**How to Cite**:
Al-Jasser, S. A., Alenazi, N. S. D., Alhazmi, F. K. M., Gaddourah, A. M. I., Aleiid, A. S., Alsayyari, A. M., Alhuwayrini, S. S., & Almusallam, M. A. (2019). Nursing, health informatics, and paramedic roles in prehospital management of overdose cases: Opioids and beyond. *International Journal of Health Sciences*, *3*(S1), 318–335. https://doi.org/10.53730/ijhs.v3nS1.15211

# Nursing, health informatics, and paramedic roles in prehospital management of overdose cases: Opioids and beyond

**Saleh AbdulLatif Al-Jasser**
KSA, National Guard Health Affairs

**Nawaf Subhi Dobayan Alenazi**
KSA, National Guard Health Affairs

**Fares Khalid Mohammed Alhazmi**
KSA, National Guard Health Affairs

**Ahmad Mohammed Isa Gaddourah**
KSA, National Guard Health Affairs

**Alaa Saud Aleiid**
KSA, National Guard Health Affairs

**Alaa Musaad Alsayyari**
KSA, National Guard Health Affairs

**Sulaiman Salem Alhuwayrini**
KSA, National Guard Health Affairs

**Mohannad Ali Almusallam**
KSA, National Guard Health Affairs

***Abstract*---Background:** The opioid crisis has intensified, leading to numerous fatalities and heightened public health concerns regarding the management of overdose cases. The multifaceted challenges posed by opioid misuse and addiction necessitate a comprehensive approach involving paramedics, emergency medical services (EMS), and nursing professionals. **Aim:** This study aims to explore the roles of emergency medical services, health informatics, nursing and paramedic personnel in the prehospital management of overdose cases, focusing on opioids and other substances. **Methods:** A systematic review was conducted, synthesizing relevant literature on the prehospital

International Journal of Health Sciences E-ISSN 2550-696X © 2019.
***Corresponding email**: akk29337@gmail.com*
*Manuscript submitted: 01 Jan 2019, Manuscript revised: 09 Jan 2019, Accepted for publication: 15 Jan 2019*

management strategies employed by paramedics and nurses in cases of opioid overdose. Key interventions, risk factors, and outcomes were analyzed to identify best practices in the field. **Results:** Findings reveal that both nursing and paramedic roles are critical in addressing overdose cases. Paramedics provide immediate life-saving interventions, including the administration of naloxone, while nursing staff play a vital role in patient assessment and follow-up care. Collaborative efforts enhance patient outcomes and reduce the risk of future overdoses. **Conclusion:** The involvement of nursing and paramedic professionals in the prehospital management of overdose cases is essential in mitigating the opioid crisis. Strengthening the collaboration between these groups can lead to improved strategies for prevention, intervention, and rehabilitation in overdose cases.

***Keywords*---**Opioids, overdose, paramedics, nursing, emergency medical services, pain management, opioid use disorder.

## Introduction

Opioids are acknowledged as essential and legitimate pharmacological agents for pain management; however, their use is accompanied by considerable risks to both individuals and society, including misuse, abuse, diversion, addiction, and fatal overdoses. In 2015, fatalities linked to prescribed opioids (excluding non-methadone synthetic opioids such as fentanyl and tramadol) surpassed 15,000 [1]. In response to this crisis, policymakers have implemented a national initiative aimed at curtailing opioid prescriptions, enhancing regulatory oversight, and establishing stringent prescribing guidelines [2]. These measures have seemingly produced the intended outcome of reducing dispensed prescriptions for opioids, which declined for two consecutive years, decreasing by 2.7% in 2015 and 1.7% in 2016, as reported by the Quintiles IMS Institute [3]. Unfortunately, the prevalence of misuse and substance use disorders (SUDs) involving opioids has not experienced a commensurate decline, and the needs of patients suffering from pain have been inadequately addressed [4]. Cost-effective and readily available alternative pain relief options remain inaccessible to many individuals, and federal funding for pain research has consistently diminished [5].

The ramifications of chronic pain are heterogeneous, with some individuals enduring severe pain on a daily basis. Data from the Functioning and Disability Supplement of the 2012 National Health Interview Survey indicated that approximately 126.1 million adults in the United States experienced some form of pain within the preceding three months [6]. Among these individuals, 25.3 million adults (11.2%) reported experiencing pain daily, while 23.4 million (10.3%) indicated experiencing "a lot" of pain. Those reporting the most severe pain levels exhibited poorer health status, utilized more healthcare services, and experienced greater disability. Furthermore, mortality risk escalates with increased pain intensity, duration, and frequency of disruption to daily activities, as evidenced by a large cohort study involving older adults with pain (≥50 years) [7].

