisher.

COLORADO CHAPTER, AMERICAN COLLEGE OF EMERGENCY PHYSICIANS

10465 Melody Dr. #101, Northglenn, CO 80234

Phone: 303.255.2715

Fax: 303.255.2704

Barbara Burgess, Executive Director

bburgess@estreet.com

**Dedicated to the men and women
who staff emergency departments across
Colorado — 24 hours a day, 7 days a week —
and the patients for whom they care.**

EDITOR-IN-CHIEF

Donald E. Stader III, MD, FACEP
dstader@carepointhc.com

ASSOCIATE EDITORS

Rachael Duncan, PharmD & Erik Verzemnieks, MD

SECTION EDITORS

Stephen V. Cantrill, MD, FACEP
Christopher Johnston, MD, FACEP
Rachael Duncan, PharmD
Jason Hoppe, DO, FACEP & Donald E. Stader III, MD, FACEP
Kevin Kaucher, PharmD

The Opioid Epidemic in Colorado
Limiting Opioid Use in the ED
Alternatives for the Treatment of Pain
Harm Reduction in the ED
Treatment of Opioid Addiction

PUBLICATION EDITOR

Rachel Donihoo

TASK FORCE MEMBERS & VOLUNTEERS

Travis Barlock
Kerry Broderick, MD
Colleen Decker, RN
Jasmeet Dhaliwal, MD
Hannah Gunther
Stefanie Huff, MD
Nathan Hibbs, MD, FACEP
Kevin McGarvey, MD, FACEP
Daniel Morrad
Dawn O'Keefe, RN
Eric Olsen, MD, FACEP
Madeleine Ponder, MD
Lisa Raville, *Executive Director, Harm Reduction Action Center*
Jack Spartz
Debra Starin, *Addiction Counselor*
Gannon Sungar, MD
Robert Valuck, PharmD, *Executive Director, Colorado Consortium*
Anne Winiarski, MD

Table of Contents

| | |
|---|----|
| I. Introduction | 1 |
| II. The Opioid Epidemic in Colorado | 3 |
| III. Limiting Opioid Use in the ED | 5 |
| IV. Alternatives to Opioids for the Treatment of Pain | 12 |
| V. Harm Reduction in the Emergency Department. | 17 |
| VI. Treatment of Opioid Addiction | 26 |
| VII. The Future. | 30 |
| Appendix 1. ALTO Protocols and References. | 31 |
| Appendix 2. ALTO Prescribing Guide for Discharge | 34 |
| Appendix 3. Suboxone for Withdrawal. | 36 |
| References. | 38 |

I. Introduction

As physicians, we are on the front lines of an opioid epidemic that is crippling communities across the country. We must accept and embrace our professional responsibility to treat our patients' pain without worsening the current crisis. These are actions we must take as physicians individually and collectively to do our part to end this epidemic.¹

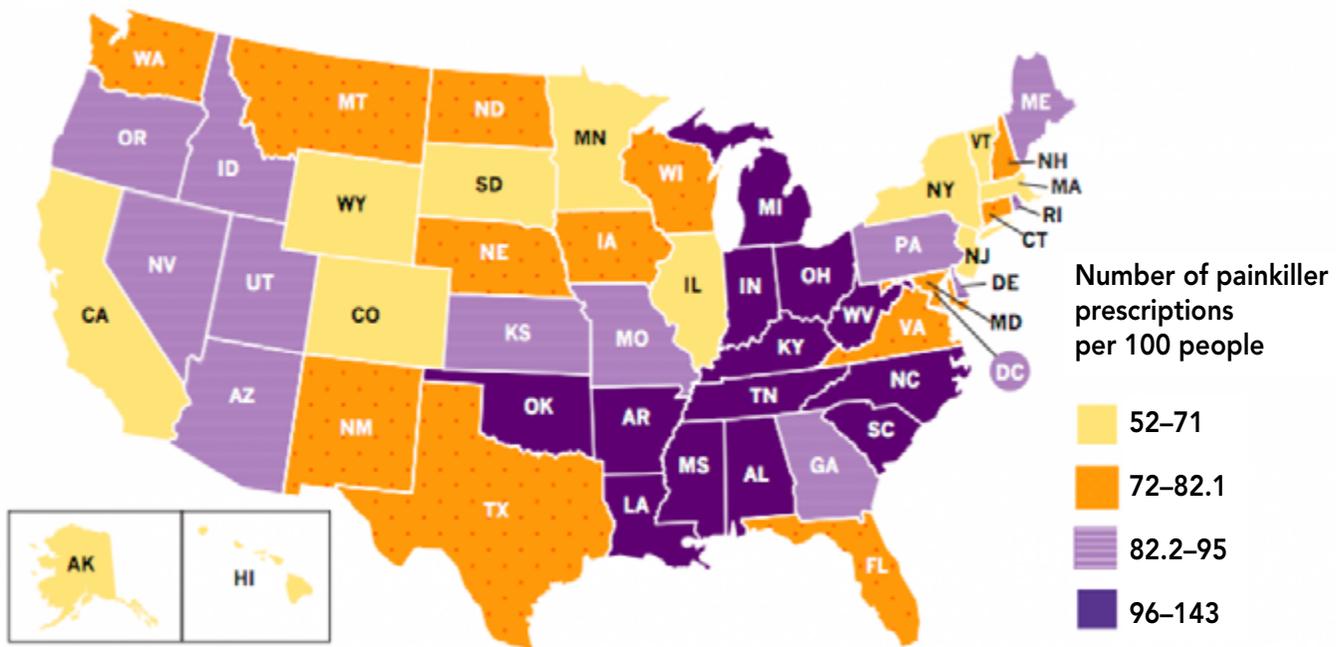
Stephen Stack, MD, AMA President & Emergency Physician (2016)

Emergency providers across Colorado and our nation are facing one of the greatest public health crises of our generation. Opioids, both prescription and illicit, have become the leading cause of accidental death in the United States. Correspondingly, hospital visits for opioid overdose, drug-related complications, and "doctor shopping" have become an increasingly common part of emergency medicine practice. The number of lives impacted by this epidemic is astonishing. The Centers for Disease Control and Prevention (CDC) reports that opioid overdose killed nearly half a million Americans between 2000 and 2014, and another 78 are dying every day. What makes this crisis especially tragic is that organized medicine and the practice patterns of physicians have played a prominent role in creating it.

The pharmaceutical use of opioids skyrocketed between 1990 and 1996; prescriptions for fentanyl rose 1,000%, followed by morphine (49%), oxycodone (15%), and hydromorphone (12%).² Our appetite for these drugs has become insatiable. The number of prescription opioids sold in the US has quadrupled since 1999, with Americans consuming nearly 100% of the global supply of hydrocodone and 81% of oxycodone.^{3,4} Despite a growing awareness about the addictive and potentially deadly effects of these drugs, their popularity thrives (*Figure 1*).

The number of emergency department (ED) visits precipitated by the nonmedical use of opioids has grown 183% since 2011.⁵ From 2003 to 2013 treatment admissions for non-heroin opioid abuse escalated from 3% to 9%.⁶ In the same decade, the prevalence of positive opioid tests tripled among drivers who died within one hour of a motor vehicle accident.⁷ The financial implications of this epidemic are equally staggering; the nonmedical use of opioid pain relievers costs insurance companies an estimated \$78.5 billion annually.⁸

FIGURE 1. PAINKILLERS IN AMERICA



Source: IMS, National Prescription Audit (NPA), 2012.

While a number of external factors have contributed to the liberal use of these potentially lethal drugs, the medical community is compelled to acknowledge its central role in creating our national addiction. However, we also have the power to reverse these grim statistics by reforming our practices with resolve and innovation.

Colorado ACEP is proud to present its *Colorado Emergency Department Opioid Prescribing and Treatment Guidelines*. Among the most comprehensive ever published, these recommendations were developed by a panel of more than 20 experts, including emergency physicians, addiction and harm reduction specialists, pharmacists, paramedics, emergency department nurses, and medical students.

These guidelines are not meant to replace clinical judgment, but rather inform and augment it. Although we acknowledge the value of opioids in certain clinical situations, including the treatment of cancer pain or hospice patients, we advocate extreme caution in all cases. Emergency clinicians must recognize that chronic opioid use and abuse often starts with acute pain. Although many dismiss the risks of short-term opioid prescriptions, roughly 16% of patients who receive more than a 1-week supply report a reliance on these drugs 1 year later. Only 6% of patients who receive a single-day supply report continued use.⁹ Here we provide an approach to pain management aimed at decreasing the morbidity and mortality associated with opioid use and abuse.

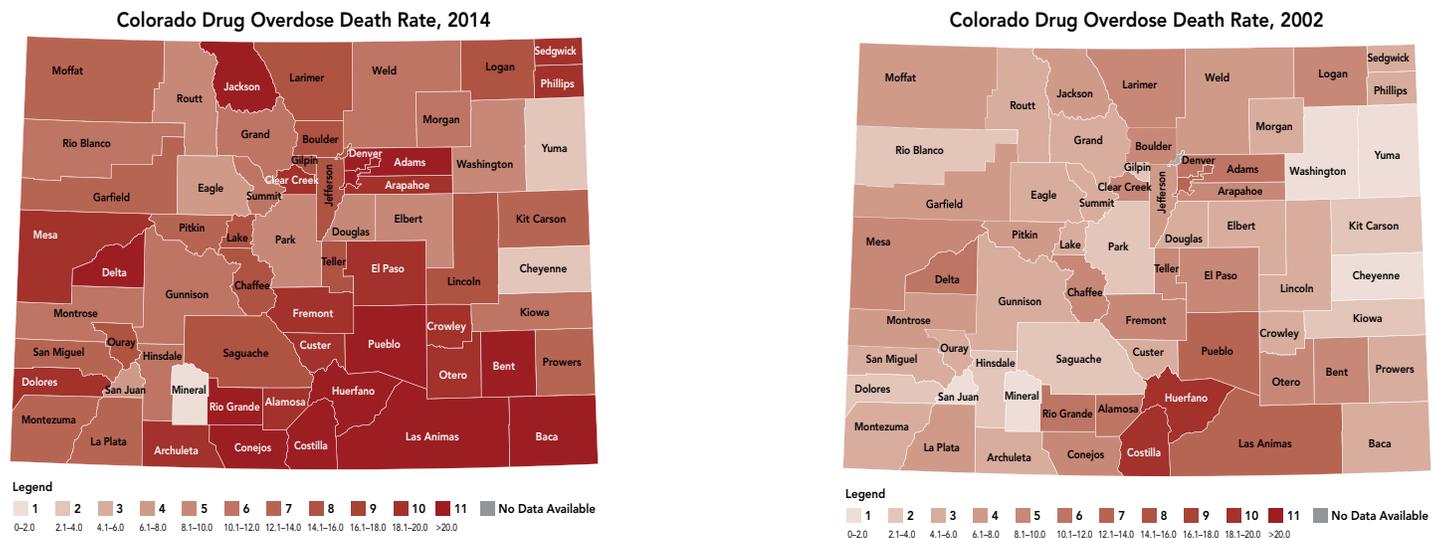
II. The Opioid Epidemic in Colorado

The US has seen a fourfold spike in the number of opioid prescriptions written since 1999; Colorado alone has seen a 100% increase (7.9:100,000 vs 15.8:100,000).¹⁰ The statistics for opioid-related poisoning deaths are equally disturbing (*Figure 2*). The age-adjusted death rate for non-heroin opioid overdose in Colorado rose from 2.0 per 100,000 in 2000 to 6.1 in 2014 (205% increase), while heroin-related deaths increased from 0.8 to 2.8 per 100,000 (250% increase).¹⁰

Colorado Statistics

- From 2012 to 2013, Colorado ranked 12th nationally in the self-reported nonmedical use of opioids.¹¹
- 25% of Coloradans admit to using pain medications in non-prescribed ways.¹²
- 29% of Coloradans have used pain medications belonging to others.¹²
- The number of heroin-related felony arrests increased 170% between 2011 and 2015.¹³
- The number of prescription drug arrests increased 27% between 2011 and 2015.¹³
- The amount of heroin seized annually has increased 827% since 2011.¹³
- Nearly 20,000 dosage units of prescription drugs have been seized annually between 2011 and 2015; however, this number appears to be decreasing.¹³

FIGURE 2. OPIOID-RELATED DEATH IN COLORADO



How Did We Get Here?

In 1986 prominent pain expert Russell Portenoy published a [limited case series of 38 patients](#), which suggested that chronic noncancer pain could be managed safely with high doses of opioids without posing a risk of addiction.¹⁴ His proposal was embraced by those involved in the care of chronic pain patients and endorsed by both the American Academy of Pain Medicine and the American Pain Society.¹⁵ Subsequently, many pharmaceutical companies began to aggressively market their opioids for wider use at increased dosages. This movement — whether intentional or not — was encouraged by the Joint Commission, which in 2001 named pain the “fifth vital sign.”^{16,17}

The growing emphasis on pain control was further encouraged by the Institute of Medicine in its seminal report, *Relieving Pain in America*, which stated that “effective pain management is a moral imperative, a professional responsibility, and the duty of people in the healing professions.” The report also stated that “relieving pain should be a national priority.”¹⁸ Additional pressures have been brought to bear on clinicians by the increasing prevalence of patient satisfaction surveys, which often stress timely and “adequate” pain control. These surveys frequently are tied to clinician remuneration.^{19,20}

Of note, the scientific validity of Portenoy's original work has been called into question; in recent years, the researcher himself has [publicly doubted](#) the relative efficacy and safety of long-term opioid use for the treatment of chronic noncancer pain.²¹⁻²⁴

WHAT'S OUR ROLE?

Emergency physicians write 12% of the opioids taken by patients between the ages of 10 and 29 years, putting our specialty third in the number of prescriptions written, behind family physicians and dentists.²⁵ Clinicians must rely on their own discretion when treating pain, while striking a balance between oligoanalgesia (ie, inadequate pain control) and the unnecessary use of opioids. Likewise, pain management in the prehospital setting also presents a dilemma for EMS professionals, who are compelled to provide adequate relief while remaining cognizant of the potential for opioid misuse and abuse.²⁶

Despite a prevalent fear that failing to give patients "what they want" might violate the [Emergency Medical Treatment & Labor Act \(EMTALA\)](#), this concern is unfounded. Pain is not considered an "emergency medical condition," and discharging patients without relieving their reported discomfort does not violate this mandate.²⁷

There soon may be additional consequences to the prescribing of opioids. In 2015 the [West Virginia Supreme Court](#) ruled that patients who become addicted to prescription medications may sue care providers and pharmacies for addiction-related damages.²⁸ Although the short- and long-term impact of this ruling on emergency medicine remains unclear, it is another important reason to make judicious decisions when administering potentially harmful drugs.

III. Limiting Opioid Use in the ED

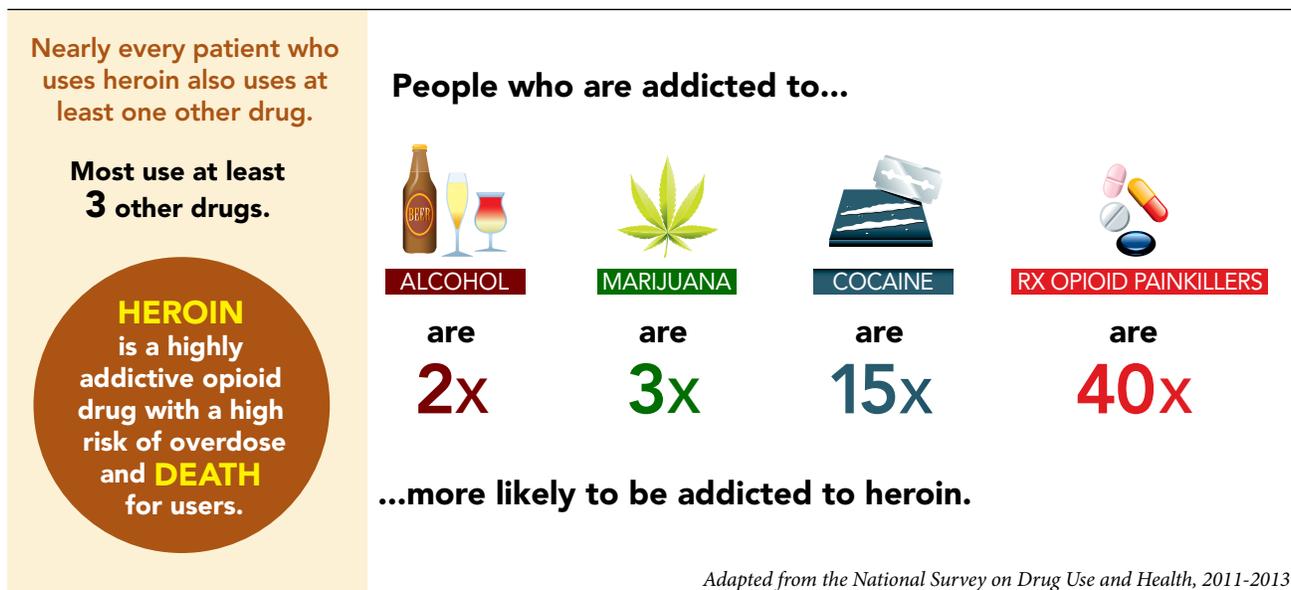
“An ounce of prevention is worth a pound of cure.”
—Benjamin Franklin

The vast majority of those who become addicted to opioids, both prescription and illicit, received their first dose from a doctor. For many years medical providers were taught that oligoanalgesia was morally reprehensible — a rampant problem that could be solved by narcotics. This marketing campaign was further fueled by the rising popularity of patient satisfaction surveys and similar ideologies, US opioid sales from 1999 to 2014 rose by nearly 400%.²⁹ Once reserved for only the most severe pain, these agents quickly became routine even for the treatment of minor discomfort.

