

Public Safety Response to Intoxication and Agitation: Clinical and Justice Perspectives

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Disclosure Information

- ◆ Presenter 1: Nicholas Chien, MD
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 - ◆ No Disclosures

Learning Objectives

- ◆ Describe the role of medications used in the pre-hospital setting to manage patients who are profoundly agitated, and how their use applies to substance use, mental illness, and race.
- ◆ Identify challenges associated with finding safe and effective evidence based interventions for the treatment of profoundly agitated patients in the prehospital setting.
- ◆ Define and describe 'structural competency' and apply this concept to clinical practice.

Excited Delirium Syndrome

Excited Delirium Syndrome

- ◆ ***Non-specific and poorly characterized*** term
 - ◆ Describes severe agitation & acute distress
 - ◆ Used in literature > 100 years
 - ◆ Encountered in the pre-hospital setting
 - ◆ Associated with sudden death
- ◆ Term is not recognized by the American Medical Association (AMA), American Psychiatric Association (APA), or World Health Organization (WHO)

Excited Delirium Syndrome

- ◆ Syndrome of uncertain etiology
 - ◆ ? Catecholaminergic excess, dopamine / glutamate overstimulation
 - ◆ Commonly perceived to be **mental illness & drug intoxication**
- ◆ Must rule-out life-threatening illness
 - ◆ Ex: intracranial hemorrhage, meningitis, hyper/hypo-glycemia, thyrotoxicosis, sepsis, uremia, serotonin syndrome
 - ◆ Requires rapid stabilization to facilitate medical transport for diagnostic evaluation and treatment

Excited Delirium Syndrome: Concurrent Drug Exposure

Table 5
Reported Drug Abuse and Respective Reported Prevalence in ExDS Patients

Reported Drug Abuse in Studies	Reported Percentage of Patients' Positive Drug Testing (%)
Psychostimulant (cocaine, LSD, methamphetamine) ^{23,29}	10%–94% ^{23,29}
Cocaine ^{13,16,20,23,24,26,29}	6%–83% ^{20,26}
In combination with alcohol ^{20,23,25,26,29,34}	27%–37% ^{29,34}
In combination with other drugs* ^{13,20,25,26,29}	3%–17% ^{20,29}
PCP ^{16,24,44,53}	24%–40% ^{16,24}
Amphetamine ^{13,16,23,26,29}	9%–24% ^{13,16}
Synthetic cathinone ^{26,38,54,56,57}	3% ²⁶
LSD ^{13,26}	3%–9% ^{13,26}
THC ^{16,23}	11%–42% ^{16,23}
Synthetic cannabinoids ²⁶	25% ²⁶
Opioids ^{16,26}	6.25%–9% ^{16,26}
Alcohol ¹⁶	23% ¹⁶
Other (lithium, methylphenidate hydrochloride, haloperidol, lidocaine, valproic acid, amantadine, lorazepam, amobarbital, citalopram, risperidone) ^{13,23,29}	2%–9% ^{13,23}
Multipositive toxicology in ED ^{16,20}	33%–55% ^{16,20}

- ◆ + tox screens > 90% of cases
- ◆ Sympathomimetics common
 - ◆ cocaine, amphetamines, PCP, synthetic cathinones, synthetic cannabis
- ◆ Does not imply causation

Excited Delirium Syndrome

- ◆ Patients are usually identified first by law enforcement
- ◆ Rapid stabilization prevents injury to patients, bystanders, or providers and facilitate medical transport
 - ◆ Physical, chemical, electrical restraints are used
- ◆ No formal protocols on management of excited delirium syndrome by prehospital providers
 - ◆ Presents significant challenges to emergency medical responders

Excited Delirium Syndrome & Mortality

- ◆ Mortality rate: 8.3 – 16.5%
- ◆ Deaths are usually *sudden* and *unanticipated*
 - ◆ Occur shortly after administration of physical or chemical restraint
 - ◆ Associated with prone positioning, positional asphyxia
- ◆ Deaths occur in the prehospital setting (~ 66% deaths)
- ◆ Deaths occur in police custody
 - ◆ 38-82% of ExDS mortality occurred in police custody

