dialogues IN CLINICAL PRACTICE

Preventing HCV and HIV Infection Among Veterans With Opioid Use Disorders

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Learning Objectives

Upon completion, participants should be able to:

- Describe factors driving opioid use disorders among veterans of the wars in Iraq and Afghanistan
- Incorporate evidence-based resources provided by the VHA system into the care of veterans with opioid use disorders
- Explain elements of a comprehensive strategy to prevent veterans with opioid use disorders from acquiring HCV and HIV

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Statement of Need

The risk of infection with hepatitis C virus (HCV) and human immunodeficiency virus (HIV) is high among individuals who abuse opioids. Injection drug use is the most common route of HCV transmission, and the incidence of new infections has skyrocketed over the past decade. Similarly, the prevalence of HIV among injection drug users is also high: in the United States, 16% of injection drug users—approximately 1 in 7—are HIV positive.

It is important to consider veterans of the recent wars in Iraq and Afghanistan as a group with a unique confluence of factors that magnify their risk of acquiring HCV and HIV. Significantly, these veterans have a pattern of prescription opioid use that far outpaces rates observed in the general population. War-related injuries, along with long-term effects of the stress and physical demands associated with deployments to war zones, can result in chronic pain for many veterans of these modern conflicts. Accordingly, the rate of opioid prescriptions provided to patients in the Veterans Health Administration system is much higher than in the general population (15% of veterans vs 4% of civilians). Furthermore, approximately 24% of veterans live in rural areas of the country, regions that are reeling from soaring rates of acute HCV infection and local HIV outbreaks. Increased risks of HCV and HIV transmission among opioid users, high rates of opioid use among veterans, and the current climate of infection within rural populations create the potential for significant increases in infection among a population of patients who may not be immediately recognized as "at risk."

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INTRODUCTION

Prescription drug abuse and misuse is the nation's fastest growing drug problem.[1] Opioid misuse can not only lead to addiction, but also put individuals at risk of overdose, transition to injection drug use, and—via this pathway—exposure to both hepatitis C virus (HCV) and human immunodeficiency virus (HIV).[1-4] Veterans of the recent wars in Iraq and Afghanistan possess unique characteristics that magnify their risks of opioid use disorder (OUD) and HCV or HIV acquisition through injection drug use.[5] This publication explores the links among chronic pain, opioid use, injection drug use, and HCV or HIV infection among the veteran population and examines strategies to address these issues within the Veterans Health Administration (VHA) system.

SCOPE OF THE PROBLEM: CHRONIC PAIN AND OPIOID USE, OVERDOSE, AND ADDICTION

Chronic Pain

Acute pain, the sensation associated with injury or a noxious stimulus, is quite different from chronic pain.[6] Although chronic pain has been variably defined as pain that either persists past the normal time of tissue healing or lasts longer than 3 months, most sources define chronic pain as pain that continues despite resolution of the injury.[7,8] This does not include pain that occurs as a result of ongoing injury, such as cancer pain, because this type of pain is usually managed as acute pain.[7,9] Chronic pain is frequently the result of a complex interplay of actions that occur when the mechanisms of pain transmission are readjusted, such as neuropathic pain that continues after the initial injury has healed.[9,10] This can include pain that results from damaged nerves or dysregulation of the nociceptive system, such as complex regional pain syndrome.[10,11] This has important ramifications for optimal pain management. Although opioids have been shown to be effective in the management of acute pain, there is a paucity of data supporting the efficacy of long-term opioid use in chronic noncancer pain syndromes.[9,11] Moreover, long-term opioid use is accompanied by significant dose-related risks that may outweigh any potential benefit.[11] These include increased risks of opioid misuse and abuse, addiction, and overdose, as well as fractures, myocardial infarction, immunosuppression, opioid-induced hyperalgesia, and adverse endocrinologic effects.[11-13]

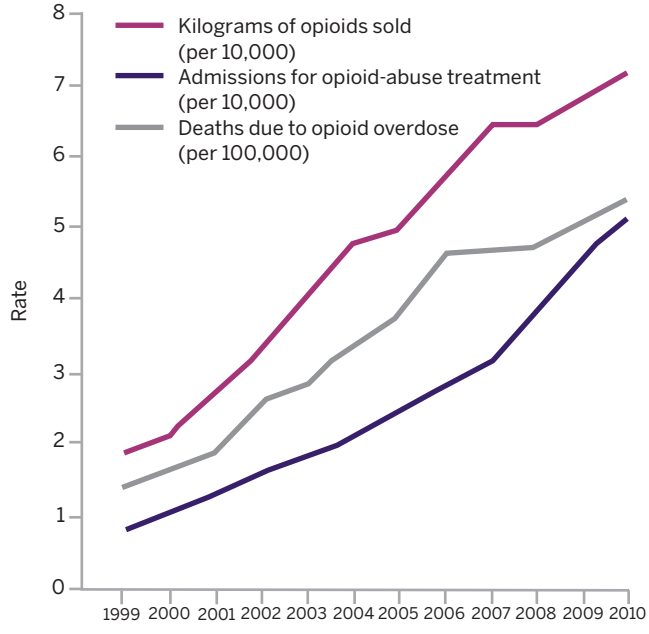
Opioid Analgesic Prescriptions

From 2000 to 2009, the number of opioid prescriptions filled by retail pharmacies increased by nearly 50%, from 174 million to 257 million.[1] The increase in opioid prescriptions for chronic noncancer pain is the result of several factors, including the urgency of unmet needs of patients experiencing chronic pain, limited therapeutic alternatives for chronic pain management, and a push by several agencies to proactively address pain.[14-16] This push included the creation of the term "pain emergency," the requirement to use pain rating scales for all patients at every visit, and the concept that pain was the so-called "fifth vital sign."[16-19] These new standards regarding pain assessment and management, together with the introduction of patient satisfaction as a reimbursement metric and economic factors, introduced a perceived pressure among clinicians to prescribe more pain medications.[16] By doing so, they felt they could circumvent negative issues related to administrative, regulatory, and economic initiatives, as well as avoid decreased patient satisfaction.

In recent years, patient satisfaction has been regarded as a complementary measure of healthcare quality.[20] Clinicians may face strong patient expectations to receive multiple prescriptions for opioids, even if this intervention may not be in the patient's best interests.[21] Although a decrease in inappropriate prescribing of opioid analgesics constitutes improvement in medical practice quality, this change in practice is likely to lead to substantial patient dissatisfaction.[21] However, recent research finds that patient satisfaction does not correlate with healthcare quality and outcomes; in fact, a national study revealed that patients who reported being most satisfied with their medical care were more likely to die than less satisfied patients.[22] Moreover, patient satisfaction does not necessarily correlate with pain relief or improved quality of life.[23] Thus, clinicians should not consider decreased patient satisfaction to be a barrier to implementing more conservative approaches to pain management as needed.

Additionally, negative outcomes from reliance on prescription opioids for chronic pain management have become evident. During the last 10 to 15 years, deaths from opioid analgesic overdoses have increased dramatically and, in 2014, accounted for 40% of the 47,055 drug-poisoning deaths in the United States (US), compared with 22% of drug-poisoning deaths due to heroin overdose.[24] The prevalence of opioid addiction has also increased, affecting approximately 2.5 million adults

FIGURE 1. Rates of Opioid Sales, Hospital Admissions for Addiction, and Overdose-Related Deaths in the US, 1999-2010



Derived from the Behavioral Health Coordinating Committee, Prescription Drug Abuse Subcommittee, US Department of Health and Human Services. Addressing prescription drug abuse in the United States: current activities and future opportunities. 2013. www.cdc.gov/drugoverdose/pdf/hhs_prescription_drug_abuse_report_09.2013.pdf. Accessed July 20, 2016.

in 2014.[14] Figure 1 illustrates the parallel increases in opioid sales, hospital admissions for addiction, and overdose-related deaths that occurred over an 11-year period.[25]

THE CHANGING NATURE OF INJURIES SUSTAINED IN OEF/OIF

Improvements in protective equipment used by servicemembers in Operation Enduring Freedom (OEF) and Operation Iraqi Freedom (OIF) have resulted in reduced combat casualty rates.[26] Between 88% and 96% of those with physical injuries from combat in Iraq and Afghanistan have survived, compared with 76% of soldiers injured in the Vietnam War.[26] However, once-fatal injuries, along with the long-term effects of stress and physical demands associated with deployments to war zones, can result in chronic pain for many veterans of these modern conflicts.[27,28] A survey of 2,597 soldiers returning from deployment in these wars found that 44% reported chronic pain.[29] Of this group, 51% characterized the pain as moderate or severe, 48% reported that the duration of pain was 1 year or longer, and 56% reported nearly daily or constant pain.[29] According to the VHA/Department of Defense (DoD), pain affects more than 90% of OEF/OIF veterans sustaining multiple injuries.[30]

Rates of long-term opioid analgesic use are high among veterans with noncancer chronic pain.[31,32] A recent national analysis of opioid use among veterans found that nearly 1 million veterans take prescription opioids, and more than one-half of these patients (52.4%) use opioids chronically (> 90 days/year).[33] One study documented a 77% relative increase in opioid prescriptions among veterans treated in the VHA system between 2004 and 2012.[31] Younger veterans (18-34 years) and women had significantly higher rates of opioid receipt.[31] Another study of 762 OEF/OIF veterans found that 64% were prescribed at least one opioid medication over a 12-month period.[32] Of these, 41% were prescribed opioids long term, and long-term users were prescribed higher doses than short-term users. Veterans with diagnoses of low back pain, migraine, posttraumatic stress disorder (PTSD), and/or nicotine use disorder were most likely to receive an opioid prescription.[32]

In 2014, more than 55,000 veterans received a diagnosis of OUD.