Heroin use has increased an estimated 37% per year since 2010; 4 in 5 new heroin users start by misusing prescription opioids (Figure 3).³⁰ Many patients who begin with prescription opioid abuse eventually transition to intravenous (IV) use or IV heroin abuse when they can no longer acquire or afford prescription drugs, or when tolerance dictates injection to achieve the same “high” or prevent withdrawal symptoms.

The first step in reversing these alarming trends is to decrease the frequency and ease with which opioids are dispensed. Emergency clinicians must be vigilant when screening patients, prescribe narcotics conservatively, and provide thorough counsel on the risks of dependency prior to discharge.

FIGURE 3. HEROIN USE AS PART OF A LARGER ABUSE PROBLEM



PRACTICE RECOMMENDATIONS

1. **Opioids are inherently dangerous, highly addictive drugs with significant abuse potential, numerous side effects, lethality in overdose, rapid development of tolerance, and debilitating withdrawal symptoms. They should be avoided whenever possible and, in most cases, initiated only after other modalities of pain control have been trialed.**

Opioids are among the three broad categories of medications that present abuse potential, the other two being central nervous system (CNS) depressants and stimulants. Much like heroin, these agents act by attaching to opioid receptors on nerve cells in the brain, spinal cord, gastrointestinal tract, and other bodily organs. The resultant spike in dopamine not only reduces the perception of pain, it also can manufacture a powerful sense of well-being and pleasure by affecting the brain’s limbic reward system.

When used repeatedly, opioids induce tolerance; greater amounts are required over time as the patient grows increasingly immune to the drug's effects.³¹ This mechanism also contributes to the high risk of overdose following a period of abstinence.³² Tolerance can be lost in times of sobriety, leading relapsed users to take a previously "safe" dose with disastrous results.³³ The effects of opioids are also mediated by specific subtype opioid receptors (mu, delta, and kappa) that are activated by endogenous endorphins and enkephalins. The production of endogenous opioids is inhibited by the repeated administration of outside opioids, which accounts for the discomfort that ensues when the drugs are discontinued.

Besides the significant abuse potential, rapidly developing tolerance, and agonizing withdrawal symptoms that accompany opioids, patients also experience serious side effects such as drowsiness, mental confusion, constipation, and nausea (*Table 1*).³⁴ These complications, which often necessitate additional medical care, can prevent patients from performing daily tasks and remaining active in the workforce.

TABLE 1. SIGNS AND SYMPTOMS OF OPIOID INTOXICATION AND WITHDRAWAL

| Intoxication | Withdrawal |
|---|---|
| Activation or "rush" (with low dosages) and sedation/apathy (with high dosages) | Depressed mood and anxiety; dysphoria |
| Euphoria | Dysphoria and cravings |
| Feelings of warmth, facial flushing, or itching | Piloerection, lacrimation, or rhinorrhea |
| Impaired judgment, attention, or memory | Frequently, "high" attention |
| Analgesia | Hyperalgesia; joint and muscle pain |
| Constipation | Diarrhea and gastrointestinal cramping, nausea, or vomiting |
| Pupillary constriction | Pupillary dilatation and photophobia |
| Drowsiness | Insomnia |
| Respiratory depression, areflexia, hypotension, tachycardia | Automatic hyperactivity (eg, hyperreflexia, tachycardia, hypertension, tachypnea, sweating, hyperthermia) |
| Apnea, sedation, coma | Yawning |

Adapted from: Martin PR, Hubbard JR. Substance-related disorders. In: Ebert MH, Loosen PT, Nurcombe B. Current diagnosis & treatment in psychiatry. New York: McGraw Hill; 2000. p. 233-59.

2. Prior to prescribing an opioid, physicians should perform a rapid risk assessment to screen for abuse potential and medical comorbidities. Alternative methods of pain control should be sought for patients at increased risk for abuse, addiction, or adverse reactions.

Multiple agencies, including the CDC and Colorado Department of Regulatory Agencies, advocate using an [Opioid Risk Tool](#) to evaluate for factors that might predispose patients to addiction and misuse. While this approach has been only validated in cases of chronic pain, screening tools may help emergency clinicians identify high-risk patients.³⁵

High-risk criteria include:

- Personal or family history of substance abuse (eg, alcohol, illicit drugs, prescription drugs)
- Age between 16 and 45 years
- Mental health/psychological history (eg, depression, attention deficit disorder, bipolar disorder, schizophrenia)
- History of sexual abuse

In addition, emergency clinicians should consider comorbid health conditions and exercise caution when prescribing opioids to those at increased risk for adverse drug reactions and accidental overdose.

High-risk comorbidities include:

- Pulmonary comorbidities (eg, chronic obstructive pulmonary disease, sleep apnea)
- Cardiac comorbidities (eg, congestive heart failure)
- Organ dysfunction (eg, renal or hepatic failure)
- Elderly age

3. Emergency physicians should frequently consult Colorado's Prescription Drug Monitoring Program (PDMP) to assess for a history of prescription drug abuse, misuse, or diversion.

As of 2014, with the introduction of [House Bill 14-1283](#), all Colorado-licensed prescribing practitioners with Drug Enforcement Administration (DEA) registrations are required to create an account with the Colorado PDMP.³⁶ Drug monitoring programs have been shown to influence opioid prescribing practices, especially in the case of lost or long-term prescriptions.³⁷

These programs can aid providers in identifying patients with multiple recent prescriptions from various providers (doctor shopping) and help spot those already using other controlled medications on a chronic basis.³⁸ Although there is limited data to indicate the utility of PDMPs in patient outcomes, they clearly can help inform the conversations physicians have with their patients.

4. Emergency physician groups should strongly consider tracking, collecting, and sharing individual opioid prescribing patterns with their clinicians to decrease protocol variabilities.

Prescribing practices vary widely among emergency physicians. Recent data suggests a striking three- to 10-fold difference in the number of opioid prescriptions written by the lowest and highest prescribing emergency physicians.^{39,40} To combat such deviations, we recommend tracking prescribing patterns and providing the comparative data to those within the practice. This information should not be used punitively, but rather to help clinicians understand their own treatment habits and facilitate change. Such local sharing has been shown to significantly reduce the number of opioids prescribed at discharge.⁴¹

5. Strongly consider removing prepopulated doses of opioids from order sets in computerized provider order entry (CPOE) systems.

Computerized provider order entry is an integral part of current emergency department practice. Order sets, which are part of nearly every electronic medical system, have become a popular mechanism for decreasing clicks, standardizing care, and meeting clinical metrics. An order for opioids should not be a default. While robust research does not exist, it is reasonable to assume that the prepopulation of opioid medications on standard order sets increases the number of these prescriptions written in the ED and may bias treating clinicians. According to the Institute for Safe Medication Practices, order sets that contain multiple opioids, multiple doses, or multiple routes of administration also appear to increase the risk of unintentional hospital overdose.

6. Opioid alternatives and nonpharmacological therapies should be used to manage patients with acute low back pain, in whom opioids are particularly detrimental. Opioids should be prescribed only after alternative treatments have failed.

Countless patients present to US emergency departments every year for acute low back pain, many of whom expect and are prescribed narcotic pain medications.³⁸ However, research shows no significant difference in relief between nonsteroidal anti-inflammatory medications and opioids.⁴² Moreover, opioids appear to increase the risk of prolonged disability at 1 year and decreased function at 6 months.^{43,44} Alternative treatments, including early mobilization and physical therapy, can improve return to function and decrease disability and should be used as first-line agents in the treatment of this complaint.

7. Potential drug interactions must be evaluated, and opioids should be avoided in patients already taking benzodiazepines, barbiturates, or other narcotics.

The concomitant prescribing of opioids for a patient taking benzodiazepines increases the risk of unintentional overdose, respiratory depression, and death.⁴⁵ Patients taking opioids and benzodiazepines together have 10 times the risk of fatal overdose over those taking opioids alone.⁴⁶ Patients who are taking multiple opioid prescriptions also are at a significant risk of overdose.⁴⁷

8. **Patients with chronic pain should receive opioid medications from one practice, preferably their primary care provider or pain specialist. Opioids should be avoided in the emergency department treatment of most chronic conditions. Emergency physicians should coordinate care with a patient’s primary care or pain specialist whenever possible, and previous patient-physician contracts regarding opioid use should be honored.**

Clinicians often require patients with chronic pain to sign an opioid contract, which may mandate the use of a single prescribing provider and pharmacy.⁴⁸ It is important to honor these control documents, which frequently outline what the patient can do to manage acute exacerbations of pain and provide guidance for emergency medical providers.

9. **Clinicians should abstain from adjusting opioid dosing regimens for chronic conditions and avoid routinely prescribing opioids for acute exacerbations of chronic noncancer pain.**

According to the CDC, it is inappropriate for emergency medicine clinicians to treat chronic pain.⁴⁵ Long-term medication regimens should be escalated and managed only by a single provider outside the acute setting. In the rare instance that a patient’s drug regimen must be adjusted in the emergency department, it should only be done in direct collaboration with a pain specialist.

Nonopioid treatments can and should be provided for acute exacerbations (see Alternative Pathways section for recommended modalities). Benzodiazepines and other sedating agents can place the patient at higher risk of overdose and should be avoided. If the patient is not being seen by a pain specialist, a referral should be initiated.

10. **“Long-acting” or “extended-release” opioid products should be avoided for the relief of acute pain.**

Long-acting or extended-release opioids are indicated only for chronic pain and should not be used for the treatment of acute or intermittent symptoms.⁴⁹ These agents are especially dangerous in opioid-naïve patients, even at recommended dosages. Long-term opioid use is nearly 4.5 times higher in those started on long-acting opioids compared to immediate release.⁹

Short-acting opioids are appropriate for the treatment of acute pain that cannot be managed with other modalities. They include:⁵⁰

- Codeine
- Oxycodone — immediate release (eg, Percocet, Percodan)
- Hydrocodone (eg, Vicodin, Lorcet, Lortab, Norco)
- Morphine — immediate release
- Hydromorphone (eg, Dilaudid)

Long-acting and extended-release forms include:

- Oxycodone — sustained release (eg, OxyContin)
- Methadone (eg, Dolophine)
- Morphine — sustained release (eg, MS Contin, Avinza, Kadian)
- Fentanyl — transdermal (eg, Duragesic)
- Oxymorphone — extended release (eg, Opana ER)

Any clinician who prescribes long-acting or extended-release opioids should complete the [FDA Risk Evaluation and Mitigation Strategies \(REMS\)](#) training program.

11. Patients receiving controlled medication prescriptions should be able to verify their identity.

Patients should be prepared to show identification if opioid pain prescriptions are to be filled. This corroboration enables a thorough evaluation of the individual’s prescription drug monitoring profile and adds another safeguard against “doctor shopping.”⁴⁸

12. Patients who receive opioids should be educated about their side effects and potential for addiction, particularly when being discharged with an opioid prescription.

Evidence suggests that clinicians do a poor job of educating patients on the risks of opioids (*Figure 4*). More than 50% of emergency department patients discharged with opioid prescriptions admit to misusing them in the 30-day period following their visit.⁵¹ In addition, nearly 80% of new heroin users between the ages of 12 and 49 report the previous nonmedical use of opioids.⁵²

All patients are at risk for opioid misuse and abuse. A prior history of substance abuse, use of psychotropic drugs, and younger age increase this potential; however, even an opioid-naïve patient with no risk factors can develop dependence.^{53,54} When prescribing these agents, it is always appropriate to initiate a detailed discussion about the significant risk of complications and addiction (*Table 2*).

FIGURE 4. PUBLIC PERCEPTION OF OPIOID RISK

Only 1 in 5 Americans consider prescription pain medication to be a serious safety threat.

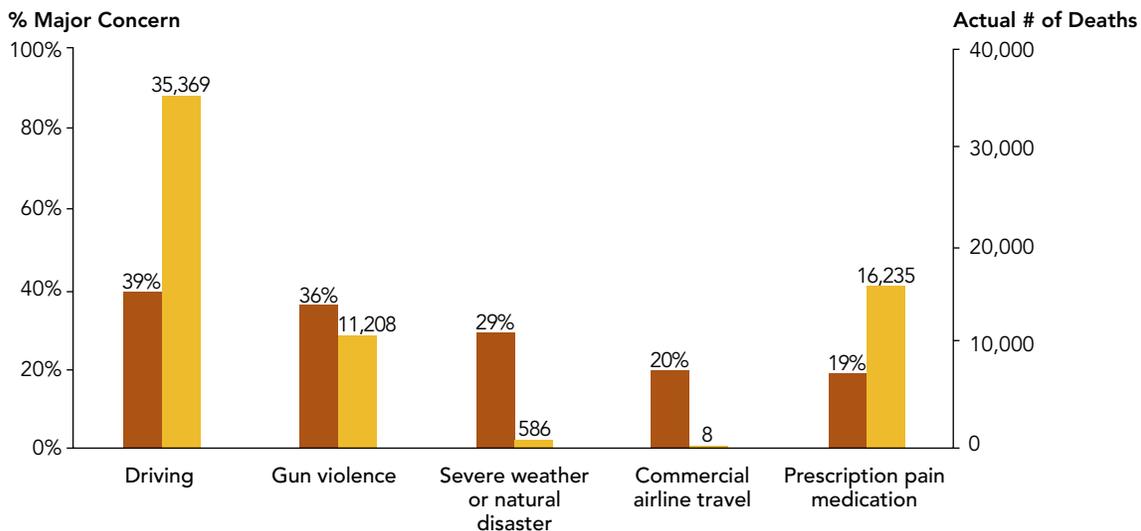


TABLE 2. THE DANGERS OF OPIOIDS (INFORMATION TO BE SHARED WITH PATIENTS)

| Common side effects ⁵⁵ | Serious side effects of chronic opioid use |
|--|--|
| <ul style="list-style-type: none"> • Nausea/vomiting • Constipation • Pruritus • Euphoria • Respiratory depression, particularly with the simultaneous use of alcohol, benzodiazepines, antihistamines, muscle relaxants, or barbiturates • Lightheadedness • Dry mouth | <ul style="list-style-type: none"> • Cardiac abnormalities, including prolonged QTc and torsades de pointes⁵⁶ • Sudden cardiac death with the concomitant use of benzodiazepines and methadone⁵⁷ • Hormonal disruptions, including decreased testosterone in males⁵⁸ • Decreased luteinizing hormone, follicle-stimulating hormone, and fertility in women⁵⁹ • Musculoskeletal compromise, including an increased risk of osteoporosis⁶⁰ • Immunosuppression⁶¹ • Inhibition of cellular immunity via delta and kappa receptors⁶² • Hyperalgesia (ie, upregulation of receptors and increased tolerance)⁶³ • Sleep disturbances (eg, shortened deep sleep cycle)⁶⁴ • Delayed or inhibited gastric emptying, increased sphincter tone, and blockade of peristalsis⁶⁵ |

13. When considering opioids, clinicians should prescribe the lowest possible effective dose in the shortest appropriate duration (eg, <3 days).