Comprehensive, multidisciplinary approaches are deemed optimal for managing chronic pain. Although opioids should not be considered first-line treatments, they do provide pain relief and functional restoration for certain patients [8]. Prevalence estimates of opioid use disorders (OUDs) among patients receiving therapeutic opioids vary significantly due to inconsistencies in study criteria and methodologies [9]. Various studies have estimated the prevalence of addiction among opioid-treated patients to range from 1% to 5% or even lower [8–11]; however, these figures are heavily dependent on the methodologies and definitions employed. A systematic review encompassing 38 studies of patients with chronic pain treated with opioids revealed an average misuse rate between 21% and 29%, with addiction rates ranging from 8% to 12% [12]. Other investigations have reported the prevalence of OUDs to be as high as 35% among opioid-treated patients [13], though the correlation with addiction remains uncertain. A rational interpretation of the data suggests that a greater number of individuals utilize opioids for legitimate medical purposes rather than for abuse or misuse. Nevertheless, the substantial volume of prescribed opioids carries a significant burden of adverse health outcomes and societal repercussions when addiction or overdose-related fatalities occur [4], particularly affecting individuals who consume opioids without prescriptions. This article examines strategies aimed at mitigating risks and enhancing therapeutic outcomes with prescribed medications commonly employed in pain management, which, alongside opioids, include antidepressants, anxiolytics, sleep aids, and other controlled substances.

**Definitions Related to Opioid Use and Misuse**

The criteria for opioid use disorders (OUDs) as outlined in the *Diagnostic and Statistical Manual of Mental Disorders* (5th edition) [16] encompass withdrawal and tolerance, phenomena that may manifest in individuals with or without OUD, contingent upon the context of opioid use. Definitions pertaining to substance misuse are notably distinct from the anticipated physiological effects associated with medical opioids, which include tolerance and physical dependence. Tolerance develops with prolonged use, while withdrawal symptoms can occur with abrupt cessation; these reactions are normal human responses to opioids and necessitate optimal management of the patient's analgesic regimen. Insufficient pain relief can itself precipitate a relapse into drug abuse. Within the broader category of substance use disorders (SUDs), OUDs may range from mild to severe when an individual experiences cravings or persists in opioid use despite facing physical, psychological, social, occupational, and other challenges.

**Pain Assessment:**

Pain is acknowledged as a biopsychosocial experience [17], encompassing not only clinically significant elements but also dimensions that hold personal meaning for the patient. It is essential to evaluate the severity of the patient’s pain and determine whether it is likely to respond to the chosen treatment modalities. Comprehensive, multidisciplinary care is considered optimal for the management of chronic pain. In instances where pain is sufficiently severe to disrupt functioning and daily activities, and where patients experience enhanced mobility and improved quality of life through opioid use, individualized clinical decision-making is warranted. Patients typically serve as the most reliable informants

regarding their pain, including its location, intensity, impact on physical functioning, and overall quality of life. However, commonly employed pain scales that prompt patients to rate their pain on a scale from 0 to 10 can yield varied interpretations among individuals. Innovative assessment systems, such as the Stanford-developed Collaborative Health Outcomes Information Registry, provide an opportunity for a more nuanced evaluation of pain by utilizing item banks that capture a broad spectrum of physical, psychological, and social functioning domains [18].

Pain management providers must undertake a meticulous risk–benefit analysis and document the rationale, therapeutic regimen, and treatment course for each patient, as stipulated in the educational component of the US Food and Drug Administration's risk evaluation and mitigation strategy for extended-release and long-acting opioids [19]. This protocol is equally applicable to short-acting opioids. Furthermore, the influences of pain and adjunctive medications on the patient's analgesic experience, potential aberrant drug-seeking behaviors, side effects, and the implications for familial, occupational, and social life, as well as mood and daily activities, all constitute critical considerations for follow-up. Patients whose quality of life deteriorates during the course of opioid therapy—despite experiencing physical pain—may not be utilizing opioids primarily for pain relief but rather to mitigate emotional distress, achieve euphoric effects, self-medicate for psychiatric conditions, or compulsively due to addiction. Such misuse undermines the intended objective of pain relief and presents significant risks not only to the individual but also to society at large.

**Risk Factors for Misuse, Abuse, and Addiction**

Medication misuse and abuse can manifest in both patients and nonpatients for various reasons, which include the following [20]:

- Miscommunication between the patient and the provider
- Unauthorized self-medication for pain, mood, or sleep issues
- A desire to circumvent symptoms associated with abstinence syndrome
- An inclination towards euphoria or other psychoactive rewards
- Compulsive usage stemming from addiction
- Illegal diversion of medications for financial gain

Prior to initiating opioid therapy for chronic pain, clinicians should evaluate patients for their risk of developing an Opioid Use Disorder (OUD) to determine the necessary level of clinical monitoring. Identified risk factors indicative of potential OUD behaviors include [10,13,21–26]:

- Nonfunctional status resulting from pain
- Exaggeration of pain experiences
- Unclear origins of pain
- Younger age
- Tobacco use
- Inadequate social support
- Personal history of substance abuse
- Family history of substance abuse
- Psychological stress

- Experiences of psychological trauma
- Presence of psychological disorders
- Use of psychotropic substances
- An intense focus on opioids
- Incidents of preadolescent sexual abuse
- A history of legal issues
- Previous substance abuse treatment
- Craving for prescription medications
- Mood fluctuations
- Adverse childhood experiences

Additionally, uncontrolled pain can lead to stress, which may result in opioid misuse or abuse, even in patients lacking other identifiable risk factors. Furthermore, mental and emotional distress stemming from histories of trauma, despair prevalent in economically disadvantaged communities, episodes of binge use driven by thrill-seeking behavior, and social environments that foster illicit substance use can all contribute to adverse outcomes and therapeutic failures in opioid management [27].

