Psychological and Behavioural Science

"The Opioids Epidemic: Prescribing Good Behaviour"

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Table of Contents

Background	4
Introduction	6
Social regulation: Mandating the use of PDMP	8
Physical Affordances: The PDMP User Interface	9
Embodied Competences: Training doctors to use the PDMP	14
Campaign: Spreading awareness of PDMPs	17
Limitations and Conclusion	20
Bibliography	21

Background

America has a severe problem with opioid addiction. According to the Centres for Disease Control and Prevention (2020), "from 1999–2019, almost 500,000 people died from an overdose involving any opioid, including prescription and illicit opioid". Only in 2017, did the US Government declare the opioid epidemic a public health emergency (Jones et al., 2018).

The Three Phases of the Epidemic

Researchers have described the opioid epidemic as occurring in three distinct phases (McCann, Pineo & Schwartz, 2020) and this is clearly signaled by the increases in overdose deaths relating to a particular category of opioids. The first phase began with doctors overprescribing prescription opioids in the 1990s which resulted in an increase in overdose deaths relating to prescription opioids. The second phase began in 2010 and was marked by an increase in overdose deaths relating to heroin for reasons which we will set out later in this introduction. The third phase began in 2013 and still continues today. It has been marked by an increase in overdose deaths relating to prescription opioids, primarily fentanyl. All three categories of opioid remain relevant in the crisis today. Pineo and Schwartz have suggested that social isolation measures imposed in response to COVID-19 and the strain on healthcare services could lead to a fourth phase in the opioid epidemic (McCann, Pineo & Schwartz, 2020).

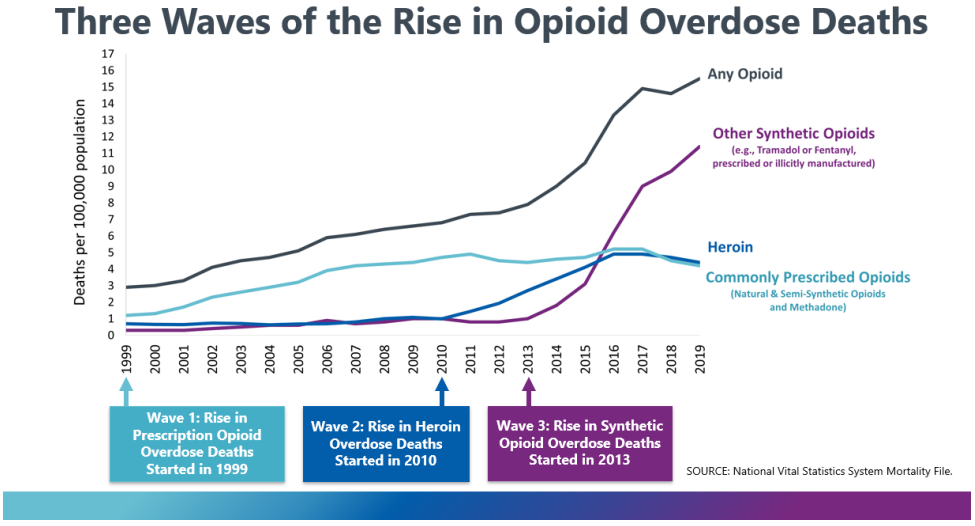

Figure 1. The 3 phases of the Opioids crisis. (National Vital Statistics System Mortality File).

Phase 1

Historically, prescription opioids were limited to the treatment of acute pain such as pain relief for cancer (Art Van Zee, MD., 2007). However, in the 1990s Purdue Pharma revolutionised the

opioids market by introducing a new opioid drug for pain relief, OxyContin. Purdue Pharma pursued an extremely aggressive marketing campaign to sell OxyContin and the most notable of its tactics included promoting a more liberal use of opioids amongst primary physicians in the non-cancer pain market, and severely misrepresenting the risk of addiction attaching to the opioids; it was marketed as "less than one per cent" (Art Van Zee, MD., 2007, p.223). Its marketing campaign was successful and "sales grew from $48 million in 1996 to almost $1.1 billion in 2000" (Art Van Zee, MD., 2007 p.221). Seeing how profitable Purdue's marketing campaign was, other pharmaceutical companies began to follow suit including Johnson & Johnson, Allergan and Cephalon Inc, to name a few.

Phase 2

As a reaction to the high incidence of overdoses from prescription pills, clinicians and policymakers reassessed the safety of outpatient use of opioids and states started to implement prescription controls (DeWeerdt, 2019). However, with a now expanded population of people addicted to opioids and with tighter controls regarding prescriptions, many people who were addicted to prescription opioids transitioned to a more potent and cheaper alternative that was easier to acquire; heroin (DeWeerdt, 2019). As a result, overdose deaths from heroin increased rapidly from 2010.

Phase 3

Around 2013, the shape of the epidemic began to change for a third time. A new drug, fentanyl, emerged in the illicit marketplace. Fentanyl is 50 times more potent than heroin and much less bulky of a product – this very high potency-to-weight ratio makes them easier to conceal and smuggle and is therefore a more appealing product to drug dealers. Heroin dealers started to mix their products with fentanyl in order to increase their profits (DeWeerdt, 2019). Due to its very high potency, there was a significant increase in overdose deaths relating to fentanyl. "According to the US Centers for Disease Control and Prevention, between 2013 and 2016, overdose deaths from Fentanyl and similar molecules increased by 88% per year." (DeWeerdt, 2019, p.11).