Differences in pharmacological potency largely are determined by the actual doses prescribed.⁶⁶ Studies have demonstrated a strong correlation between high daily doses and overdose death.⁶⁷⁻⁶⁹ When these agents are selected for pain management, they should be administered at the lowest possible effective dose and for the shortest duration, generally no more than 3 days.^{38,50,70} The duration of this first opioid prescription can have a significant impact on the risk of long-term use and abuse. After just 7 days, 13.5% of patients become long-term users (double the rate of patients who have only 1 day of use).⁹ Leftover medications frequently are misused; 70% of abusers report receiving these drugs from friends or family members.⁷¹

14. Emergency departments should refuse to refill lost or stolen opioid prescriptions.

Patients who divert or abuse controlled medications may claim their prescription was lost or stolen. In these clinical scenarios, it is best to refuse refill requests; however, it may be reasonable to administer a single dose in the emergency department.¹ When warranted, clinicians should contact the patient's prescribing physician to discuss the situation and confirm the request. If this cannot be done, the prescriptions should not be filled.⁵⁰

POLICY RECOMMENDATIONS

1. As has been done in other states, the Colorado PDMP should develop an automated query system that can be more readily integrated into electronic health records and accessed by emergency clinicians.

Although the Colorado PDMP is an important tool for preventing inappropriate opioid prescribing and misuse, it is cumbersome to implement and often incompatible with high-acuity emergency department workflows. We favor the integration of a process that provides automatic queries and responses that obviate time-consuming manual data entry. To help improve functionality and encourage widespread use, the PDMP should be optimized with improvements such as automatic queries linked to emergency department registration, and automatic queries and/or data population in electronic medical records.⁷² Systems that incorporate such technology are overwhelmingly favored by clinicians, 98% to 100% of whom report improved access.⁷³

2. Pain control should be removed from patient satisfaction surveys, as they may unfairly penalize physicians for exercising proper medical judgement.

When used as a barometer of quality medical care, patient surveys regarding pain control may unfairly punish physicians for exercising proper medical judgement. This fear of patient dissatisfaction and its ensuing penalties can lead clinicians to prescribe potentially harmful medications, even when not medically indicated. Despite mixed evidence on the connection between opioids and poor hospital survey scores, the effects of these questionnaires on clinician behavior is well understood.⁷⁴⁻⁷⁶ A reported 28% admit prescribing these drugs for reasons that can be tied directly and indirectly to patient satisfaction.⁷⁷

Pain management should be removed from future drafts of the [Emergency Department Patient Experience of Care \(EDPEC\)](#) survey, [inpatient Hospital Consumer Assessment of Healthcare Providers and Systems \(HCAHPS\)](#) questionnaire, and instruments used by private medical groups to gauge patient satisfaction. Physicians should be empowered to manage pain using their own clinical acumen, and high scores should be removed as a proxy for appropriate medical care.

3. Opioid prepacks should be avoided or eliminated from emergency departments if 24-hour pharmacy support is available.

Dispensing opioids from the emergency department should be discouraged. Although drug prepacks carry the same risks as any other prescription, small doses of opioids (<24-hour supply) are not tracked by the Colorado Prescription Drug Monitoring Program. This loophole makes it difficult to identify overuse or addiction, particularly in the acute setting or when treating an unfamiliar patient.

If 24-hour pharmacy support is unavailable (eg, in a rural community), providers should use their best clinical judgement when dispensing opioids from the emergency department. In the interim, only the minimum quantity anticipated for pain control should be administered and the patient should be directed to the nearest pharmacy for additional medication.

4. Pain should not be considered the “fifth vital sign.”

Long regarded as the “fifth vital sign,” pain has developed enormous leverage in the American medical lexicon. While there is great merit to assessing a patient’s discomfort, it should not be given the same level of consideration as heart rate, respiratory rate, blood pressure, and other concrete measurements of health.

We have overemphasized pain; as a result, physicians often feel pressured to prescribe opioids to normalize this “vital sign.” Rather than making informed medical decisions about the best way to address a patient’s complaints, many providers have come to equate an abnormally high pain score to physical abnormalities such as hypotension, tachycardia, or hypoxia. While emergency physicians are trained to address the latter elements immediately, pain is a more complex process that involves significant provider discretion.

In addition, pain scores should be excluded from triage questionnaires and should not carry the same weight as other vital signs measured during a patient’s stay in the emergency department.

IV. Alternatives to Opioids for the Treatment of Pain

"We cannot solve our problems with the same thinking we used when we created them."

—Albert Einstein

Using nonopioids to address pain management is a novel strategy called **Alternatives to Opioids (ALTO)**. The first Colorado ALTO program was implemented in 2016 at **Swedish Medical Center** in Englewood, a busy level-1 trauma center. The press has inaccurately branded such emergency departments as "opioid-free EDs," an exclusionary term that misrepresents the care provided. ALTO simply recommends using opioids infrequently, primarily as second-line treatments and only after effective nonopioid alternatives have been trialed.

Such programs should be studied by all ED providers and uniformly adopted by hospitals. Through education, the implementation of novel concepts, and partnerships within the community, an ALTO-based multidisciplinary approach can transform pain management practice in Colorado.

Treatment Goals

- Utilize nonopioid approaches as the first-line therapy.
- Utilize opioids as a second-line treatment.
- Opioids can be given as rescue medication.
- Discuss realistic pain management goals with patients.
- Discuss addiction potential and side effects with those using opioids.

The ALTO program utilizes the CERTA concept: **channels, enzymes, receptors, targeted, analgesia**. The CERTA concept optimizes the following medication classes in place of opioids: Cox-1, 2, 3 inhibitors, NMDA receptor antagonists, sodium channel blockers, nitrous oxide, inflammatory cytokine inhibitors, and GABA agonists/modulators. Specific agents include NSAIDs and acetaminophen, ketamine, lidocaine, nitrous oxide, corticosteroids, benzodiazepines, and gabapentin.

The protocol targets multiple pain receptors, making use of nonopioid medications, trigger-point injections, nitrous oxide, and ultrasound-guided nerve blocks to tailor a patient's pain management needs and substantially decrease opioid use. Examples of this approach include:

- Treating renal colic with intravenous lidocaine;
- Managing acute lower back pain with a combination of oral nonopioids and topical pain medications with directed trigger-point injections;
- Treating extremity fractures with ultrasound-guided nerve blocks; and
- Using an algorithm to manage acute headache/migraine pain with a variety of nonopioid medications.

Only if patients' pain is not adequately managed using ALTO techniques are opioids used as a rescue medication.

Alternative Medications

Ketamine

Ketamine has been used extensively in the emergency department for procedural sedation and rapid-sequence intubation. Recent research has demonstrated that a low (subdissociative) dose (0.1-0.3 mg/kg IV) is safe and effective for pain management.⁷⁸⁻⁸¹ Due to the relatively short-lived analgesic effects of the drug, the initial bolus can be followed by an infusion (9-30 mg/hour) for sustained effect.⁹²⁻⁹⁵ Caution should be used in any patient with a significant psychiatric history, and use should be avoided in anyone with a history of post-traumatic stress disorder.

Lidocaine

Lidocaine is an ideal agent for treating visceral and central pain, and also may be useful when narcotics are inefficient or lead to undesirable side effects. Intravenous or topical (4% or 5% transdermal patch) doses are effective for controlling renal colic and neuropathic pain associated with conditions such as diabetic neuropathy, postoperative or post-herpetic pain, headaches, and neurological malignancies.⁸²⁻⁸³ Topical lidocaine also is an appropriate treatment for low-back pain.⁸⁴⁻⁸⁸ Intravenous lidocaine should be used with caution in any patient with a significant cardiac history. Side effects of the drug are minimal when used sparingly.

Trigger-Point Injections

A focal area of spasm and inflammation (eg, trapezius, rhomboid, low back) can be associated with chronic myofascial pain syndrome. Palpation of the trigger point should fully reproduce pain, which may be referred to other areas (eg, nodule or taut band of spasm). Dry needling will cause a disruption of the spastic feedback loop by interrupting abnormal activity in the sensory and motor nerve endings and muscle fibers. Using local anesthetics such as marcaine or lidocaine for this procedure often resolves pain and decreases soreness. Indications for this approach include a palpable, taut band or nodule, reproducible pain with palpitation, or a chronic painful condition.⁸⁹⁻⁹² Trigger-point injection has also been found to be a successful treatment strategy for migraines.⁹³⁻⁹⁵

Nitrous Oxide

Nitrous oxide is a tasteless, colorless gas administered in combination with oxygen via mask or nasal hood at a maximum concentration of 70%. The gas is absorbed via pulmonary vasculature and does not combine with hemoglobin or other body tissues. Featuring a rapid onset and elimination (<60 sec), the agent contains both analgesic and anxiolytic properties. It typically is used in combination with a local anesthetic or other pain medications. Pulse oximetry is the only patient monitoring required. There are no fasting requirements; patients can drive after administration; and no IV line is needed. There is solid evidence to support its role in the management of pediatric pain and sedation, prehospital pain relief, colonoscopy, and bronchoscopy.⁹⁶⁻⁹⁹ Additional indications for the use of nitrous oxide include laceration repair, incision and drainage, wound care, foreign body removal, central venous access, peripheral venous access, fecal disimpaction, and as an adjunct for dislocations and splinting.

NSAIDs

Nonsteroidal anti-inflammatory drugs (NSAIDs) can be used to manage most painful conditions, particularly musculoskeletal pain, migraine, and renal colic.¹⁰⁰ These agents can be administered intravenously, intramuscularly, orally, and topically. For ketorolac, literature supports using a maximum intravenous dose of 15 mg, as higher doses do not increase efficacy and may introduce unnecessary harm.^{101,102} Caution should be used in patients with renal dysfunction or heart failure, or when there is a concern for bleeding.¹⁰³ For these subpopulations, consider topical choices such as diclofenac gel or a patch. Topical agents have significantly lower systemic absorption and lower rates of adverse drug events.

Haloperidol

Haloperidol is a “typical” or first-generation antipsychotic agent. It can be administered intravenously, intramuscularly, and orally and often is used for the treatment of psychiatric emergencies. The drug also can be used in low doses as an adjunct treatment for pain and nausea. At doses of 2.5 to 5 mg, haloperidol is effective for the management of abdominal pain and migraine-associated headaches.^{104,105} Anecdotally there has been a rise in the number of haldol “allergies.” If a patient’s reaction is suspected to stem from a true allergy rather than an extrapyramidal side effect of the drug, olanzepine is a reasonable alternative.

Dicyclomine

Dicyclomine is an antispasmodic and anticholinergic agent that acts to alleviate smooth muscle spasms in the gastrointestinal tract. It is effective for treating abdominal pain, particularly caused by cramping.¹⁰⁶⁻¹⁰⁸ The drug can be administered either orally or intramuscularly, but should NOT be administered intravenously. Due to its anticholinergic action, dicyclomine should be avoided in the geriatric population.¹⁰⁹

Special Populations

Not all patients are appropriate candidates for each agent suggested in the ALTO treatment protocol. All medications should be administered with thoughtful consideration of patient-specific factors such as age, organ function, comorbidities, and other medications being taken.

Geriatric Patients

Great care should be taken when treating elderly patients. Some of the therapies suggested may be inappropriate for use in this vulnerable population, including dicyclomine, haloperidol, diphenhydramine, and muscle relaxants. The Beers Criteria list is a well-established resource that should be consulted when making treatment decisions for patients older than 65 years.¹⁰⁹ When possible, consider prescribing topical agents instead of oral or intravenous drugs. Also consider recommending heat, massage, and physical therapy on discharge for musculoskeletal pain.

Renal Dysfunction

Not all ALTO agents are safe for patients with renal dysfunction, particularly NSAIDs. In patients who cannot receive systemic NSAIDs, consider prescribing topical agents such as diclofenac gel or patches.

Heart Failure

Not all ALTO agents are recommended for use in patients with heart failure, particularly steroids and NSAIDs. For patients in whom these medications should be avoided, consider prescribing topical alternatives.

Pregnant Patients

Pregnant women should be excluded from the ALTO protocol. Many of these agents are contraindicated in pregnancy, including haloperidol, NSAIDs, and valproic acid.

Pediatric Patients

Do not use the ALTO protocol when managing children younger than 15 years or less than 40 kg. Although ALTO principles are applicable to the pediatric population, precautions should be considered and agents must be dosed appropriately.

PRACTICE RECOMMENDATIONS

Note: Many of the recommendations in the following section are based on the ALTO clinical model. A full discussion of each drug and procedure is beyond the scope of these guidelines. Appropriate references are listed, however. (See *Figure 5* for specific treatment pathways by indication.)

- 1. All emergency departments should implement ALTO programs and provide opioid-free pain treatment pathways for the following conditions (see *Appendix 1*):**
 - a. Acute on chronic opioid-tolerant radicular lower back pain
 - b. Opioid-naive musculoskeletal pain
 - c. Migraine or recurrent primary headache
 - d. Extremity fracture or joint dislocation
 - e. Gastroparesis-associated or chronic functional abdominal pain
 - f. Renal colic
- 2. Emergency departments should integrate ALTO into their computerized physician order entry systems to facilitate a seamless adoption by clinicians.**
- 3. For musculoskeletal pain, consider a multimodal treatment approach using acetaminophen, NSAIDs, steroids, topical medications, trigger-point injections, and (for severe pain) ketamine.**
- 4. For headache and migraine, consider a multimodal treatment approach that includes the administration of antiemetic agents, NSAIDs, steroids, valproic acid, magnesium, and triptans. Strongly consider cervical trigger-point injection.**

5. For pain with a neuropathic component, consider gabapentin.
6. For pain with a tension component, consider a muscle relaxant.
7. For pain caused by renal colic, consider an NSAID, lidocaine infusion, and desmopressin nasal spray.
8. For chronic abdominal pain, consider low doses of haloperidol, diphenhydramine, and lidocaine infusion.
9. For extremity fracture or joint dislocation, consider the immediate use of nitrous oxide and low-dose ketamine while setting up for ultrasound-guided regional anesthesia.
10. For arthritic or tendinitis pain, consider an intra-articular steroid/anesthetic injection.
11. Outpatient prescribing patterns should follow ALTO principles by minimizing opioids and utilizing a multimodal approach to adequately control pain. (See *Appendix 2* for discharge prescribing guidelines.)

FIGURE 5. PAIN PATHWAYS BY INDICATION



POLICY RECOMMENDATIONS

1. Hospitals should update institutional guidelines and put policies in place that enable clinicians to order and nurses to administer dose-dependent ketamine and IV lidocaine in non-ICU areas. (For more information, [download the Denver Health policy on Ketamine for Acute Pain in the ED.](#))
2. Emergency departments are encouraged to assemble an interdisciplinary pain management team that includes clinicians, nurses, pharmacists, physical therapists, social workers, and case managers.
3. Reimbursement should be available for any service directly correlated to pain management, the reduction of opioid use, and treatment of drug-addicted patients.

Marijuana Use in Chronic Pain



Patients frequently inquire about the use of medical marijuana for the treatment of painful conditions. Although a number of studies have been conducted on the drug's potential role in the treatment of chronic pain, results are limited. Most of the trials have been short, and many have focused on neuropathic pain resulting from a narrow range of etiologies; fewer than 3,000 patients have been studied.

Marijuana plants are comprised of more than 65 cannabinoids, including tetrahydrocannabinols (THC) and cannabidiols (CBD). It is important to note that while studies have shown the effectiveness of treating pain with a combination of these two chemicals, more research is needed to identify the positive and negative attributes of the remaining active ingredients.¹¹⁰⁻¹¹²

The current scheduling nature of the drug presents several roadblocks for researchers.^{113,114} While previous studies have focused on the use of medical marijuana for alleviating chronic pain, there are interesting links between recently enacted state laws and an overall decline in opioid-linked overdoses and deaths. According to a study that examined medical marijuana laws and opioid analgesic overdose rates from 1999 to 2010, "States with medical cannabis laws had a 24.8% lower mean annual opioid overdose mortality rate compared with states without medical cannabis laws."¹¹⁵

At this time COACEP takes no position on the use of medical marijuana for the control of chronic pain, and recommends that emergency physicians refrain from prescribing or advocating its use until definitive studies have been conducted.

V. Harm Reduction in the Emergency Department

“Patients come to us for care, not for judgment.”