As in the general population, opioid prescribing practices in the VHA appear to correlate with opioid overdoses among veterans.[34,35] Between 2004 and 2008, 1,136 veterans treated within the VHA system died of prescription opioid overdose, nearly two-thirds of whom had received prescription opioids within that timeframe.[34] Veterans who died of opioid overdose were more likely to have chronic or acute pain, substance use disorders (SUDs), or other psychiatric disorders. Notably, veterans had almost twice the rate of fatal accidental poisoning from medications (including opioids) compared with the general population.[34]

EVOLVING VHA POLICIES ON OPIOID PRESCRIBING PRACTICES

In 2009, as a result of growing concern over the potential for serious harm from chronic opioid therapy, the American Pain Society and the American Academy of Pain Medicine issued a guideline to promote the appropriate and safe use of opioid therapy in chronic noncancer pain.[36] The guideline addressed issues such as:

- Patient selection and risk stratification
- Informed consent and opioid management plans
- Initiation, titration, and monitoring of chronic opioid therapy
- Indications and methods for discontinuation of therapy
- The prevention and management of opioid-related adverse effects

In 2010, the VHA/DoD updated its clinical practice guideline for the management of opioid therapy for chronic pain to reflect these changes and created an algorithmic, goal-directed approach to assist clinicians in treatment decision making in chronic pain and opioid use.[30]

In 2013, the VHA/Health Services Research & Development's Substance Use Disorder Quality Enhancement Research Initiative developed the Opioid Therapy Guideline Adherence Report, which are guidelines that use a set of national metrics to assess gaps in opioid therapy practices.[37] The report consists of 12 key practice recommendations from the 2010 VA/DoD guidelines, including the provision of appropriate follow-up for new prescriptions and avoidance of sole reliance on opioid therapy to manage chronic pain. The metrics are operationalized by using data from the VHA's electronic health records system and can be used to help track facility-level prescribing practices.[37] Also in 2013, the VHA launched the Opioid Safety Initiative (OSI) to substantially reduce opioid use through system-wide monitoring of dispensing practices and coordination of pain management care.[38,39] The OSI emphasizes patient education, informed consent, careful patient selection and monitoring, and the use of complementary and alternative healthcare practices (eg, acupuncture) to decrease dependency on opioids in chronic pain.[38,39] Prior to the nationwide VHA OSI implementation, the Minneapolis VHA facility implemented a local primary care–level OSI.[39,40] By 2014, the local initiative had been effective in reducing high-dose opioid therapy by 50%, demonstrating the potential of the nationwide VHA OSI initiative.[40]

Branches of the military have also taken steps to limit opioid prescriptions.[41] The US Army, for example, has implemented changes limiting the duration of prescription opioids to 6 months and provides pharmacist monitoring of servicemembers' medications when multiple prescriptions are being used.[41]

OUD IN VETERANS AND MILITARY PERSONNEL

OUD is a condition that is characterized by a problematic pattern of opioid use that leads to clinically significant distress and impairment.[42] In 2014, more than 55,000 veterans received a diagnosis of OUD.[43] Notably, homeless veterans are more likely to have OUD than other veterans.[44] The prevalence of homelessness in veterans who are in opioid addiction treatment programs is approximately 10 times that of the general veteran population accessing VHA care.

The DoD maintains a zero tolerance policy for illicit drug use in the military, which is enforced by random drug testing.[41] Servicemembers in violation of the policy face dishonorable discharge or even criminal prosecution. This policy has been effective at limiting illicit drug use—just 2.3% of military personnel are past-month users of illicit drugs compared with 12% of civilians. However, in 2008, 11% of servicemembers

reported misusing prescription drugs—primarily opioids—compared with 2% in 2002, representing a staggering 550% increase over a period of 6 years.[41]

OUD and Comorbid PTSD

PTSD is strongly associated with SUDs among both active military personnel and veterans.[5] Since 2002, more than 300,000 servicemembers have been diagnosed with PTSD at VHA hospitals.[5] PTSD is also associated with the presence of chronic pain.[45] Indeed, a recent study found that 31% of veterans with chronic pain have been diagnosed with PTSD, compared with just 13% of veterans without chronic pain.[45] As many as 40% of Afghanistan and Iraq war veterans treated at VHA facilities have received a triple diagnosis of PTSD, pain, and traumatic brain injury.[5] Additionally, major depressive disorder (MDD) in veterans is frequently overlooked when evaluating and treating veterans for PTSD.[46] Notably, veterans with comorbid MDD and PTSD report significantly higher rates of pain than veterans with PTSD alone.[46] They are also significantly more likely to receive opioid prescriptions than veterans with PTSD only.[47]

Patients with both OUD and PTSD present a treatment challenge for clinicians, in part due to a lack of evidence-based guidelines for treating these comorbid conditions.[48,49] In many instances, it may be difficult to differentiate symptoms of PTSD and opiate dependence.[49] Among veterans of OEF/OIF, mental health diagnoses—particularly PTSD—are associated not only with increased rates of receiving prescription opioids for pain, but also high-risk opioid use and related adverse clinical outcomes.[47] In a study of 15,676 veterans given a prescription for opioids, veterans with PTSD were more than 2.5 times more likely to receive opioids than veterans without mental health disorders. Moreover, those with PTSD were more likely to receive higher doses of opioids, 2 or more types of opioids, or early opioid prescription refills. The prevalence of adverse clinical outcomes, including self-inflicted or violence-related injuries and opioid-related overdoses, was more than doubled in veterans with PTSD.[47]

Veterans with PTSD were also nearly 5.5 times more likely to receive concurrent prescriptions for sedative hypnotics, despite the fact that benzodiazepines are not recommended in the treatment of PTSD and are documented in more than 50% of fatal poisonings involving opioids.[50,51] Among veterans prescribed long-term therapy with benzodiazepines, 47% are also prescribed long-term opioids, a practice that is known to increase the risk of overdose, accidents, and self-inflicted injury.[5,51]

Transition to Injection Opioid Use

Mounting evidence suggests that prior use of prescription pain relievers may be a precursor to injection drug use, particularly heroin.[52] An analysis of data from the National Survey on Drug Use and Health revealed that recent heroin use was 19 times higher among those who also reported use of prescription pain relievers.[52] A study of 123 younger heroin injectors aged 18 to 40 years found that 40% reported problematic use of prescription-type opioids prior to initiating heroin use.[53] These individuals also perceived themselves as having a lower risk of HCV and HIV infection than other drug users, despite the fact that a majority shared drug equipment and engaged in other high-risk behaviors.

Although data on heroin use among veterans are limited, the 2015 prospective Veterans Aging Cohort Study (VACS) found that veterans reporting the nonmedical use of prescription opioids were 5 times more likely to initiate heroin use over a 10-year period than other veterans.[2] Research also suggests that veterans may turn to prescription sharing or street drugs to manage chronic pain.[54] Indeed, a 2011 study of 343 veterans found that 16.3% reported sharing prescriptions to manage pain and 11.7% reported using street drugs.[54] An earlier study found that veterans with SUDs who received opioid prescriptions for chronic pain were 6.62 times more likely to share prescriptions than other veterans treated with opioids.[55]

THE ROLE OF OPIOID USE IN HCV INFECTION

HCV Transmission Among Injection Drug Users

Approximately 2.7 to 3.9 million people in the US are chronically infected with HCV.[56-58] The most common risk factor for HCV infection is injection drug use, in which the virus is spread by shared needles and syringes.[3,59] HCV is endemic among those who inject drugs, with an estimated prevalence of 73% in this population in the US.[60]

Although most individuals with HCV were born during 1945 to 1965, recent evidence suggests a rapid growth of HCV cases among younger persons, primarily due to injection drug use.[56,59] For example, between 2002 and 2009, HCV infection in Massachusetts increased from 65 to 113 cases per 100,000 population years in persons aged 15 to 24 years.[56] Moreover, available data strongly suggest that early prescription opioid abuse and addiction followed by a transition to injection drug use is responsible for increases in HCV infection among younger individuals, especially in rural areas east of the Mississippi River.[61] State surveillance reports from 4 states in the central Appalachian Region between 2006 and 2012 showed that new cases of HCV infection were highly correlated with treatment admissions for opioid dependency and opioid injection in persons aged 30 years or younger.[59] Prescription opioid abuse accounted for about one-third of admissions, whereas heroin accounted for 8.3% to 12%, with heroin-related admissions increasing over time.

The possibility of HCV reinfection after spontaneous clearance (which may occur, on average, in up to 26% of infected persons) or after successful treatment remains an area of clinical uncertainty.[62] A meta-analysis found that the 5-year risk of late relapse or reinfection after a sustained viral response to treatment was 1.1% among patients not engaging in high-risk behaviors.[63] Unfortunately, the risk of reinfection is often used to justify withholding treatment to persons who continue to inject drugs.[64] This position is not defendable, given that drug users who are provided with access to sterile injection equipment have been shown to decrease sharing of needles and syringes.[64] Moreover, a cost-effectiveness analysis also concluded that HCV treatment for injection drug users effectively prevented transmission and new infections, even if reinfection occurred at comparatively higher rates in this population.[65]

Veterans and HCV

Approximately 175,000 patients in VHA care have been diagnosed with HCV infection, and another 45,000 veterans in care are estimated to have undiagnosed HCV.[66] The estimated prevalence among veterans in VHA care is approximately 6%, which is 2 to 3 times higher than the HCV prevalence among the general population. An estimated 1 in 5 of these veterans remain undiagnosed. Rural and homeless veterans in particular have an increased risk of HCV. Although eradication of HCV is now possible with newer antiviral treatments, just

23% of VHA patients with HCV have been treated, and only a minority have been cured. Thus, many patients with HCV in the VHA have developed HCV-related complications, such as cirrhosis, hepatic cell carcinoma, or liver failure.[66]

Rural veterans. Approximately 24% of all veterans live in rural sections of the country where access to VHA care can be limited.[67,68] Currently, 3.2 million rural veterans are enrolled in the VHA system, representing 36% of the total enrolled veteran population.[69] A substantial portion of these veterans are younger: approximately 30% of rural veterans enrolled in the VHA system served in OEF or OIF.[69] In addition, more than 40% of rural veterans have service-related disabilities, with PTSD and traumatic arthritis being two of the most prevalent conditions.[67] As previously discussed, PTSD and combat-related chronic pain have been correlated with OUD, other SUDs, and injection drug use, thereby potentially increasing this population's risk of HCV infection.[2,41,47,70]

Homeless veterans. Homelessness is highly correlated with HCV infection, and recent data find that 10% to 44% of homeless veterans have antibodies to HCV or have HCV infection.[71] This may be partially explained by the fact that homeless veterans frequently have comorbid SUDs (eg, injection drug use), putting them at risk of not only initial HCV infection but also treatment failures or reinfection, even if they receive appropriate treatment for HCV.