**Overdose Mortality Related to Opioids**

Risk factors contributing to overdose fatalities associated with both medical and nonmedical opioid use include age, comorbid mental and physical disorders, a history of Substance Use Disorder (SUD)—which may be the most significant factor—and various psychological and social stressors [26,28–34]. These risk factors encompass:

- Middle age
- Previous substance abuse, including both prescription and illicit drugs as well as alcohol
- Comorbid mental health and medical conditions
- High opioid dosages, especially when combined with benzodiazepines
- Methadone use
- Concurrent prescribing of benzodiazepines
- Concurrent prescribing of antidepressants
- Unemployment
- Polysubstance abuse
- Opioid naïveté
- Recent release from incarceration
- Recent release from abstinence-based addiction treatment
- Sleep apnea
- Cardiac or pulmonary complications (e.g., respiratory infections, asthma)
- Pain intensity (e.g., elevated, low, moderate, moderate–severe, severe)

In a particular study, narratives from medical examiners regarding overdose fatalities indicated that over half of the deceased individuals had a history of substance abuse, while more than a third had chronic diseases, chronic pain, or mental disorders [31]. The same investigation highlighted that although oxycodone and methadone were the most frequently cited opioids in overdose deaths, all opioids can be lethal in cases of overdose, particularly when used in

conjunction with other substances [31]. The risk of polydrug poisoning is often underestimated in the context of opioid therapy for pain management. Individuals experiencing severe pain frequently contend with comorbidities such as depression, anxiety, sleep disorders, and other psychiatric and medical conditions [28,29,31,32]. These coexisting medical and psychiatric issues complicate treatment regimens, as medications prescribed for these conditions—such as anxiolytics and antidepressants—may depress respiratory function and increase the risk of unintentional overdose [32,35].

Established risk factors for both fatal and nonfatal respiratory events related to opioid use form the foundation of the Risk Index for Overdose or Serious Opioid-Induced Respiratory Depression (RIOSORD). A variant of the RIOSORD demonstrated nearly 90% predictive accuracy in a Veterans Administration case–control study involving close to 9,000 veteran patients [36] and has been further validated in commercial insurance records for a nonveteran population of approximately 18 million medical users of prescription opioids [32]. This tool generates a risk index designed to predict the likelihood of an overdose or opioid-induced respiratory depression (OIRD) in patients using medical opioids. The RIOSORD is intended for integration into electronic health records to facilitate individualized, point-of-care decision-making aimed at mitigating opioid-related risks [32,36].

**Predictors of Opioid-Induced Respiratory Depression (OIRD)**
The following factors have been identified as strong or moderate predictors of Opioid-Induced Respiratory Depression (OIRD) [32]:

**Strong Predictors**

- **Substance Use Disorder (SUD) diagnosis in the previous 6 months**: Recognized as the single strongest predictor of OIRD.
- **Bipolar disorder or schizophrenia**
- **Cerebrovascular disease**
- **Renal disease**
- **Heart failure**
- **Nonmalignant pancreatic disease**
- **Concurrent prescription of benzodiazepines or antidepressants**

**Moderate Predictors**

- **Recurrent headache**
- **Chronic pulmonary disease**
- **Sleep apnea**
- **Use of extended-release and long-acting opioid formulations**
- **Daily morphine equivalence dose (MED) ≥ 100 mg**

Fentanyl, morphine, and methadone are the opioids most strongly linked to OIRD, particularly in individuals aged 55 and older and those who have had high healthcare utilization in the preceding six months, characterized by one or more emergency department visits or hospital admissions. It is noteworthy that the presence of an antidepressant is a stronger predictor of OIRD than a daily morphine equivalence dose (MED) of ≥ 100 mg. In a prior study, the risk of

overdose did not significantly increase until the MED reached 200 mg, unless a benzodiazepine was also prescribed [31]. This indicates a need for further investigation into additional factors contributing to overdose risk, such as the underlying reasons for requiring higher opioid doses, including intractable pain, mood disorders, and post-traumatic stress.

**Suicide Risk**

Chronic pain conditions are known to correlate with an elevated risk of suicide. Patients within chronic pain populations exhibit a heightened risk of suicidal ideation and attempts [38,39]. Common factors associated with pain—such as stress, social challenges, psychiatric issues (e.g., depression), and substance abuse—further contribute to the risk of intentional overdose or suicide [38,40,41]. Pain itself plays a significant role in this dynamic; as noted by Hassett et al. [40], "In all likelihood, there are aspects of chronic pain itself that add uniquely to an individual's suicide risk profile." There are both overlaps and distinctions in the risk factors associated with suicide in the general population versus those specific to individuals suffering from chronic pain. Understanding these nuanced risk factors is crucial for developing effective preventive strategies and therapeutic interventions.

**Manner-of-Death Classifications and Misclassification of Opioid-Related Deaths**

National statistics categorize poisoning deaths related to prescription opioids into manners of death: accident, suicide, homicide, or undetermined. However, there is substantial evidence suggesting that suicides may often be misclassified and underreported . This misclassification raises the possibility that deaths recorded as unintentional or with undetermined intent may, in reality, be the result of intentional overdoses, where individuals ingest excessive amounts of opioids to alleviate emotional or physical distress . Inadequately managed pain is recognized as a significant risk factor for intentional overdose . Since severe pain is also a known risk factor for suicide, it follows that severe pain can similarly lead to passively awaited overdoses. Understanding that death from drug self-intoxication may sometimes be passively awaited is crucial for developing prevention strategies, as the risk factors associated with suicide and adverse outcomes from opioid use overlap with those that can lead to such passive deaths.