—Greg L. Henry, MD

Harm reduction is a set of practical strategies and ideas aimed at reducing negative consequences associated with drug use. The approach is predicated on respecting patients and their choices, removing stigma, and meeting them “where they are” and not where we believe they *should* be. In a perfect world, patients would be compelled to quit by logical physician counseling. In reality, however, patients must possess the internal resolve to pursue sobriety before they can enter into recovery; even the most well-meaning advice can be counterproductive if it is disjunct with the situation. The simplistic directive to “stop using because you may die” is ineffective and often deleterious to the physician-patient relationship.

Harm reduction aims to prevent the spread of infection, including HIV/AIDS, hepatitis B and C, sepsis, and endocarditis; reduce the risk of overdose and other drug-related fatalities; and decrease the negative effects drug use may have on individuals and communities.

Of the thousands of patients who present with opioid-related emergencies, ranging from withdrawal to constipation to overdose to injection-related infections, the fact is that most are not ready to quit on the day they visit the ED. Given the unprecedented scope and destruction of this epidemic, clinicians can and must do better in counseling and treating the addicted patient who is not ready to stop using.

Initially developed in response to the US AIDS epidemic, the harm reduction philosophy primarily has been used in recent years for the treatment of people who inject drugs (PWID); however, its principles are broadly applicable to most substance-abusing patients. Injection drug use is intertwined with the growing opioid epidemic; roughly 75% of injection heroin addictions originate with prescription opioids.³⁰ Significant risks are associated with this behavior, as injection drug use accounts for between 12% and 26% of new HIV diagnoses and the majority of new hepatitis C infections.^{116,117}

Health care providers have been shown to have a negative view of patients with substance abuse problems, a dynamic that erodes both clinician empathy and patient care.¹¹⁸ A quote from the [National Harm Reduction Coalition patient manual](#) captures the stigma these patients feel when receiving treatment in the emergency department:

“Only use the emergency room as a last resource for getting your abscess drained. Chances are the doctor you see will not be too sympathetic to your plight, under-medicate you for pain, make a large incision, and provide no follow-up or aftercare.”

As a result, patients who abuse opioids and injection drugs often go to great lengths to avoid medical care or sign out before treatment is complete. It is imperative that we begin to change these perceptions by making the ED a welcoming place for those who seek care (*Table 3*). Drug addiction truly is a physiological disease, defined by genetic predisposition and long-term changes in brain structure and function. Clinically, patients often suffer from uncontrollable, compulsive drug cravings that render them powerless even in the face of catastrophic social and health-related consequences.¹¹⁹

TABLE 3. PITFALLS IN THE TREATMENT OF PWIDS

- It is not uncommon for clinicians to assume that drug users don't care about their health; such misperceptions are noticed by patients. Fearing this negativity and condescension, many drug users avoid the emergency department by trying to “doctor” themselves.
- Some providers automatically undertreat or minimize pain when they suspect drug-seeking behavior, or perform procedures (eg, abscess drainage) with inadequate anesthesia in order to “teach the patient a lesson.”
- Health care providers occasionally bring in other colleagues to gawk at patients without their permission. However, these insensitive “Look at the crazy thing this junkie did to herself/himself!” conversations are inappropriate.
- Nurses and doctors should not contact law enforcement without the patient's knowledge.
- Vague or unrealistic aftercare plans are futile.
- Long speeches and shaming life lectures about drug use can and should be replaced by educational information about risk reduction.
- Patients often overhear health care providers talking about them negatively outside of the room or behind a curtain. Assuming the patient can't hear them, clinicians can be heard warning other providers about the “druggie” or “drug seeker.”

Harm reduction and therapeutic relationship-building is especially pertinent in Colorado, where buprenorphine and methadone treatment programs are scarce and plagued by long waiting lists. This inaccessibility means that most opioid users will continue to abuse these medications, many within hours of discharge. There is one great barrier that remains to be addressed, namely the fact that most emergency providers are unfamiliar with harm reduction principles, unaware of how to perform effective interventions, and lacking the education and resources needed to integrate harm reduction into their practices.

PRACTICE RECOMMENDATIONS

1. Patients who abuse opioids should be managed without judgment; addiction is a medical condition and not a moral failing. Caregivers should endeavor to meet patients “where they are,” infusing empathy and understanding into the patient/medical provider relationship.

It is imperative that we work to better understand addiction and end the stigma associated with prescription opioid abuse. A harm reduction mentality, as outlined below, offers a pragmatic approach to mitigating the associated risks without casting blame or alienating those who seek help.

Allow patients to seek treatment—or not—at their own pace (*Table 4*). Pressuring or forcing patients into treatment for substance abuse is fruitless, violates the autonomy, and creates an adversarial rather than therapeutic relationship.

TABLE 4. COUNSELING PATIENTS WITH ADDICTION

| DO | DON'T |
|--|---|
| <ul style="list-style-type: none"> • Use neutral language when referring to drug use. • Assess the patient’s readiness to change. • Respect the patient’s decisions regarding treatment. • Encourage patients to be honest with providers about any drug use. • Make information available that is specific to the needs of the patient. • Remember harm reduction principles: <ul style="list-style-type: none"> — Accept and don’t condemn patients who use drugs. — Offer resources without pressure or judgment. — Improve quality of life for patients with opioid use disorders. — See the individual as a person, rather than their addiction. | <ul style="list-style-type: none"> • Use negative terminology such as “addict” or “junkie.” • Tell the patient they are ruining their life or are going to die. • Attempt to pressure the patient to begin substance abuse treatment. • Make assumptions about the mental or physical health of patients with opioid use disorders. • Let the stigma associated with injection drug use affect how a patient is treated. |

2. Every emergency clinician should be well-versed in the safe injection of heroin and other intravenous drugs, and understand the practical steps for minimizing the dangers of overdose, infection, and other complications. When treating patients with complications of IV drug use, injection habits should be discussed and instruction should be given about safe practices.

Heroin offers a cheaper high for patients addicted to prescription opioids, a factor that has contributed to the drug’s increasing popularity and contributed to a rise in communicable (eg, HIV and hepatitis C and B) and noncommunicable diseases (eg, abscesses, cellulitis, and endocarditis). Data collected by [Denver’s Harm Reduction Action Center](#) estimates that 24% of PWID are hepatitis C-positive; injection drug use is the leading transmission method of this pathogen in the US. A [notorious HIV outbreak in one tiny, rural Indiana town](#) is a cautionary tale about what can happen when safe injection practices are ignored. The tightknit community of Austin (population 4,000) was ravaged by the virus in 2015 when 190 new cases were diagnosed — all of which could be attributed to a local epidemic of injection oxymorphone abuse.

The vast majority of medical providers are unfamiliar with drug injection methods and are unprepared to discuss safeguards with their patients. Most IV drug users learn from their peers, from whom they can inherit dangerous habits. Counseling about safer injection practices should be offered prior to discharging any IV drug user (*Figure 6*). The following guidelines can be shared to help reduce the substantial risk of infection and overdose.

Avoid using alone. Drug users should inject in the presence of others for safety. [Colorado's Good Samaritan Law](#) protects individuals who call 911 to report an overdose, exempting them and the patient from arrest and prosecution for small drug charges.

Always carry naloxone. The evidence in support of naloxone is staggering. Since 1996 the opioid reversal agent has saved more than 26,000 lives.¹²⁰ Because most overdoses are witnessed and transpire over hours, naloxone is our patients' most powerful tool for preventing overdose death. The antidote should be dispensed in the emergency department to anyone suspected of abusing IV drugs, and at-risk patients should be encouraged to keep the naloxone within reach at all times.

Try tester shots. Variations in drug potency are common, especially with the popular practice of cutting or substituting heroin for fentanyl or carfentanyl. When trying a new product, patients should use a small test dose (ie, tester shot) to gauge its potency.

Avoid sharing equipment. Although HIV can survive only minutes outside the body, it can live for days to weeks inside hollow-bore needles. The risk of transmission is highest when drug paraphernalia is shared between multiple users within a short period of time. Hepatitis B and C are particularly virulent, and can survive between 1 and 3 weeks outside of the body. These pathogens can be spread easily via injection equipment (eg, needles, syringes, cookers (spoons), injection water, and cottons) (*Figure 7*).

Practice good hygiene. Always encourage hand washing and cleansing of the injection site. If no running water is available, benzalkonium chloride towelettes can be a good substitute. Recommend the use of alcohol pads to sterilize skin prior to injection.

Use sterile equipment. Communicable disease can be avoided by not sharing needles. Reusing equipment increases the risk of bacterial contamination. Patients can obtain new equipment for free through local syringe access programs (formerly referred to as needle exchange programs). If such resources are unavailable, advise patients to purchase needles, syringes, and alcohol pads at pharmacies. If new paraphernalia cannot be obtained, patients should clean their existing equipment with bleach for at least 2 minutes, flushing all components, and rinsing with clean cold water. The average injection drug user injects 3 to 5 times per day.

Use sterile water to prepare the product. Many infections stem from unsafe water supplies; some users report using river water, toilet water, or saliva to dissolve product into an injectable form. **Bottled water is NOT sterile!** Optimally, patients will have access to single-use containers of sterile water. If these are unavailable, water should be sterilized by heating it at rolling boil for 10 minutes.

Protect veins. Patients should be advised to use highest gauge (smallest) needle possible; rotate injection sites, starting distally; drink water to remain well hydrated; use citric acid if an acidic solution is required to dissolve product (never lime, lemon, or orange juice, which are more sclerotic and carry a higher risk of infection). Advise against using the jugular, femoral, or pedal veins, which can further increase the danger of infection.

FIGURE 6. EDUCATING IV DRUG USERS

Safer Injecting (For Patients)

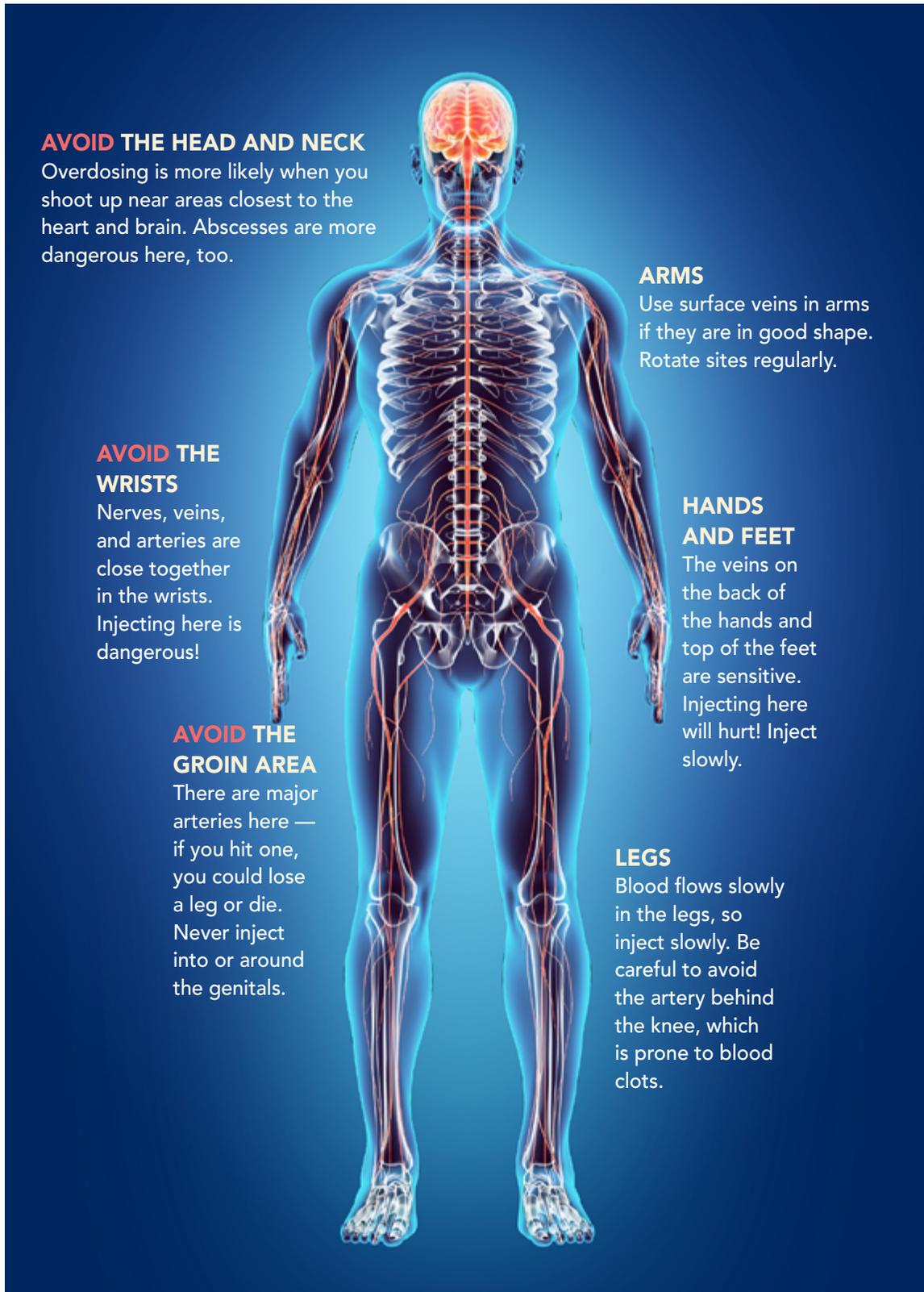


FIGURE 7. COMMON SUPPLIES DISPENSED THROUGH SYRINGE ACCESS PROGRAMS



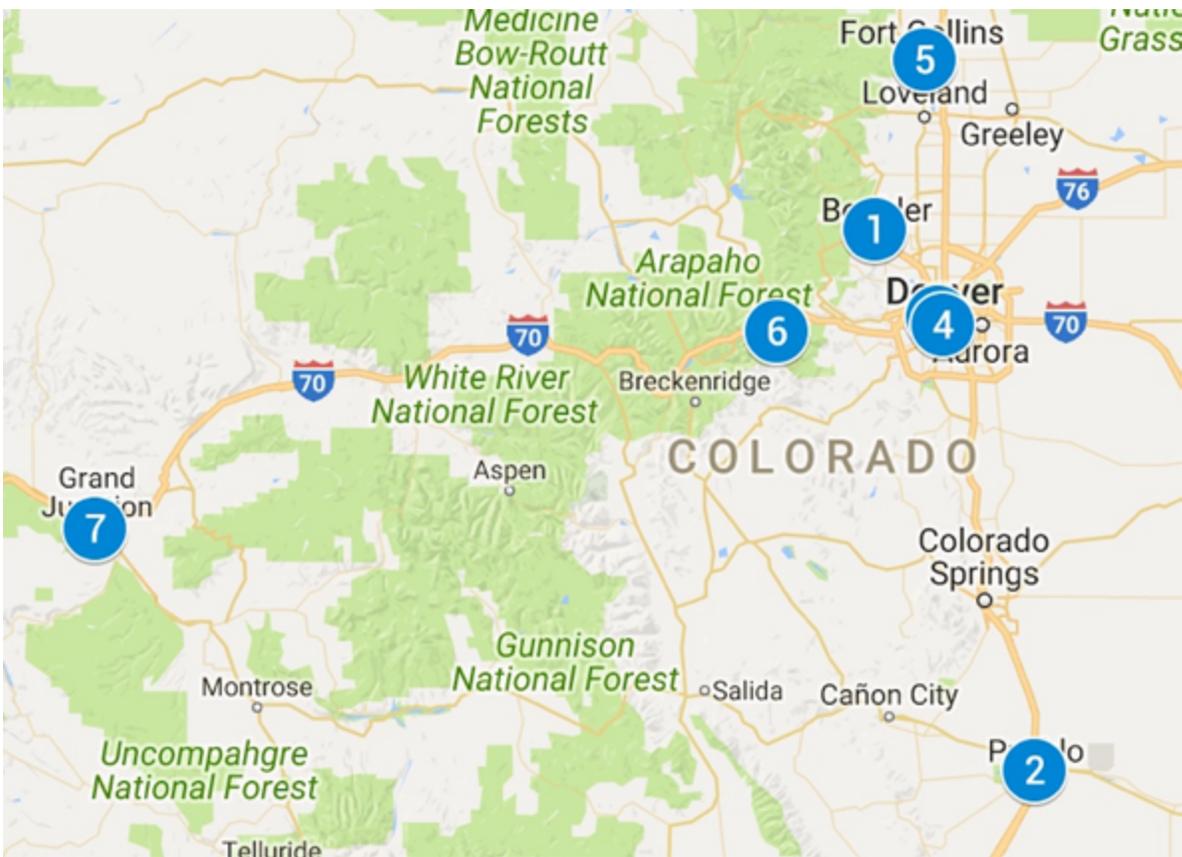
3. Emergency department patients who inject drugs should be referred to local syringe access programs, where they can obtain sterile injection materials and support services such as counseling, HIV/hepatitis testing, and referrals.