Introduction

The misuse and abuse of opioids in the U.S. is a complex problem that requires a multifaceted approach. Acknowledging the complexity of this problem, we began our research for this essay by mapping out the making of an addict in the U.S.: from the first time an individual is prescribed opioids by a doctor, to developing dependence on opioids and then becoming addicted (Figure 2). We overlaid our understanding of the making of an addict with the various interventions that have been adopted to tackle the problem. This provided us with a high level snapshot of the problem and interventions to date. From this snapshot we could see that the problem presented itself in two broad categories: the overprescription of opioids, which occurred upstream in the journey of an addict, and inadequate care for those who are addicted to opioids, which occurred downstream in that journey.

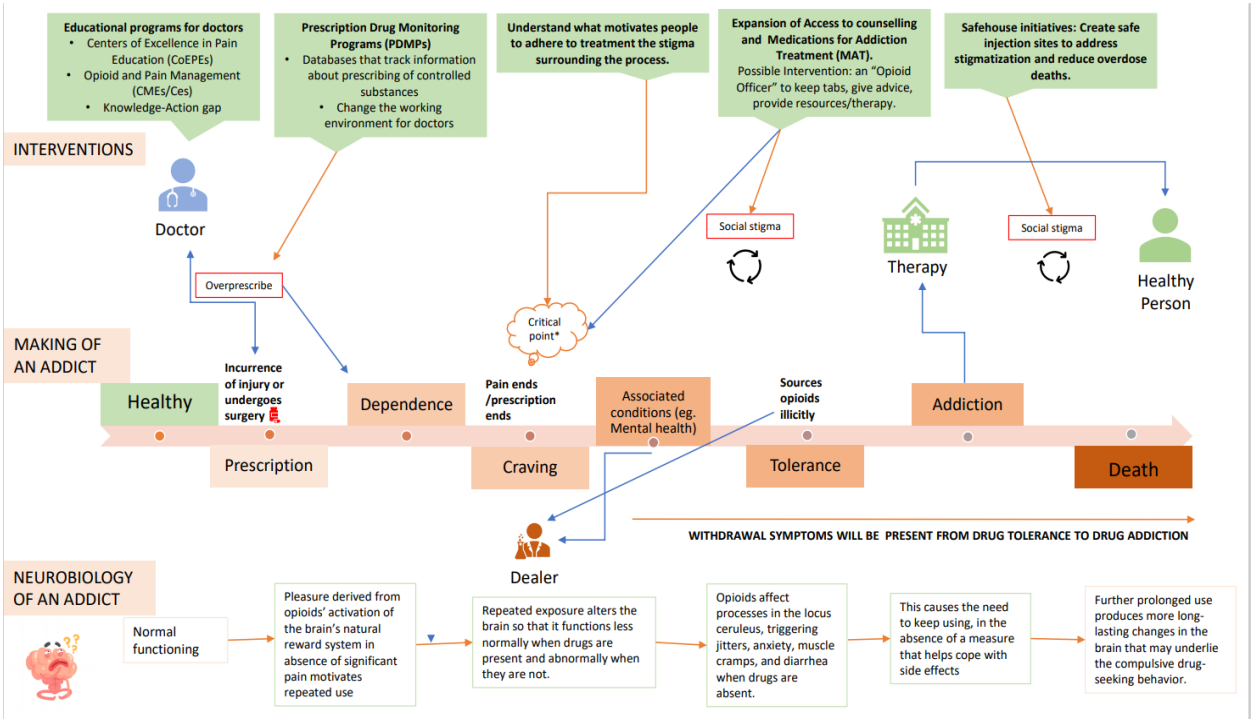

Figure 2. The making of an addict (created by authors).

Taking into account that most of today's heroin users were introduced to opioids via prescription drugs (Cicero et al., 2014), and the overprescription of opioids has been noted as significantly driving opioid overdoses (Compton et al., 2015), we decided to focus our intervention upstream and to find ways that could help reduce the supply of opioids that are flooding the system. Focusing on prevention rather than the cure.

Prescription Drug Monitoring Programs, referred to as PDMPs, are a promising tool to reduce the supply of prescription opioids**.** A PDMP, is "an information system capable of collecting, monitoring, analyzing and transmitting data" that increases "awareness of prescriptions by presenting clinicians, including pharmacists, with accurate and adequate information related to prescriptions" (Martin et al., 2020, p.1). Specifically, the PDMPs provide prescribers with controlled substance prescription histories, which includes opioids. This information enables prescribers to detect overuse of medications and drug diversion in patients as well as doctor shopping, where a patient seeks out the same prescription from multiple prescribers (Blum, Nelson & Hoffman, 2016).

PDMPs have received substantial support in the literature and from health care agencies. The WHO has recommended monitoring opioid prescribing as a strategy to prevent opioid overdose (Martin et al., 2020) and the office of National Drug Control Policy advocates PDMPs as a strategy for reducing prescription drug abuse (Hildebran, 2014). Studies have shown that PDMPs help to change physician prescribing behaviours, reducing the supply of prescription opioids (Simeone & Holland, 2006; Bao et al., 2016; Hickton & Leary, 2015). Forty-nine states in the U.S. have PDMP legislation in place to authorize PDMPs. The only state without enacted PDMP legislation is Missouri (PDMP TTAC, 2018). However, the implementation of the PDMP varies significantly across states; with each state having its own conditions for mandatory enrollment, queries and how frequently to check the PDMP (Martin et al., 2020).