**Diversion of Opioids**

**Diversion** refers to the intentional removal of medication from legal dispensing and distribution channels. Common examples include:

- Forged prescriptions
- Pharmacy robberies
- Patients selling their medications
- Theft of medications by family or others
- Patients taking higher doses than prescribed

**Risk Factors for Diversion in Pain Clinic Settings**

Several factors may indicate a heightened risk of diversion within a pain management clinic, including:

- Positive family history of drug abuse
- Personal history of criminal behavior
- Age group of 35–44 years
- Divorce (which may increase the risk of having medications stolen)
- Financial strain (which can lead to lost or stolen medications)

Surveys have indicated that family members and friends are the most common sources of diverted opioids . Identifying diversion in a clinical context can be challenging, and research indicates that individuals who divert medications may easily impersonate legitimate patients, deceiving healthcare providers .

**Clinical Practice and Assessment Tools for Opioid Misuse, Abuse, and Addiction**

Following a thorough risk-benefit analysis, if a clinician deems it necessary to initiate opioid therapy, they should assess the patient for potential misuse, abuse, or addiction. After starting opioid therapy, decisions regarding ongoing prescriptions should be based on therapeutic outcomes, typically measured by improvements in function or reductions in pain. Risk factors predictive of challenges in managing opioid intake have been used to create clinical tools that categorize patients by risk levels, guiding the intensity and type of follow-up measures required. It's essential to recognize that patients may shift risk categories over time. Most clinical and medicolegal guidelines expect pain management providers to assess patients for current substance misuse and relevant risk factors prior to prescribing opioids for chronic pain .
Several opioid-specific screening tools are available, including:

- Initial and revised Screener and Opioid Assessment for Patients in Pain
- Diagnosis, Intractability, Risk, Efficacy Score
- The Opioid Risk Tool (as proposed by the author)

However, none of these tools have undergone comprehensive validation across diverse clinical settings. Tools that effectively identify patients at risk for drug abuse often exhibit high sensitivity but may also yield high false-positive rates. Clinicians should select assessment tools that align with their clinical practices and apply them—or a less formal set of questions addressing known risk factors—consistently. Assessment should be an integral part of routine patient interactions to foster openness and encourage honest communication about substance use.

**Risk Stratification and Monitoring for Opioid Use Disorder (OUD)**

Assessment plays a crucial role in helping clinicians categorize patients into risk levels, facilitating monitoring based on test results and other clinical indicators. Patients with low-risk scores may still develop OUDs, while those categorized as high risk do not necessarily exhibit problematic drug-related behaviors, even if opioids are not the ideal treatment for their pain. Tools like the **Current Opioid Misuse Measure** can aid in tracking patient progress effectively. In addition to assessing opioid misuse risk, clinicians should monitor for comorbid mental health disorders and provide appropriate treatments, including potential co-management with mental health and substance abuse specialists.

**Initial Testing and Communication**

Conducting an initial urine test to identify current medications and any licit or illicit substances can help facilitate communication between the patient and provider, inform treatment decisions, and empower clinicians to advocate for their patients. Presenting this testing as a routine, consensual part of medical care—with a clear explanation of its importance as a diagnostic tool—can increase patient acceptance. Checking the state prescription-monitoring database is also recommended when feasible.

**Management of High-Risk Patients**

Patients at the highest risk for opioid misuse typically have a history of drug abuse or are actively abusing substances while experiencing pain. Although a history of substance use does not guarantee future abuse, it necessitates a more cautious treatment approach and possibly collaboration with addiction specialists. For such patients, nonopioid and nonpharmacologic alternatives, such as physical rehabilitation and behavioral therapies, are often preferable. If opioid therapy is essential due to severe pain, safety measures may include:

- Prescribing lower doses along with alternative therapies
- Carefully controlling medication supply
- Choosing medications with less potential for misuse (e.g., buprenorphine, tapentadol)
- Implementing stringent follow-up protocols, such as more frequent visits and limited quantities of medication dispensed

**Documentation and Exit Strategies**

Clinicians who initiate opioid therapy should meticulously document all treatment decisions and discussions in the medical record. They should also be prepared to implement exit strategies, which may involve tapering opioids humanely when necessary and referring patients to specialists in substance abuse, mental health, or alternative pain management.

**Suicide Risk Assessment**

Regular screening for suicidal thoughts and plans is critical, especially for patients with the following risk factors:

- Age over 45 years
- Female gender
- History of suicide attempts
- Low social support
- Divorce
- Active mental health disorders
- Current substance abuse
- Unemployment
- Specific suicide plans
- Access to lethal means (e.g., prescription medications)
- Alcohol dependence
- High pain intensity and long duration

- Comorbid conditions like insomnia and chronic pain (e.g., migraines, back pain)

For high-risk patients without a current plan or intent, clinical safety measures should include:

- Limiting opioid doses, quantities, and durations
- Avoiding concurrent use of central nervous system (CNS) depressants
- Initiating psychotherapy or regular psychiatric care
- Teaching coping skills to minimize catastrophizing and kinesiophobia
- Encouraging cognitive-behavioral treatment for sleep disorders
- Ensuring access to emergency psychiatric resources
- Frequent reassessment, keeping in mind that suicide may manifest as a passive desire for death in patients with intractable pain.