Patients engaged in such behavior should be counseled on the risks of bloodborne pathogens, particularly HIV and hepatitis, which can be transmitted via shared needles and drug preparation equipment. Syringe access programs have demonstrated cost-effectiveness in reducing HIV transmission and prevalence.¹²¹ The additional resources these centers often provide (eg, sterile water, cooking units, and cleaning solutions) also can help reduce such dangers.

The World Health Organization (WHO) suggests a “compelling case that needle and syringe programs substantially and cost effectively reduce the spread of HIV among IV drug users and do so without evidence of exacerbating injecting drug use at either the individual or societal level.”¹²² In 2000 the American Medical Association (AMA) adopted a position strongly supporting the efficacy of these programs when combined with addiction counseling.¹²³

A complete list of local syringe access/harm reduction programs can be found through the [North American Syringe Exchange Network](#) (Figure 8).

FIGURE 8. LOCATIONS OF COLORADO SYRINGE ACCESS PROGRAMS



1. The Works

3450 Broadway
Boulder, CO 80304
(303) 413-7533

2. Access Point Pueblo

Available Fridays Only
505 West 8th Street
Pueblo, CO 81003
(719) 621-1105

3. Denver Colorado AIDS Project

2480 W 26th Avenue, Suite B-26
Denver, CO 80211
(303) 837-0166

4. Harm Reduction Action Center

231 E. Colfax Avenue
Denver, CO 80203
(303) 572-7800

5. Northern Colorado AIDS Project

400 Remington, Suite 100
Ft Collins, CO 80524
(970) 484-4469

6. Rocky Mountain Morpheus Project

414 Taos Street, #B
Georgetown, CO 80444
720-401-6569
(Syringe services not currently offered at this site.)

7. West Colorado Aids Project

805 Main Street
Grand Junction, CO 81501
(970) 243-2437

8. Aurora Syringe Access Services

1475 Lima Street
Aurora, CO 80010
(Only available Wednesdays 1–3:30 pm.)

4. Emergency departments should provide naloxone to high-risk patients at discharge. If the drug is unavailable at the time of release, patients should receive a prescription and be informed about the over-the-counter availability of the drug in most Colorado pharmacies.

Multiple federal agencies have responded to the national opioid epidemic by endorsing the role of naloxone, an opioid antagonist that reverses opioid overdoses.¹²⁴⁻¹²⁶ Although Colorado community programs have been distributing the drug with great success since 1996, an increasing number of emergency departments across the country are implementing lifesaving policies to improve naloxone access.¹²⁷⁻¹³³

Ready-to-use naloxone should be given directly to high-risk patients at discharge who:

- Receive emergency care for opioid intoxication or overdose
- Have suspected substance abuse or nonmedical opioid use
- Are taking >100 mg morphine equivalents/day
- Are receiving an opioid prescription for pain **PLUS:**
 - A prescription for methadone or buprenorphine
 - A history of acute or chronic pulmonary disease
 - A history of renal dysfunction, hepatic disease, or cardiac comorbidities
 - Known or suspected excessive alcohol use or dependency
 - Concurrent use of benzodiazepines or other sedatives
 - Known or suspected poorly controlled depression
- Are taking opioids but have unreliable access to emergency medical services
- Have been recently incarcerated/released from prison
- Have resumed opioid use after a period of abstinence

If unable to provide naloxone in the emergency department, consider writing a prescription and counseling the patient on its appropriate use. Patients should be informed about the wide-availability of naloxone and where it can be obtained. Pharmacies who participate in Colorado's standing naloxone protocols can be found at stoptheclockcolorado.org

5. Emergency clinicians should be familiar with Colorado's regulations pertaining to naloxone. State laws eliminate liability risk for prescribing the drug, encourage good samaritan reporting of overdose, and make naloxone legal and readily available over the counter in most pharmacies.

Colorado State-Specific Policy Summaries

Third-Party Naloxone Bill (Colorado SB 13-014)

Passed in 2013, the bill removes the following:

- Civil liability for prescribers
- Criminal liability for prescribers
- Civil liability for layperson administration
- Criminal liability for layperson administration

Colorado Good Samaritan Law (CO revised Statute 18-1-711 and HB 16-1390)

- Samaritan acting in good faith
- No arrest or prosecution for possession
- No arrest or prosecution for paraphernalia and protection from other crimes

Standing Orders for Naloxone (SB 15-053)

- Any medical professional with prescriptive authority can write a standing order for naloxone that can be dispensed by other designed individuals (such as pharmacists and harm reduction organizations).
- Find participating pharmacies at stoptheclockcolorado.org
- With these standing orders, pharmacists and harm reduction organizations can now provide naloxone to those who might benefit from it the most, including:
 - A family member, friend or other person in a position to assist a person at risk of overdose
 - An employee or volunteer of a harm reduction organization
 - A first responder
 - An individual at risk of overdose

Means of distribution: Clinicians can provide patients naloxone through direct distribution, by writing a prescription, or through referral to a community organization or pharmacy with a standing order agreement.

Additional Resources

<http://prescribetoprevent.org/prescribers/emergency-medicine>

<https://www.colorado.gov/cdphe/naloxoneorders>

6. Emergency department patients who receive prescriptions for opioids should be educated on their risks, safe storage methods, and the proper disposal of leftover medications.

Most patients who misuse opioids receive them from friends and/or family. Prescriptions should be stored safely, ideally in a locked location. Once the acute pain phase has ended and medication is no longer required, it is critical to dispose of the leftovers promptly. In an exception to the general rule, the FDA allows opioids to be flushed down the toilet; however, more environmentally friendly disposal methods are encouraged.¹³⁴ An increasing number of communities also offer prescription take-back programs.

More than 50% of the counties in Colorado offer safe disposal sites for controlled substances, and the number of these facilities is increasingly rapidly. Patients should be encouraged to utilize one of the preferred disposal locations found on takemededback.org, or participate in a [national DEA-sponsored take-back event](#).

If disposing of the medication at home, patients should be instructed to:

1. Remove the medication from its original container, and remove any labels or cross out identifying information.
 2. Mix the pills with something that can't be eaten (eg, kitty litter, coffee grounds, sawdust, home cleanser, etc.)
 3. Place the mixture in a sealable bag, empty can, or other durable container that prevents leakage.
 4. Wrap the container in newspaper or a plain brown bag to conceal its contents. Place it in your trash the day your trash is collected.
-

Additional Resources

takemedsseriously.org

<http://www.corxconsortium.org/wp-content/uploads/Safe-Disposal-Brochure.pdf>

http://www.deadiversion.usdoj.gov/drug_disposal/takeback/index.html

POLICY RECOMMENDATIONS

1. Harm reduction agencies and community programs that provide resources for people who inject drugs (PWID) should be made readily available.

The passage of C.R. S. §25-1-520 in 2010 legalized the establishment of syringe access programs with local jurisdiction approval. Community programs aimed at providing needle exchange and disposal services, sterile equipment, free counseling, and HIV/hepatitis screening are cost effective strategies for preventing the transmission of bloodborne pathogens. These programs, many of which also provide basic medical and social services to this high-risk population, should be well funded and expanded beyond their current levels.

2. When local programs are unavailable for PWID, emergency departments should establish their own programs to provide services such as safe syringe exchanges.

This recommendation is especially applicable to rural communities, which are particularly vulnerable to communicable disease outbreaks and are unlikely to have local syringe access programs. Emergency clinicians in these environments have a unique opportunity to intervene when caring for high-risk patients. Hospitals should partner with their local health departments and state and federal authorities to establish programs that foster harm reduction. Ideally, such initiatives should be funded by national or state governments, nonprofit organizations, or grants to make this service cost effective for participating hospitals.

VI. Treatment of Opioid Addiction

“We have an obligation to fight for the world as it should be.”

—Michelle Obama

The Substance Abuse and Mental Health Services Administration (SAMHSA) estimates that 2.1 million people in the United States suffer from substance use disorders related to prescription opioid pain relievers — a population larger than that of New Mexico and 14 other states. Although opioid abuse cuts across all social demographics, it is particularly prevalent in emergency department patients. Indeed, clinicians are in an ideal position to not only identify addiction, but intervene and direct these patients toward treatment and recovery (*Figure 9*).

Most opioid-addicted patients can benefit from the “Screening, Brief Intervention and Referral to Treatment” (SBIRT) approach developed and recommended by the Institute of Medicine. Although the use of SBIRT in the ED has elicited positive results in addressing alcohol and illicit drug use, the protocol is used infrequently in Colorado.

As outlined and endorsed by SAMHSA, MAT centers provide behavioral therapy in concert with pharmaceutical treatments such as buprenorphine or methadone. In a more perfect system, patients seeking treatment for opioid addiction would be identified in the ED, referred to MAT and, when possible, initiated on Suboxone to bridge them to recovery. Unfortunately, the number of treatment centers is limited and relationships between EDs and MATS are uncommon. In 2017 the US government appropriated \$1 billion to improve access to opioid addiction services; however, at this juncture a coordinated system of referral and treatment is more of an aspiration than a reality.

FIGURE 9. LAUNCHING OPIOID ADDICTION TREATMENT IN EMERGENCY DEPARTMENTS

| | | |
|---|---|--|
| <p>CHANGE CAN START WITH ONE ED DOCTOR AND ONE REFERRAL CLINIC.</p> | <p>Cultivate CHAMPIONS among clinicians, nurses, pharmacists, social workers, behavioral health staff, and administrators.</p>  | <p>Encourage clinicians to get BUPRENORPHINE TRAINING.</p>  |
| <p>Partner with PHARMACISTS.</p>  | <p>Build relationships with fellow CLINICIANS for ongoing cases.</p>  | <p>Collaborate with BEHAVIORAL HEALTH SERVICES where available.</p>  |
| <p>Develop a TEAM-BASED APPROACH involving the ED, inpatient services, and outpatient clinics.</p>  | <p>Integrate buprenorphine into SAFE PRESCRIBING GUIDELINES in the ED.</p>  | <p>Connect addiction treatment with the TREATMENT OF WITHDRAWAL AND OVERDOSE.</p>  |

Adapted from the California Health Care Foundation

PRACTICE RECOMMENDATIONS

1. **The use of the Screening, Brief Intervention, and Referral to Treatment (SBIRT) protocol and SBIRT-trained health educators in the acute setting is associated with a significant decrease in continued drug abuse and an increase in patient follow up for treatment programs. Every Colorado emergency department should consider implementing such a tool.**

SBIRT has been studied since the 1960s as a way to identify and address the behavior of patients at risk for alcohol and substance addiction.^{135,136} Studies consistently have shown these programs can increase the likelihood of patient follow up and significantly decrease the risk of future substance abuse (by nearly 70%, by some accounts).¹³⁷ A number of Colorado EDs employ trained health educators specifically to identify and provide brief interventions and referrals to treatment.

Multiple resources, including [Improving Health Colorado](#), also provide valuable resources for health care practitioners and those interested in developing SBIRT programs of their own. In addition, a [SBIRT mobile application](#) has been developed to aid in the bedside identification of high-risk patients and provide a template for interventions and treatment referrals.

Institutions across the country have integrated similar SBIRT screening questions into their electronic medical record documentation systems:

- Do you currently smoke/use any form of tobacco? (Yes/No)
- Do you have >7 (women) or >14 (men) drinks per week? (Yes/No)
- When was the last time you had 4 or more (all women and men >65) or more (men <65) drinks in one day?
- In the past year have used/experimented with illegal drugs or prescriptions drugs for nonmedical reasons? (Yes/No)
- Are you or anyone worried your use of prescription pain meds have or will become a problem? (Yes/No)
- How many times in the past year have you used marijuana?

SCORING

Risky use: Fewer than two YES answers

Require further diagnostic evaluation and referral: Two or more YES answers

2. **The use of alpha²-agonists, antihistamines, antiemetics, and NSAIDs should be used to ameliorate withdrawal symptoms.**

While generally not life-threatening, opioid withdrawal causes significant discomfort and dysphoria. Although a general lack of evidence exists, anecdotal therapies can be used to suppress symptoms; supportive and symptomatic treatment with non-narcotic agents also is encouraged.

Alpha²-agonists. Clonidine is effective for ameliorating withdrawal symptoms.¹³⁹ Typical regimens consist of 0.1-0.3 mg given orally in 2 to 4 doses/day (up to a maximum of 1.2 mg/day) for 7-10 days. Compared to placebo, the drug is associated with a greater incidence of adverse effects, including hypotension, lethargy, drowsiness, and dry mouth (most commonly seen in the first few days of treatment). Transdermal systems deliver doses that are equivalent to oral formulations, but in an easy-to-use weekly patch. For example, the Catapres-TTS-1 patch delivers a dose that is equivalent to an oral dose of 0.1 mg twice daily for 7 days; however, adverse effects are unpredictable due to the lack of titration. Lofexidine, a new alpha²-agonist, lofexidine currently is undergoing FDA clinical trials. According to early results, the drug appears to be as effective as clonidine with a safer side effect profile.

Antiemetics. Agents such as ondansetron, promethazine, and prochlorperazine are very familiar to emergency physicians and can be used for nausea and vomiting associated with withdrawal.

Anticholinergics. Medications such as dicyclomine may be given to alleviate abdominal cramping and pain.

Antihistamines. Hydroxyzine can be used for anxiety and dysphoria.

NSAIDs. Ibuprofen, naproxen, and ketorolac can be used for headache, myalgias, and pain.

Benzodiazepines. These agents generally are not recommended, as their potential for abuse and side effects typically outweigh the benefits; patients must be strictly monitored.

3. Any patient willing to consider treatment and recovery should be directed to a nearby medication assisted treatment (MAT) program.

Medication-assisted treatment for addiction is one of the most effective ways emergency physicians can start patients on a path to sobriety. This approach can help alleviate withdrawal symptoms and drug cravings while patients turn their attention to other aspects of recovery such as avoiding triggers and reducing harmful behaviors. A stable source of medication may help stem the pursuit of illegal behaviors motivated by the need to obtain opioids elsewhere.

Medication-assisted treatment programs address addiction with a combination of drug (eg, buprenorphine, methadone and naltrexone) and behavioral therapies. This whole-patient approach has been shown to improve substance abuse-related disorders and psychosocial functioning.

MAT programs typically are directed by physicians certified in addiction medicine. If a formal relationship exists between your institution and a MAT center, patients should be referred upon discharge. A list of current MAT facilities can be accessed on the [Colorado Consortium for Prescription Drug Abuse](#) website.

4. The initiation of buprenorphine/naloxone (Suboxone) is among the most effective methods for transitioning patients into treatment and recovery. Emergency departments with a high prevalence of opioid-addicted patients should strongly consider implementing a coordinated program that allows those suffering from opioid withdrawal to be inducted on buprenorphine and expeditiously referred or transferred to a MAT program.

Buprenorphine, a partial mu-receptor agonist and kappa-receptor antagonist, has chemical properties that make it effective for treating opioid withdrawal without causing the marked euphoria or “high” common with the use of heroin and other opioids. Buprenorphine has a much higher affinity for the mu-receptor than most opioids; if other opioids are in a patient’s system, buprenorphine will displace them, often precipitating significant withdrawal. It is important for the patient to be exhibiting at least moderate withdrawal symptoms before the medication is initiated.

Although the DEA has restricted the prescribing of buprenorphine to physicians who hold a special certification and waiver, there is an exception for emergency situations. Called the “3-day rule,” the caveat allows non-certified physicians to dispense the medication by adhering to certain guidelines. A physician may administer but not prescribe a daily dose of Suboxone to relieve withdrawals and cravings for 3 consecutive days (72 hours). This protocol may only occur once per patient, cannot be extended, and must be carried out with a simultaneous referral for treatment.

An emergency department treatment algorithm can help provide clear-cut guidelines for the initiation of buprenorphine therapy and minimize the amount of time required for each individual patient. The algorithm should include a clinical opioid withdrawal scale (COWS), which can help determine the appropriate course for each individual (*Figure 10*).