HIV RISK AND INJECTION DRUG USE

In 2012, approximately 1.2 million people in the US were living with HIV.[4] Of those, about 1 in 8 were undiagnosed. In 91% of new HIV cases, heterosexual and male-to-male sexual contact are the primary modes of HIV transmission; injection drug use is responsible for the majority of remaining cases.[4] Nationally, cases of HIV transmitted via injection drug use have been in decline, from approximately 30% of all newly diagnosed HIV cases in the 1990s to just 6% in 2014.[72] However, accumulating evidence suggests that the demographics of injection drug users who contract HIV may be changing, in part due to the prescription opioid epidemic.[73] Additionally, localized outbreaks of HIV can occur in communities of injection drug users.

HIV Transmission Among Injection Drug Users

Indiana case study. In early 2015, the Indiana State Department of Health traced 11 confirmed new cases of HIV to one rural county in southeastern Indiana.[73,74] As of February 2016, the number of cases had grown to 188.[73] Over the past decade, fewer than 1 case per year had been reported in this county.[73] The outbreak was found to be centered in one town of 4,200 people, of whom an estimated 400 to 500 individuals reported injecting drugs.[75] Nearly all individuals (99%) diagnosed with HIV were non-Hispanic whites, 58% were male, and 96% reported injection drug use as their only risk factor for HIV.[73,76] The source of HIV infection was found to be injection of oxymorphone via contaminated shared syringes and other drug equipment.[73]

Avidity testing revealed that most HIV infections were recent; genetic analysis revealed that infections involved a single HIV-1 strain, suggesting that just one individual introduced HIV into the community but that injection drug use caused its rapid spread.[73,75]

Of interest, Centers for Disease Control and Prevention (CDC) investigators had also been tracking a large cluster of HCV cases in the same area that were detected several years before the HIV outbreak.[75,77] The presence of HCV with the introduction of multiple strains of the virus over time was likely a signal of widespread ongoing injection drug use within the community and possibly predictive of the HIV outbreak.[75,77] More than 90% of HIV-infected individuals were coinfected with HCV, and approximately 25% of persons with HCV were coinfected with HIV.[73,77]

Like in many other rural communities, a number of barriers interfered with containing the HIV/HCV outbreak in this area. Nearly 1 in 5 (19%) residents live at or below the poverty level.[73] Few affected individuals were employed or had health insurance, and many lacked the necessary documents to apply for Indiana's state-supported health insurance program.[72,73] Additionally, there was little awareness of HIV transmission risks and no outpatient HIV/HCV care in the community.[73] The county also had limited addiction services, including medication-assisted therapy (MAT) for opioid addiction. At the time of the outbreak, syringe service programs were prohibited by state law; however, a local syringe exchange program was instituted on an emergency basis in response to the epidemic.[73]

Houston study. Evidence suggests that high-risk sexual behaviors are an important component of HIV transmission among injection drug users.[78,79] In a sample of middle-aged injection drug users in Houston, TX, prevalence was high not only for needle sharing, but also for having multiple sexual partners and having unprotected sex with a partner in exchange for money or drugs.[79] Compared with national averages reported by the CDC, injection drug users in this sample who shared needles were 2 times more likely to have had more than 3 sexual partners (OR = 2.1; 95% CI, 1.40-3.12) in the last year; those who shared drug equipment were nearly 4 times more likely to have had unprotected sex (OR = 3.89; 95% CI, 1.66-9.09) during their previous sexual encounter.

Veterans and HIV

Although the majority of the 26,784 HIV-infected veterans in VHA care are older than 50 years, it is expected that the age distribution may change in the future as increasing numbers of younger OEF/OIF veterans enter VHA care.[80,81] This is supported by the fact that in the general population, more HIV infections are occurring among persons younger than 39 years than in any other age group.[81,82] Across all age groups, the majority of new HIV infections continue to be sexually transmitted.[82] However, as illustrated by the 2015-to-2016 Indiana HIV outbreak, it is possible that increased prescription opioid and illicit drug use among veterans, particularly those of the OEF/OIF conflicts, may indirectly confer an increased risk of HIV infection via transition to injection drug use.[73,83] As previously mentioned, veterans who are prescribed opioids for chronic pain have a high risk of initiating heroin use.[2] Moreover, SUDs are highly prevalent in the HIV-infected veteran population, with 31% reporting a history of illicit drug use.[81] In 2008, 17% of veterans infected with HIV had a recent hard drug–use diagnosis (eg, use of opioids, amphetamines, cocaine).[81] Extrapolating from the Indiana HIV outbreak, acknowledgement of this potentially increased risk of HIV infection in OEF/OIF veterans with OUD represents a key opportunity for HIV prevention.[73]

STRATEGIES TO ADDRESS OUD AND HCV/HIV RISK AMONG VETERANS

The VHA Handbook 1160.01 Uniform Mental Health Services in VA Medical Centers and Clinics outlines specific requirements for the treatment of SUDs, including OUD.[84] Appropriate services and support for the treatment of SUDs must be available for all veterans who need them. These include psychosocial interventions as either primary treatment or an adjunctive component of a coordinated program that includes pharmacotherapy.[84] VHA care centers offer the following types of care and support services[85]:

- First-time screening for alcohol or tobacco use at all VHA care locations
- Intensive outpatient counseling and treatment
- Residential care
- Medically managed detoxification and support services
- Continuing care and relapse prevention
- Marriage and family counseling
- Self-help groups
- Drug substitution therapies and newer medicines to reduce craving

The VHA system also provides treatment for comorbid mental health disorders that commonly occur with SUDs (eg, irritability, PTSD, pain, relationship problems, depression, disturbed sleep).[85] To help ensure that veterans can attend VHA treatment services, programs with expanded evening and weekend hours are also typically available. Programs are often tailored to patients with special concerns and needs, such as women, veterans of OEF/OIF, and homeless individuals. VHA healthcare providers or OEF/OIF coordinators at a local VHA medical center can provide assistance in helping veterans access these services.[85] Information on SUD services is also available through the VHA's hotline at 1-800-827-1000.

MAT in OUD

Available agents. As one component of a comprehensive treatment strategy, pharmacotherapy is often needed to assist patients who are in withdrawal from opioids.[70] When prescribed and monitored appropriately, MATs have been proven effective in reducing illicit drug use and improving social, occupational, and psychological functioning. Available therapies include methadone, buprenorphine, and naltrexone (Table 1).[70]

TABLE 1. Medications for the Treatment of OUD

	METHADONE	BUPRENORPHINE	NALTREXONE/ER NALTREXONE
Setting	Specialty licensed OTP only	Office-based or OTP, requires "x" waiver	Any medical setting (ER naltrexone requires injection)
Indication	Withdrawal or maintenance	Withdrawal or maintenance	Maintenance only; contraindicated in acute opioid withdrawal or in patients using opioids
Drug Class	Agonist (fully activates opioid receptors)	Partial agonist (produces diminished response)	Antagonist (opioid receptor blocker; blocks euphoric/analgesic effects of opioids)
Dosing	Oral: tablets or liquid	Oral: tablets or sublingual film; also available in combination with naloxone, which discourages misuse	Oral: tablets; intravenous/intramuscular: injection
Craving Reduction	+++	++	+
Advantages	Highly effective in reducing euphoria, effective in patients who fail to respond to other medications, can be used to manage comorbid pain	Better safety profile than methadone, flexible dosing, available in office settings	No addiction potential, not sedating, no potential for physical dependence, potential for improved adherence with ER naltrexone injection (once-monthly dosing)
Side Effects/ Disadvantages	Requires daily visit to outpatient treatment clinic, sedation, opioid withdrawal if discontinued abruptly, constipation, numerous drug-drug interactions, potential risk of overdose with concurrent benzodiazepines or alcohol	Constipation, potential risk of overdose with concurrent benzodiazepines or alcohol	Requires 7-day abstinence from opioids before administration to avoid precipitation of opioid withdrawal, suboptimal patient adherence with oral formulation

ER = extended release; OTP = opioid treatment program.
Derived from prescribing information; American Society of Addiction Medicine. The ASAM national practice guideline for the use of medications in the treatment of addiction involving opioid use. Pocket guide and app. International Guidelines Center, 2015. www.asam.org/quality-practice/guidelines-and-consensus-documents/npg/pocket-guide-and-app. Accessed June 11, 2016; and Volkow ND, Frieden TR, Hyde PS, et al. Medication-assisted therapies—tackling the opioid-overdose epidemic. *N Engl J Med.* 2014;370(22):2063-2066.