Excited Delirium Syndrome & Racial Inequality

- ◆ Excited Delirium Syndrome is more likely to occur among people of color
 - ◆ Particularly, Black or Afro-Caribbean men
- ◆ Independent risk factors:
 - ◆ Young age
 - ◆ African-American race
 - ◆ Male sex

Excited Delirium Syndrome

- ◆ The term is frequently described in medical literature
- ◆ No universal definition exists
- ◆ Lack of standardized protocol in pre-hospital management
- ◆ It carries racial and social implications

Described Approach to Pre-Hospital Agitation

Verbal De-escalation

Chemical Sedation

- ◆ Benzodiazepines and antipsychotics are most commonly used
 - ◆ Slow onset of action (15-30 mins)
 - ◆ IV routes are preferred, but can be difficult to obtain
 - ◆ Side effects: respiratory depression, cardiac dysrhythmias, variability in clinical response

Physical Restraints

- ◆ Physical submission, physical restraints, spit masks, stun guns/tasers
- ◆ Higher risk of asphyxia and death, especially in the prone position
 - ◆ Direct crush asphyxia (compression of chest and abdomen)
 - ◆ Direct neck compression, carotid sleeper holds

Chemical Sedation: Purpose

- ◆ Facilitate medical evaluation
 - ◆ Calm patient
 - ◆ Reduce physical exertion
 - ◆ Counteract endogenous chemicals
 - ◆ Counteract exogenous chemicals

Chemical Sedation: Benzodiazepines

Benzodiazepines

◆ Midazolam (Versed)

- ◆ Typical dose: 2.5 - 5mg IV/IM
- ◆ Onset of action: 10-20 minutes (IM) – more rapid than lorazepam
- ◆ May require repeat dosing (every 3-5 minutes)

◆ Lorazepam (Ativan)

- ◆ Typical dose: 0.5 - 2mg IV/IM
- ◆ Onset of action: 15-30 minutes (IM)
- ◆ May require repeat dosing (every 30 minutes)
- ◆ As effective as haloperidol

Indication: Agitation from drug intoxication (specially stimulants) and alcohol withdrawal

◆ Side Effects: Respiratory depression, paradoxical disinhibition

Chemical Sedation: Anti-Psychotics

Anti-Psychotics

◆ Haloperidol (most commonly used)

- ◆ Typical Dose: 2.5 – 10mg (IV or IM)
- ◆ Onset of action: 30-60 minutes (IM)
- ◆ FDA “black box” warning 200

◆ Droperidol

- ◆ Typical dose: 2.5 - 5mg (IV or IM)
- ◆ Onset of action: 15-30 minutes (IM)
- ◆ FDA “back box” warning 2001
- ◆ More rapid onset than haloperidol, but shorter half-life

Indication: Agitation
from psychiatric illness
and alcohol intoxication

◆ Side Effects: QT Prolongation, cardiac dysrhythmias (torsades de pointes), EPS

Chemical Sedation: Benzos vs Antipsychotics

- ◆ Pharmacologic treatment should be catered to likely cause
- ◆ Ideal sedative for agitated, violent patients would be rapid acting and possess minimal side effects.
- ◆ IM midazolam has shorter time to sedation than IM lorazepam and IM haloperidol
- ◆ IM midazolam has a quicker time to arousal than IM lorazepam and IM haloperidol

Chemical Sedation: Ketamine

- ◆ An alternative in managing acute agitated patients
- ◆ Mechanism: N-methyl-D-aspartate receptor antagonist
 - ◆ The only dissociative agent currently in clinical use
 - ◆ "Disconnects" the thalamocortical and limbic systems, dissociating the central nervous system from external stimuli resulting in sedation, analgesia, and amnesia

Chemical Sedation: Ketamine

- ◆ Dissociative Dosing: 1.0 – 1.5 mg/kg (IV) or 3-4 mg/kg (IM)
 - ◆ Effects are dose-dependent to the point of dissociation
- ◆ Onset of action: 4 minutes (IM)
- ◆ Hospital-based research has demonstrated safety and efficacy for its use. As a result, its use has been applied to the pre-hospital setting.