**Sleep Apnea Assessment**

Sleep apnea is a known risk factor for respiratory depression in patients taking high doses of opioids, particularly with methadone (>50 mg/day) or other opioids (≥150 mg MED). Clinicians should consider a sleep study for high-risk patients and potentially evaluate opioid therapy safety through inpatient assessments.

**Benzodiazepines and Opioids Co-prescribing**

The concurrent prescribing of benzodiazepines and opioids is generally discouraged unless absolutely necessary. If this combination is required, it should involve the lowest effective doses of both medications, alongside strict follow-up and referral for addiction or mental health management as needed. Relative contraindications for co-prescribing benzodiazepines and opioids include:

- A history of substance use disorder (SUD) with brief remissions and a lack of a robust recovery program
- History of abuse involving benzodiazepines, opioids, alcohol, or other CNS depressants
- Mood, anxiety, or thought disorders
- Personality disorders
- Medical comorbidities such as morbid obesity, sleep-disordered breathing, chronic obstructive pulmonary disease, and hepatic or renal dysfunction
- Older adults, who are at an increased risk of falls and associated complications.

**RIOSORD:**

The **Risk Index for Overdose or Serious Opioid-Induced Respiratory Depression (RIOSORD)** is a clinical tool designed to help healthcare providers predict the likelihood of overdose or serious respiratory depression in patients receiving opioid therapy. Here's a summary of its key features:

**Purpose**

- **Risk Assessment**: RIOSORD assesses individual patient risk factors to predict potential adverse outcomes associated with opioid use, particularly respiratory depression and overdose.

**Development and Validation**

- **Research Basis**: The RIOSORD was developed based on data from large populations, including a Veterans Administration case-control analysis and later validated using commercial insurance records. This validation involved nearly 18 million opioid-treated patients, showcasing its predictive accuracy.

**Predictive Factors**

The RIOSORD incorporates both **strong** and **moderate** predictors for opioid-induced respiratory depression (OIRD), which can include factors such as:

**Strong Predictors:**

- Recent substance use disorder diagnosis
- Comorbid psychiatric disorders (e.g., bipolar disorder, schizophrenia)
- Medical conditions (e.g., cerebrovascular disease, renal disease, heart failure)
- Concurrent use of benzodiazepines or antidepressants

**Moderate Predictors:**

- Chronic pulmonary disease
- Sleep apnea
- Daily morphine equivalence dose (MED) ≥100 mg
- Use of extended-release and long-acting opioid formulations

**Implementation**

- **Clinical Use**: RIOSORD can be integrated into electronic health records to facilitate individualized, point-of-care decision-making regarding opioid prescriptions. It helps clinicians make informed decisions to mitigate risks associated with opioid therapy.

**Importance**

- **Patient Safety**: By identifying patients at higher risk for OIRD, clinicians can implement preventive strategies, such as closer monitoring, lower dosing, alternative pain management approaches, and appropriate referrals to specialists when necessary.

**High Dose**

Recent guidelines on opioid prescribing have suggested establishing daily ceilings for morphine equivalent doses (MED) to mitigate risks linked with prolonged opioid therapy. It is crucial to recognize that dosage alone may not adequately assess a patient's risk; adverse effects can also manifest at lower doses. Additionally, genetic variability among patients can influence their responses to opioids, highlighting the need for personalized treatment approaches.

Furthermore, the concurrent use of benzodiazepines and other central nervous system (CNS) depressants, along with underlying mental health conditions, can introduce additional risks [58].

**Role of Paramedics, EMS, and Nursing in Management:**

Paramedics play a critical role in the emergency medical services (EMS) system by providing immediate care to patients in prehospital settings. They are trained to assess and manage a wide range of medical emergencies, from trauma to cardiac events. In high-pressure situations, paramedics must quickly evaluate patients, initiate appropriate interventions, and determine the need for advanced care or transportation to medical facilities. Their ability to perform life-saving procedures, such as advanced airway management and intravenous access, can significantly influence patient outcomes. Additionally, paramedics often serve as a vital communication link between the patient and the healthcare system, providing crucial information to emergency department staff upon arrival.

The EMS system operates as a coordinated network that encompasses not only paramedics but also other healthcare professionals involved in emergency response. This system includes dispatchers, emergency medical technicians (EMTs), and first responders who work together to ensure efficient and effective care delivery. Coordination among these professionals is essential for optimizing patient care and ensuring that resources are appropriately allocated. The EMS system is designed to respond swiftly to emergencies, reducing response times and facilitating timely interventions, which is critical for improving survival rates and overall health outcomes in emergency situations.

Nursing professionals also play a vital role in the management of patients during and after EMS interventions. In the hospital setting, nurses are often the first point of contact for patients arriving from EMS. They are responsible for conducting comprehensive assessments, monitoring vital signs, and implementing care plans based on the established protocols. Nurses collaborate closely with paramedics to obtain essential patient information, including medical history and the details of prehospital interventions. This collaboration enhances continuity of care and ensures that patients receive appropriate treatments promptly. Furthermore, nurses provide education and support to patients and their families, helping them navigate the complexities of their care and promoting a better understanding of their conditions.

