



**EXPLAINING
THE OPIOID
CRISIS USING
DECISION
HEURISTICS
SCIENCE**

**GOING BEYOND THE 'WHAT'
AND EXPLAINING THE 'WHY'**

newristics[®]



How a series of unintended decisions led to a nationwide epidemic

Background

More than 30,000 premature deaths were caused by opiate overdose last year, up 4x times since the late 90's. After more than 5,000 years of use by humans, how is it possible that in less than 30 years Rx opioid use has become a dangerous epidemic touching every socio-economic class in America? It's too easy to simply blame a few "pill mill" physicians or aggressive pharmaceutical sales people.

The real answer is much more complex and lies in understanding the human decisions behind and surrounding at least 4 major market-shaping events that have occurred in the last 30 years.

In this white paper, Newristics analyzes the top 4 market events that led to the opioid crisis in America utilizing decision heuristic science to better explain how we got here and how we can work to reverse this crisis and its devastating effects.



Decision Heuristics Science

Heuristic = Shortcut

Decision heuristic = Mental shortcut used to make >95% of human decisions

Over 30 years of research into human decision-making shows that most human decisions, simple or complex, are driven by heuristics.

We use heuristics every day to make decisions and don't even realize it. We have difficulty rationalizing most of our decisions because we are not really aware of why or how we make over 95% of our decisions every day.

Over 650 decision heuristics have been discovered, researched, and validated to date; providing a way to understand human decision-making in ways not previously possible.

Many bad decisions were made (unintentionally) by many people that led to the opioid crisis. Decision heuristics science helps explain why and what we can do about it.



Patient Satisfaction



Market Event #1

Unintended Consequences of Hospital Ratings

WHAT HAPPENED?

- Hospital reimbursement became increasingly driven by ratings which in turn were heavily influenced by patient satisfaction scores.
- Patients undergoing procedures gave hospitals low satisfaction scores if they experienced significant pain during their stay.
- Hospitals found that using opioids after procedures helped patients take notice of their pain relief, rate their experience more favorably, and in turn, their prescribed use increased.
- Creation of hospital ratings such as HCAHPS had an unintended consequence – increased use of opioids in hospitals!

HEURISTICS THAT DROVE DECISIONS:

- **Attribute Substitution**
 - Definition – Humans unconsciously substitute a complex, difficult decision with an easier one.
 - Impact – Managing post-procedural pain through opioids was possibly a lot easier than creating a comprehensive pain management program.
- **Hyperbolic Discounting**
 - Definition – Humans strongly prefer immediate rather than later payoffs, even if the later payoff is larger.
 - Impact – Opioids provided a quick way for hospitals to improve their patient satisfaction scores, comfort, and satisfaction even though they might have the potential to create long-term problems.



Editor's Note: For reasons of public health, readers should be aware that this letter had been "heavily and uncritically cited" as evidence that addiction is rare with opioid therapy. We describe its history.

CORRESPONDENCE [ARCHIVE](#)

Addiction Rare in Patients Treated with Narcotics



Market Event #2

A Letter to the NEJM Editor that Changed Opioid Safety Perceptions

WHAT HAPPENED?

- As hospitals used more opioids after procedures, hospital-based physicians' addiction concerns increased.
- An assessment of 40,000 hospitalized patients demonstrated that almost no patients showed signs of addiction from opioid use during their hospital stay.
- These findings were mentioned in a 1-paragraph letter to the editor of NEJM but were used by many as if they appeared in a peer-reviewed clinical paper.
- The letter was reprinted 100s of times by other publications sending the medical world a message that opioids posed little if any risk of addiction, at least not during a short hospital stay.

HEURISTICS THAT DROVE DECISIONS:

- **Anchoring**
 - Definition – Humans tend to rely too heavily on the first piece of information offered (the “anchor”), and make subsequent judgments based on it.
 - Impact – Cited over 600 times, the letter served as an anchor for the medical community to rely on as proof that addiction was rare and opioid usage was safe.
- **Availability**
 - Definition – Humans tend to put too much emphasis on an event/information that is most readily available to them.
 - Impact – Less than 1% of the 40,000 patients showed signs of addiction became readily available information repeatedly cited to physicians who concluded that therefore the risk of addiction in their patients would be close to zero



Market Event #3

From Hospital Acute Pain - Chronic Pain Managed in an Office Setting by Physicians

WHAT HAPPENED?