Despite the benefits of PDMPs, studies have reported that voluntary use of PDMPs by doctors remains limited (Freeman et al., 2019). Given the effectiveness of this technology in helping to reduce the supply of prescription opioids, encouraging doctors to use this technology is of great importance. Accordingly, in this essay we apply insights from installation theory and other social psychological theories to design interventions that encourage the use of PDMPs by doctors.

Analytical framework: Installation Theory

As a framework for our analysis, we have chosen to use Installation Theory, due to its ability to account for environmental, social and individual factors in order to explain behaviour (Lahlou, 2017), providing the multifaceted framework needed to address a problem as complex as the opioid epidemic. An installation is defined as a "specific, local societal setting, where humans are expected to behave in a predictable way (Lahlou, 2017, p. 15), which consists of three layers. The layer of embodied competencies addresses the individual and its embodied skills, while the physical affordances layer deals with the environment surrounding the individual and its skills to

decode potential use cases for those given affordances (Ibid.). Lastly, the social regulation layer refers to accepted social rules as well as laws that structure interactions (Ibid.).

Having narrowed down the scope of the essay to a very detailed level, we have used installation theory not only as a tool to identify potential obstacles within each layer, but to design appropriate and realistic interventions to overcome those (Lahlou, 2017). Using very practical interventions – like the design of a new standardized interface for PDMPs – we decided to tackle problems and solutions within each layer, rather than separating them into two different chapters. With the implementation of a new Federal law requiring the standardized and mandatory use of PDMPs, being the cornerstone of our proposed interventions, we are addressing the social regulation layer first.

Social regulation: Mandating the use of PDMPs

To address social regulations (Lahlou, 2017) we are proposing the implementation of a law making the use of our standardized version of the PDMP mandatory for all practitioners in the United States. We are building on the Support for Patients and Communities Act that has been passed by Congress in 2018, making the use of PDMPs mandatory for Medicaid providers before prescribing opioids (Section 5042; Congressional Research Service, 2018). Our proposal expands the requirements of the bill to all patients and mandates the use of a standardized system to avoid inter-state competition regarding PDMP use (Martin et al., 2020). Currently, despite PDMPs being in place in almost every state, still 91% of overdose survivors in a cohort study were able to get another opioid prescription within less than a year, which in part is attributed to different use and documentation standards between states (Larochelle et al., 2016). By requiring the use of a standardized Federal system with unified reporting standards we are bridging that gap and making the prescription of opioids - particularly for vulnerable patients - less likely. However, when implementing a new law that changes existing practices substantially there always are certain obstacles that might negatively impact its potential. In this case a potential lack of intrinsic motivation and therefore resistance to change has been identified as a key problem that is addressed in the following way:

Intrinsic motivation and commitment to change

As with every significant change project, one of the key challenges is to generate commitment among the people affected by our proposal (Narine & Persaud, 2003). Without that, the impact of a new nationwide PDMP system will fall short of its true potential. One essential requirement is to include physicians and doctors, who will be forced to use the system into the transformation process of existing PDMPs. It has been shown that active participation in planning and implementation increases commitment and helps to overcome change reluctance (i.e. Buckley,

2000). Therefore, we are proposing to establish an expert commission consisting of IT experts and practitioners (Doctors & Physicians) to optimize the design of the new nationwide PDMP. This commission has to present their proposals every month to the broader public, to address potential shortcomings and collect feedback from practitioners on the ground. This does not only boost commitment but also increases intrinsic motivation by addressing the three essential dimensions of Self-Determination Theory (Deci & Ryan, 2012).

Self-determination Theory (SDT) is based on the idea of creating intrinsic motivation through satisfying what Deci and Ryan (2012) call the three basic psychological needs: competence relatedness and autonomy. Recent research on the effect of SDT on motivation and work performance has revealed that fulfilling those three needs significantly increases the motivation of workers, as well as their well-being and task performance (Deci, Olafsen & Ryan, 2017).

Not only can practitioners showcase their competence by being included in the expert commission or providing valuable feedback to the process from the outside, but there is also a constant feedback loop for everyone involved that increases a sense of belonging to the progress of the project, as well as the wider community involved, addressing the dimension of relatedness (Ibid.). The expert commission is free to propose whatever changes to the design they deem useful and appropriate, guaranteeing a sense of autonomy in the workflow and thereby boosting the third layer of SDT, ensuring that we are satisfying all three dimensions of basic psychological needs (Deci & Ryan, 2012). Moreover, through direct Feedback and the salient importance of the project, we elevate the feeling that there is true meaningfulness to the work being done, which is another essential driver of intrinsic motivation (Hackman & Oldham, 1976).

In general, all the interventions we are proposing that are directly addressing practitioners are building on the ideas of Self-determination Theory (Deci & Ryan, 2012), in order to maximize intrinsic motivation and foster commitment to our proposed legal intervention. Thereby we are guaranteeing that the idea of a nationwide PDMP can capture its full potential and contribute to a significant decrease in opioid prescriptions.