Methadone is an orally or sublingually administered, long-acting synthetic opioid agonist that can prevent withdrawal symptoms, reduce cravings, and block the effects of illicit opioids.[70] Although methadone is a first-line treatment for OUD and has superior treatment retention, it has important drug-drug interactions (eg, sedative-narcotics, anesthetics, phenothiazines, CYP34A inhibitors), relatively high toxicity, and a high potential for both abuse and overdose.[86,87] For these reasons, it must be administered through a federally regulated narcotic treatment program.[87] Research has shown that methadone maintenance is most effective when combined with counseling and referral to other needed medical and psychosocial services.[70]

Buprenorphine is a synthetic partial opioid agonist that can reduce or eliminate withdrawal symptoms during treatment for OUD.[70] It does not produce sedation or euphoria that is associated with other opioids and carries a low risk of overdose. In addition to the pure form of the drug, a combination of buprenorphine and the opioid antagonist naloxone is commonly prescribed. Both formulations are administered sublingually.[70] Buprenorphine for detoxification and/or maintenance can be provided in office-based settings by physicians who have obtained a DATA 2000 waiver (DEA X-number) to allow them to prescribe it.[70,87]

Naltrexone is a synthetic opioid antagonist that blocks the euphoric effects of opioids and reduces the risk of overdose.[70] It has also been used to reverse opioid overdose. Naltrexone works differently from the opioid agonists in that it diminishes the motivation to abuse opioids by blocking their effects and subsequently diminishes cravings and addiction.[70] Naltrexone has no potential for addiction or abuse; however, it will precipitate opioid withdrawal in individuals dependent on opioids.[70,87] Nonadherence with oral treatment, which requires daily dosing, is common.[70] To address this issue, an extended-release injectable formulation has recently become available that requires only once-monthly dosing.[70]

Recommendations for use. VHA guidelines indicate that pharmacotherapy with methadone or buprenorphine must be available to all patients who receive a diagnosis of OUD and do not have medical contraindications.[84] If treatment with agonists is contraindicated or not acceptable to the patient, treatment with the opioid antagonist naltrexone should be considered and made available.

Despite its proven benefits in the treatment of OUD, MAT is vastly underutilized. Approximately 25% to 27% of VHA-treated veterans with OUD receive opioid agonist therapy.[88] This percentage is about the same or slightly higher than in the general population with SUD. In 2010, only 38% of VHA hospitals offered methadone or buprenorphine in specialized clinic settings (either at VHA hospitals or in community clinics under contract with the VHA).[5,88] MAT might not be offered to patients because these treatments, particularly methadone, are frequently viewed as substitutions of one addictive drug for another.[70] Additionally, the underutilization of methadone may, in part, be due to the fact that methadone use is under strict federal regulation and access to its use is often suboptimal, particularly in rural settings.[5] However, when used appropriately, opioid agonists can be effective in helping patients with OUD lead functional lives, engage in behavioral interventions, and reduce exposure to HIV and HCV by decreasing injection drug use and drug-related high-risk sexual behavior.[70]

To address the shortage of office-based settings offering MAT treatment, the VHA has expanded access to buprenorphine in nonspecialty settings (eg, primary care clinics).[5,84] As of 2014, of the 151 VHA facilities, 142 now provide some access to buprenorphine, either onsite or through referral to community providers, although very little treatment is now contracted to non-VHA facilities.[5,84,87] The ability to prescribe buprenorphine in office-based settings has enabled facilities to keep pace with increasing demand for opioid agonist therapy.[88]

Reversing Opioid Overdose in Emergency Settings

Naloxone is an opioid antagonist that works predominantly at μ-receptors.[89] It is highly effective in reversing respiratory depression and central nervous system depression from opioid overdose and has been used for decades by emergency department personnel (Table 2).[89] (Naloxone is also used in combination formulations with buprenorphine to reduce the risk of buprenorphine misuse during treatment of OUD.[90]) Although

TABLE 2. Naloxone for the Emergency Treatment of Opioid Overdose

SETTING	Any setting where opioids are present
INDICATION	Emergency treatment of opioid overdose
DRUG CLASS	Antagonist
DOSING	Intranasal: spray; intramuscular/subcutaneous: injection; also available in combination with buprenorphine to discourage buprenorphine misuse
CRAVING REDUCTION	N/A
ADVANTAGES	Only available medication to completely or partially reverse respiratory and/or central nervous system depression associated with opioid overdose; rapid onset of action (2 minutes)
SIDE EFFECTS/ DISADVANTAGES	May precipitate severe opioid withdrawal in opioid-dependent patients; may have limited efficacy if used to reverse partial opioid agonists or mixed opioid agonists/antagonists

Derived from prescribing information; American Society of Addiction Medicine. The ASAM national practice guideline for the use of medications in the treatment of addiction involving opioid use. Pocket guide and app. International Guidelines Center, 2015. www.asam.org/quality-practice/guidelines-and-consensus-documents/npg/pocket-guide-and-app. Accessed June 11, 2016.

traditionally administered by intramuscular injection, it can also be administered intranasally or by subcutaneous injection, making it relatively easy to use by persons with minimal or no medical training.[89] Community-based opioid overdose prevention programs have reported 26,463 overdose reversals by laypersons administering naloxone from 1996 to 2014.[91] Nearly one-half of persons participating in these programs report witnessing an overdose in their lifetime, and a substantial minority of patients with OUD are likely to experience repeated overdoses.[91,92] To reduce the risk of fatality from opioid overdose, the VHA now recommends that naloxone kits or autoinjectors be provided to veterans who are prescribed or using opioids and who are at increased risk of opioid overdose.[89] Both veterans at risk of opioid overdose and any persons who might be present when the veteran is using opioids (eg, friends, family, carers, bystanders) should be educated regarding the use of naloxone to prevent death due to overdose.[89]

Reducing HCV and HIV Risk With MAT

In addition to the benefits associated with MAT in the treatment of OUD, it also plays a crucial role in reducing disease transmission among injection drug users.[5,70] This is accomplished by reducing high-risk behaviors, primarily sharing of drug injection equipment and high-risk sexual behavior associated with drug use.[70] Recent studies found that the treatment of OUD with opioid agonists or naltrexone is associated with a lower incidence of HCV and HIV transmission in persons who inject drugs.[93-95] For these reasons, major international healthcare organizations, including the World Health Organization, the United Nations Office on Drugs and Crime, and the Joint United Nations Programme on HIV/AIDS, support the expanded use of MAT.[5]

Early studies found that opioid agonist therapy, primarily methadone, can reduce the incidence of HCV by 40% to 60%.[94] However, little is known about the effects of MAT in younger individuals, especially since the advent of buprenorphine. A recently published observational study by Tsui et al found that maintenance opioid agonist therapy with either methadone or buprenorphine was associated with a 61% reduction in HCV incidence versus no treatment (adjusted hazard ratio = 0.39; 95% CI, 0.18-0.87) over a 13.5-year period in injection drug users who were younger than 30 years.[94]

A 2012 systematic review and meta-analysis of 15 studies documented a 54% risk reduction in HIV transmission attributable to opioid substitution treatment with methadone among those who inject drugs.[95] Long-term maintenance MAT may be more effective in preventing HIV than short-term interventions.[93] A 2015 study by Metzger et al found that patients with 1-year access to the combination buprenorphine/naloxone had a significantly higher and sustained reduction in opioid use and injection than those with a shorter 26-week MAT intervention. Although the number of HIV infections observed in the study was too small to determine whether the 1-year intervention was more effective in preventing HIV infection and death, the reduction in injection frequency suggests a reduced risk of HIV exposure in patients provided with long-term MAT. Moreover, patients in the long-term intervention were more likely to complete more counseling sessions and engagement with harm-reduction services.[93]

Recommendations for HCV and HIV Screening in OUD

The National Institute on Drug Abuse recommends that all patients receiving treatment for SUDs should be tested for the presence of HCV, HIV, and other infectious diseases.[70] They should also be provided with targeted risk-reduction counseling and linked to treatment for those diseases, if necessary. Substance abuse treatment facilities should provide rapid HIV testing rather than referrals to offsite testing. This increases the likelihood of patients actually receiving the test and being engaged in HIV treatment, if needed.[70]

The VHA recommends screening for HCV and HIV in general accordance with current CDC guidelines and in some special circumstances, as summarized below and on the following page.[96,97]

HCV screening. The VHA, as well as a number of other organizations including the CDC, have developed recommendations regarding identifying individuals who should be tested for HCV infection. There is strong concordance among the testing guidelines from these organizations (Table 3).[96,98]

TABLE 3. Criteria for Testing Patients for HCV Infection

- All adults born between 1945 and 1965, without prior ascertainment of HCV infection (one-time screening)
- Individuals who:
  - Have a past or current history of injection drug use (including those who were one-time users)
  - Were or are on long-term hemodialysis
  - Received blood or blood components or had an organ transplant prior to 1992
  - Received clotting factor concentrate prior to 1987
  - Have been informed that they received blood from a donor who later tested positive for HCV infection
  - Received tattoos, body piercing, or scarification in an unregulated setting
  - Are intranasal drug users
  - Are currently or have been incarcerated
  - Have unexplained chronic liver disease, including persistently elevated alanine aminotransferase levels
  - Have HIV infection
- Children born to HCV-infected mothers
- Healthcare, emergency medical, and public safety professionals after needlestick, sharp, or mucosal exposure to HCV-positive blood

Derived from Centers for Disease Control and Prevention. Recommendations for prevention and control of hepatitis C virus (HCV) infection and HCV-related chronic disease. *MMWR Recomm Rep.* 1998;47(RR-19):1-54; Centers for Disease Control and Prevention. Recommendations for the identification of chronic hepatitis C virus infection among persons born during 1945-1965. *MMWR Recomm Rep.* 2012;61(4):1-32; American Association for the Study of Liver Diseases/Infectious Diseases Society of America. Hepatitis C guidance: AASLD-IDSA recommendations for testing, managing, and treating adults infected with hepatitis C virus. http://hcvguidelines.org. Accessed August 15, 2016; Moyer VA; US Preventive Services Task Force. Screening for hepatitis C virus infection in adults: US Preventive Services Task Force recommendation statement. *Ann Intern Med.* 2013;159(5):349-357; Yee HS, Chang MF, Pocha C, et al. Update on the management and treatment of hepatitis C virus infection: recommendations from the Department of Veterans Affairs Hepatitis C Resource Center Program and the National Hepatitis C Program Office. *Am J Gastroenterol.* 2012;107(5):669-689; World Health Organization. Guidelines for the screening, care and treatment of persons with hepatitis C infection. April 2014. http://apps.who.int/iris/bitstream/10665/111747/1/9789241548755_eng.pdf?ua=1&ua=1. Accessed July 28, 2016; US Department of Veterans Affairs. Screening veterans for hepatitis C infection. www.hepatitis.va.gov/provider/reviews/screening.asp. Accessed July 28, 2016; Centers for Disease Control and Prevention. Testing recommendations for chronic hepatitis C virus infection. www.cdc.gov/hepatitis/hcv/guidelinesc.htm. Accessed July 29, 2016; and US Department of Veterans Affairs. Hepatitis C: military-related blood exposures, risk factors, VA care. National Hepatitis C Program Office. February 2016. www.hepatitis.va.gov/provider/policy/military-blood-exposures.asp. Accessed June 10, 2016.

