FATAL OPIOID CRISIS OF UNITED STATES

University of Rochester, Simon Business School

Siqi Jiang, Yuxiao Liu, Nitin Pandey, Krishna Mythili Vusulumarti

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EXECUTIVE SUMMARY

The United States has been in the throes of a full-blown crisis in opioid overuse, abuse, damage, and death.

- On October 17, 2017, in a white house briefing on the opioid crisis, US President Donald Trump mentioned that 64000 American lives were lost to overdoses in 2016. That's 175 lives lost every day due to overdoses of which 140+ involved opioids.[1]
- Opioids have now claimed more American lives than the battlefields of both World Wars combined.[2]
- The Center for Disease Control and Prevention estimates that the total economic burden of prescription opioid misuse alone in the United States is $78.5 billion a year, including the costs of healthcare, lost productivity, addiction treatment, and criminal justice involvement[3]
- The U.S. government, federal agencies, and other stakeholders recognized the problems around opioid addiction as far back as early 2006 but there is no clear consensus on how to combat the crisis.[4]

In our analysis we understood the underlying mental models responsible for the crisis-

- There's an unequal parity of physical and mental pain in society amongst physicians, pharmacies, insurers. Mental trauma like depression aren't taken as seriously as physical injuries
- Also, since the last century, there's changing expectations of people towards pain relief- People are now seeking immediate pain relief forcing physicians to prescribe opioids

Some successful measures taken by the federal and local governments, pharmaceutical companies, and increased awareness among the masses has contained the problem, but the crisis is far from over. The opioid overdose deaths have plateaued, but the challenges still remain.

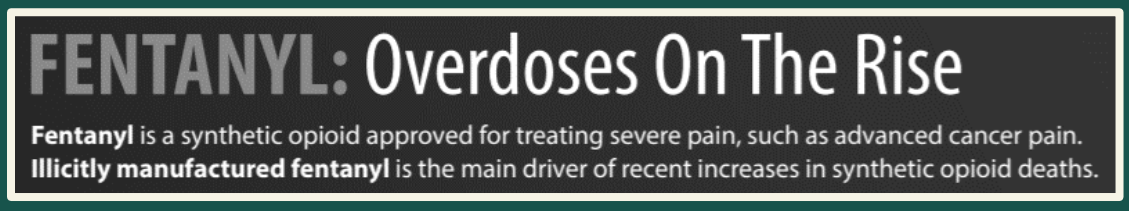
Our research found that there are two areas that are to be catered before we declare victory over the crises. These are: Prevent new opioids addiction and support the recovery of addicts. We have identified the gaps in the existing system and propose to bring different stakeholders together to reduce abuse, harm and stigma.

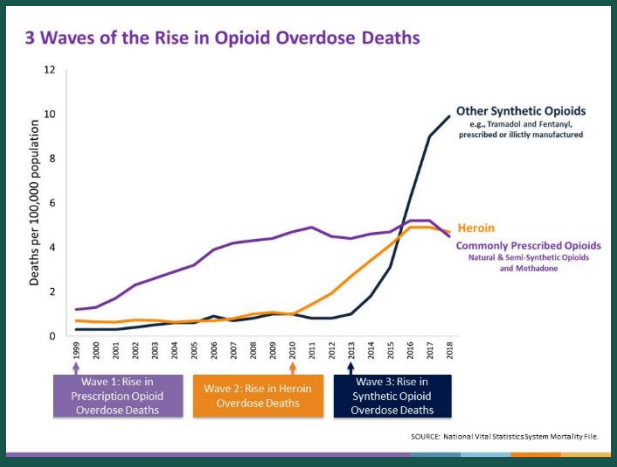
[1] https://www.whitehouse.gov/briefings-statements/remarks-president-trump-combatting-drug-demand-opioid-crisis/
[2] https://www.psychcongress.com/article/elevate-spotlight-best-practices-opioid-addiction-treatment
[3] https://www.drugabuse.gov/drugs-abuse/opioids/opioid-overdose-crisis#two
[4] https://www.politico.com/story/2019/08/21/federal-scientists-opioid-crisis-1673694
Picture Source: https://www.newskarnataka.com/mangalore/ex-irs-officer-to-deliver-keynote-address-on-american-opioid-crisis

CHALLENGE LANDSCAPE

Source of addiction: One of our important research findings was that 80% of Americans who use street drugs started with prescription opioids. This means that excessive dispensation of opioids in hospitals and doctor's offices led to addiction. Jeanmarie Perrone at UPenn did a longitudinal study[5] starting in 2011, that looked at patients who went to the E.R. for a sprained ankle.