Physical Affordances: The PDMP User Interface

The physical layer of Installation Theory is the one comprising the objects or “artefacts” that offer affordances. The PDMP itself is the physical affordance (Lahlou, 2017), we therefore suggest significant changes to the software. These changes will affect the embodied competencies, thus allowing greater competence and increased use of the program. Redesigning artefacts aids in refining human behaviour, as artefacts have affordances which can either limit or encourage specific behaviours (Lahlou, 2011).

Alongside mandating the use of PDMP, there is a need to make a standardised, comprehensive and adaptable PDMP. With insights from IT and medical experts and findings from previous research, we propose to redesign the PDMP. We follow a user-centric design; reflecting on their motives, goals and barriers. An efficient workflow allows for specific entries at specific points (Lahlou, 2011), creating a streamlined process.

Time constraints have been reported across the literature as a barrier to PDMP use (Mastarone et al., 2019). Further, users have reported that they do not believe that the system will change their prescribing behaviour, the benefits would not outweigh effort related to checking the PDMP and that the PDMP would interrupt workflow (Martin et al., 2020). Another barrier to greater acceptance and usage of PDMPs is that the software has thus far varied across every state. These concerns and barriers show that there is both, inertia and scepticism amongst doctors regarding the use of PDMPs. There is a need to redesign the PDMP and address and rectify these barriers.

The PDMP represents the "local knowledge" i.e., the health records of the patient and the form to fill out prescriptions. These interventions directly influence the choice architecture of doctors. By creating a standard software that is used in every state, mandating use of PDMP on a federal level can be made easier. The training, educational programs and campaigns can be common nationwide, ensuring equity and efficiency. Simplifying the User Interface will make use and decision making easier for the Doctors.

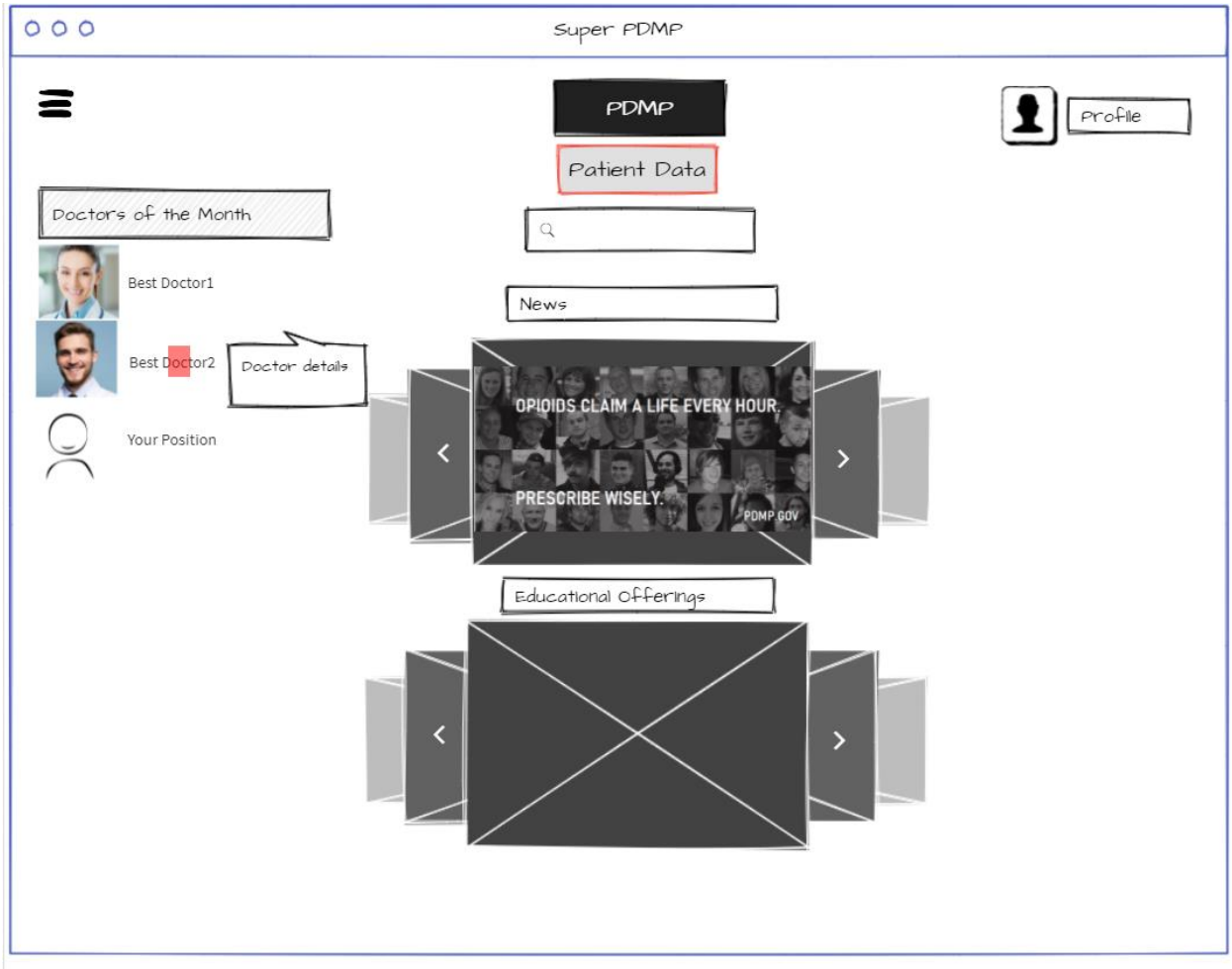

Figure 3. Suggested PDMP Homepage (created by authors).