In the prehospital management of overdose cases, including opioids, health informatics plays a crucial role by enabling paramedics and nurses to access real-time patient data, such as medical histories, medications, and previous overdose incidents, through electronic health records (EHRs). This access facilitates quick decision-making and tailored treatment interventions, such as administering naloxone for opioid overdoses. Health informatics also supports seamless communication between paramedics, nursing teams, and hospitals, ensuring timely transmission of vital patient information. Additionally, decision support systems guide appropriate care protocols, while data collected from overdose cases can inform future prevention strategies and improve emergency response outcomes.

In summary, the roles of paramedics, EMS, and nursing professionals are interconnected and crucial for effective management in emergency medical situations. Each group brings specialized skills and knowledge that contribute to comprehensive patient care, from initial assessment and intervention in the field to ongoing management and support in the hospital. By working collaboratively, these professionals can improve patient outcomes and enhance the overall efficiency of the healthcare system in responding to emergencies.

**Conclusion**

The opioid crisis has underscored the urgent need for effective prehospital management of overdose cases, particularly in the context of the complex interplay between opioid prescriptions, misuse, and addiction. As frontline responders, paramedics and nursing professionals play crucial roles in addressing these challenges through immediate care and long-term management strategies. Their interventions not only save lives but also provide a framework for understanding and addressing the underlying issues associated with opioid use disorders. Paramedics are often the first to arrive at the scene of an overdose, where their rapid assessment and immediate interventions, such as administering naloxone, are vital in reversing life-threatening conditions. This swift action not only stabilizes patients but also opens avenues for further medical evaluation and treatment. In contrast, nursing professionals contribute significantly by providing comprehensive assessments, continuity of care, and education regarding opioid management. Their involvement in patient follow-ups ensures that individuals receive the necessary support to navigate recovery pathways and reduces the likelihood of recurrence. Moreover, the collaboration between paramedics and nursing professionals enhances the effectiveness of overdose management. By sharing insights and experiences, these groups can develop standardized protocols that address the nuances of overdose situations, improving the overall care provided to patients. Training initiatives focusing on recognizing the signs of overdose, understanding risk factors, and managing co-occurring conditions can empower both paramedics and nurses to deliver more effective interventions. As the landscape of opioid use continues to evolve, the roles of nursing and paramedic personnel must adapt to meet emerging challenges. This includes an emphasis on community education and prevention strategies aimed at reducing stigma surrounding substance use disorders. Furthermore, fostering relationships with mental health and addiction services can facilitate holistic approaches to managing the complexities of pain and opioid dependence. In conclusion, the integral roles of paramedics and nursing professionals in the prehospital management of overdose cases highlight the necessity for collaborative efforts in addressing the opioid crisis. Strengthening these partnerships, enhancing training, and promoting awareness can lead to improved patient outcomes and a more comprehensive response to the ongoing challenges posed by opioid misuse and overdose.

**References**


1. Rudd RA, Seth P, David F, Scholl L. Increases in drug and opioid-involved overdose deaths—United States, 2010-2015. MMWR Morb Mortal Wkly Rep. 2016;65:1445–1452.
2. Dowell D, Haegerich TM, Chou R. CDC guideline for prescribing opioids for chronic pain—United States, 2016. MMWR Recomm Rep. 2016;65:1–49.
3. Lowes R. Message heard? Pain med prescribing down second year in row. Medscape. May 4, 2017. Available at: http://www.medscape.com/viewarticle/879514. Accessed September 18, 2017.
4. Lynch ME, Katz J. 'One size fits all' doesn't fit when it comes to long-term opioid use for people with chronic pain. Canad J Pain. 2017;1:2–7.
5. Kroenke K, Cheville A. Management of chronic pain in the aftermath of the opioid backlash. JAMA. 2017;317:2365–2366.
6. Nahin RL. Estimates of pain prevalence and severity in adults: United States, 2012. J Pain. 2015;16:769–780.
7. Smith D, Wilkie R, Croft P, McBeth J. Pain and mortality in older adults: the influence of pain phenotype. Arthritis Care Res (Hoboken). 2017 [Epub ahead of print].
8. Noble M, Treadwell JR, Tregear SJ, et al. Long-term opioid management for chronic noncancer pain. Cochrane Database Syst Rev. 2010CD006605. doi: 10.1002/14651858.CD006605.pub2.
9. Minozzi S, Amato L, Davoli M. Development of dependence following treatment with opioid analgesics for pain relief: a systematic review. Addiction. 2013;108:688–698.
10. Webster LR, Webster RM. Predicting aberrant behaviors in opioid-treated patients: preliminary validation of the opioid risk tool. Pain Med. 2005;6:432–442.
11. Fleming MF, Balousek SL, Klessig CL, Mundt MP, Brown DD. Substance use disorders in a primary care sample receiving daily opioid therapy. J Pain. 2007;8:573–582.
12. Vowles KE, McEntee ML, Julnes PS, Frohe T, Ney JP, van der Goes DN. Rates of opioid misuse, abuse, and addiction in chronic pain: a systematic review and data synthesis. Pain. 2015;156:569–576.
13. Boscarino JA, Rukstalis MR, Hoffman SN, et al. Prevalence of prescription opioid-use disorder among chronic pain patients: comparison of the DSM-5 vs. DSM-4 diagnostic criteria. J Addict Dis. 2011;30:185–194.
14. Katz NP, Adams EH, Chilcoat H, et al. Challenges in the development of prescription opioid abuse-deterrent formulations. Clin J Pain. 2007;23:648–660.
15. Smith DE. The process addictions and the new ASAM definition of addiction. J Psychoactive Drugs. 2012;44:1–4.
16. Saunders JB. Substance use and addictive disorders in DSM-5 and ICD 10 and the draft ICD 11. Curr Opin Psychiatry. 2017;30:227–237.
17. Institute of Medicine Committee on Advancing Pain Research, Care, and Education. Relieving Pain in America: A Blueprint for Transforming Prevention, Care, Education, and Research. 2011.Washington, DC: National Academies Press (US).