Over the course of four years, the study found that up to 40 percent of patients who visited an emergency department got opioids for ankle sprain. And of those, they got somewhere between 10 and 30 tablets. The study found that the risk of getting addicted to opioids was directly proportional to the tablets prescribed in the first month. With a 30 day supply of opioids, there was a 30% chance of being on opioids in 6 month period and with a prescription of 10-12 pills, there is a 6% chance of being on opioids in a 6 month period which means the more you get prescribed, higher the chances of getting addicted.





Overall overdose death rates decreased by 4.1% from 2017 to 2018 in the United States. New CDC data show death rates involving heroin decreased by 4%, and prescription opioid-involved overdose death rates decreased by 13.5%. Decreases in overdose deaths involving prescription opioids and heroin reflect the effectiveness of public health efforts to protect Americans and their families.

However, while progress has been made to combat overdose deaths, death rates involving synthetic opioids increased by 10% from 2017 to 2018[6].

5 https://www.annemergmed.com/article/S0196-0644(18)30498-0/fulltext
6 https://www.cdc.gov/media/releases/2020/p0318-data-show-changes-overdose-deaths.html

How measures to reduce prescription opioid misuse is contributing to the problem?

Market forces are working from opposite directions to boost the death count from opioids.

- **Abuse Deterrent Formulations are contributing to the growth of Illegal markets:**

In our study we found that pills may be crushed in the mouth, insufflated, smoked, or injected with few physical barriers to use, and a transdermal patch's active pharmaceutical ingredients may be chewed, sucked, or extracted and prepared for injection. Therefore, many prescription opioid preparations approved in recent years make crushing the pill more difficult and sometimes formulated to deter tampering. These are called ADFs- Abuse Deterrent Formulations. But these changes have shown to increase the opioid misuse (intake of heroin/Fentanyl) rate by as much as 80%.

With stringent regulations on the side of medical practitioners and pharmacies and abuse-deterrent formulations, people with Opioid Use Disorder (OUD) are tilting towards illegal markets to seek Heroine and Fentanyl.

- **Pricing and availability of drugs:**

A comparison of heroin (and other illicit opioids) with naloxone, the lifesaving antidote for opioid overdoses, offers a devastating peek into the overdose epidemic that is ravaging the United States.
Let's start with the price of heroin. In the early 1980s, a gram of pure heroin cost about $2,200. Today that same amount costs less than $500, nearly an 80 percent decrease. And prices continue to fall with the introduction of more powerful synthetic opioids, such as fentanyl.

Compared to heroin, which requires lengthy cultivation of poppy plants and cumbersome processing, fentanyl and its ilk are relatively cheap to make. Humans have been growing poppies and harvesting opium for at least 6,000 years; manufacturing has historically been constrained by the 120-day growth cycle of the opium poppy plant and the distant geography in which it grows.

Today, fentanyl and other illicit opioids are being rapidly mass produced and are as redundant and robust as the supply chain bringing coffee beans to our neighborhood cafe, though with far more "retail outlets."

Naloxone is near miraculous in its ability to reverse an opioid overdose within minutes. Given the ongoing devastation of the opioid crisis, you might expect that naloxone would be widely available at a low price. Not so. A decade ago, a lifesaving dose of naloxone cost $1. Today, that same dose costs $150 for the nasal spray, a 150-fold increase. A naloxone auto-injector, approved in 2016, costs $4,500.[7]

