Team OPAT

Empowering Opioid Prescribers with Aviation-inspired Instrumentation

An **Opioid Prescribing Awareness Tool** that distills gigabytes of prescribing and referral data into simple, interactive visualizations to:

- Display prescriber behavior relative to peers
- Inform referral decisions
- Empower providers in planning a patient's journey toward safe pain management
- Reduce Unnecessary Opioid Prescribing

Developed by a cross-disciplinary team with extensive experience in emergency medicine, public health research, aviation mishap root cause analysis, network science, and **software development.**

The Problem

Opioid overdoses are the #1 cause of death for Americans under the age of 50.

For decades, we as a society taught clinicians that opioids were safe, effective, and non-addictive in combatting chronic pain. Then we changed our minds. We changed the rules on prescribers without giving them the kind of information and options that they need to help solve the problem.

- **Prescribers have no means of seeing what "normal" opioid prescribing is within their specialty.**

- **Prescribers have no means of knowing the prescribing behavior of those they refer patients to.**

- **Prescribers do not have an easily-accessible comprehensive list of local behavioral health and multimodal pain management options.**

The CDC estimates that more than 70% of those who die of opioid overdoses begin their paths to addiction not with an illegal narcotic, but with a legally prescribed opioid. The provider faced with the opioid prescribing decision is the first and most important line of defense in the fight against the opioid epidemic. We owe our healthcare professionals best tools that modern data science can provide.

The Innovation

In a world full of people looking at treatment for those already addicted or focusing on the relatively rare case of “pill mill” clinics that overprescribe for profit, we choose to look at the problem in the way we would approach the crash of a jetliner: **find the beginning of an endangered patient’s journey toward addiction and intervene there.**

Our solution adopts the behavioral economic theory developed by Nobel Laureate Richard Thaler in his work on Nudge Theory. In a world full of economic, managerial, time-based, and patient-based pressures that isolate prescribers and push them toward higher levels of opioid distribution, we focus on two key truths:

- Healthcare providers want the best for their patients
- Prescribing behavior is best influenced by the normalizing force associated with seeing the behavior of professional peers

Rather than a “black box” solution that tells a physician what to do, we utilize prescribing data and referral network patterns to enable a prescriber to see her own rates of opioid prescribing relative to those of her specialty both in her state and nationally.

We then utilize network science, completing tens of millions of edge calculations to provide the prescriber with a visualization of all of the providers to whom she has referred patients, each color coded according to their level of opioid prescribing.

This visualization can be filtered by specialty and thus used to inform a referral decision for a patient who may have a history of substance abuse and be particularly at risk if treated by high-prescribing doctors.

Finally, we provide the prescriber with a map showing the behavioral health and multimodal pain management facilities nearest her, with contact information and the ability to print out directions. The goal here is to drive patients toward multimodal treatment rather than opioids, thus reducing the demand on addiction treatment facilities in the long run. We also connect a link to the prescriber’s state opioids registry to facilitate the detection of patients who may be “doctor shopping”, seeking opioid prescriptions.

The Approach

The team has discussed this problem with numerous physicians, physicians assistants, nurse practitioners, nurses, and public health professionals. Core themes are:

- Time pressure
- Scattered information flows and usability issues
- A lack of immediate alternatives to opioids
- A total lack of ability to see how one's prescribing stacks up against peers

We have been putting the tool in front of potential users from the first static prototype, constantly honing the design and drawing the experience down to the simplest and most essential elements.
The team's intent is to partner with a state government with an eye toward connecting with either an all payer claims database or opioid registry database and piloting in a single health system in the Summer of 2018. Maine, Ohio, Indiana, and Louisiana are the states targeted for initial talks.

Team Expertise

Alex Rich, MBA, MPH https://www.linkedin.com/in/alex-rich-940651a8/

John Cronin, RN, MPH https://www.linkedin.com/in/johncroninrn/

Jarrod Parker https://www.linkedin.com/in/fluidity/

Cameron Yick www.cameronyick.com

Our team's clinical expert has more than 10 years of experience as an ER nurse at Level 1 Trauma centers in Boston and New York City as well two years as an operations and strategy consultant at a major academic medical center and a degree in Healthcare Management from Yale. Our health informatics lead is a National Library of Medicine Fellow in a PhD program at UNC Chapel Hill. He has an MBA, an MPH, and a decade of experience leading cross-functional teams in crash investigation and combat operations as a field grade officer and Senior Pilot in Air Force Special Operations Command. Our lead data scientist has more than a decade of experience in multiple startups and is currently the principal data scientist at Enigma Technologies. Our software engineering and UI lead is a Yale graduate with a degree in computer science and electrical engineering who is also a developer at Enigma Technologies. The team built the working prototype seen in the HHS code-a-thon in a 24 hour period, covering all prescribers serving Medicare Part D beneficiaries in 2015.

Commercialization

The team intends to develop a program around an “Opioid-Safe Facility Seal”, certifying that participating hospitals and health systems aggressively address statistically significant outliers in heavy opioid prescribing. We expect revenue sources to come from fees associated with membership in the program as well as consulting engagements during which our team harnesses network science insights and healthcare operations expertise to develop systemic solutions to lower the systems’ rates of excessive opioid prescribing.

We further expect opioid manufacturers to have strong desire to develop a public perception that they are part of the solution to the crisis, particularly as state AGs move forward with large lawsuits against Purdue and others. Alcohol companies have invested in “responsible driving” campaigns. Environmental regulation violators like Volkswagen have agreed to support expansion of electric transportation facilities and research. As the legal, political, and perceptual pressure ramps up in the next year, we expect the manufacturers and distributors of opioids to be very interested in helping to fund something like the “Opioid-Safe Facility” program.

Finally, we expect to be able to partner with states like Ohio, where more than $8 million is being distributed to further innovative efforts to handle the opioid crisis. We expect our strong connections to the Yale network to be helpful here.

Because our tool does not demonize opioids, manufacturers, or prescribers , it is something that stakeholders from all sides can get behind. We intend to build relationships with all stakeholders as we aggressively pursue these paths to revenue.