- Opioids had been primarily used for acute pain within the hospital, but soon physicians started using opioids in their offices for chronic pain.
- While many physicians may have held on to a concern about the addiction potential of opioids, most had a false sense of optimism and confidence that abuse was not going to be a problem in their practice.
- When they became aware of addiction within their practice, they all too often correlated it with the presence of comorbidities including psychiatric conditions which made it easy for them to place the blame on the individual patient and/or medical circumstances.
- Even if clinical data on the long-term efficacy of opioids in managing pain were sparse, not having to see the most troublesome pain patients and listen to their suffering was strong anecdotal evidence for physicians!

HEURISTICS THAT DROVE DECISIONS:

- **Fundamental Attribution Error**
 - Definition – When explaining the behavior of others, humans overestimate the effect of personality and underestimate situational factors.
 - Impact – Physicians looked at patients with chronic pain through a different lens and were more likely to hold them responsible for their circumstances/suffering.
- **Lake Wobegon Effect**
 - Definition – Humans have a natural tendency to overestimate their own capabilities and see themselves as better than others.
 - Impact – Every physician overestimated both their own ability to Rx opioids responsibly and the ability of their patients to not abuse/misuse opioids



Market Event #4

The Curse of Suboxone

WHAT HAPPENED?

- Congress passed the Drug Addiction Treatment Act (DATA) in 2000, creating the urgency to bring opioid addiction treatment for the first time to the physician office-based setting.
- The FDA didn't want methadone or levomethadyl to be prescribed in physician offices, so under social and government pressure, they set new precedence and approved Suboxone for office use in 2002 without robust efficacy and safety data in patients addicted to prescription pain killers.
- In an unprecedented move, Suboxone was launched WITHOUT efficacy data on its label and most physicians didn't have details on how effective Suboxone really was in treating addiction. They also didn't understand the addictive nature of Suboxone.
- Over time, opioid addiction for many patients was replaced with suboxone addiction without effectively addressing many patients' unresolved chronic pain.

HEURISTICS THAT DROVE DECISIONS:

- **Take the Best**
 - Definition – Humans choose what is best for that moment, leaving the subproblems for later even though they may not be able to handle them later.
 - Impact – Authorities and physicians jumped into Suboxone without realizing what they were really getting into.
- **Lake Wobegon Effect**
 - Definition – Humans may make risk-averse choices if the expected outcome is positive, but make risk-seeking choices to avoid negative outcomes.
 - Impact – Physicians quickly took on the unknown risk of Suboxone in the hopes of addressing the real risk that they knew and were witnessing – increasing Opioid addiction/death.

Using Decision Heuristic Science To Reverse The Opioid Epidemic

If decision heuristics science can help explain the complex human decisions that led to the opioid crisis, can it also help fix it? YES, definitely!

Under President Obama, the White House created an Office of Science and Technology within which there was an Office of Behavioral Sciences, modeled after the Office of Nudge created by UK's Prime Minister Tony Blair. The Office of Behavioral Sciences has been trying to use decision heuristics science to nudge physicians towards limiting the use of opioids, but unfortunately, the results have been mixed so far.

Many other organizations have also made recommendations on how to address the opioid crisis. The common elements across most recommendations tend to be the same:

- More physician training
- More pain specialists
- More addiction treatment centers
- More comprehensive pain management programs
- More abuse surveillance programs
- More naloxone injections

Sadly, these programs tend to have a minor impact on the deeper issue, the poor human behaviors fueling the crisis in the first place. What's needed are heuristics-based programs and messages powerful enough to change human behavior.

So, what are the human behaviors that need to be changed? Using decision heuristics science, Newristics proposes the following 4 initiatives:

- Get every doctor to understand that they and their patients are at risk of opioid addiction just as much as the doctor next door.
- Deter physicians from prescribing opioids for chronic pain and shift most remaining prescriptions toward abuse - deterrent opioids.
- Help physicians nudge patients away from an opioid at the point of thought, i.e. when they hand patients a prescription.
- Help reduce accidental or unintentional misuse of leftover Rx painkillers lying around in millions of American homes.