If initiating the drug in the emergency department, clinicians should remain mindful of co-addictions that may interact with buprenorphine; alcohol and benzodiazepines, for example, can trigger respiratory depression. It also is important to gather information about community resources for outpatient referral, MAT programs, and addiction counseling, which can be provided to patients on discharge. Some buprenorphine providers may be reached via phone to arrange close follow up. Finally, the patient should be provided with written materials that clearly explain the drug’s indications and side effects. (See *Appendix 3* for discharge dosing information.)

FIGURE 10. CLINICAL OPIOID WITHDRAWAL SCALE (COWS)

For each item, circle the number that best describes the patient's signs or symptom. Rate on just the apparent relationship to opiate withdrawal. For example, if heart rate is increased because the patient was jogging just prior to assessment, the increased pulse rate would not add to the score.

Patient's name _____

Date and time _____

Reason for this assessment _____

| | |
|---|--|
| <p>Resting pulse rate: _____ beats/minute (<i>measured after patient has been sitting or lying down for 1 minute</i>)</p> <p>0 pulse rate \leq80 1 pulse rate 81-100 2 pulse rate 101-120 4 pulse rate $>$120</p> | <p>GI upset (<i>in last 30 minutes</i>)</p> <p>0 no GI symptoms 1 stomach cramps 2 nausea or loose stool 3 vomiting or diarrhea 5 multiple episodes of diarrhea or vomiting</p> |
| <p>Sweating (<i>in last 30 minutes, and not accounted for by room temperature or patient activity</i>)</p> <p>0 no report of chills or flushing 1 subjective report of chills or flushing 2 flushed or observable moistness on face 3 beads of sweat on brow or face 4 sweat streaming off face</p> | <p>Tremor (<i>observation of outstretched hands</i>)</p> <p>0 no tremor 1 tremor can be felt, but not observed 2 slight tremor observable 4 gross tremor or muscle twitching</p> |
| <p>Restlessness (<i>observed during assessment</i>)</p> <p>0 able to sit still 1 reports difficulty sitting still, but is able to do so 3 frequent shifting or extraneous movements of legs/arms 5 unable to sit still for more than a few seconds</p> | <p>Yawning (<i>observation during assessment</i>)</p> <p>0 no yawning 1 yawning once or twice during assessment 2 yawning three or more times during assessment 4 yawning several times/minute</p> |
| <p>Pupil size</p> <p>0 pupils pinned or normal size for room light 1 pupils possibly larger than normal for room light 2 pupils moderately dilated 5 pupils so dilated that only the rim of the iris is visible</p> | <p>Anxiety or irritability</p> <p>0 none 1 patient reports increasing irritability or anxiousness 2 patient obviously irritable or anxious 4 patient so irritable or anxious that participation in the assessment is difficult</p> |
| <p>Bone or joint aches (<i>if patient was having pain previously, only the additional component attributed to opioid withdrawal is scored</i>)</p> <p>0 not present 1 mild diffuse discomfort 2 patient reports severe diffuse aching of joints/muscles 4 patient is rubbing joints or muscles and is unable to sit still because of discomfort</p> | <p>Gooseflesh skin</p> <p>0 skin is smooth 3 piloerection of skin can be felt or hairs standing up on arms 5 prominent piloerection</p> |
| <p>Runny nose or tearing: (<i>not accounted for by cold symptoms or allergies</i>)</p> <p>0 not present 1 nasal stuffiness or unusually moist eyes 2 nose running or tearing 4 nose constantly running or tears streaming down cheeks</p> | <p>TOTAL SCORE _____</p> <p>The total score is the sum of all 11 items.</p> <p>Initials of person completing assessment _____</p> |

Score: 5-12 = mild; 13-24 = moderate; 25-36 = moderately severe; more than 36 = severe withdrawal

The DEA requires every emergency department that dispenses methadone to register separately as an “opioid treatment program.” Given the long half-life of this medication and the intricacies of determining tolerance and appropriate dosing, methadone is not recommended in the acute setting and hence has been precluded from these guidelines.

POLICY RECOMMENDATIONS

- Emergency departments should work with MAT programs to facilitate direct referrals. When possible, physicians should consider performing a “warm handoff” where patients are initiated on medications such as buprenorphine until they are able to enroll in an appropriate MAT program.
- COACEP strongly advocates for the expansion of MAT services and increased local, state, and federal funding for these resources.

VII. The Future

“The best way to predict the future is to create it.”

—Abraham Lincoln

The Colorado Chapter of the American College of Emergency Physicians stands with the families and patients currently afflicted with opioid addiction and abuse. We must harbor hope for our patients and view addiction not as a moral failing, but as a medical disease. Opioid harm reduction should be an integral part of everyday practice with the ultimate goal of keeping patients safe until they are ready for recovery. We will need to improve our referral patterns and access syringe access and MAT programs. Multimodal pain control strategies, including ALTO, must become a part of every emergency medical practice. Finally and perhaps most importantly, we must reject the status quo, revolutionize our own practices, and endeavor to stem the tide of opioid addiction. We challenge you to join us in becoming an agent for change. We in Colorado can make a profound difference by setting the standard for every emergency department in the country, and together we can bring this deadly epidemic to an end.

What Can You Do?

- Work with your emergency department medical director, physician group, pharmacists, and hospital administrators to fully integrate as many of these recommendations into your clinical practice as possible.
- Share these guidelines with the clinicians and medical staff in your emergency department.

Appendix 1. ALTO Protocols and References

Musculoskeletal Pain

Note: This includes sprains, strains, or opioid-naïve lower back pain, acute neck, joint and soft tissue pain; rotator cuff tendonitis, arthritis of knee, lateral epicondylitis, greater trochanteric bursitis, biceps tendonitis, etc. Acute on chronic radicular lower back pain (opioid tolerant) can be approached in a similar manner.

NON-IV TREATMENT OPTIONS

- Acetaminophen 1,000 mg PO
- NSAID: ibuprofen 600 mg PO **OR** ketorolac 15 mg IV/30 mg IM
- Muscle relaxant: cyclobenzaprine 5 mg PO **OR** diazepam 5 mg PO
- Intranasal ketamine 50 mg
- Trigger-point injection with 1-2 mL of lidocaine 1%
- Gabapentin 300-600 mg (neuropathic component of pain)
- Lidocaine 5% patch to most painful area (max 3 patches); instruct patient to remove after 12 hours

IV TREATMENT OPTIONS

- Dexamethasone 8 mg IV
- Diazepam 5 mg IV
- Ketamine 0.1-0.3 mg/kg IV infusion over 10 min (0.1 mg/kg/hr drip)

Headache/Migraine

Note: The American Academy of Neurology and the American Headache Society do not recommend opioids except in extraordinary cases in which other agents are contraindicated (eg, pregnancy, etc.) Numerous studies reveal that opioids are not as effective as standard treatments for the management of headaches, and can render acute migraine medications less efficacious (eg, triptans). Opioid use can, in fact, promote chronic migraine and medication overuse headaches, and increase anxiety, disability, and depression in patients who suffer from migraine pain.

IMMEDIATE/FIRST-LINE THERAPY

- 1 L 0.9% NS bolus **PLUS** high-flow oxygen
- Dexamethasone 8 mg IV
- Ketorolac 15 mg IV
- Metoclopramide 10 mg IV
- Cervical or trapezius trigger-point injection with 1-2 mL lidocaine 1%

ALTERNATIVES

- Acetaminophen 1,000 mg PO **PLUS** ibuprofen 600 mg PO
- Promethazine 12.5 mg PO/IV **OR** prochlorperazine 10 mg PO/IV
- Sumatriptan 6 mg subcutaneous injection
- Magnesium 1 gm IV over 60 min
- Valproic acid 500 mg/50 mL normal saline over 30 min

- Haloperidol 2.5-5 mg IV over 5 min
- If tension component:
 - Cyclobenzaprine 5 mg **OR** diazepam 5 mg PO/IV
 - Trigger-point injection (see above)
 - Lidocaine 5% patch
- If <50% pain relief is achieved, consider placing patient in the observation unit and consulting neurology.

Renal Colic

IMMEDIATE/FIRST-LINE THERAPY

- Ketorolac 15 mg IV
- Acetaminophen 1,000 mg PO
- 1 L 0.9% normal saline bolus

SECOND-LINE IV THERAPY

- Lidocaine 1.5 mg/kg IV in 100 mL normal saline over 10 min (max 200 mg)

ALTERNATIVES

- Desmopressin acetate (DDAVP) 40 mcg IN
- Ketamine 50 mg IN

Extremity Fracture or Joint Dislocation

Note: The following strategies present an opportunity to address pain quickly and without the need for IV access.

- Focused nonsedating pain control
- Long-lasting relief for fracture pain
- Short-acting relief for joint reduction
- Proximal blocks (eg, brachial plexus)
- Distal blocks (eg, ulnar nerve)
- Immediate therapy (while setting up for block):
 - Ketamine intranasal 0.5 mg/kg (concentration 100 mg/mL); (max dose 50 mg; max volume per nare 1 mL)
 - Nitrous oxide titrated up to 70%
 - Acetaminophen 1,000 mg PO
- Followed by ultrasound-guided regional anesthesia:
 - Joint dislocation: lidocaine 0.5% perineural infiltration (max 5 mg/kg)
 - Extremity fracture: lidocaine 0.5% perineural infiltration (max 5 mg/kg)
- Discharge medications:
 - Acetaminophen 1,000 mg PO every 4-6 hrs **PLUS** naprosyn 500 mg PO every 12 hrs

Gastroparesis-Associated/Chronic Abdominal Pain

IMMEDIATE/FIRST-LINE THERAPY

- Metoclopramide 10 mg IV
- Prochlorperazine 10 mg IV
- Diphenhydramine 25 mg IV
- Dicyclomine 20 mg PO/IM

ALTERNATIVE OPTIONS

- Haloperidol 2.5 mg IV
- Lidocaine 1.5 mg/kg in 100 mL normal saline over 10 min (max 200 mg)
- Ketamine 0.1-0.3 mg/kg IV infusion over 10 min (0.1 mg/kg/hr until pain is tolerable)

Appendix 2. ALTO Prescribing Guide for Discharge

Headache^{139,140}

FOR ACUTE ATTACKS

- Sumatriptan 100 mg PO
- Acetaminophen/aspirin/caffeine (Excedrin Migraine) PO every 6 hours **OR** acetaminophen 1,000 mg every 6 hours
- Dihydroergotamine mesylate 2 mg nasal spray
- Naproxen 500-550 mg 2x/day **OR** ibuprofen 600 mg PO every 6 hours
- Metoclopramide 10 mg PO every 6 hours

FOR PREVENTION

- Propranolol 40 mg PO 2x/day
- Divalproex DR 250 mg PO 2x/day **OR** extended release 500 mg PO daily
- Topiramate 25 mg PO at bedtime
- Magnesium supplementation 600 mg PO daily

Sore Throat

- Ibuprofen 600 mg PO every 6 hours
- Acetaminophen 1,000 mg PO every 6 hours
- Dexamethasone 10 mg PO once
- Viscous lidocaine

Fibromyalgia^{141,142}

- Cardiovascular exercise
- Strength training
- Massage therapy
- Amitriptyline 10 mg PO at bedtime
- Cyclobenzaprine 10 mg PO every 8 hours
- Pregabalin 75 mg PO 2x/day

Uncomplicated Neck Pain¹⁴³

- Acetaminophen 1,000 mg PO every 6 hours
- Ibuprofen 600 mg PO every 6 hours
- Cyclobenzaprine 5 mg PO every 8 hours
- Physical therapy
- Lidocaine 5% transdermal patch every 24 hours (remove after 12 hours)

Uncomplicated Back Pain^{144,145}

- Acetaminophen 1,000 mg PO every 6 hours
- Ibuprofen 600 mg PO every 6 hours

- Lidocaine 5% transdermal patch every 24 hours (remove after 12 hours)
- Diclofenac 1.3% transdermal patch 2x/day **OR** diclofenac 1% gel 4 g 4x/day as needed
- Cyclobenzaprine 5 mg PO 3x/day
- Heat
- Physical therapy
- Exercise program

Simple Sprains¹⁴⁶

- Immobilization
- Ice
- Ibuprofen 600 mg PO every 6 hours
- Acetaminophen 1,000 mg PO every 6 hours
- Diclofenac 1.3% transdermal patch 2x/day **OR** diclofenac 1% gel 4 g 4x/day as needed

Contusions¹⁴⁷

- Compression
- Ice
- Ibuprofen 600 mg PO every 6 hours
- Acetaminophen 1,000 mg PO every 6 hours
- Lidoderm 5% patch transdermal patch every 24 hours (remove after 12 hours)

Nontraumatic Tooth Pain¹⁴⁸

- Ibuprofen 600 mg PO every 6 hours **PLUS** acetaminophen 1,000 mg PO every 6 hours

Osteoarthritis¹⁴⁹

- Diclofenac 50 mg PO every 8 hours **OR** naproxen 500 mg PO 2x/day **OR** celecoxib 200 mg daily
- Diclofenac 1.3% transdermal patch 2x/day **OR** diclofenac 1% gel 4 g 4x/day as needed

Undifferentiated Abdominal Pain

- Dicyclomine 20 mg PO every 6 hours
- Ibuprofen 600 mg PO every 6 hours
- Acetaminophen 1,000 mg PO every 6 hours
- Metoclopramide 10 mg PO every 6 hours
- Prochlorperazine 10 mg PO every 6 hours

Neuropathic Pain

- Gabapentin 300 mg PO at bedtime
- Amitriptyline 25 mg PO at bedtime
- Pregabalin 75 mg PO 2x/day

Appendix 3. Suboxone for Withdrawal

Buprenorphine and buprenorphine/naloxone (Suboxone or Zubsolv) are viable alternatives for those seeking opioids. The following rules only apply to patients taking short-acting opioids (eg, morphine, oxycodone, hydrocodone, heroin). For patients on long-acting opioids (eg, methadone, oxycontin ER), induction and treatment with buprenorphine should be performed by an addiction specialist.

1. Provide information about the drug and how it is dispensed and administered. Determine the patient's COWS score (a score between 11 and 20 is required for treatment).
2. Begin with an initial dose of 2 to 4 mg of Suboxone (buprenorphine HCl 8 mg/naloxone HCl dihydrate 2 mg) or Subutex (buprenorphine HCl) sublingual tablets after moderate opioid withdrawal symptoms have developed. (Subutex should be reserved for patients with liver compromise, pregnancy, or a severe documented allergic reaction to naloxone). Discuss available strengths with your pharmacist. Suboxone 8-mg strips can be divided in half or quartered to accommodate lower requirements.
3. Reassure the patient that opioid withdrawal symptoms are usually alleviated in 20 to 40 minutes following the first dose of buprenorphine. The strip or pill should be placed fully under the tongue or within the cheek, and should not be chewed or swallowed. Nothing else should be put in the mouth at the same time, and the patient should not eat or drink anything until the medication is fully dissolved. The patient should be told to spit out any accumulated saliva to limit the ingestion of naloxone, which can cause nausea. It may take up to 30 minutes for the strip or pill to dissolve.
4. If possible, the patient should be observed for 1 to 2 hours. A second dose of Suboxone (4 mg) or Subutex can be dispensed or prescribed if no precipitated withdrawal is observed. (A Suboxone waiver is required to prescribe the drug. If a waiver is unavailable, patients can be instructed to return to the emergency department under the 3-day rule.)

DAY 1. The usual first-day dose is 8 mg up to a typical maximum of 12 mg; a maximum dose of 16 mg may be required for significant dependence. A third dose (2-4 mg) may be taken later in the evening as needed for withdrawal symptoms. If the patient cannot be observed in the emergency department after taking the the second dose, another responsible adult should be available to monitor the patient's response.

DAY 2. If the patient returns to the emergency department for a second day, the response to the initial dose should be assessed. If opioid withdrawal symptoms were fully suppressed and cravings were absent between doses, the dose can remain the same; otherwise increase by 2 or 4 mg. All attempts should be made to maintain the dose at 16 mg a day; however, a maximum daily dose of 24 mg may be required. In such rare cases, the dose should be decreased as rapidly as possible.

DAY 3. Provided the withdrawal symptoms were fully suppressed, the third and final dose can remain the same as the day 2 dose. It can be increased by 2 or 4 mg on day 3 if needed.