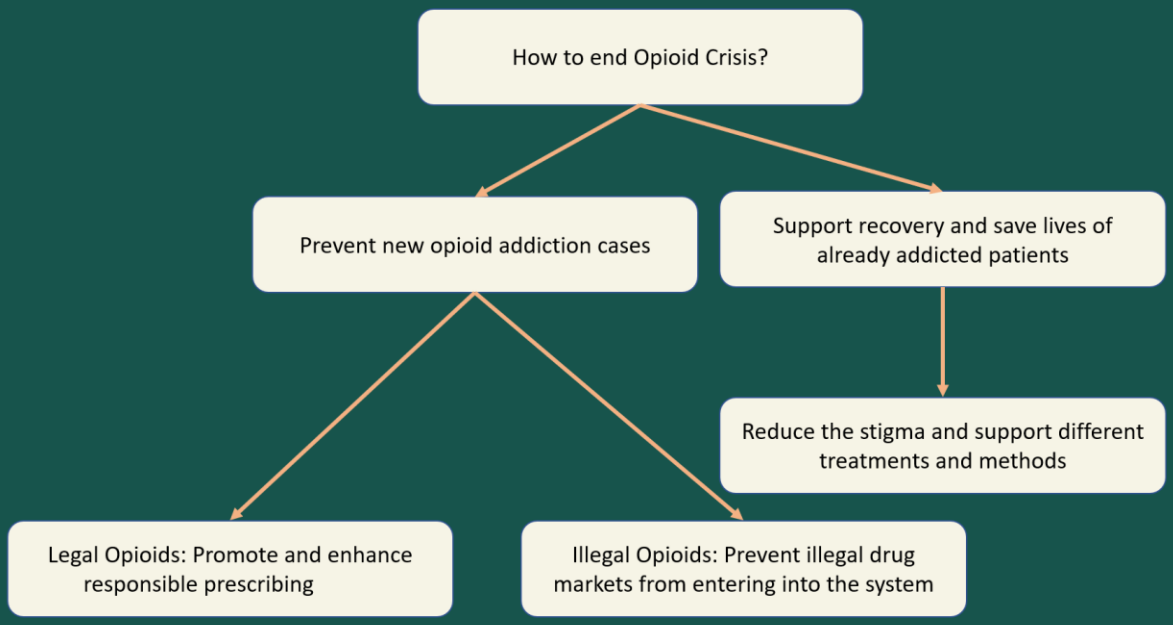
Our causal loop system visual map unfolds the vicious loops of vulnerable populations falling prey to legal and illegal opioids.

Picture source: https://www.psychiatrictimes.com/substance-use-disorder/opioid-epidemic-who-blame

[7] https://www.statnews.com/2018/11/08/costs-heroin-naloxone-tragic-snapshot-opioid-crisis/

SOLUTION LANDSCAPE

After our in-depth analysis we found that we need a two-pronged approach to end the opioid epidemic. States and communities will succeed only if they engage and align all actors to create systems that can prevent new individuals from becoming dependent on opioids, while supporting the recovery of those who already are. Failing to take such an approach will result in burnout among those working individually to improve the current situation and a rate of progress that is too slow to keep up with the velocity of this crisis and the power of opioid addiction[8].



Fortunately, important actions are being taken at the national level and within some states to both prevent individuals from becoming addicted and to treat those who already are. For example, the Center for Disease Control and Prevention's (CDC) recent guidelines will help millions of physicians prescribe opioids appropriately and responsibly. The Department of Health and Human Services' proposed rule to increase the patient limit for physicians who prescribe buprenorphine (an effective medication used to treat opioid addiction).

States are implementing drug courts; narcotics detectives and emergency medical technicians (EMTs) are becoming trusted case managers helping guide individuals to treatment rather than arresting them; and some medical examiners are serving as physician educators when overdoses occur. Again, although these efforts are necessary, they are not sufficient to reverse this crisis.

Many efforts focus only on one part of the crisis. We cannot focus just on prescribing guidelines, just on naloxone distribution, just on increasing access to treatment, just on preventing diversion. We need to focus on them all, and all at once- only then can we put an end to this fatal crisis.

[8] https://www.healthaffairs.org/do/10.1377/hblog20160613.055320/full/

EXISTING SOLUTIONS

The same actors that created the crisis – government and federal agencies, and pharmaceutical, and drug distributing companies—are at the forefront of fighting the menace of opioid overdose.

- Steps taken by federal agencies, medical centers and physicians: Change in prescribing practices
  - The CDC has issued guidelines[9] that recommend the lowest effective dose of opioids — if any at all; many states and hospital networks now limit the number and potency of pain pills that are dispensed to patients. As a result, the medical establishments have started scaling back on prescription opioids.
  - Also, there's an increase in the use of local anesthetic solutions to lessen the need of opioids in surgery.
  - Oxy-free emergency departments no longer prescribe or refill opioids as a first line response
  - The rate of opioid prescription has started falling for the first time since 2012[10]. The deaths from prescription opioids have now levelled off. And, more recently, heroin deaths have also plateaued.