Complications of Pre-Hospital Ketamine Use

- ◆ 13 patients who were given ketamine by EMS for chemical restraint
 - ◆ Quick onset (~ 2 minutes)
 - ◆ Side Effects:
 - ◆ 77% developed emergence reaction
 - ◆ 54% required hospital admission
 - ◆ 23% developed hypoxia
 - ◆ 15% required intubation
 - ◆ Primary diagnosis in the ED
 - ◆ 1) Psychosis
 - ◆ 2) Drug/alcohol intoxication

Pre-Hospital Ketamine Use and Intubation

- ◆ Systematic review of 14 studies where ketamine was administered for prehospital agitation
 - ◆ Rapid suitable sedation: 96%
 - ◆ Intubation Rate: 15-63%
 - ◆ Dosing of ketamine in intubated patients:
 - ◆ Median Dose: 5-5.25 mg/kg
 - ◆ Mean Dose: 6.16 mg/kg

Ketamine vs haloperidol for pre-hospital agitation

- ◆ Ketamine is faster at inducing sedation compared to haloperidol (5 mins vs 17 mins)
- ◆ Complication rates were higher with ketamine compared to haloperidol (49% vs 5%)
 - ◆ Hypersalivation (38%)
 - ◆ Emergency reaction (10%)
 - ◆ Vomiting (9%)
 - ◆ Laryngospasm (5)
- ◆ Intubation rates were higher with ketamine compared to haloperidol (39% vs 4%)

Ketamine Use in Patients with Psychiatric Illness

- ◆ Shown to stimulate psychosis, visual hallucinations, positive and negative symptoms in schizophrenia
- ◆ Studies are small, limited, and with mixed results
- ◆ American College of Emergency Physicians (ACEP) Clinical Policy 2011
 - ◆ Schizophrenia is an absolute contraindication for ketamine use

Ketamine Use in the Pre-Hospital Setting

- ◆ IM ketamine has a quicker onset of action compared to IM midazolam, lorazepam, and haloperidol
- ◆ IM ketamine is associated with side effects (hypoxia, need for intubation, vomiting, laryngospasm, psychotic outbreaks)
- ◆ Pre-hospital studies regarding ketamine use are limited in number and quality of evidence.

Safety and Efficacy

- ◆ Generally low quality evidence for safety and efficacy of any of these agents in the prehospital setting
- ◆ Extremely difficult to perform high quality RCTs
 - ◆ Inability to obtain informed consent
 - ◆ EFIC studies are ethically controversial and challenging to perform
 - ◆ Inconsistency in regulatory authority decisions regarding appropriateness of EFIC designs for this indication
 - ◆ Recent ketamine studies performed without patient consent were heavily criticized and

Ketamine Use in the Pre-Hospital Setting

- ◆ No evidence-based guidelines exists on utilizing ketamine for management of aggression/agitation in the pre-hospital setting
- ◆ Pre-hospital setting doses vary due to lack of standard guidelines, which may increase risk of side effects particularly in patients with mental illness or substance misuse
- ◆ Physicians are absent in pre-hospital setting