Next Steps

The primary goal is to induce treatment smoothly and suppress withdrawal as completely and rapidly as possible. Failure to do so may cause the patient to turn to opioids, alcohol, benzodiazepines, or other medications to alleviate withdrawal symptoms, and may lead to early treatment dropout.

Drug withdrawal can cause significant anxiety and may interfere with patient management. Symptomatic care using IV fluids, antiemetics (eg, ondansetron or promethazine), and IV nonopioid pain relievers (eg, ketorolac 15 mg) may help calm the patient; opioids and benzodiazepines should be avoided.

It also can be useful to obtain baseline laboratory measurements prior to initiating buprenorphine. At minimum, these should include liver function and blood alcohol level tests, a urine drug screen, and a pregnancy test in females. Also consider testing for HIV and hepatitis, particularly for injection drug users. Patients also should be screened for other mental health issues such as suicidal or homicidal ideations, hallucinations, and severe depression. These findings may warrant more intensive inpatient treatment.

If the initial dose of Suboxone appears to worsen withdrawal symptoms, symptomatic treatment can be offered. These effects can be exacerbated if the last opioid dose was too recent and/or underreported by the patient. An additional 2 mg to 4 mg can be given hourly until symptoms dissipate. It is important for both the patient and physician to understand that this complication does not indicate treatment failure.

Discussions should be initiated with your hospital's pharmacy about the amount of buprenorphine that should be kept on hand. Suboxone 8 mg/2 mg films are most common; however, 4 mg/1 mg films may be more useful in the acute setting.

REFERENCES

1. Stack SJ. Confronting a crisis: An open letter to America's physicians on the opioid epidemic. *The Huffington Post*. http://www.huffingtonpost.com/steven-j-stack/confronting-a-crisis-an-o_b_9911530.html. Accessed July 7, 2016.
2. Joranson DE, Ryan KM, Gilson AM. Trends in medical use and abuse of opioid analgesics. *JAMA*. 2000; 283(13):1710-1714.
3. Wide-ranging online data for epidemiologic research (WONDER). Centers for Disease Control and Prevention WONDER online database. <http://wonder.cdc.gov/>. Updated December 22, 2016. Accessed December 26, 2016.
4. International Narcotics Control Board Report 2008. United Nations Pubns. 2009. p. 20
5. Substance Abuse and Mental Health Services Administration, *Drug Abuse Warning Network, 2011: National Estimates of Drug-Related Emergency Department Visits*. HHS Publication No. (SMA) 13-4760, DAWN Series D-39. Rockville, MD: Substance Abuse and Mental Health Services Administration, 2013.
6. Substance Abuse and Mental Health Services Administration, Center for Behavioral Health Statistics and Quality. *Treatment Episode Data Set (TEDS): 2003-2013*. National Admissions to Substance Abuse Treatment Services. BHSIS Series X-XX, HHS Publication No. (SMA) XX-XXXX. Rockville, MD: Substance Abuse and Mental Health Services Administration, 2015.
7. Coalition Against Insurance Fraud. Prescription for peril: how insurance fraud finances theft and abuse of addictive prescription drugs. Washington, DC: Coalition Against Insurance Fraud; 2007.
8. Florence CS, Zhou C, Luo F, Xu L. The Economic Burden of Prescription Opioid Overdose, Abuse, and Dependence in the United States, 2013. *Medical Care*. 2016;54(10):901-906.
9. Shah A, Hayes CJ, Martin BC. Characteristics of Initial Prescription Episodes and Likelihood of Long-Term Opioid Use — United States, 2006–2015. *MMWR*. 2017;66:265–269.
10. Personal communication, Kirk Bol, Colorado Department of Public Health and Environment, June 8, 2016.
11. Substance Abuse and Mental Health Services Administration, Center for Behavioral Health Statistics and Quality. *National Survey on Drug Use and Health: Comparison of 2011-2012 and 2012-2013*. www.samhsa.gov/data/sites/default/files/NSDUHStateEst2012-2013-p1/ChangeTabs/NSDUHsaeShortTermCHG2013.pdf. Accessed July 7, 2016.
12. 2014 Statewide Survey, Dec. 2014, by National Research Center, Boulder, for Public Awareness Work Group, Colorado Consortium for Prescription Drug Abuse Prevention.
13. Personal communication, Kevin Wong, Colorado High Intensity Drug Trafficking Area Program (HIDTA), June 22, 2016.
14. Portenoy RK, Foley KM. Chronic use of opioid analgesics in nonmalignant pain: report of 38 cases. *Pain*. 1986;25:171-186.
15. The use of opioids for the treatment of chronic pain. A consensus statement from the American Academy of Pain Medicine and the American Pain Society. *Clin J Pain*. 1997;13:6-8.
16. Pizzo PA, Clark NM. Alleviating suffering 101—pain relief in the United States. *N Engl J Med*. 2012;366:197-199.
17. Lanser P, Gesell S. Pain management: the fifth vital sign. *Healthcare Benchmarks*. 2001;8:62, 68-70.
18. Institute of Medicine. *Relieving Pain in America: A Blueprint for Transforming Prevention, Care, Education, and Research*. Washington, DC: National Academies Press; 2011.
19. Lembke A. Why doctors prescribe opioids to known opioid abusers. *N Engl J Med*. 2012;367:1580-1581.
20. Bhakta HC, Marco CA. Pain management: association with patient satisfaction among emergency department patients. *J Emerg Med*. 2014;46:456-464.
21. Catan T, Perez E. A Pain-Drug Champion Has Second Thoughts. *The Wall Street Journal*. <http://www.wsj.com/articles/SB10001424127887324478304578173342657044604>. Published 2012. Accessed July 30, 2016.
22. Von Korff M, Kolodny A, Deyo RA, et al. Long-term opioid therapy reconsidered. *Ann Intern Med*. 2011;155:325-328.
23. Grady D, Berkowitz SA, Katz MH. Opioids for chronic pain. *Arch Intern Med*. 2011;171:1426-1427.
24. Dhalla IA, Persaud N, Juurlink DN. Facing up to the prescription opioid crisis. *BMJ*. 2011;343:5142.
25. Volkow ND, McLellan TA, Cotto JH. Characteristics of opioid prescriptions in 2009. *JAMA*. 2011;305:1299-1301.
26. Gunderson M. Prehospital pain management. *EMS Insider*. 2011. <http://www.jems.com/ems-insider/articles/2011/01/prehospital-pain-management.html>. Accessed July 7, 2016.
27. Bitterman, RA. Is "severe pain" considered an emergency medical condition under EMTALA? *ACEP News*. 2013;34(4). <http://www.acepnow.com/article/severe-pain-considered-emergency-medical-condition-emtala/>. Accessed July 30, 2015.
28. Mazer-Amirshahi M, Nelson L, Pines J. West Virginia Supreme Court ruling allows physician liability for patient addiction. *Emergency Physicians Monthly*. 2015. http://www.epmonthly.com/www.epmonthly.com/departments/subspecialties/medico-legal/you-re-suing-me-for-what/?utm_source=July+30th+Ezine&utm_campaign=EPM+August+27+2014&utm_medium=email. Accessed July 24, 2015.
29. Centers for Disease Control and Prevention. Vital Signs: Overdoses of Prescription Opioid Pain Relievers --- United States, 1999—2008. *MMWR*. 2011; 60(43):1487-1492.
30. Cicero TJ, Ellis MS, Surratt HL, Kurtz SP. The changing face of heroin use in the United States: a retrospective analysis of the past 50 years. *JAMA Psychiatry*. 2014;71(7):821-826
31. Williams, J. Regulation of mu-opioid receptors: desensitization, phosphorylation, internalization, and tolerance. *Pharmacol Rev*. 2013;65(1):223-54.
32. Moller LF, Matic S, van den Bergh BJ, et al. Acute drug-related mortality of people recently released from prisons. *Public Health*. 2010;124(11):637-9.
33. Buster M, et al. An increase in overdose mortality during the first 2 weeks after entering or re-entering methadone treatment in Amsterdam. *Addiction*. 2002;97(8):993-1001.
34. Leon-Casasola OAD. Opioids for chronic pain: new evidence, new strategies, safe prescribing. *Am J Med*. 2013;126(3).
35. Webster LR, Webster RM. Predicting aberrant behaviors in opioid-treated patients: preliminary validation of the Opioid Risk Tool. *Pain Med*. 2005;6(6):432-42.
36. Stakely T. Colorado DORA. Colorado Prescription Monitoring program open forum presentation. <http://www.ichpcolorado.com/docs/RCCO-Opioid-Forum-Presentation.pdf>. Accessed December 26, 2016.

37. Baehren DF, Marco DA, Droz DE, et al. A statewide prescription monitoring program affects emergency department prescribing behaviors. *Ann Emerg Med.* 2010;56:19-23.
38. Cantrill, et al. ACEP Clinical Policy: Critical Issues in the Prescribing of Opioids for Adult Patients in the Emergency Department. *Ann Emerg Med.* 2012;60:499-525.
39. Smulowitz PB, Cary C, Boyle KL, et al. Variation in opioid prescribing patterns between ED providers. *Intern Emerg Med.* 2016 Dec; 11(8):1121-1124.
40. Barnett ML, Olenski AR, Jena AB. Opioid-Prescribing Patterns of Emergency Physicians and Risk of Long-Term Use. *N Engl J Med.* 2017 Feb 16;376(7):663-673.
41. Burton JH, Hoppe JA, Echternach JM, et al. Quality improvement initiative to decrease emergency physician opioid analgesic prescribing. *WJEM.* 2016 May; 17(3):258-263
42. Roelofs PDDM, Deyo RA, Koes BW, et al. Non-steroidal anti inflammatory drugs for low back pain. *Cochrane Database Syst Rev.* 2008;(1):CD000396
43. Franklin GM, Stover BD, Turner JA, et al. Early opioid prescription and subsequent disability among workers with back injuries: the Disability Risk Identification Study Cohort. *Spine.* 2008;33(2):199-204.
44. Ashworth J, Green DJ, Dunn KM, Jordan KP. Opioid use among low back pain patients in primary care: Is opioid prescription associated with disability at 6-month follow-up? *Pain.* 2013;154(7):1038-1044.
45. Dowell D, Haegerich T, Chou R. CDC Guideline for Prescribing Opioids for Chronic Pain - United States, 2016. *MMWR Recomm Rep.* 2016;65. <http://www.cdc.gov/media/dpk/2016/dpk-opioid-prescription-guidelines.html>. Accessed December 26, 2016.
46. Dasgupta N, Funk MJ, Proescholdbell S, et al. Cohort Study of the Impact of High-dose Opioid Analgesics on Overdose Mortality. *Pain Medicine.* 2015. <http://onlinelibrary.wiley.com/doi/10.1111/pme.12907/abstract>. Accessed December 26, 2016.
47. Jena AB, Goldman D, Weaver L, et al. Opioid prescribing by multiple providers in Medicare: retrospective observational study of insurance claims. *BMJ.* 2014;348:1393.
48. Open Letter to the General Public on the Quad-Regulator Joint Policy for Prescribing and Dispensing Opioids, 2014. Colorado Department of Regulatory Agencies. <http://www.ucdenver.edu/academics/colleges/PublicHealth/research/centers/CHWE/Documents/DORA%20Opioid%20Policy%20Revised%2010.15.14.pdf>. Accessed July 26, 2016.
49. Chou R, Clark E, Helfand M. Comparative efficacy and safety of long-acting oral opioids for chronic non-cancer pain: a systematic review. *J Pain Symptom Manage.* 2003;26:1026-1048.
50. New York City Emergency Department Discharge Opioid Prescribing Guidelines, 2013. New York City Department of Health and Mental Hygiene. <https://www1.nyc.gov/assets/doh/downloads/pdf/basas/opioid-prescribing-guidelines.pdf>. Accessed July 29, 2015
51. Straube ST, Lopez JJ, Baird J, et al. Prescription opioid misuse is common among emergency department patients discharged with opioids [abstract]. *Ann Emerg Med.* 2013;62(4):92.
52. Muhuri PK, Gfroerer JC, Davies MC. Associations of nonmedical pain reliever use and initiation of heroin use in the United States. *CBHSQ Data Rev.* 2013. <http://www.samhsa.gov/data/2>
53. Boscarino JA, Rukstalis M, Hoffman SN, et al. Risk factors for drug dependence among out-patients on opioid therapy in a large US health-care system [published online ahead of print August 16, 2010] *Addiction.* 2010;105(10):1776-82.
54. Miech R, Johnston L, O'Malley PM, et al. Prescription opioids in adolescence and future opioid misuse. *Pediatrics.* 2015;136(5):1169-77
55. Cazacu I, Mogosan C, Loghin F. Safety issues of current analgesics: an update [published online ahead of print April 15, 2015]. *Chujul Med.* 2015;88(2):128-36.
56. Kuryshv YA, Bruening-Wright A, Brown AM, Kirsch GE. Increased cardiac risk in concomitant methadone and diazepam treatment: pharmacodynamic interactions in cardiac ion channels. *J Cardiovasc Pharmacol.* 2010;56:420-430.
57. Roden DM. Drug-induced prolongation of the QT interval. *N Engl J Med.* 2004;350:1013-1022.
58. Daniell HW. Hypogonadism in men consuming sustained-action oral opioids. *J Pain.* 2002;3:377-384.
59. Abs R, Verhelst J, Maeyaert J, et al. Endocrine consequences of long-term intrathecal administration of opioids. *J Clin Endocrinol Metab.* 2000;85:2215-2222.
60. Tennant F. A 10-year evaluation of chronic pain patients treated with opioids. *Heroin Addict Relat Clin Probl.* 2009;11:31-34.
61. Wei G, Moss J, Yuan CS. Opioid-induced immunosuppression: is it centrally mediated or peripherally mediated? *Biochem Pharmacol.* 2003;65:1761-1766.
62. Welters ID. Is immunomodulation by opioid drugs of clinical relevance? *Curr Opin Anaesthesiol.* 2003;16: 509-513
63. Lee M, Silverman S, Hansen H, et al. A Comprehensive Review of Opioid-Induced Hyperalgesia. *Pain Physician.* 2011;14:145-161.
64. Dimsdale JE, Norman D, Dejardin D, Wallace MS. The effect of opioids on sleep architecture, *J Clin Sleep Med.* 2007;3:33-36.
65. Khansari MR, Sohrabi MR, Zamani Farhad. The Usage of Opioids and their Adverse Effects in Gastrointestinal Practice: A Review. *Middle East J Dig Dis.* 2013;5:5-16.
66. Passik PS, Webster ML. Opioid analgesics: Does potency matter? *J Opioid Manag.* 2014;10(4):263-275.
67. Bohnert AS. Association between opioid prescribing patterns and opioid overdose-related deaths. *JAMA.* 2011;305(13):1315.
68. Paulozzi LJ, Kilbourne EM, Shah NG, et al. A history of being prescribed controlled substances and risk of drug overdose death. *Pain Med.* 2012;13(1):87-95.
69. Dunn KM. Opioid Prescriptions for Chronic Pain and Overdose. *Ann Intern Med.* 2010;152(2):85.
70. Becker W. Prescription drug misuse: Epidemiology, prevention, identification, and management. http://www.uptodate.com.hsl-ezproxy.ucdenver.edu/contents/prescription-drug-misuse-epidemiology-prevention-identification-and-management?source=search_result&search=opioidprescribing&selectedTitle=2~150. Accessed June 31, 2016.
71. National Survey Shows Friends and Family Are Primary Sources of Abused Painkillers. The White House. <https://www.whitehouse.gov/ondcp/news-releases-remarks/national-survey-shows-friends-and-family-are-primary-sources-of-abused-painkillers>. Published 2012. Accessed August 18, 2016.