HIV screening. In concordance with current CDC recommendations that support universal HIV screening, VHA Directive 1113 recommends that all veterans who do not have documentation of an HIV test in their health record should be offered HIV testing at the first reasonable opportunity.[97,99] Patients documented to be HIV negative but who have ongoing exposure to risk factors or demonstrate high-risk behaviors, such as injection drug use, should be offered an HIV test annually (Table 4).[99]

TABLE 4. Recommendations for HIV Testing

HIV testing is recommended for persons who:

- Are men who have sex with men[a,b]
- Have anal or vaginal sex with an HIV-positive partner[a]
- Have had > 1 sexual partner since their last HIV test[a]
- Inject drugs (or share drug injection equipment) and their sexual partners[a]
- Exchange sex for drugs or money[a]
- Have been diagnosed with or sought treatment for other sexually transmitted diseases or tuberculosis
- Have had sex with someone who has any of the above risk factors or with someone they do not know

[a]Annual testing is recommended for these persons.
[b]Sexually active gay and bisexual men may benefit from testing every 3 to 6 months.
Derived from Branson BM, Handsfield HH, Lampe MA, et al; Centers for Disease Control and Prevention. Revised recommendations for HIV testing of adults, adolescents, and pregnant women in health-care settings. *MMWR Recomm Rep.* 2006;55(RR14);1-17.

Despite recommendations for universal screening, the VHA's National HIV Testing Campaign reports that only 38% of veterans in the VHA system have been tested for HIV.[100] Clinicians should inform veterans that HIV testing at VHA facilities is voluntary.[97] As of August 2009, the VHA policy no longer requires written consent, and scripted pre-/post-test counseling is not mandatory. Prior to performing HIV testing, however, patients must still be given the opportunity to have any questions addressed.[97]

HCV and HIV Risk-Reduction Strategies Beyond MAT

Awareness of HIV seropositivity has been shown to lower high-risk sexual behavior and, subsequently, HIV transmission rates.[101] Additionally, when injection drug users have access to sterile equipment, HIV transmission rates also decrease.[78] However, it is not fully known whether awareness of HIV seropositivity among injection drug users in itself reduces HIV transmission rates. Moreover, studies have identified certain high-risk populations in which awareness of the risk of HIV remains low despite a high prevalence of HIV, such as in rural communities of the southeastern US and among African American men who have sex with men.[102-104]

Cessation of injection drug use is the most effective method for preventing HCV and HIV exposure or transmission through reduction of high-risk behaviors.

Cessation of injection drug use is the most effective method for preventing HCV and HIV exposure or transmission through reduction of high-risk behaviors, such as sharing drug equipment or engaging in risky sexual behavior.[105] Among injection drug users, patient participation in an evidence-based comprehensive drug abuse treatment program is the most effective strategy for preventing blood-borne pathogens and can provide support to help individuals stop compulsive drug-seeking.[70,105] For patients who cannot or will not seek treatment, sterile syringe access programs can help remove potentially contaminated equipment from circulation.[105] Moreover, these programs serve as an important point of contact with drug users and can facilitate the dissemination of risk-reduction and behavior-change information, referrals for HCV/HIV testing and counseling, and drug treatment services.[70,105]

Evidence supports the effectiveness of needle and syringe programs in reducing HIV transmission.[106,107] Indeed, a systematic review and meta-analysis of 12 studies concluded that needle and syringe exchange programs can reduce HIV transmission by approximately 56%.[106] Another analysis revealed that countries that provided preventive, large-scale, comprehensive harm-reduction strategies, which include needle and syringe exchange programs and MAT for opioid misuse, never experienced national HIV epidemics among people who inject drugs.[107] However, the effectiveness of needle and syringe programs in reducing HCV transmission among people who inject drugs is less clear.[107] Instead, it may indirectly reduce the risk of HCV transmission by altering risk behaviors.[73,106] A study of 4,663 injection drug users revealed that those participating in a needle exchange program were significantly less likely to share needles than nonparticipants; this change in risk behavior may indirectly reduce HCV transmission.[108] A 2014 "review of reviews" found that both needle and syringe programs and education can reduce risk behaviors associated with injecting, but further study is needed to quantify the degree to which these programs can reduce HCV transmission.[106]

Given the uncertain magnitude of effect of needle and syringe programs and other primary interventions on reducing HCV transmission among injection drug users, there has been considerable interest in using HCV pharmacologic treatment as prevention in at-risk individuals.[109] To date, no studies are evaluating the effectiveness of HCV treatment as a preventive strategy, but extrapolations from HIV treatment and theoretical evidence point to its potential. Targeted approaches—such as treating contacts of an HCV-infected individual or treating high-risk injection drug users—may have a greater positive impact than the random treatment of all injection drug users. However, the efficacy of these strategies must be proven in clinical studies before they can be implemented.[109]

Conversely, antiretroviral pre-exposure prophylaxis (PrEP), when taken consistently, has been shown to significantly reduce the risk of HIV infection among people who inject drugs.[110] Clinical practice guidelines recommend PrEP for adults without acute or established HIV infection who have used any injection drugs in the past 6 months not prescribed by a clinician and either shared injection or drug-preparation equipment in the past 6 months; have been in a methadone, buprenorphine, or buprenorphine/naloxone treatment program in the past 6 months; or are at risk of sexual acquisition.[111] Although the

strategy of PrEP with frequent testing and prompt treatment for infected individuals is an effective approach to reduce HIV transmission, it can be an expensive intervention; therefore, its use may be limited to communities with high HIV prevalence.[112]

VHA Resources for Individuals Diagnosed With HCV or HIV

In veterans diagnosed with HCV or HIV, patient education materials on treatment are available online through the VA.gov Web site at:

- www.hepatitis.va.gov/patient/index.asp (HCV)
- www.hiv.va.gov/patient/index.asp (HIV)

CONCLUSION

The VHA is committed to reducing the inappropriate use of opioids in chronic pain and providing support to veterans with OUD. An important goal in the treatment of OUD is preventing the spread of HCV and HIV through injection drug use and other high-risk behaviors. Although underutilized, MAT is a key component in the treatment of OUD and has been proven to not only reduce opioid use and improve psychosocial functioning, but also reduce behaviors that can lead to HCV and HIV infection. Screening for HCV and HIV in patients with OUD should not be overlooked—timely diagnosis and referral for VHA treatment services are necessary to improve outcomes of these diseases in the veteran population.