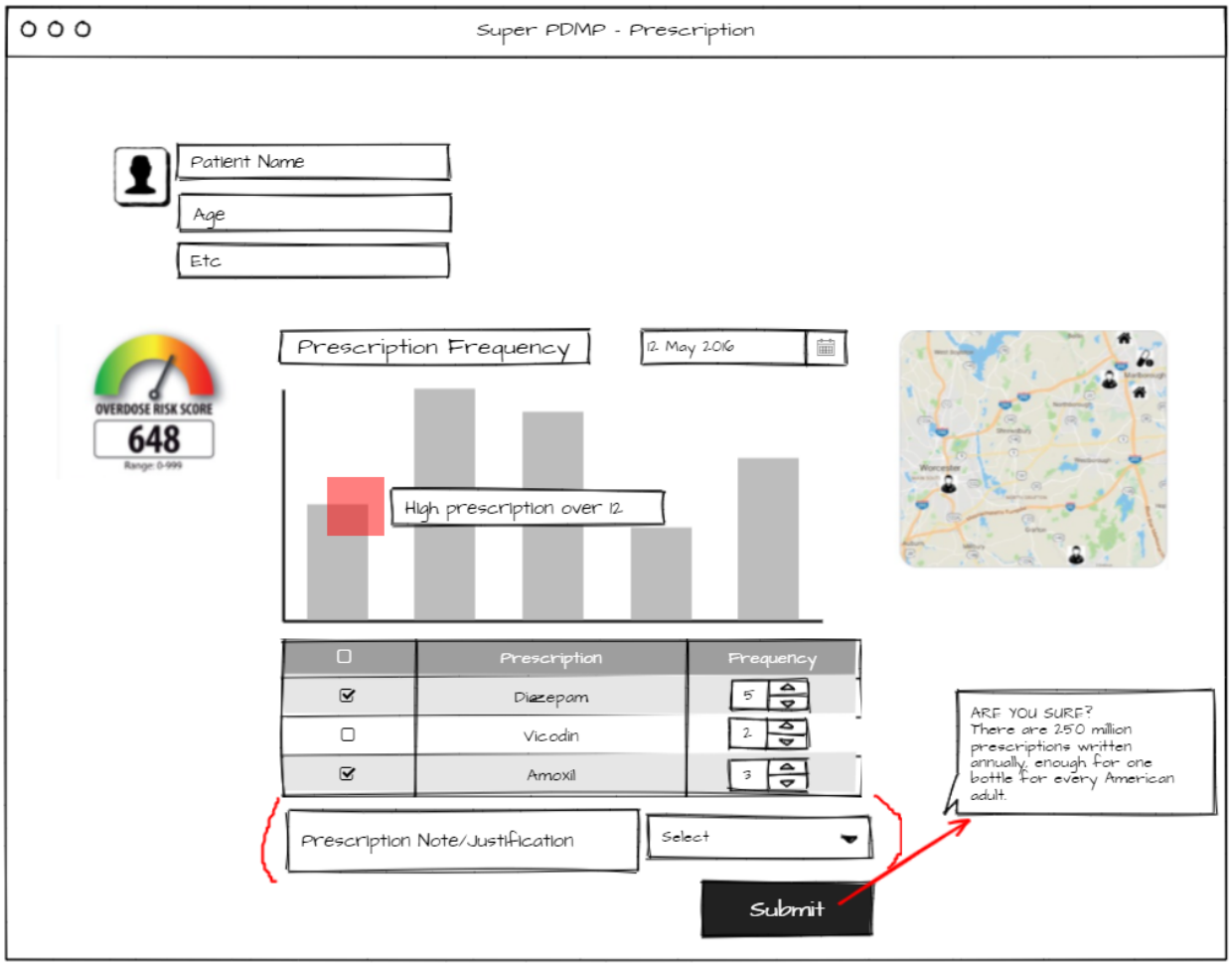

Figure 4. Suggested PDMP prescription and records page (created by authors).

1) *Simplified UI*: The home page has minimal options, a search bar right at the top to access patient's records, a news carousel updating those accessing the PDMP with latest information on the epidemic, educational programmes and other helpful tools. Most importantly, a prominent "leader-board" highlights the "Doctor of the Month' (*Figure 3*). The simplified UI helps combat an important issue that doctors face: lack of time (Martin et al., 2020). According to Hicks Law, the time taken for a person to make a choice is dependent upon the number of options available (Proctor et.al, 2018). Reducing the clutter on the homepage as well as the prescription page reduces time spent as well as the cognitive load. Secondly, the news carousel is essential in reducing scepticism as it provides strong counter arguments i.e., success stories, facts and figures of reduced opioid prescriptions.

2) *Leader-board*: "Doctor of the Month" is one who has accomplished reducing opioid prescriptions or offering alternatives to pain management. Highlighting this affects the motivation of the doctors to continue using PDMP and also provides recognition to their efforts,

which eventually acts as reinforcement. The doctors will be ranked by the software and then asked for their consent through email before they are featured. Similarly, doctors with bad prescribing behaviour will be emailed to inform them about their low position in the leader-board. This information will be available to law enforcement for evidentiary purposes which will be further motivation for good prescribing behaviour. Moreover, doctors will be compared to good doctors as opposed to average doctors, to avoid the boomerang effect (Byrne & Hart, 2009). This is when realizing that your behavior is above the average leads to changing your behavior in a negative way, with the justification that the majority of people are doing so.