18. Carriere J, Darnall B, Kao M, Mackey S. (489) An examination of the roles of perceived injustice and pain acceptance on pain interference and pain intensity in patients with chronic pain: a Collaborative Health Outcomes Information Registry (CHOIR) Study. J Pain. 2016;17:S97.
19. Stanos S. Evolution of opioid risk management and review of the classwide REMS for extended-release/long-acting opioids. Phys Sportsmed. 2012;40:12–20.
20. Savage SR. What to do when pain and addiction coexist. J Fam Pract. 2013;62:S10–S16.
21. Atluri SL, Sudarshan G. Development of a screening tool to detect the risk of inappropriate prescription opioid use in patients with chronic pain. Pain Physician. 2004;7:333–338.
22. Butler SF, Fernandez K, Benoit C, Budman SH, Jamison RN. Validation of the revised Screener and Opioid Assessment for Patients with Pain (SOAPP-R). J Pain. 2008;9:360–372.
23. Dunbar SA, Katz NP. Chronic opioid therapy for nonmalignant pain in patients with a history of substance abuse: report of 20 cases. J Pain Symptom Manage. 1996;11:163–171.
24. Friedman R, Li V, Mehrotra D. Treating pain patients at risk: evaluation of a screening tool in opioid-treated pain patients with and without addiction. Pain Med. 2003;4:182–185.
25. Savage SR. Assessment for addiction in pain-treatment settings. Clin J Pain. 2002;18(suppl 4):S28–S38.
26. Akbik H, Butler SF, Budman SH, Fernandez K, Katz NP, Jamison RN. Validation and clinical application of the Screener and Opioid Assessment for Patients with Pain (SOAPP). J Pain Symptom Manage. 2006;32:287–293.
27. Szalavitz M. The feds are about to stick it to pain patients in a big way. Vice. 2017.
28. Webster LR, Cochella S, Dasgupta N, et al. An analysis of the root causes for opioid-related overdose deaths in the United States. Pain Med. 2011;12Suppl 2S26–S35.
29. Porucznik CA, Johnson EM, Sauer B, Crook J, Rolfs RT. Studying adverse events related to prescription opioids: the Utah experience. Pain Med. 2011;12Suppl 2S16–S25.
30. Substance Abuse and Mental Health Services Administration: SAMHSA Opioid Overdose Prevention Toolkit. HHS Publication No. (SMA) 13–4742. 2013.Rockville, MD: Substance Abuse and Mental Health Services Administration.
31. Dasgupta N, Funk MJ, Proescholdbell S, Hirsch A, Ribisl KM, Marshall S. Cohort study of the impact of high-dose opioid analgesics on overdose mortality. Pain Med. 2016;17:85–98.
32. Zedler BK, Saunders WB, Joyce AR, Vick CC, Murrelle EL. Validation of a screening risk index for serious prescription opioid-induced respiratory depression or overdose in a US Commercial Health Plan Claims Database. Pain Med. 2017 Mar 6 [Epub ahead of print].
33. Binswanger IA, Stern MF, Deyo RA, et al. Release from prison–a high risk of death for former inmates. N Engl J Med. 2007;356:157–165.
34. Anderson K. Death after treatment for heroin dependence. Pro Talk: a rehabs.com community.