- **Steps taken by pharmaceutical companies:** Change dispensing practices and prevent diversion

Pharmaceutical companies and Drug distributors' internal programs and policies to stop the abuse of opioid medications:

  - CVS 90 days Safe Medication Disposal Plan: Patients can cancel their prescription and dispose opioid medicine at CVS if they think they don't need after 60 days etc.
  - McKesson acts through their corporate activities, including:
    - Creating a nationwide clinical alert system that uses patient prescription history to identify patients at risk of opioid overuse, abuse, addiction or misuse. The system would provide real-time clinical alerts, integrated into pharmacist workflow, across state lines
    - Education and training programs: They offer complimentary pharmacist training by independent medical experts on how to administer opioid overdose reversal medications such as naloxone

- **Steps taken by Public Safety:** Community partnerships to reduce fear and Stigma

  - "If you have drugs or drug paraphernalia on you, we will dispose of it for you. You will not be arrested. You will not be charged with a crime. You will not be jailed."
  - The Gloucester Police Department has created a revolutionary new policing program aimed at getting addicts the help they need, instead of putting them in handcuffs.

[9] https://www.cdc.gov/drugoverdose/pdf/guidelines_at-a-glance-a.pdf
[10] https://www.cdc.gov/drugoverdose/maps/rxrate-maps.html

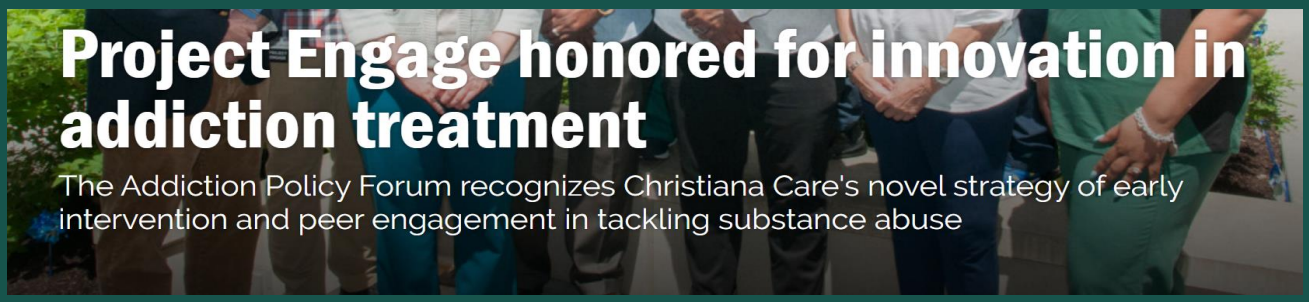
- If an addict comes into the Gloucester Police Department and asks for help, an officer will take them to the Addison Gilbert Hospital, where they will be paired with a volunteer "ANGEL" who will help guide them through the process.
- Partnered with more than a dozen additional treatment centers to ensure that our patients receive the care and treatment they deserve — not in days or weeks, but immediately.

➢ **Steps taken by Health and Wellness non-profits:** Providing support and Care

- Overdose Lifeline, Inc.: Reached 24K Indiana Students

- Complements and integrates with substance use prevention programs such as Botvin LifeSkills and Too Good for Drugs
- Targets students grades 6 – 12, prioritize transitional years
- Pre- and post-assessment incorporated into the program design
- Undergoing third-party evidence-based study for SAMHSA NREPP review

- Project Engage, Delaware: 59% reduction in readmission rates



- Designed to help hospital patients who may be struggling with alcohol or drug use, Project Engage provides early intervention and referrals to substance use disorder treatment.
- Integrates peers in recovery, who are called engagement specialists, into the clinical setting in the hospital to meet with patients at their bedside about their alcohol or drug use.
- The program identifies individuals at their reachable moment in the hospital and acts on it.

GAPS & LEVERS OF CHANGE

Everyone in the community has a role to play.

The complexity of the opioid crisis requires medical, legislative, behavioral, educational, and legal changes, and it requires that these changes be made in coordination with each other, at the same time. If you produce or prescribe opioids, if you treat addiction, if you enforce the law, if you are an educator, if you are a family member, if you're an individual taking opioids – you have a role to play.[11]

As someone said- "Unfortunately, Communities today are often resource rich and coordination poor." Resources—financial, human, programmatic—are precious, and given the extent of this crisis, cannot be wasted. Unlikely collaborators must learn to work together, communicate continuously, and think beyond the perceived boundaries of their role in the community. Well-intentioned providers need to work together across areas, which likely means moving beyond the borders of their institutions and traditional roles to create new relationships and pathways in order to provide coordinated services to those in need.