Recognition of doctors' achievements is also recognised as a crowding- in factor, appealing to their intrinsic motivation (Berdud, 2016). Moreover, peer comparison makes use of social norms – they tell doctors what their prescription behaviour should be and motivate this behaviour through informal social sanctions, leading doctors to be influenced by fellow doctors to use PDMPs. Reminding doctors of their performance and prescription behaviour will motivate doctors to conform (Persell et al., 2013). Social norms are also vital in reducing scepticism.

3) *Graphical Representation*: We recommend that the PDMP should have electronic health records of the patients integrated in the system for easier accessibility. Upon entering the name of the patient, the user is redirected to the patient's electronic healthcare records (*Figure 4*). This page displays the name, age and other identity details of the patient. Noteworthy tools on this page are the Risk Thermometer and the graph of prescriptions. The Risk Thermometer (Heather et al., 2020), as the name suggests, shows the prescriber at a glance whether the patient is at risk i.e., if the patient has been prescribed opioids recently; is or has struggled with addiction, or could become dependent/addicted with this prescription. Graphical representation allows goal-oriented doctors to scan the page faster and reduce cognitive load whilst simplifying decision making. It provides succinct information to the prescriber and saves time. When the user hovers the mouse over the graph, the statistics will be displayed in text format for ease. A geographical map will make it easier for doctors to see where the patient has obtained their prescription, especially in cases of doctors shopping or crossing state borders to obtain additional prescriptions.

4) *Integrated Records*: Right below these are the prescription records. Following a tabular format, these present the name of the medicine and the frequency of prescription. Above the table is a Date Input dropdown to access specific records. By default, the table will display records of the last 12 months for easy accessibility.

5) *Justification*: As a part of creating an adaptable system, this page will defer for doctors with bad prescribing behaviours or patients who are at risk. Underneath the records, a Dropdown for

Prescription note/justification allows for the prescriber to quickly and efficiently state the reason for prescribing the Opioids. By default (i.e. if nothing is written), the justification will say "No justification was provided for this prescription". Default options are actions set in advance (Thaler & Sunstein, 2008) and act as an effective nudge for when there is inaction (Samson & Ramani, 2018).

For patients at risk and for doctors with bad prescribing records, the "Submit" button can only be clicked when the justification option is completed. A justification is not required for those doctors and patients who need no help in prescription behaviour in order to avoid overloading the user with acknowledgement demands (Lahlou, 2009). The justification is necessary to be in the medical records in order to understand the rationale behind prescription. It will also enable doctors to check their actions. This has been adapted from a study on prescription of antibiotics (Persell, 2013) to suit opioids prescription.

6) *Submit pop-up*: Once the user clicks the Submit button, a pop up appears on the centre screen. This window will display the following: "Are you sure?", followed by a statistic or shocking fact about the dangers of over prescription. This is one final nudge to the doctors, an opportunity to reconsider their prescription and review alternatives. This is a smart notification, giving the prescriber social proof of the consequences of opioid prescriptions. As stated earlier, the justification option and submit pop-up will appear only in cases where patients are at risk and/or for doctors with bad prescribing records.

Embodied Competences: Training doctors to use the PDMP

According to Installation theory, the second layer of determinants of activity is the embodied interpretive systems which constitute the interpretation structures that are internal to the body such as reflexes, skills, knowledge and representations (Lahlou, 2017). In this context, we are interested in the interpretive systems required for doctors to use PDMPs effectively and to deliver alternative pain management to reduce the supply of opioids.

Embodied competences regarding the use of PDMPs

In their study of the barriers and facilitators to PDMPs success Martin and colleagues identified training as a barrier to the use of PDMPs. This was further elaborated as a "lack of knowledge on how to use PDMP, lack of access training, lack of training on how to interpret results and communicate results to patients" (Martin et al., 2020, p.7). Whilst these results not only flag a lack of embodied competencies regarding the basic use of the PDMP, they also point to a lack of embodied competences in respect of the wider clinical encounter in which PDMPs are used.

Other studies have highlighted the lack of training on how to communicate and interpret results from the PDMP. One study pointed to a lack of agreed upon objective criteria concerning the "values in the PDMP report" that "trigger intervention from the clinician" which highlights the importance of a need for guidelines concerning the interpretation of results (Griggs, Weiner & Feldman, 2015, p.69). When communicating results from the PDMP to patients, Hildebran and colleagues found that some prescribers exhibited less effective communication strategies such as avoiding discussions entirely and or confronting patients with the aim of catching them in a lie (Hildebran et al., 2014). Doctors should be trained in effective communication strategies such as motivational interviewing which has been found to be helpful in reducing substance use in other chronic health conditions (Hildebran et al., 2014).

Embodied competences regarding alternative pain management therapies

In order to reduce the supply of opioids, doctors need knowledge of alternative pain management therapies so that they can effectively manage their patient's pain in lieu of opioids. Nondrug modalities such as behavioural therapies and mindfulness meditation are proven to help individuals control pain, however doctors are reported to use only 10% of the effective modalities available to treat pain (Spaniol et al., 2019). The lack of knowledge of alternative pain management therapies arises from a lack of formal training in alternative pain management therapies in both general and continuing medical education (Allen et al., 2020).

