



## Screening emergency department patients for opioid drug use: A qualitative systematic review<sup>☆</sup>



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### HIGHLIGHTS

- There is a lack of validity and reliability data for opioid screening instruments.
- There is no clear evidence to state which instruments are appropriate for use.
- There is a need for reliable and valid opioid screening instruments in EM settings.

### ARTICLE INFO

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### ABSTRACT

**Introduction:** The opioid drug epidemic is a major public health concern and an economic burden in the United States. The purpose of this systematic review is to assess the reliability and validity of screening instruments used in emergency medicine settings to detect opioid use in patients and to assess psychometric data for each screening instrument.

**Methods:** PubMed/MEDLINE, PsycINFO, Cochrane Database of Systematic Reviews, Cochrane Central Register of Controlled Trials, Web of Science, Cumulative Index to Nursing and Allied Health Literature and [ClinicalTrials.gov](http://ClinicalTrials.gov) were searched for articles published up to May 2018. The extracted articles were independently screened for eligibility by two reviewers. We extracted 1555 articles for initial screening and 95 articles were assessed for full-text eligibility. Six articles were extracted from the full-text assessment.

**Results:** Six instruments were identified from the final article list: Screener and Opioid Assessment for Patients with Pain - Revised; Drug Abuse Screening Test; Opioid Risk Tool; Current Opioid Misuse Measure; an Emergency Medicine Providers Clinician Assessment Questionnaire; and an Emergency Provider Impression Data Collection Form. Screening instrument characteristics, and reliability and validity data were extracted from the six studies. A meta-analysis was not conducted due to heterogeneity between the studies.

**Conclusions:** There is a lack of validity and reliability evidence in all six articles; and sensitivity, specificity and predictive values varied between the different instruments. These instruments cannot be validated for use in emergency medicine settings. There is no clear evidence to state which screening instruments are appropriate for use in detecting opioid use disorders in emergency medicine patients. There is a need for brief, reliable, valid and feasible opioid use screening instruments in the emergency medicine setting.

### 1. Introduction

At the beginning of 1999, the opioid drug epidemic began to disperse across the United States (U.S.) and it persists, despite efforts to

end this epidemic from spreading further. The Centers for Disease Control and Prevention (CDC) report that opioids such as prescription opioids, heroin and fentanyl killed over 42,000 individuals in 2016 (Centers for Disease Control and Prevention, 2018a). Furthermore, in

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2016, there were 32,445 deaths involving prescription opioids specifically. This is almost a 10,000 death increase in the span of a year as 22,598 deaths involving prescription opioids were reported in 2015 (Centers for Disease Control and Prevention, 2018b). In 2016, the rate of overdose of prescription opioids in men was 6.2 and the rate in women was 4.3 (Centers for Disease Control and Prevention, 2018c). The number of drug overdose deaths exceeds alcohol use and motor vehicle traffic-related deaths, illustrating the severity and concern of drug overdose in the U.S (Centers for Disease Control and Prevention, 2017a; Centers for Disease Control and Prevention, 2017b).

As defined by the *Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition*, the terms substance abuse and dependence have been replaced with the expression “substance use disorders,” categorized on a scale from mild to severe. The Substance Abuse and Mental Health Services Administration describes concrete symptoms of opioid use disorder, such as “strong desire[s] for opioids, inability to control or reduce use, continued use despite interference with major obligations or social functions, use of larger amounts over time, development of tolerance, spending a great deal of time to obtain and use opioids” (Substance Abuse and Mental Health Services Administration, 2017)... as well as adverse health outcomes. During periods of attempted withdrawals, individuals may experience changes in mood or behavior, nausea, vomiting, fatigue, fever and insomnia, to name a few (Substance Abuse and Mental Health Services Administration, 2017).

The rise in opioid use disorders reinforces the severity of the opioid drug epidemic, as well as the undue burdens placed on individuals and the American healthcare system (Substance Abuse and Mental Health Services Administration, 2017). A retrospective study reported on the economic burden of prescription opioid use and misuse in 2013. About \$78.5 billion of total U.S. economic burden was accredited to prescription opioid misuse. About one-third (\$28.9 billion) was spent on healthcare and substance abuse treatments (Florence, Zhou, Luo, & Xu, 2016).