A multi-faceted problem requires a multi-faceted solution and preventing the ongoing addiction requires a system approach. We have categorized the issues to be resolved into two streams- prevention and cure.

It's all the more important to treat addiction as a chronic physical and psychological disease and treat it accordingly.

Legend:
Orange- Need for Improvement in terms of scale
Yellow- Recommendation

PREVENTION

Issue to be resolved	Key Actions	Gaps	Actors
Decrease supply of prescription opioids	• Change dispensing practices	Medical, Legislative	• Pharmacists, Payers, legislation
	• Limit pharmaceutical production	Medical, Legislative	• National legislative action, FDA, pharmaceutical companies
Educate about risks of prescription opioids	• Identify patients at greater risk for addiction	Medical	• Providers
	• Educate the public about the risk of prescription opioids	Educational, Medical	• Medical Centers, Clinics, Hospitals, Universities

[11] https://www.healthaffairs.org/do/10.1377/hblog20160613.055320/full/

Decrease supply of recreational opioids	• Enable prosecution of dealer by classifying overdose death as crimes rather than untimely deaths	Legal	• Attorney General
	• Change classification of controlled substances	Legal	• Law enforcement agencies
Decrease demand for recreational opioid use	• Implement drug courts	Legal, Medical	• Attorney General, payers
	• Build strong recovery system	Behavioral, Medical, Educational	• Public health, behavioral health services
Reduce stigma	Provide education for: • Providers	Education, Medical	• Medical Practitioners, Hospitals, Clinics
	• Individuals/families	Behavioral, Education	• Providers, education system, Public Health
	• Law enforcement	Legal	• Law enforcement (treatment of disease, not just crime)
Manage opioid-Dependent population	• Educate patients about pain management	Educational, Medical	• Providers and Pharmacies
	• Using the power of marketing to change the narrative of pain	Educational	• Physicians and Pharmacies

CURE

Categories	Key Actions	Gaps	Actors
Link detox and ongoing treatment and recovery services	• Provide ongoing MAT when appropriate[12]	Medical	• Providers, payers, Peer support
	• Provide ongoing group therapy	Behavioral, Medical, Educational, Legal	• Courts, jails, Health care centers, Hospitals, NGOs
Prevent death from opioid overdose	• Administer Naloxone and make it affordable	Medical, Legal	• Emergency Medical Trainers (EMTs), clinicians, law enforcement
	• Increase availability of Naloxone in community	Legal	• Courts, Medical Centers
	• Educate family/friends on signs of overdose and use of Naloxone	Behavioral, Education	• Legislative, Individual, Provider
Increase availability of non-opioid forms of chronic pain management	• Improved reimbursements and coverages[13]	Legislative	• Payers: private and public
	• Educate providers on effective, alternative pain management strategies	Educational	• Medical Centers, Universities and Educational Institutions- Requires academic detailing, guidelines, requirements, and education/implementation

[12]MAT meaning: https://www.pewtrusts.org/en/research-and-analysis/fact-sheets/2016/11/medication-assisted-treatment-improves-outcomes-for-patients-with-opioid-use-disorder

KEY INSIGHTS & LESSONS

Initially, we thought that street drugs such as fentanyl and heroin were luring misguided youth into addiction and killing them. We, however, learnt, that 80% of people who die of street drugs got addicted through prescription pills. We learnt the sad irony that medicines prescribed by hospitals, marketed as safe by pharma companies led people to addiction.

Further, we also learnt that government who was supposed to tax addictive opioids (just like the taxes on tobacco and alcohol) subsidized them by sponsoring the opioids through government insurers. In this way, various stakeholders with novel intentions ended up creating the menace of opioid epidemic in the US.

Finally, we learnt that an addict can relapse into addiction anytime during his/her lifetime despite being clean for years. This means that even though annual deaths due to opioid might be falling, we, as a society, cannot let up our fight against opioid addiction.

In our study of the opioid crisis, including the myriad efforts being put in place across the country to save lives and the successes and failures that accompany these efforts, we find the systems perspective more important than ever. It will take a community-wide effort and work at the national, state, and local levels to adequately address the problem.