Representations and narratives

Pursuant to installation theory, actors rely on internalized representations to guide their actions and for an installation to work all members of a community must share a similar representation of an object (Lahlou, 2017). Given the variation in policies implemented by different states concerning the use of PDMPs, it is important that there is a shared representation at the national level regarding the use of PDMPs. The Centers for Disease Control and Prevention, the CDC, published national clinical practice guidelines for prescribing opioids for chronic pain (2016) and on the use of PDMPs which have helped to construct a representation of how to effectively use the PDMP. However, more comprehensive guidance on areas such as interpretation and communication of results in the PDMP and on alternative pain management therapies are needed so that they can construct a more comprehensive representation of how to use the PDMP alongside the clinical encounter. To address these areas of concern, our intervention would involve the publication of materials by the CDC that would provide a more comprehensive representation of how to effectively use the PDMP and the wider clinical encounter that accompanies this.

Narratives have been found to provide a novel and effective dissemination strategy for the recall of opioid prescribing guidelines, providing better recall of such guidelines compared to

summaries of information, (Kilaru et al., 2014) and they have been found to be an effective tool for communicating information in other health care contexts (Shaffer et al., 2018). Accordingly, our intervention would use narratives to provide a comprehensive representation of how to use the PDMP in the clinical encounter. These narratives would entail short video clips of a fictional encounter between a doctor and patient that would model the appropriate behaviour of a doctor when using the PDMP and would be disseminated in all CDC materials and included on the homepage of the PDMP user interface. These videos would cover all aspects of the clinical encounter including integration of the PDMP into the workflow, the interpretation of results from the PDMP, communicating results to patients, alternative pain management therapies and what steps to take when a doctor is concerned with the results of a PDMP. Different narratives would cover different patient scenarios from a patient with no history of substance necessitating opioids for acute pain to a patient presenting with substance abuse and suspected of doctor shopping.

Education

In addition to improving the representations that doctors rely on when using the PDMP, our intervention would scaffold the prescribing behaviours of doctors through the use of PDMPs by extending the embodied competences of doctors in the following areas: (i) improving their skills regarding the use of PDMPs and utilization of the more comprehensive CDC recommended practices; (ii) improving their know-how regarding alternative pain management; and (iii) improving their communication skills.

According to installation theory, education can be used to ingrain in people "interpretive systems of the world that foster generic behaviours" (Lahlou, 2017, p.108). Continuing medical education in the form of seminars and webinars was the most reported system training facilitator in Martin and colleagues' study (Martin et al., 2020). Moreover, continuing medical education has been shown to be effective for improving clinical knowledge and confidence related to opioid misuse and the effective use of PDMP (Finnell et al., 2017). Mandatory requirements concerning continuing medical education for prescribing opioids vary between states, with most dedicating only 2 hours of training to the topic. None require training on the use of PDMPs. Our intervention would recommend that the CDC provide improved training on its enhanced recommendations concerning the use of PDMPs alongside the clinical encounter and that this training become a mandatory part of all state continuing medical education requirements. Renewal of medical licences should be contingent upon completion of this training.

It is important that education and training happen upstream in general medical education as well downstream in continuing medical education. The literature notes that doctors receive little training at medical school in pain management or prescribing opioids (Young, Tindal & Cottler,

2017). Our intervention would require medical schools to include alternative pain management strategies and the use of PDMPs, in accordance with the more comprehensive CDC guidelines, in their curriculum.

Campaign: Spreading awareness of PDMPs

An important part of our interventions includes a campaign aimed specifically at doctors. This campaign will support the law mandating usage of PDMPs with the goal of making doctors more sensitive to the issue and to ultimately shape their behavior. While in theory the law is enough to mandate the desired behavior, as behavioral scientists we are aware of the importance of intrinsic motivation on action. The campaign will reach doctors through pamphlets sent to their offices.

Braddock and Dillard (2016, p.2) define a narrative as a *"cohesive, causally linked sequence of events that takes place in a dynamic world subject to conflict, transformation, and resolution through non-habitual, purposeful actions performed by characters".* This connection helps make sense of apparently random and separate events. As humans, we have a tendency to attribute actions to conscious intentions, rather than luck or other uncontrollable factors (Kahneman, 2011), and narratives are an effective way to do so. Another important characteristic of narratives is that it simplifies information. Our world is extremely complex and obtaining, storing, and retrieving information is costly, in terms of cognitive work. A narrative allows us to compact a big amount of information into a cohesive and simple story that can be easily shared and understood by many people (Taleb, 2007). Similarly, the medical world is extremely complex. Opioids are just a small part of the myriad of drugs that exist and overprescription is just one of the many issues a doctor can incur in. Furthermore, from a doctor's perspective, it might be hard to link overprescription to the direct death of a patient. This is not to say doctors are unaware of the problem. Rather, they might simply not consider it in their complicated decision-making process. Narratives can help simplify this process and clearly link together overprescription and death and make doctors more sensitive to the issue.