REFERENCES

1. Office of National Drug Control Policy, Office of the President of the United States. Epidemic: responding to America's prescription drug abuse crisis, 2011. www.whitehouse.gov/sites/default/files/ondcp/issues-content/prescription-drugs/rx_abuse_plan_0.pdf. Accessed June 2, 2016.
2. Banerjee G, Edelman EJ, Barry DT, et al. Incident non-medical use of prescription opioids is associated with heroin initiation among U.S. veterans: a prospective cohort study. *Drug Alcohol Dependence*. 2015;156:e14-e15.
3. Centers for Disease Control and Prevention. Hepatitis C FAQs for health professionals. Last updated May 23, 2016. www.cdc.gov/hepatitis/hcv/hcvfaq.htm#b1. Accessed June 3, 2016.
4. Centers for Disease Control and Prevention. HIV/AIDS. Basic statistics. Last updated March 16, 2016. www.cdc.gov/hiv/basics/statistics.html. Accessed June 10, 2016.
5. Human Rights Watch. No time to waste: evidence-based treatment for drug dependence at the United States Veterans Administration. July 2014. www.hrw.org/sites/default/files/reports/us0614_vets_ForUpload.pdf. Accessed June 3, 2016.
6. Woolf CJ, American College of Physicians, American Physiological Society. Pain: moving from symptom control toward mechanism-specific pharmacological management. *Ann Intern Med*. 2004;140(6):441-451.
7. Dowell D, Haegerich TM, Chou R. CDC guideline for prescribing opioids for chronic pain—United States, 2016. *MMWR Recomm Rep*. 2016;65(1):1-49.
8. Rosenquist EWK. Definition and pathogenesis of chronic pain. In: Aronson MD (ed). UpToDate. Waltham, MA: UpToDate; 2014. www.uptodate.com/contents/definition-and-pathogenesis-of-chronic-pain?source=search_result&search=chronic+pain&selectedTitle=2-150. Accessed July 28, 2016.
9. Voscopoulos C, Lema M. When does acute pain become chronic pain? *Br J Anaesth*. 2010;105(Suppl 1):i69-i85.
10. Nicholson B. Differential diagnosis: nociceptive and neuropathic pain. *Am J Manag Care*. 2006;12(9 Suppl):S256-S262.
11. Chou R, Turner JA, Devine EB, et al. The effectiveness and risks of long-term opioid therapy for chronic pain: a systematic review for a National Institutes of Health Pathways to Prevention Workshop. *Ann Intern Med*. 2015;162(4):276-286.
12. Vallejo R, de Leon-Casasola O, Benyamin R. Opioid therapy and immunosuppression: a review. *Am J Ther*. 2004;11(5):354-365.
13. White JM. Pleasure into pain: the consequences of long-term opioid use. *Addict Behav*. 2004;29(7):1311-1324.
14. Volkow ND, McLellan T. Opioid abuse in chronic pain--misconceptions and mitigation strategies. *N Engl J Med*. 2016;374(13):1253-1263.
15. Eriksen J, Sjøgren P, Bruera E, Ekholm O, Rasmussen NK. Critical issues on opioids in chronic non-cancer pain: an epidemiological study. *Pain*. 2006;125(1-2):172-179.
16. Kelly S, Johnson GT, Harbison RD. "Pressured to prescribe" The impact of economic and regulatory factors on South-Eastern ED physicians when managing the drug seeking patient. *J Emerg Trauma Shock*. 2016;9(2):58-63.
17. Veterans Health Administration. Pain as the 5th vital sign toolkit. 2000. www.va.gov/painmanagement/docs/toolkit.pdf. Accessed July 22, 2016.
18. Fiore K. Opioid crisis: scrap pain as 5th vital sign? *MedPage Today*. April 13, 2016. www.medpagetoday.com/publichealthpolicy/publichealth/57336. Accessed July 22, 2016.
19. Joint Commission Resources, Joint Commission International. *Approaches to Pain Management: An Essential Guide for Clinical Leaders*. 2nd ed. Oakbrook Terrace, IL: 2010.
20. Browne K, Roseman D, Shaller D, Edgman-Levitan S. Analysis & commentary. Measuring patient experience as a strategy for improving primary care. *Health Aff (Millwood)*. 2010;29(5):921-925.
21. Zgierska A, Miller M, Rabago D. Patient satisfaction, prescription drug abuse, and potential unintended consequences. *JAMA*. 2012;307(13):1377-1378.
22. Fenton JJ, Jerant AF, Bertakis KD, Franks P. The cost of satisfaction: a national study of patient satisfaction, health care utilization, expenditures, and mortality. *Arch Intern Med*. 2012;172(5):405-411.
23. Ballantyne JC, Shin NS. Efficacy of opioids for chronic pain: a review of the evidence. *Clin J Pain*. 2008;24(6):469-478.
24. Centers for Disease Control and Prevention, National Center for Health Statistics, National Vital Statistics System, Mortality File. Number and age-adjusted rates of drug-poisoning deaths involving opioid analgesics and heroin: United States, 2000-2014. 2015. www.cdc.gov/nchs/data/health_policy/AADR_drug_poisoning_involving_OA_Heroin_US_2000-2014.pdf. Accessed June 12, 2016.
25. Volkow ND, Frieden TR, Hyde PS, Cha SS. Medication-assisted therapies—tackling the opioid-overdose epidemic. *N Engl J Med*. 2014;370(22):2063-2066.
26. Stevenson C. Evolving mechanisms and patterns of blast injury and the challenges for military first responders. *J Mil Veterans Health*. 2009;17(4).
27. Tanelian T, Jaycox LH. *Invisible Wounds of War: Psychological and Cognitive Injuries, Their Consequences, and Services to Assist Recovery*. Santa Monica, CA: Rand Corporation; 2008.
28. Congressional Research Service. A guide to US military casualty statistics: Operation Freedom's Sentinel, Operation Inherent Resolve, Operation New Dawn, Operation Iraqi Freedom, and Operation Enduring Freedom. August 7, 2015. www.fas.org/sgp/crs/natsec/RS22452.pdf. Accessed July 22, 2016.
29. Toblin RL, Quartana PJ, Riviere LA, Walper KC, Hoge CW. Chronic pain and opioid use in US soldiers after combat deployment. *JAMA Intern Med*. 2014;174(8):1400-1401.
30. US Department of Veterans Affairs, US Department of Defense. VA/DoD clinical practice guideline for management of opioid therapy for chronic pain. 2010. www.healthquality.va.gov/guidelines/Pain/cot/. Accessed June 3, 2016.
31. Mosher HJ, Krebs EE, Carrel M, Kaboli PJ, Weg MW, Lund BC. Trends in prevalent and incident opioid receipt: an observational study in Veterans Health Administration. *J Gen Intern Med*. 2015;30(5):597-604.
32. Macey TA, Morasco BJ, Duckart JP, Dobscha SK. Patterns and correlates of prescription opioid use in OEF/OIF veterans with chronic noncancer pain. *Pain Med*. 2011;12(10):1502-1509.
33. Sullivan M, Hudson T, Martin BC, et al. National analysis of opioid use among veterans. 30th Annual Meeting of the American Academic of Pain Medicine; Phoenix, AZ; March 6-9, 2014. www.painmed.org/2014posters/abstract-119/. Accessed June 3, 2016.
34. Bohnert AS, Ilgen MA, Galea S, et al. Accidental poisoning mortality among patients in the Department of Veterans Affairs Health System. *Med Care*. 2011;49(4):393-396.
35. Bohnert AS, Ilgen MA, Trafton JA, et al. Trends and regional variation in opioid overdose mortality among Veterans Health Administration patients, fiscal year 2001 to 2009. *Clin J Pain*. 2014;30(7):605-612.
36. Chou R, Fanciullo GJ, Fine PG, et al; American Pain Society-American Academy of Pain Medicine Opioids Guidelines Panel. Clinical guidelines for the use of chronic opioid therapy in chronic noncancer pain. *J Pain*. 2009;10(2):113-130.
37. US Department of Veteran Affairs. Spotlight: improving safety and effectiveness of opioid therapy for chronic pain. October 2013. www.hsrd.research.va.gov/news/feature/sud-pain.cfm. Accessed June 3, 2016.
38. Mooney BL. New VA initiative seeks to reduce opioid use. *US Medicine*. May 2014. www.veterans.senate.gov/imo/media/doc/VA%20Testimony%20-%20April%2030%20SVAC%20Overmedication%20hearing.pdf. Accessed June 3, 2016.
39. US Department of Veterans Affairs. VA initiative shows early promise in