72. Enhancing Access to Prescription Drug Monitoring Programs Using Health Information Technology: Integrating Health IT and PDMPs to Improve Patient Care. 2012. The MITRE Corporation. https://www.healthit.gov/sites/default/files/connecting_for_impact-final-508.pdf. Accessed December 26, 2016
73. Enhancing Access to Prescription Drug Monitoring Programs Using Health Information Technology: Connecting Prescribers and Dispensers to PDMPs through Health IT: Six Pilot Studies and Their Impact. 2012. The MITRE Corporation. https://www.healthit.gov/sites/default/files/pdmp_pilot_studies_summary_0.pdf. Accessed December 26, 2016
74. Fallon E, Fung S, Rubal-Peace G, Patanwala AE. Predictors of patient satisfaction with pain management in the emergency department. *Adv Emerg Nurs J.* 2016;38(2):115-22.
75. Kelly S, Johnson GT, Harbison RD. "Pressure to prescribe" The impact of economic and regulatory factors on South-Eastern ED physicians managing the drug seeking patient. *J Emerg Trauma Shock.* 2016;9(2):58-63
76. Gunderman, Richard. "When Physicians' Careers Suffer Because They Refuse to Prescribe Narcotics," *The Atlantic* 2014, <http://www.theatlantic.com/health/archive/2013/10/when-physicians-careers-suffer-because-they-refuse-to-prescribe-narcotics/280995/>
77. Pomerleau AC, Nelson LS, Hoppe JA, et al. The impact of prescription drug monitoring programs and prescribing guidelines on emergency department prescribing: a multi-center survey [published online ahead of print March 19, 2016]. *Pain.*
78. Ahern TL, Herring AA, Miller S, Frazee BW. Low-dose ketamine infusion for emergency department patients with severe pain. *Pain Medicine.* 2015;16:1402-1409.
79. Sin B, Ternas T, Motov SM. The use of subdissociative ketamine for acute pain in the emergency department. *Acad Emerg Med.* 2015;22:251-257.
80. Miller JP, Schauer SG, Ganem VJ, Bebartá VS. Low-dose ketamine vs morphine for acute pain in the ED: a randomized, controlled trial. *Acad Emerg Med.* 2015;33:402-408.
81. Motov S, Rockoff B, Cohen V, et al. Intravenous subdissociative-dose ketamine versus morphine for analgesia in the emergency department: A randomized, controlled trial. *Ann Emerg Med.* 2015; 66(3):222-229.
82. Ferrini RA, Paice J. How to initiate and monitor infusion of lidocaine for severe and/or neuropathic pain. *J Support Oncol.* 2004;2:90-94.
83. Afhami MR, Salmasi PH. Studying analgesic effect of preincisional infiltration of lidocaine as a local anesthetic with different concentrations on postoperative pain. *Pak J Med Sci.* 2009;25(5):821-824.
84. Soleimanpour H, Hassanzadeh K, Vaezi H, et al. Effectiveness of intravenous lidocaine versus intravenous morphine for patients with renal colic in the emergency department. *BMC Urol.* 2012;12(13):1-5.
85. Gammaitoni AR, Galer BS, Onawola R, et al. Lidocaine patch 5% and its positive impact on pain qualities in osteoarthritis: results of a pilot 2-week, open-label study using the Neuropathic Pain Scale. *Curr Med Res Opin.* 2004;20(suppl 2):13-9.
86. Galer BS, Gammaitoni AR, Oleka N, et al. Use of the lidocaine patch 5% in reducing intensity of various pain qualities reported by patients with low-back pain. *Curr Med Res Opin.* 2004;20(suppl 2):5-12.
87. Davies PS, Galer BS. Review of lidocaine patch 5% studies in the treatment of postherpetic neuralgia. *Drugs.* 2004;64(9):937-47.
88. Argoff CE, Galer BS, et al. Effectiveness of the lidocaine patch 5% on pain qualities in three chronic pain states: assessment with the neuropathic pain scale. *Curr Med Res Opin.* 2004;20(suppl 2):21-8.
89. Alvarez DJ, Rockwell PG. Trigger points: diagnosis and management. *Am Fam Physician.* 2002;65(4):653-60.
90. Rachlin ES. Myofascial Pain and Fibromyalgia: Trigger Point Management. *St Louis: Mosby.* 1994;1:145-157.
91. Tough EA, White AR, Cummings TM, et al. Acupuncture and dry needling in the management of myofascial trigger point pain: a systematic review and meta-analysis of randomised controlled trials. *Eur J Pain.* 2009;13(1):3-10.
92. Kietrys DM, Palombaro KM, Azzaretto E, et al. Effectiveness of dry needling for upper-quarter myofascial pain: a systematic review and meta-analysis. *J Orthop Sports Phys Ther.* 2013;43(9):620-34.
93. Mellick L, Verma M. Headache management with occipital nerve blocks, cervical injections, and trigger point injections. *Open Emer Med J.* 2010;3:32-5.
94. Mellick LB, McIlrath ST, Mellick GA. Treatment of headaches in the ED with lower cervical intramuscular bupivacaine injections: a 1-year retrospective review of 417 patients. *Headache.* 2006;46(9):1441-9.
95. Mellick LB, Mellick GA. Treatment of acute orofacial pain with lower cervical intramuscular bupivacaine injections: a 1-year retrospective review of 114 patients. *J Orofac Pain.* 2008;22(1):57-64.
96. Herres J, Chudnofsky CR, Manur R, Damiron K, et al. The use of inhaled nitrous oxide for analgesia in adult ED patients: a pilot study. *Am J Emerg Med.* 2016;34(2):269-73.
97. Furuya A, Ito M, Fukao T, et al. The effective time and concentration of nitrous oxide to reduce venipuncture pain in children. *J Clin Anesth.* 2009;21(3):190-3.
98. Ducassé JL, Siksik G, Durand-Béchu M, et al. Nitrous oxide for early analgesia in the emergency setting: a randomized, double-blind multicenter prehospital trial. *Acad Emerg Med.* 2013;20(2):178-84.
99. Aboumarzouk OM, Agarwal T, Syed Nong Chek SA, et al. Nitrous oxide for colonoscopy. *Cochrane Database Syst Rev.* 2011;(8):CD008506.
100. Catapano MS. The analgesic efficacy of ketorolac for acute pain. *J Emerg Med.* 1996;14(1):67-75.
101. Motov S, Yasavolian M, et al. Comparison of intravenous ketorolac at three single-dose regimens for treating acute pain in the emergency department: A randomized controlled trial. *Ann Emerg Med.* 2016
102. Soleyman-Zomalan E, Motov S, et al. Patterns of ketorolac dosing by emergency physicians. *World J Emerg Med.* 2017;8(1):43-46.
103. Garcia Rodriguez LA, Cattaruzzi C, et al. Risk of hospitalization for upper gastrointestinal tract bleeding associated with ketorolac, other nonsteroidal anti-inflammatory drugs, calcium antagonists, and other antihypertensive drugs. *Arch Intern Med.* 1998;158(1):33-39.
104. Benevides ML, Oliveira SS, Aguiar-Nascimento JE. Combination of haloperidol, dexamethasone, and ondansetron reduces nausea and pain intensity and morphine consumption after laparoscopic sleeve gastrectomy. *Braz J Anesthesiol.* 2013 Sep-Oct;63(5):404-9.
105. Honkaniemi J, Liimatainen S, Rainesalo S, et al. Haloperidol in the acute treatment of migraine: a randomized, double-blind, placebo-controlled study. *Headache.* 2006;46(5):781-787.
106. Grillage MG, Nankani JN, Atkinson SN, et al. A randomised, double-blind, study of mebeverine versus dicyclomine in the treatment of functional abdominal pain in young adults. *Br J Clin Pract.* 1990;44(5):176-0.

107. Rosen JM, Alioto A, Saps M. Advances in pain-predominant functional gastrointestinal disorders in the adolescent. *Adolesc Med State Art Rev*. 2016; 27(1): 34-56.
108. Chiou E, Nurko S. Management of functional abdominal pain and irritable bowel syndrome in children and adolescents. *Expert Rev Gastroenterol Hepatol* 2010; 4(3): 293-304.
109. American Geriatrics Society 2015 Beers Criteria Update Expert Panel. American Geriatrics Society 2015 Updated Beers Criteria for Potentially Inappropriate Medication Use in Older Adults. *J Amer Geriatrics Soc*. 2015;63(11):2227-46.
110. Noyes RJ et al. The analgesic properties of delta-9-tetrahydrocannabinol and codeine. *Clin Pharmacol Ther* 1975; 18: 84-9.
111. Pertwee RG. Cannabinoid pharmacology: the first 66 years. *Br J Pharmacol*. 2006; 147 suppl 1: S163-71.
112. Johnson JR, Burnell-Nugent M, Lossignol D, et al. Multicenter, double-blind, randomized, placebo-controlled, parallel-group study of the efficacy, safety, and tolerability of THC:CBD extract and THC extract in patients with intractable cancer-related pain. *J Pain Symp Manag* 2010; 39(2):167-79.
113. Ware MA, Wang T, Shapiro S, et al. Smoked cannabis for chronic neuropathic pain: A randomized controlled trial. *CMAJ* 2010; 182(14): E694-E701.
114. Eisenberg E, Miri O, Shlomo A. The pharmacokinetics, efficacy, safety, and ease of use of a novel portable metered-dose cannabis inhaler in patients with chronic neuropathic pain: A phase 1A study. *J Pain Palliat Care Pharmacother*. 2014;28(3):216-225.
115. Bachhuber MA, Saloner B, Chinazo O, et al. Medical cannabis laws and opioid analgesic overdose mortality in the United States, 1999-2010. *JAMA Intern Med*. 2014; 174 (10):1668-1673.
116. Centers for Disease Control and Prevention. HIV Surveillance Report, 2012; vol. 24. <http://www.cdc.gov/hiv/library/reports/surveillance/>. Published November 2014. Accessed December 26, 2016.
117. Centers for Disease Control and Prevention. Surveillance for Acute Viral Hepatitis – United States, 2007. *MMWR Surveillance Summary* 2009;58:1-27. <http://www.cdc.gov/mmwr/PDF/ss/ss5803.pdf>. Accessed December 26, 2016.
118. Van Boekel LC, Brouwers EP, van Weeghel J, et al. Stigma among health professionals towards patients with substance use disorders and its consequences for healthcare delivery: systematic review. *Drug Alcohol Depend*. 2013;131(1-2):23-35. .
119. Courtwright DT. The NIDA brain disease paradigm: History, resistance and spinoffs. *History Faculty Publications*. 2010 Paper 2 Retrieved from http://digitalcommons.unf.edu/ahis_facpub/2.
120. Wheeler E, Jones S, Gilbert MK, Davidson PJ. Opioid Overdose Prevention Programs Providing Naloxone to Laypersons — United States, 2014. Centers for Disease Control and Prevention. *MMWR*. 2015;64(23):631-635. <https://www.cdc.gov/mmwr/preview/mmwrhtml/mm6423a2.htm>. Published 2015. Accessed November 27, 2016.
121. Palmateer N, Kimber J, Hickman M, et al. Evidence for the effectiveness of sterile injecting equipment provision in preventing hepatitis C and human immunodeficiency virus transmission among injecting drug users: a review of reviews. *Addiction*. 2010;105(5):844-859.
122. Wodak A, Cooney A. (2004). Effectiveness of Sterile Needle and Syringe Programming in Reducing HIV/AIDS Among Injecting Drug Users. World Health Organization. Retrieved 18 July 2013.
123. Yoast R, Williams MA, Deitchman SD, Champion HC. Report of the Council on Scientific Affairs. *J Addict Dis*. 2001;20(2):15-40.
124. Szalavitz M, Szalavitz M. Preventing Overdose: Obama Administration Drug Czar Calls For Wider Access to Overdose Antidote. *Time*. <http://healthland.time.com/2012/08/22/preventing-overdose-obama-administration-drug-czar-calls-for-wider-access-to-overdose-antidote>. Accessed October 20, 2015.
125. Attorney General Holder Announces Plans for Federal Law Enforcement Personnel to Begin Carrying Naloxone | OPA | Department of Justice. 2014. <http://www.justice.gov/opa/pr/attorney-general-holder-announces-plans-federal-law-enforcement-personnel-begin-carrying>. Accessed October 20, 2015.
126. Mufson S, Zezima K. Obama announces new steps to combat heroin, prescription drug abuse. *The Washington Post*. https://www.washingtonpost.com/politics/white-house-announces-newsteps-to-combat-heroin-prescriptiondrug-abuse/2015/10/21/e454f8fa-7800-11e5-a958-d889faf561dc_story.html. Accessed October 23, 2015.
127. 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*. 2013;346:174.
128. Albert S, Brason FW, Sanford CK, et al. Project Lazarus: Community-based overdose prevention in rural North Carolina. *Pain Med*. 2011;12(suppl 2):77-85.
129. Davis CS, Ruiz S, Glynn P, et al. Expanded access to naloxone among firefighters, police officers, and emergency medical technicians in Massachusetts. *Am J Public Health*. 2014;104:7-9.
130. Kim D, Irwin K, Khoshnood K. Expanded Access to Naloxone: Options for Critical Response to the Epidemic of Opioid Overdose Mortality. *Am J Public Health*. 2009;99(3):402-407.
131. Attorney General Holder, Calling Rise in Heroin Overdoses 'Urgent Public Health Crisis,' Vows Mix of Enforcement, Treatment | OPA | Department of Justice. <https://www.justice.gov/opa/pr/attorney-general-holder-calling-rise-heroin-overdoses-urgent-public-health-crisis-vows-mix>. Accessed April 1, 2015.
132. Dwyer K, Walley AY, Langlois BK, et al. Opioid education and nasal naloxone rescue kits in the emergency department. *West J Emerg Med*. 2015;16:381-384.
133. Samuels E. Emergency department naloxone distribution: A Rhode Island department of health, recovery community, and emergency department partnership to reduce opioid overdose deaths. *R I Med J*. 2014;97:38-39.
134. Disposal of unused medicines: what you should know. U.S. Food and Drug Administration. <http://www.fda.gov/Drugs/ResourcesForYou/Consumers/BuyingUsingMedicineSafely/EnsuringSafeUseofMedicine/SafeDisposalofMedicines/ucm186187.htm>. Updated November 15, 2016. Accessed December 26, 2016.
135. D'Onofrio G, et al. Development and implementation of an emergency department practitioner-performed brief intervention for hazardous and harmful drinkers in the emergency department. *Acad Emerg Med*. 2005;12(3):249- 256.
136. Saitz RM. Screening and brief intervention enter their 5th decade. *Subst Abuse*. 2007;28(3):3-6.
137. Madras BK, Compton WM, Avula D, et al. Screening, brief interventions, referral to treatment (SBIRT) for illicit drug and alcohol use at multiple health care sites: Comparison at intake and 6 months later. *Drug Alcohol Depend*. 2009;99(1-3):280-295.

138. Gowing L, Farrell M, Ali R, White JM. Alpha2-adrenergic agonists for the management of opioid withdrawal. *Cochrane Database Syst Rev*. 2016, Issue 5. Art. No.: CD002024. doi: 10.1002/14651858.CD002024.pub5.
139. Marmura MJ, Silberstein SD, Schwedt TJ. The acute treatment of migraine in adults: the american headache society evidence assessment of migraine pharmacotherapies. *Headache*. 2015 Jan;55(1):3-20.
140. Matchar DB, Young WB, Rosenberg JH, et. al. Evidence-based guidelines for migraine headaches in the primary care setting: pharmacological management of acute attacks. Available from the American Academy of Neurology [online]. <http://www.aan.com>.
141. Chinn S, Caldwell W, Gritsenko K. Fibromyalgia pathogenesis and treatment options update. *Curr Pain Headache Rep*. 2016; 20-25.
142. Goldenberg DL, Burckhardt C, Crofford L. Management of fibromyalgia syndrome. *JAMA*. 2004 Nov 17;292(19):2388-95.
143. Schnitzer, TJ. Update on guidelines for the treatment of chronic musculoskeletal pain. 25 (Suppl 1), *Clin Rheumatol*. 2006;25 Suppl 1:S22-9
144. McIntosh G, Hall H. Low back pain (acute). *Clin Evid (Online)*. 2011;05:1102.
145. Hayden JA, van Tulder MW, Malmivaara A, Koes BW. Exercise therapy for treatment of non-specific low back pain. *Cochrane Database Syst Rev*. 2005;(3).
146. Derry S, Moore RA, Gaskell H, et al. Topical NSAIDs for acute musculoskeletal pain in adults. *Cochrane Database Syst Rev*. 2015.
147. Jones P, Dalziel SR, Lamdin R, et al. Oral non-steroidal anti-inflammatory drugs versus other oral analgesic agents for acute soft tissue injury. *Cochrane Database Syst Rev*. 2015 Jul 1.
148. Moore PA, Hersh EV. Combining ibuprofen and acetaminophen for acute pain management after third-molar extractions. *JADA*. 2013; 898-908.
149. da Costa, Bruno R et al. Effectiveness of non-steroidal anti-inflammatory drugs for the treatment of pain in knee and hip osteoarthritis: a network meta-analysis *The Lancet*. 2016. 2093-2105.