Mike grew up in a typical blue-collar family, playing street hockey and pickup football in local parks. He was always a good student and excelled as a three-sport varsity athlete in high school. During his senior year in high school, Mike had surgery to repair a broken wrist due to a hockey injury. Following his surgery, he was prescribed an opioid pain medication. Shortly after this, his wisdom teeth were removed, and he was written another prescription for opioids. Mike believes his use of prescription opioids transitioned to addiction within three to six months after first taking prescription opioids. He did not realize how physically dependent upon opioids his body had become until he became very sick from withdrawal after forgetting to bring his prescription on a vacation. From then on, he continued taking prescription opioids not to treat any pain, but to avoid feeling these withdrawal symptoms ever again. As his addiction progressed, he recalls completely losing sight of his goals and the things he once loved. Mike eventually had to stop playing sports in college and drop out of his classes. He became depressed and described his addiction as "isolating."

Figure 5. An example of an image to be used in our campaign. In the front is a picture taken and edited from the Wall Street Journal showing the faces of the victims. On the back is an example of a personal story to elicit the Identifiable Victim Effect. Story taken from CDC Rx Awareness program (design created by authors).

Figure 5 is an example of how we would build our informational pamphlet. The image has the picture of people who were victims of opioids overdose. This is because of the Identifiable Victim Effect, which states that being able to identify a victim leads to greater expenditure of resources to save them, compared to statistical victims (e.g., “50.000 people have died of opioids overdose this year”) (Jenni & Lowenstein, 1997). On the back of the pamphlet, we would write the individual stories of the victims, which would be linked to the face on the other side. The stories would vary across the pamphlet, to give each enough space. Unfortunately, opioid addiction often has stories that fit nicely in the power of storytelling and the identifiable victim. One example is the many promising young athletes who are overprescribed opioids after an accident and end up being addicted (Ekhtiari et al., 2020).

Stories have key elements such as the hero and the victim, and a quest (Laer et al., 2013). In the case of opioids, we want to make doctors the heroes of our story and the patient who receives too many opioids is the victim. The quest is to avoid overprescription of opioids. This is a simplification and an ideal, rather than reality. In fact, the doctors who overprescribe are the opposite of a hero. Opioids, in the right quantity and for the right patient, are an excellent solution, and not prescribing enough can also be a problem. However, for the purpose of changing behavior and making doctors more sensitive we believe our campaign should promote the ideal role of a doctor: that is, a hero of the community, who saves lives. For this more complex ad, we are limited in our production resources. We provide you with the psychological background but recommend the usage of a professional advertising firm.

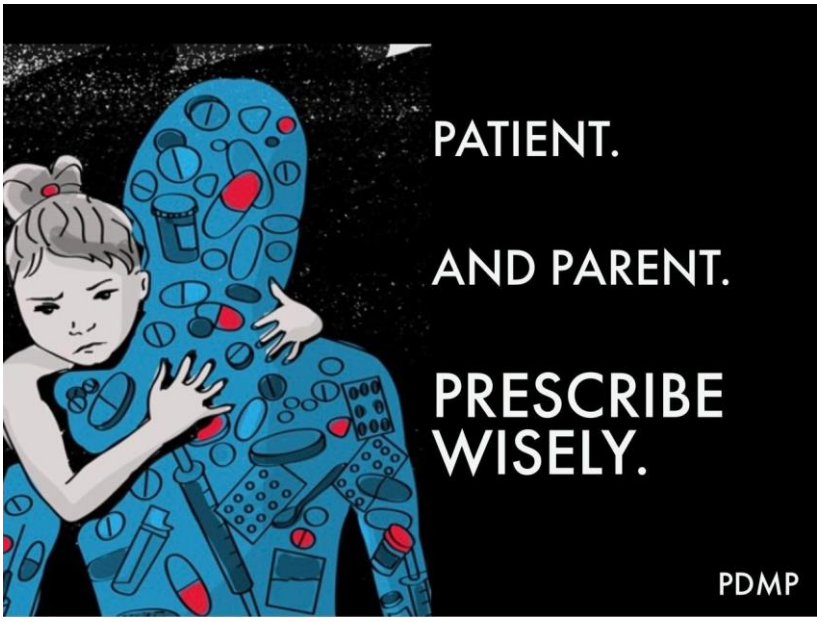

Figure 6. Another example of an image to be used for the campaign. Illustration from Communities In School website (design created by authors).

Limitations and Conclusion

As shown in the introduction, the opioid is a crisis that consists of various different layers that cannot be addressed within a single essay. Therefore, we have chosen to focus on one specific angle: improving the existing PDMPs software by standardizing it; aiming at improving the current situation without any claim of solving all of the identified problems. In terms of stakeholder engagement, our approach is targeted specifically at doctors, which leaves out the political decision-making processes that will be key in passing our proposed law to make PDMP use mandatory on a federal level. With the pharmaceutical industry, that is profiting off the opioid epidemic, having spent more than $4.6 billion in campaign donations over the past 20 years (Wouters, 2020), there will be powerful opposition to any measure taken that might threaten the profits of pharmaceutical companies. Therefore, the passing of our proposed laws will face obstacles that go far beyond commitment and acceptance of the doctors we are targeting with our interventions and the campaign.

Using Installation Theory, we were able to create a holistic system that subsequently aims at eliminating loopholes that have sustained the Opioid epidemic for far too long. With interventions that make changes to all three layers of the PDMP - physical level of artefacts, psychological level of representations and institutional level (Lahlou, 2017) - our intention was to create a system that is smooth and efficient. We thus took into consideration the user, the system and its expected end results to create a socio-technical system that is adaptable, effective and promising.

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