Efficacy of sedation in Pre-hospital agitation

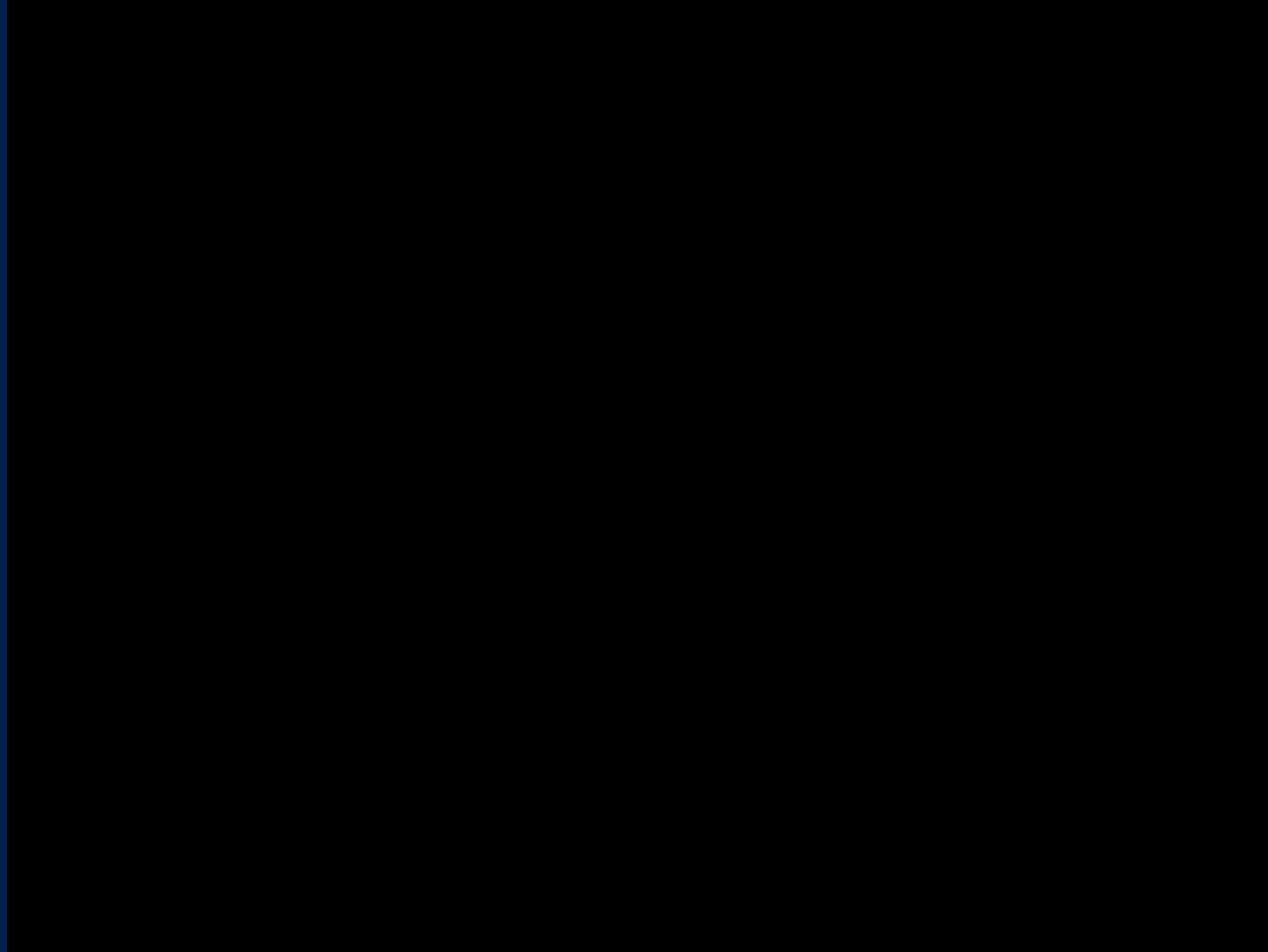
- ◆ No evidence proves that sedation results in decreased morbidity or mortality
- ◆ No management approach is without adverse side effects
- ◆ No quality comparative data exists that show one approach is more or less safe than another

Case Study: Elijah McClain



Age: 23 year old
Race: African American
Gender: Male

Case Study: Elijah McClain



Case Study: Elijah McClain



Risk factors for excited delirium:

Young age

African-American race

Male sex

Case Study: Elijah McClain - Outcomes

- ◆ EMS physicians scrutinized (some have even received even death threats)
- ◆ In Sept 2020, city council of Aurora banned prehospital use of ketamine until completion of review of state's ketamine program
- ◆ Colorado Department of Public Health and Environment suspended ketamine waiver program
- ◆ American Society of Anesthesiologist (July 2020): “firmly opposes the use of ketamine or any other sedative/hypnotic to chemically incapacitate someone for law enforcement purpose and not for a legitimate medical reason”
- ◆ American College of Medical Toxicology (Sept 2020): “oppose the use of [ketamine] solely for the purpose of behavior control on behalf of law enforcement



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Structural Racism in Medicine

- ◆ Racial minorities at greater risk of receiving lower medical care
- ◆ Black people receive inferior care compared to white people
 - ◆ Includes medical procedures (cardiac bypass surgery, cardiac catheterization, renal transplantation, prostate cancer treatment)
- ◆ Despite consistent research documenting racial disparities in healthcare, there has been reluctance to address the role of racism in driving such disparities.