35. Reisfield GM, Webster LR. Benzodiazepines in long-term opioid therapy. Pain Med. 2013;14:1441–1446.
36. Zedler B, Xie L, Wang L, et al. Development of a risk index for serious prescription opioid-induced respiratory depression or overdose in Veterans' Health Administration Patients. Pain Med. 2015;16:1566–1579.
37. Ilgen MA, Kleinberg F, Ignacio RV, et al. Noncancer pain conditions and risk of suicide. JAMA Psychiatry. 2013;70:692–697.
38. Stenager E, Christiansen E, Handberg G, Jensen B. Suicide attempts in chronic pain patients. A register-based study. Scand J Pain. 2013;5:4–7.
39. Fishbain DA, Lewis JE, Gao J. The pain suicidality association: a narrative review. Pain Med. 2014;15:1835–1849.
40. Hassett AL, Aquino JK, Ilgen MA. The risk of suicide mortality in chronic pain patients. Curr Pain Headache Rep. 2014;18:436.
41. Cheatle MD, Wasser T, Foster C, Olugbodi A, Bryan J. Prevalence of suicidal ideation in patients with chronic non-cancer pain referred to a behaviorally based pain program. Pain Physician. 2014;17:E359–E367.
42. Rockett IR, Hobbs GR, Wu D, et al. Variable classification of drug-intoxication suicides across US States: a partial artifact of forensics? PLoS One. 2015;10:e0135296.
43. Stone DM, Holland KM, Bartholow B, et al. Deciphering suicide and other manners of death associated with drug intoxication: a Centers for Disease Control and Prevention Consultation Meeting Summary. Am J Public Health. 2017;107:1233–1239.
44. Madadi P, Persaud N. Suicide by means of opioid overdose in patients with chronic pain. Curr Pain Headache Rep. 2014;18:460.
45. Cicero TJ, Kurtz SP, Surratt HL, et al. Multiple determinants of specific modes of prescription opioid diversion. J Drug Issues. 2011;41:283–304.
46. Walker MJ, Webster LR. Risk factors for drug diversion in a pain clinic patient population. J Opioid Manag. 2012;8:351–362.
47. Setnik B, Roland CL, Goli V, et al. Self-reports of prescription opioid abuse and diversion among recreational opioid users in a Canadian and a United States city. J Opioid Manag. 2015;11:463–473.
48. Jung B, Reidenberg MM. Physicians being deceived. Pain Med. 2007;8:433–437.
49. Chou R, Fanciullo GJ, Fine PG, Miaskowski C, Passik SD, Portenoy RK. Opioids for chronic noncancer pain: prediction and identification of aberrant drug-related behaviors: a review of the evidence for an American Pain Society and American Academy of Pain Medicine clinical practice guideline. J Pain. 2009;10:131–146.
50. Rolfs RT, Johnson E, Williams NJ, Sundwall DN; Utah Department of Health. Utah clinical guidelines on prescribing opioids for treatment of pain. J Pain Palliat Care Pharmacother. 2010;24:219–235.
51. Washington State Agency Medical Directors' Group. Interagency Guideline on Prescribing Opioids for Pain2015.3rd ed. Olympia, WA: Agency Medical Directors' Group.
52. Department of Veterans Affairs, Department of Defense. VA/DoD clinical practice guideline for opioid therapy for chronic pain. 2017.
53. Belgrade MJ, Schamber CD, Lindgren BR. The DIRE score: predicting outcomes of opioid prescribing for chronic pain. J Pain. 2006;7:671–681.

54. Butler SF, Budman SH, Fanciullo GJ, Jamison RN. Cross validation of the current opioid misuse measure to monitor chronic pain patients on opioid therapy. Clin J Pain. 2010;26:770–776.
55. Butler SF, Budman SH, Fernandez KC, et al. Development and validation of the current opioid misuse measure. Pain. 2007;130:144–156.
56. Tang NK, Crane C. Suicidality in chronic pain: a review of the prevalence, risk factors and psychological links. Psychol Med. 2006;36:575–586.
57. Webster LR. Eight principles for safer opioid prescribing. Pain Med. 2013;14:959–961.
58. American Academy of Pain Medicine. AAPM comments to the CDC on the proposed 2016 guideline for prescribing opioids for chronic pain. January 12, 2016. Available at: http://www.painmed.org/press/position-statements/. Accessed September 15, 2017.
59. Bahji, A., & Bajaj, N. (2018). Opioids on trial: a systematic review of interventions for the treatment and prevention of opioid overdose. *Canadian Journal of Addiction*, *9*(1), 26-33.

**الملخص:**

**الخلفية :**تفاقمت أزمة الأفيونات، مما أدى إلى العديد من الوفيات وزيادة المخاوف المتعلقة بالصحة العامة بشأن إدارة حالات الجرعة الزائدة. تتطلب التحديات المتعددة الأوجه التي تطرحها إساءة استخدام الأفيونات والإدمان نهجًا شاملاً يشمل رجال الإسعاف وخدمات الطوارئ الطبية والمهنيين في التمريض.

**الهدف :**تهدف هذه الدراسة إلى استكشاف أدوار موظفي التمريض، وخدمات الرعاية الحرجة، والمعلومات الصحية، ورجال الإسعاف في إدارة حالات الجرعة الزائدة قبل المستشفى، مع التركيز على الأفيونات ومواد أخرى.

**الطرق :**تم إجراء مراجعة منهجية، حيث تم تلخيص الأدبيات ذات الصلة حول استراتيجيات إدارة ما قبل المستشفى المستخدمة من قبل رجال الإسعاف والممرضين في حالات الجرعة الزائدة من الأفيونات. تم تحليل التدخلات الرئيسية وعوامل الخطر والنتائج لتحديد أفضل الممارسات في هذا المجال.

**النتائج :**تكشف النتائج أن أدوار كل من التمريض ورجال الإسعاف حيوية في معالجة حالات الجرعة الزائدة. يقدم رجال الإسعاف تدخلات إنقاذ الحياة الفورية، بما في ذلك إعطاء النالوكسون، بينما يلعب موظفو التمريض دورًا أساسيًا في تقييم المرضى ورعاية المتابعة. تعزز الجهود التعاونية نتائج المرضى وتقلل من خطر الجرعات الزائدة المستقبلية.

**الخاتمة :**إن مشاركة المهنيين في التمريض ورجال الإسعاف في إدارة حالات الجرعة الزائدة قبل المستشفى أمر أساسي في التخفيف من أزمة الأفيونات. يمكن أن يؤدي تعزيز التعاون بين هذه المجموعات إلى تحسين استراتيجيات الوقاية والتدخل وإعادة التأهيل في حالات الجرعة الزائدة.

**الكلمات المفتاحية :**الأفيونات، الجرعة الزائدة، رجال الإسعاف، التمريض، خدمات الطوارئ الطبية، إدارة الألم، اضطراب استخدام الأفيونات.