The rate of opioid prescribing in the U.S. plateaued between 2010 and 2012 (Compton, Jones, & Baldwin, 2016). Despite the decline in prescription opioid abuse, there are surges of heroin use and overdose deaths. In 2016, about 475,000 people ages 12 and older were classified as current heroin users. This corresponds to about 0.2% of the population ages 12 or older (Substance Abuse and Mental Health Services Administration, 2018). According to the 2016 National Survey on Drug Use and Health report, “The percentage of young adults [ages 18 to 25 years] in 2016 who were current heroin users (0.3%) was higher than the percentages in 2002 through 2004, and it was similar to the percentages in 2005 through 2015.” (Substance Abuse and Mental Health Services Administration, 2018) Nonmedical prescription opioid use is associated as a risk factor for future heroin use, although the transition from nonmedical prescription opioids to heroin is rare and occurs at a steady rate (Compton et al., 2016).

As of 2008, the U.S. Preventive Services Task Force (USPSTF) determined “that the current evidence is insufficient to assess the balance of benefits and harms of screening adolescents, adults, and pregnant women for illicit drug use.” (United States Preventive Services Task Force, 2017) The USPSTF conducted a systematic review to identify validated screening instruments for the detection of drug misuse in ambulatory general medical settings and found “the evidence is not sufficient, however, to establish the positive predictive value of these tests when used in a general medical patient population with a predictably lower prevalence of drug use/misuse. The available evidence does not permit one to determine the overall clinical utility of these instruments when applied in a busy primary care practice setting, and especially in screening pregnant women for drug use.” (Lanier & Ko, 2008; United States Preventive Services Task Force, 2017).

There is an urgent need to identify possible screening instruments for illicit drug use, specifically opioid use disorders, in various patient populations. Screening instruments provide healthcare providers with information in order to disseminate resources to patients who are at

risk for substance use disorders. Screening instruments are available to almost all patient populations, in several clinical settings, and there are different forms of screening tools available, including questionnaires/instruments (Center for Substance Abuse Treatment, 2009; Substance Abuse and Mental Health Services Administration-Health Resources and Services Administration Center for Integrated Health Solutions, 2017).

Screening instruments have been validated for other health concerns, conditions and disorders, including alcohol use disorders (AUDs) and intimate partner violence, in emergency medicine (EM) settings (Feldhaus et al., 1997; Jones, 2011). These previous studies illustrate that it is possible to screen for multiple health conditions in EM settings. In particular, EM settings require time-sensitive screening instruments due to the fast-paced nature of the clinical environment and patient volume.

Furthermore, previous literature has depicted associations between emergency department use and drug overdose, as one study found a strong association between ED visits and the risk of subsequent prescription drug overdose deaths (Brady et al., 2015). Additionally the CDC found that from July 2016 to September 2017, 142,557 ED visits (15.7 per 10,000 visits), in 45 states, were suspected opioid overdoses. Rates increased in demographic groups and in five U.S. regions. In 16 states, 119,198 ED visits (26.7 per 10,000 visits) were suspected opioid-involved overdoses (Vivolo-Kantor et al., 2018). As a result, the CDC includes an implication for public health practice statement: “Educating ED physicians and staff members about appropriate services for immediate care and treatment and implementing a post-overdose protocol that includes naloxone provision and linking persons into treatment could assist EDs with preventing overdose.” (Vivolo-Kantor et al., 2018) From these results, it is evidence that EM settings play a significant role in the public health response to the opioid epidemic and because pain-related cases are common in the EM setting, it is necessary for EM providers to monitor patients for possible opioid use disorders (Cordell et al., 2002).

The objective of this qualitative systematic review is to analyze existing literature and provide comprehensive psychometric evidence concerning the use of screening instruments in EM settings to detect opioid use in patients. We believe that shorter, highly-reliable and validated screening instruments will provide accurate data regarding opioid use, and serve as the best options for screening instruments to use in EM settings. Due to contamination, mislabeling and lost sampling of toxicology screening tests, we will not analyze invasive screening tests such as blood, urine and saliva sampling (Beck et al., 2014; Lanier & Ko, 2008; O’Neal & Poklis, 1998). We aim to provide reliability and validity psychometric evidence for screening instruments that can detect opioid use in fast-paced EM settings to contribute to the existing literature in this field. We hope to provide EM physicians and clinicians with information concerning which screening instruments they can utilize to screen EM patients for possible opioid use disorder patterns and provide immediate interventions and educational programs for these patients.

## 2. Materials and methods

### 2.1. Literature search strategies

We systematically searched the following databases: PubMed/MEDLINE, PsycINFO, Cochrane Database of Systematic Reviews, Web of Science, Cumulative Index to Nursing and Allied Health Literature (CINAHL) and Cochrane Central Register of Controlled Trials (CENTRAL) from their inception dates to May 2018. We developed the optimal search strategy in PubMed and applied filters to restrict the final search results. The search strategy was moderately modified for use in the other selected databases. The search strategies for each database are depicted in Appendix A (Appendix A.).

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