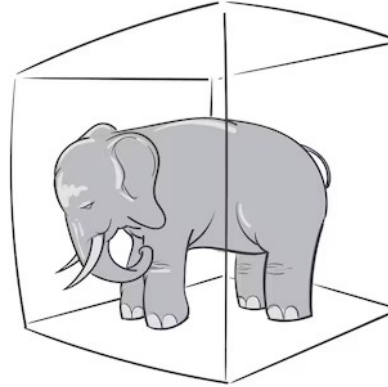


Cerebral Hypoxia & the “Opioid Epidemic” – An Elephant in the Room

Addiction is a vexing challenge in our society. One it is prudent to look at what is not being spoken about, perhaps with as much or more focus than what is getting attention. Where are the proverbial elephants in the room? Cerebral Hypoxia and related brain injury associated with overdoses is one of those elephants in the room. Roughly [3 million Americans](#) have an OUD. In [2017, 967,615 nonfatal drug overdoses](#) were treated in emergency departments, in the US. In 2021, [according to the CDC](#), over 106,000 people died in the United States from drug overdose, but what happens to survivors? Do they survive over the long term? Are there short- or long-term functional impairments as a result of an OD? Despite hundreds of thousands of deaths and millions of overdose reversals, the answer is we do not know much at all about the implications of surviving an OD for persons experiencing brain injury and its clinical and recovery considerations.



ELEPHANT IN THE ROOM

Efforts to date have focused on first aid, reversing death. It is a critical area of focus. Increasing access to Naloxone is vital to our efforts to save lives. According to a [CNN article](#) 1.2 Million doses of naloxone were distributed by retail pharmacies, in 2023, which is only one major source of distribution. One [large-scale national study](#) showed opioid overdose deaths decreased by 14% in states after they enacted naloxone access laws. Another [study suggests](#) that because of changes in drug use patterns, with the increase of fentanyl and fentanyl in combination with drugs like xylazine or methamphetamine are resulting in more rapid overdose onset and the narrow window for treatment with overdose reversal agents. This last point suggests the stakes are getting higher.

Naloxone is vital as this [2017 CNN article notes](#), yet it is only first aid. Naloxone temporarily reverses death 93% of the time. Those we survive *often die within the year*. Another study analyzed [Medicaid records from 45](#) states to look for causes of death in more than 75,000 adults who were treated for an OD between 2001 and 2007. More than 5,000 of the adults died within the first year following an OD —24 times the death rate found in the general population.

The most common causes of death were those related to drug use (25%), diseases of the circulatory system (13.2%), and cancer (10.3%). The data show that adults in this population are substantially more likely to die of these causes than adults in the general population. We need to get people into treatment and recovery if we are to make a dent in these horrific stats. This is a consequence of framing a multimitated, polysubstance addiction crisis as an opioid or overdose crisis, which leads to tunneled senses in both people and systems.

Brain injury impacting cognition may be a major barrier to healing. This is one of our most profound public health crises, one that has been unfolding over the last two decades, yet we have not studied the implications and clinical considerations of a key factor in helping people survive and heal from it. How is it possible we know so little about overdose related brain injury? It is likely commonplace, but rarely studied.

[Cerebral hypoxia](#) is a condition where the brain doesn't get enough oxygen. It can kill brain cells and lead to brain damage and death. It includes symptoms such as difficulty paying attention, poor judgment and decision making and memory loss. How many people have impaired cognitive functioning in the very moments they are offered further help? We don't know and have not bothered to methodically explore this question.

There has been disturbingly little focus on the prevalence of cerebral hypoxia or related brain injury in overdose survivors. [One meta-analysis](#) of 79 journal articles published between 1973 and 2020 found it was probable that brain injuries and neurocognitive impairments were associated with opioid overdoses. The paper notes that additional research is needed to understand its onset, characteristics, the duration of potential incidence and clinical care implications. This is vital information needed to save lives, and we do not yet have it!

Another paper published in Europe in 1999 reviewed autopsies of 100 intravenous opioid drug users suggests in that era, with lower potency opioids less likely to be used in combination with other drugs, between 5% and 10% of heroin addicted persons may have brain injury associated with their use. The paper notes that severe mental disturbances are likely in affected persons. A 2019 paper, [Neurologic, Cognitive, and Behavioral Consequences of Opioid Overdose: a Review](#), notes that further studies are needed on the neurologic, cognitive, and behavioral sequelae of opioid overdose in order to develop an effective long-term treatment strategy to manage the healthcare needs of this population.

This [article Fentanyl Overdoses are a Hidden Health Crisis, by Dr. Keith Ahamad](#), a Vancouver-based addiction specialist notes that paralysis, brain death and organ failure are things he regularly sees. Why do we rarely hear about this potential outcome for overdose survivors. The numbers are staggering. A paper from 2017 reviewed records from 162 hospitals in 44 states, between 2009, and 2015. They documented 2.7 million admissions with 4.1 million requiring ICU care an increase of 34% over the period of review. It does not delineate how many of these cases relate to overdose related brain injury. This 2018 NYT Op-ed, [An Overdose Left Him With Brain Damage. Now What?](#) It is the story of Andrew Foote, a young man loved by family and friends who survived an overdose only to experience severe brain injury that has incapacitated him for life. How many of these tragic stories are out there? How can we prevent these cases without a focus on them?

We should have had this data decades ago. How have we have failed to focus on these vital considerations with perhaps the most significant public health crises in the last one hundred years? We need to understand the clinical and policy implications of neurological impairment in overdose survivors to improve interventions.

Questions to consider:

- If this type of brain injury is prevalent among overdose survivors, how does it impact their reasoning capacity either in the short term or long term?
- How does overdose related cognitive injury impact clinical care?
- How do we screen for the capacity to make reasoned decision for overdose survivors who may experience this type of brain injury? Are we doing such screening systemically?
- How can clinicians and laypersons identify potential brain injury in overdose survivors and how do we get this information out to the impacted communities as quickly as possible?
- How does multiple drug use impact overdose related brain injury?
- Do emerging drug trends such as the combination of fentanyl with xylazine as an example, impact the prevalence of brain injury in persons experiencing overdoses?
- What is the prevalence of brain injury in persons who have experienced multiple overdose reversals?
- What can we learn from the treatment of other conditions in which a person may not be cognitively functioning?
- Would it be ethical to allow a person in diabetic shock for example to refuse treatment to stabilize their blood sugar levels? What is different about a person cognitively impaired following an overdose?
- If we have not invested in understanding this fundamental issue, what else don't we know about how to more effectively help people survive and heal from an opioid use disorder?

We must address this major deficit in our knowledge base while asking hard questions about why it has been allowed to occur. With just under one million people presenting at hospital emergency departments across America, how is it humanly possible that we never even bothered to rigorously study cognitive impairment related to overdose related brain injury and its impact on survival rates and healing?

Can we imagine this being tolerated for any other condition?

Let's talk about the elephant in the room!

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