Structural Racism in Medicine

- ◆ Black patients are perceived as less rational or more threatening than their white counterparts
- ◆ Black patients, particularly men, are at higher risk of *physical restraint use* compared to white patients in the emergency department.
 - ◆ Substance use, mental illness, and homelessness are independent risk factors for the use of physical restraints.

Structural Racism in Pre-Hospital Medicine

- ◆ While many medical specialties (oncology, cardiology, emergency medicine) have identified racial treatment disparities, the field of pre-hospital medicine remains relatively unexamined.
- ◆ Racial disparities in pre-hospital pain management:
 - ◆ Young et al 2013 (morphine use in blunt trauma, Contra Costa County CA)
 - ◆ African Americans were **half as likely** to receive morphine compared to Whites
 - ◆ Hewes et al 2017
 - ◆ Racial minority adults and children received pain meds **less frequently**
 - ◆ Kennel et al 2019 (pain assessment & medication administration in trauma, Oregon)
 - ◆ Hispanic, Asians less likely to receive pain assessment
 - ◆ Black, Hispanic, Asians less likely to receive pain medication

Mental Illness & Law Enforcement

- ◆ One in four individuals with mental illness have a history of police arrest.
- ◆ Risk factors associated with increased rate of police contact:
 - ◆ Male gender, black race, psychiatric impairment, substance use problems, homelessness, low socioeconomic status.
- ◆ Law enforcement officers are frustrated with lack of health and social service systems directed towards mental disorders. They feel they should not be first resort and that such responses divert resources from core law enforcement activity
- ◆ People with mental illness are often concerned about police interventions, particularly the use of force.

From Then

- ◆ Racialized conceptions of susceptibility to disease persist to this day. In its 2003 report *Unequal Treatment: Confronting Racial and Ethnic Disparities in Health Care*, the Institute of Medicine reviewed more than 100 studies and concluded that bias, prejudice, and stereotyping contributed to widespread differences in health care by race and ethnicity

Until Now

- ◆ That call to action went largely unheeded. Fifteen years later, the 2018 National Healthcare Quality and Disparities Report documented that Black, American Indian and Alaska Native, and Native Hawaiian and Pacific Islander patients continued to receive poorer care than White patients on 40% of the quality measures included, with little to no improvement from decades past.

How do we move forward?

- ◆ Collaborate with medical colleagues
 - ◆ Multi-disciplinary physician approach (AM with EMS, anesthesia, EM)
 - ◆ Behavioral health experts providing de-escalation assistance and support
- ◆ Expand evidenced-based research
 - ◆ Race / gender differences in pre-hospital care
 - ◆ Safety / efficacy of pre-hospital ketamine
 - ◆ In setting of drug intoxication + mental illness
 - ◆ Impacts of structural racism on public health

How do we move forward?

- ◆ Develop standard definitions and guidelines
 - ◆ Excited delirium syndrome
 - ◆ Pre-hospital sedation
 - ◆ Escalation of restraint use
- ◆ Improve EMS Training
 - ◆ Ketamine and sedation indications
 - ◆ How to respond to instructions from law enforcement

How do we move forward?

- ◆ Increase Black/Latinx representation in physician workforce
 - ◆ Particularly at the professional, dean, or chair level.
 - ◆ In 2015, black and Latinx constituted 31% of the U.S. population, but only 7% of full-time faculty at U.S. medical schools
- ◆ Dismantling racism in medical education
 - ◆ Rebuilding our current approaches
 - ◆ Responsibility of educators, faculty developers, scholars
 - ◆ Assess race and racism at a personal level then shift to the system/institutional level

Take-Home Points

- ◆ Agitated, undifferentiated patients are encountered by EMS and law enforcement in the pre-hospital setting and are perceived to suffer from mental illness or substance use
- ◆ “Excited Delirium” is a term used in literature to describe such patients; however, it lacks a universal definition and is associated with racial stigma and police brutality
- ◆ Ketamine has emerged as a unique sedation agent due to its rapid onset but its use is complicated by side effects and inappropriate use
- ◆ No evidence-based guidelines exist on the use of pre-hospital sedation
- ◆ There exists a need for further research and guidelines on pre-hospital sedation and racial disparities in pre-hospital care.

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