1. “Yes, You Too” Program

HEURISTIC STRATEGY:

Fight Lake Wobegon Effect

OBJECTIVE:

Get every doctor to understand that they and their patients are at risk of opioid addiction just as much as the doctor next door.

ACTION PLAN:

- Create a monthly reporting system that allows every doctor to view their opioid prescribing behavior in comparison to the average of their peers within their specific geographic location.
- Create incentives and penalties for physicians who are significantly below or above their peer average to shift behaviors towards permanent change.



2. “Dread, but Hope” Messaging

HEURISTIC STRATEGY:

Feed Dread Risk, Fight Wishful Thinking

OBJECTIVE:

Use heuristics-based messaging to reduce overall opioid prescribing for chronic pain and shift most remaining prescriptions toward abuse-deterrent opioids.

ACTION PLAN:

- Past research in opioid messaging suggests that a magic combination of “dread and hope” is needed to create messaging that can shift physician’s opioid prescribing behaviors.
- Feeding Dread Risk in messaging would require a focus on the most dreadful facts and stories of opioid abuse.
Example: “In 2009, over 400,000 emergency department visits were associated with complications from nonmedical use of prescription opioids, up nearly 50,000 from the year before.”
- Just establishing dread is not sufficient and could perhaps even be counterproductive if it sends the signal that there is no hope for the problem to be fixed. It needs to be paired with messaging that feeds Wishful Thinking.
Example: “In 2010, a crush-resistant formulation of an opioid was introduced, and since then, there has been a 60% decrease in overall incidence of abuse of this medication.”



3. Target the Point of Thought

HEURISTIC STRATEGY:

Feed Attribute Substitution

OBJECTIVE:

Help physicians nudge patients away from an opioid at the point of thought, i.e. when they hand patients a prescription.

ACTION PLAN:

- If physicians were to tell patients that opioids can quickly become addictive, most of their patients will think that they personally will not become an addict because they view themselves as a responsible person.
- What if, instead of focusing on the addiction risk of opioids, physicians were required to read the following statement to every patient at the point of writing a prescription: “80% of patients get constipation within 3 days of using opioids and stay constipated as long as they keep taking opioids.”
- By substituting the more important attribute (addiction) with a less important attribute (constipation), a very simple message that feeds Attribute Substitution could nudge many patients away from filling their opioid prescription.



4. Use OR Toss program

HEURISTIC STRATEGY:

Fight Open Option Bias

OBJECTIVE:

Help reduce accidental or unintentional misuse of leftover Rx painkillers lying around in millions of American homes.

ACTION PLAN:

Develop a program to reward people for switching to less abusive painkillers and incent them to turn in their unused opioid based medications.

Add a \$20 opioid deposit (to fund drug addiction programs) to every prescription. If they return the bottle within 5 days of the end of their prescribed treatment, they will receive their \$20 deposit back + \$10 per unused pill in the form of a

- store coupon.

Pharmacist will be alerted to any bottles not turned back in so that they can

- properly follow up.

Heuristic Appendix

ANCHORING

Humans tend to rely too heavily on the first piece of information offered (the “anchor”), and make subsequent judgments based on it.

ATTRIBUTE SUBSTITUTION

Humans unconsciously substitute a complex, difficult judgment with an easier one.

AVAILABILITY

Humans tend to put too much emphasis on an event/information that is most readily available to them.

DREAD RISK

Humans may let their fears of extreme, catastrophic events guide their decisions to avoid even the remote possibility of such events coming to pass.

FUNDAMENTAL ATTRIBUTION ERROR

When explaining the behavior of others, humans overestimate the effect of personality and underestimate situational factors.

HYPERBOLIC DISCOUNTING

Humans strongly prefer immediate rather than later payoffs, even if the later payoff is larger.

LAKE WOBEGON EFFECT

Humans have a natural tendency to overestimate their own capabilities and see themselves as better than others.

OPEN OPTION BIAS

Humans want to keep options open whenever possible, which makes them feel more in control.

PSEUDOCERTAINTY EFFECT

Humans may make risk-averse choices if the expected outcome is positive, but make risk-seeking choices to avoid negative outcomes.

TAKE THE BEST

Humans choose what is best for that moment, leaving the subproblems for later.

WISHFUL THINKING

Humans can let their hopes of pleasant outcomes over influence their decisions.



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Shortcut to Great