reducing use of opioids for chronic pain. February 25, 2014. www.va.gov/opa/pressrel/pressrelease.cfm?id=2529. Accessed June 10, 2016.
40. Westanmo A, Marshall P, Jones E, Burns K, Krebs EE. Opioid dose reduction in a VA health care system—implementation of a primary care population-level initiative. *Pain Med*. 2015;16(5):1019-1026.
41. National Institute on Drug Abuse. Drug facts: substance abuse in the military. Last updated March 2013. www.drugabuse.gov/publications/drugfacts/substance-abuse-in-military. Accessed June 3, 2016.
42. American Psychiatric Association. *Diagnostic and Statistical Manual of Mental Disorders*. 5th ed. Washington, DC: American Psychiatric Association; 2013.
43. Oliva EM (Health Services Research and Development). Opioid overdose education and naloxone distribution (OEND): preventing and responding to an opioid overdose. September 2, 2014. www.hsrd.research.va.gov/for_researchers/cyber_seminars/archives/video_archive.cfm?SessionID=868. Accessed June 3, 2016.
44. Bachhuber MA, Roberts CB, Metraux S, Montgomery AE. Screening for homelessness among individuals initiating medication-assisted treatment for opioid use disorder in the Veterans Health Administration. *J Opioid Manag.* 2015;11(6):459-462.
45. Higgins DM, Kerns RD, Brandt CA, et al. Persistent pain and comorbidity among Operation Enduring Freedom/Operation Iraqi Freedom/operation New Dawn veterans. *Pain Med.* 2014;15(5):782-790.
46. Runnals JJ, Van Voorhees E, Robbins AT, et al. Self-reported pain complaints among Afghanistan/Iraq era men and women veterans with comorbid posttraumatic stress disorder and major depressive disorder. *Pain Med.* 2013;14(10):1529-1533.
47. Seal KH, Shi Y, Cohen G, et al. Association of mental health disorders with prescription opioids and high-risk opioid use in US veterans of Iraq and Afghanistan. *JAMA*. 2012;307(9):940-949.
48. Back SE. Toward an improved model of treating co-occurring PTSD and substance use disorders. *Am J Psychiatry*. 2010;167(1):11-13.
49. Fareed A, Eilender P, Haber M, Bremner J, Whitfield N, Drexler K. Comorbid posttraumatic stress disorder and opiate addiction: a literature review. *J Addict Dis.* 2013;32(2):168-179.
50. Warner M, Chen LH, Makuc DM. Increase in fatal poisonings involving opioid analgesics in the United States, 1999-2006. *NCHS Data Brief*. 2009;(22):1-8.
51. Hawkins EJ, Malte CA, Imel ZE, Saxon AJ, Kivlahan DR. Prevalence and trends of benzodiazepine use among Veterans Affairs patients with posttraumatic stress disorder, 2003-2010. *Drug Alcohol Depend*. 2012;124(1-2):154-161.
52. Muhuri PK, Gfroerer JC, Davies MC. Associations of nonmedical pain reliever use and initiation of heroin use in the United States. *CBHSQ Data Review*. 2013;1-17.
53. Pollini RA, Banta-Green CJ, Cuevas-Mota J, Metzner M, Teshale E, Garfein RS. Problematic use of prescription-type opioids prior to heroin use among young heroin injectors. *Subst Abuse Rehabil.* 2011;2(1):173-180.
54. Goebel JR, Compton P, Zubkoff L, et al. Prescription sharing, alcohol use, and street drug use to manage pain among veterans. *J Pain Symptom Manage*. 2011;41(5):848-858.
55. Morasco BJ, Dobscha SK. Prescription medication misuse and substance use disorder in VA primary care patients with chronic pain. *Gen Hosp Psychiatry*. 2008;30(2):93-99.
56. Centers for Disease Control and Prevention. Hepatitis C virus infection among adolescents and young adults: Massachusetts, 2002-2009. *MMWR Morb Mortal Wkly Rep.* 2011;60(17):537-541.
57. Ditah I, Ditah F, Devaki P, et al. The changing epidemiology of hepatitis C virus infection in the United States: National Health and Nutrition Examination Survey 2001 through 2010. *J Hepatol*. 2014;60(4):691-698.
58. Armstrong GL, Wasley A, Simard EP, McQuillan GM, Kuhnert WL, Alter MJ. The prevalence of hepatitis C virus infection in the United States, 1999 through 2002. *Ann Intern Med.* 2006;144(10):705-714.
59. Zibbell JE, Iqbal K, Patel RC, et al; Centers for Disease Control and Prevention. Increases in hepatitis C virus infection related to injection drug use among persons aged ≤30 years - Kentucky, Tennessee, Virginia, and West Virginia, 2006-2012. *MMWR Morb Mortal Wkly Rep.* 2015;64(17):453-458.
60. Nelson PK, Mathers BM, Cowie B, et al. Global epidemiology of hepatitis B and hepatitis C in people who inject drugs: results of systematic reviews. *Lancet*. 2011;378(9791):571-583.
61. Suryaprasad AG, White JZ, Xu F, et al. Emerging epidemic of hepatitis C virus infections among young nonurban persons who inject drugs in the United States, 2006-2012. *Clin Infect Dis.* 2014;59(10):1411-1419.
62. Micallef JM, Kaldor JM, Dore GJ. Spontaneous viral clearance following acute hepatitis C infection: a systematic review of longitudinal studies. *J Viral Hepat.* 2006;13(1):34-41.
63. Hill AM, Simmons B, Saleem J, Cooke G. Five-year risk of late relapse or reinfection with hepatitis C after sustained virological response: meta-analysis of 49 studies in 8534 patients. 2015 Conference on Retroviruses and Opportunistic Infections; Seattle, WA; February 23-26, 2015. Abstract 654.
64. Edlin BR, Seal KH, Lorvick J, et al. Is it justifiable to withhold treatment for hepatitis C from illicit-drug users? *N Engl J Med.* 2001;345(3):211-215.
65. Martin NK, Vickerman P, Miners A, et al. Cost-effectiveness of hepatitis C virus antiviral treatment for injection drug user populations. *Hepatology*. 2012;55(1):49-57.
66. Beste LA, Ioannou GN. Prevalence and treatment of chronic hepatitis C virus infection in the US Department of Veterans Affairs. *Epidemiol Rev.* 2015;37:131-143.
67. VHA Office of Rural Health. Fact sheet. May 2014. www.ruralhealth.va.gov/about/rural-veterans.asp. Accessed June 10, 2016.
68. National Rural Health Association. Rural veterans: a special concern for rural health advocates (2013 update). www.ruralhealthweb.org/index.cfm?objectid=70A65A88-3048-651A-FEC6F164AD6ADE87. Accessed June 4, 2016.
69. VHA Office of Rural Health. Fact sheet: information about the VHA Office of Rural Health and Rural Veterans. 2014. www.ruralhealth.va.gov/docs/factsheets/ORH_General_FactSheet_2014.pdf. Accessed July 28, 2016.
70. National Institute on Drug Abuse. *Principles of Drug Addiction Treatment. A Research-Based Guide*. 3rd ed. NIH Publication No. 12–4180. Last updated December 2012.
71. US Department of Veterans Affairs. State of care of veterans with hepatitis C, 2014. September 2014. www.hepatitis.va.gov/pdf/HCV-State-of-Care-2014.pdf. Accessed June 3, 2016.
72. Brooks JT. Persistent challenge of HIV transmission control in injection drug use: lessons from the Indiana outbreak. International Antiviral Society-USA; Washington, DC; April 15, 2016. www.iasusa.org/content/persistent-challenges-hiv-transmission-control-injection-drug-use-lessons-indiana-outbreak-1. Accessed August 1, 2016.
73. Peters PJ, Pontones P, Hoover KW, et al. HIV infection linked to injection use of oxymorphone in Indiana, 2014–2015. *N Engl J Med.* 2016;375(3):229-239.
74. Conrad C, Bradley HM, Broz D, et al; Centers for Disease Control and Prevention. Community outbreak of HIV infection linked to injection drug use of oxymorphone—Indiana, 2015. *MMWR Morb Mortal Wkly Rep.* 2015;64(16):443-444.
75. Smith M. Drug-fueled Indiana HIV outbreak was preventable. *MedPage Today*. February 26, 2016. www.medpagetoday.com/meetingcoverage/croi/56416. Accessed August 1, 2016.
76. Highleyman L in collaboration with hivandhepatitis.com. Indiana HIV outbreak offers lessons about containing local outbreaks and need for harm reduction. NAM aidsmap. August 10, 2015. www.aidsmap.com/Indiana-HIV-outbreak-offers-lessons-about-containing-local-outbreaks-and-need-for-harm-reduction/page/2989444. Accessed July 28, 2016.
77. Ramachandran S. Networks of HCV transmissions among persons who inject drugs: Indiana, 2015. Conference on Retroviruses and Opportunistic Infections; Boston, MA; February 22-25, 2016. Abstract 149.
78. Strathdee SA, Sherman SG. The role of sexual transmission of HIV infection among injection and non-injection drug users. *J Urban Health*. 2003;80(Suppl 3):iii7-iii14.
79. Noor SW, Ross MW, Lai D, Risser JM. Clustered drug and sexual HIV risk among a sample of middle-aged injection drug users, Houston, Texas. *AIDS Care*. 2013;25(7):895-903.
80. US Department of Veteran Affairs. HIV infected veterans in VHA care in 2013 with VHA outpatient prescriptions for HIV antiviral medications in 2013, and/or ever had a clinical AIDS OI for the nation and by state. www.hiv.va.gov/provider/policy/hiv-in-care-by-state-2013.asp. Accessed June 4, 2016.
81. US Department of Veterans Affairs. The state of care for veterans with HIV/AIDS. December 2009. www.hiv.va.gov/provider/policy/state-of-care/veterans.asp#top. Accessed June 4, 2016.
82. Centers for Disease Control and Prevention. HIV/AIDS. Statistics overview. Last updated March 21, 2016. www.cdc.gov/hiv/statistics/overview/. Accessed June 13, 2016.
83. Bennett AS, Elliott L, Golub A. Opioid and other substance misuse, overdose risk, and the potential for prevention among a sample of OEF/OIF veterans in New York City. *Subst Use Misuse*. 2013;48(10):894-907.
84. Veterans Health Administration. VHA Handbook 1160.01 Uniform Mental Health Services in VA Medical Centers and Clinics. Last updated November 2015. www1.va.gov/vhapublications/publications.cfm?pub=2. Accessed June 10, 2016.
85. US Department of Veterans Affairs. Treatment programs for substance

use problems. www.mentalhealth.va.gov/res-vatreatmentprograms.asp. Accessed June 10, 2016.
86. Dolophine [package insert]. Eatontown, NJ: West-Ward Pharmaceuticals Corp; 2016.
87. Drexler K (Veterans Health Administration). Medications for treatment of substance use disorders (SUDs). http://justiceforvets.org/sites/default/files/vcc-2015/Handouts/VCC%20E7/VCC-E-7.pdf. Accessed June 10, 2016.
88. Oliva EM, Trafton JA, Harris AH, Gordon AJ. Trends in opioid agonist therapy in the Veterans Health Administration: is supply keeping up with demand? *Am J Drug Alcohol Abuse*. 2013;39(2):103-107.
89. VA Pharmacy Benefits Management Services. Naloxone kits and naloxone autoinjectors. Recommendations for issuing naloxone kits and naloxone autoinjectors for the VA Overdose Education and Naloxone Distribution (OEND) Program. October 2015. www.pbm.va.gov/PBM/clinicalguidance/clinicalrecommendations/Naloxone_HCl_Rescue_Kits_Recommendations_for_Use.pdf. Accessed August 1, 2016.
90. VA Pharmacy Benefits Management Services, Medical Advisory Panel, VISN Pharmacist Executives. Buprenorphine transdermal system (TDS) [BUTRANS] C-III criteria for use. June 2016. www.pbm.va.gov/PBM/clinicalguidance/criteriaforuse/Buprenorphine_TDS_Butrans_Criteria_for_Use.pdf. Accessed August 1, 2016.
91. Wheeler E, Jones TS, Gilbert MK, Davidson PJ; Centers for Disease Control and Prevention. Opioid overdose prevention programs providing naloxone to laypersons - United States, 2014. *MMWR Morb Mortal Wkly Rep*. 2015;64(23):631-635.
92. Hasegawa K, Brown DF, Tsugawa Y, Camargo CA Jr. Epidemiology of emergency department visits for opioid overdose: a population-based study. *Mayo Clin Proc*. 2014;89(4):462-471.
93. Metzger DS, Donnell D, Celentano DD, et al; HPTN 058 Protocol Team. Expanding substance use treatment options for HIV prevention with buprenorphine-naloxone: HIV Prevention Trials Network 058. *J Acquir Immune Defic Syndr*. 2015;68(5):554-561.
94. Tsui JI, Evans JL, Lum PJ, Hahn JA, Page K. Association of opioid agonist therapy with lower incidence of hepatitis C virus infection in young adult injection drug users. *JAMA Intern Med*. 2014;174(12):1974-1981.
95. MacArthur GJ, Minozzi S, Martin N, et al. Opiate substitution treatment and HIV transmission in people who inject drugs: systematic review and meta-analysis. *BMJ*. 2012;345:e5945.
96. US Department of Veterans Affairs. Hepatitis C: military-related blood exposures, risk factors, VA care. National Hepatitis C Program Office. February 2016. www.hepatitis.va.gov/provider/policy/military-blood-exposures.asp. Accessed June 10, 2016.
97. Veterans Health Administration. VHA Directive 1113. Testing for human immunodeficiency virus in Veterans Health Administration facilities. May 5, 2015. www.va.gov/vhapublications/ViewPublication.asp?pub_ID=3104. Accessed June 12, 2016.
98. Centers for Disease Control and Prevention. Testing recommendations for hepatitis C virus infection. Last updated October 15, 2015. www.cdc.gov/hepatitis/hcv/guidelinesc.htm. Accessed June 10, 2016.
99. Branson BM, Handsfield HH, Lampe MA, et al; Centers for Disease Control and Prevention. Revised recommendations for HIV testing of adults, adolescents, and pregnant women in health-care settings. *MMWR Recomm Rep*. 2006;55(RR14);1-17.
100. US Department of Veterans Affairs. National HIV testing campaign. www.hiv.va.gov/provider/campaigns-HIVtesting.asp. Accessed June 10, 2016.
101. Hall HI, Holtgrave DR, Tang T, Rhodes P. HIV transmission in the United States: considerations of viral load, risk behavior, and health disparities. *AIDS Behav*. 2013;17(5):1632-1636.
102. Holtgrave DR, Pinkerton SD. Can increasing awareness of HIV seropositivity reduce infections by 50% in the United States? *J Acquir Immune Defic Syndr*. 2007;44(3):360-363.
103. Nunn A, Zaller N, Cornwall A, et al. Low perceived risk and high HIV prevalence among a predominantly African American population participating in Philadelphia's rapid HIV testing program. *AIDS Patient Care STDS*. 2011;25(4):229-235.
104. Sison N, Yolken A, Poceta J, et al. Healthcare provider attitudes, practices, and recommendations for enhancing routine HIV testing and linkage to care in the Mississippi Delta region. *AIDS Patient Care STDS*. 2013;27(9):511-517.
105. National Institute on Drug Abuse. Principles of HIV prevention in drug-using populations. 2002. archives.drugabuse.gov/POHP/FAQ_1.html#reduce. Accessed July 24, 2016.
106. MacArthur GJ, van Velzen E, Palmateer N, et al. Interventions to prevent HIV and hepatitis C in people who inject drugs: a review of reviews to assess evidence of effectiveness. *Int J Drug Policy*. 2014;25(1):34-52.
107. Perlman DC, Des Jarlais DD, Feelemyer J. Can HIV and hepatitis C virus infection be eliminated among persons who inject drugs? *J Addict Dis*. 2015;34(2-3):198-205.
108. Holtzman D, Barry V, Ouellet LJ, et al. The influence of needle exchange programs on injection risk behaviors and infection with hepatitis C virus among young injection drug users in select cities in the United States, 1994-2004. *Prev Med*. 2009;49(1):68-73.
109. Hickman M, De Angelis D, Vickerman P, Hutchinson S, Martin NK. Hepatitis C virus treatment as prevention in people who inject drugs: testing the evidence. *Curr Opin Infect Dis*. 2015;28(6):576-582.
110. Choopanya K, Martin M, Suntharasamai P, et al; Bangkok Tenofovir Study Group. Antiretroviral prophylaxis for HIV infection in injecting drug users in Bangkok, Thailand (the Bangkok Tenofovir Study): a randomised, double-blind, placebo-controlled phase 3 trial. *Lancet*. 2013;381(9883):2083-2090.
111. Centers for Disease Control and Prevention. Preexposure prophylaxis for the prevention of HIV infection in the United States–2014: a clinical practice guideline. www.cdc.gov/hiv/pdf/prepguidelines2014.pdf. Accessed August 25, 2015.
112. Bernard CL, Brandeau ML, Humphreys K, et al. Cost-effectiveness of HIV preexposure prophylaxis for people who inject drugs in the United States. *Ann Intern Med*. 2016. [Epub ahead of print.]

PREVENTING HCV AND HIV INFECTION AMONG VETERANS
WITH OPIOID USE DISORDERS

CME/CE/CPE EVALUATION AND POST-TEST

Release Date: September 19, 2016 Expiration Date: September 18, 2017

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To submit for credit, complete the evaluation, attestation, and post-test (answering at least 70% of the post-test questions correctly). If completing the print version below, please use all capital letters and print your name, address, and other information requested below. Keep a copy of the completed evaluation and post-test for your records and mail originals to Med-IQ, 5523 Research Park Drive, Suite 210, Baltimore, MD, 21228, or fax to 443 543 5210 by September 18, 2017; certificates will be mailed within 7 business days of receipt of evaluation. To complete the evaluation online, please visit www.Med-IQ.com/a973; certificates can be printed immediately.

The purpose of this evaluation is to receive your feedback so we may improve future educational activities. All responses are confidential but may be evaluated in aggregate.

PARTICIPANT INFORMATION

Date of Participation: _____

First Name: _____ Last Name: _____

Degree/Profession: ❑ MD ❑ DO ❑ PharmD ❑ RPh ❑ PhD ❑ PA ❑ MBA
❑ RN ❑ NP ❑ LPN ❑ CRNA ❑ RT ❑ Other: _____

Specialty: ❑ Family Practice ❑ General Practice ❑ Internal Medicine
❑ Other: _____

Address 1: _____

Address 2: _____

City/State/Zip: _____

Phone: _____ Fax: _____ E-mail: _____

Type of practice: ❑ VA Medical Center ❑ Community-Based Outpatient Clinic ❑ Community Living Center ❑ VET Center
❑ Domiciliary ❑ Other: _____

ACTIVITY EVALUATION

Rate the extent to which this CME/CE/CPE activity met your expectations:	Minimally 1	2	3	4	5	6	Completely 7	N/A
Addressed my most pressing questions	❑	❑	❑	❑	❑	❑	❑	❑
Addressed competencies identified by my specialty	❑	❑	❑	❑	❑	❑	❑	❑
Provided clear evidence to support content	❑	❑	❑	❑	❑	❑	❑	❑
Included opportunities to learn interactively from faculty and participants	❑	❑	❑	❑	❑	❑	❑	❑
Provided me with supporting materials or tools for my office (reminders, patient materials, etc.)	❑	❑	❑	❑	❑	❑	❑	❑

Rate the extent to which this CME/CE/CPE activity met your expectations:	Minimally 1	2	3	4	5	6	Completely 7	N/A
Included opportunities to solve patient cases	❑	❑	❑	❑	❑	❑	❑	❑
Allowed me to assess what I have learned	❑	❑	❑	❑	❑	❑	❑	❑
Translated trial data to patients I see in my practice	❑	❑	❑	❑	❑	❑	❑	❑
Addressed barriers to my optimal patient management	❑	❑	❑	❑	❑	❑	❑	❑
Provided useful educational materials	❑	❑	❑	❑	❑	❑	❑	❑
Met your educational needs	❑	❑	❑	❑	❑	❑	❑	❑
Is applicable to your practice	❑	❑	❑	❑	❑	❑	❑	❑
Used appropriate teaching methods	❑	❑	❑	❑	❑	❑	❑	❑
Rate the extent to which this CME/CE/CPE activity met the following learning objectives:	**Minimally 1**	**2**	**3**	**4**	**5**	**6**	**Completely 7**	**N/A**
Describe factors driving opioid use disorders among veterans of the wars in Iraq and Afghanistan	❑	❑	❑	❑	❑	❑	❑	❑
Incorporate evidence-based resources provided by the VHA system into the care of veterans with opioid use disorders	❑	❑	❑	❑	❑	❑	❑	❑
Explain elements of a comprehensive strategy to prevent veterans with opioid use disorders from acquiring HCV and HIV	❑	❑	❑	❑	❑	❑	❑	❑

Did this activity provide fair and balanced content free from commercial bias? ❑ Yes ❑ No
(Commercial bias is defined as information presented that advocates a specific proprietary business product, or service, of a commercial interest.)

If no, please explain: _____

As a result of this learning experience, what will you do differently in the care of your patients? _____

_____

Other comments (eg, what can we do to improve future CME/CE/CPE activities?) _____

_____

_____

ATTESTATION REQUIRED TO EARN CREDIT:

Physicians: I claim _____ ❑ (maximum 1.0) *AMA PRA Category 1 Credit™*

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Pharmacists: I claim _____ ❑ (maximum 1.0) contact hour/0.10 CEU

REQUIRED FOR CREDIT REDEMPTION

_____ _____
Signature **Date**

_____
Nurses: must provide license # to redeem credit

_____ _____
Pharmacists: must provide EPID # to redeem credit

_____
Pharmacists: Date of Birth (MM/DD)

POST-TEST

Name

(Please Print)

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To redeem credit for this activity, please take a moment to select the optimal answer for each of the following questions. You must answer at least 70% of the questions on this page correctly to receive credit.

1. What is the estimated number of veterans with OUD?

A. 12,000
B. 24,000
C. 55,000
D. 100,000

2. In the treatment of OUD, MATs:

A. Have been shown to be effective in reducing HCV and HIV transmission
B. Work by substituting one opioid for another
C. Are unavailable in office-based settings
D. Are most effective as short-term treatments

3. The most effective way for patients with OUD who inject drugs to reduce their risk of HCV and HIV transmission is to:

A. Cease injection drug use
B. Participate in a syringe exchange program
C. Engage in comprehensive psychosocial and occupational counseling
D. Receive treatment with buprenorphine

4. The estimated prevalence of HCV among veterans in VHA care is approximately:

A. 5%
B. 6%
C. 7%
D. 8%

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