Opioid Addiction and an approach to solving the problem.

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Abstract

Today we are faced with a considerable addiction problem related to opioid usage that is killing people at an alarming rate and potentially impacting our future society. This problem is a number one priority for every government and politicians are all announcing how they will "fix the problem" and save our future from this vile drug. Problem is, no-one seems to have a plan of attack, or even a direction in mind. Maybe they are too close to the problem, or the source of the problem.

The opioid problem has been caused by over prescription by doctors, doctor shopping, weak laws and regulations, black market sales, and illegal sales based on theft and excess available pills. Children have access to these drugs in many household medicine cabinets, or through their friends and peers. Many have turned to Heroin because it delivers a similar experience at a much lower cost. All of this has led to an alarming rise in addiction and to many overdoses leading to spiraling addiction and death.

But are doctors the blame, or have they been led in this direction by outside forces looking to make a profit at societies expense. Doctors may be a front-line problem, but society is suffering the loss of human dignity and the cost of trying to respond to the problem through treatment not covered by insurance. Many families cannot pay the large cost of treatment, which has resulted in financial strains leading to dissolution of the family bond, loss of family members through addiction and death, and tremendous hardships. How did this happen and how can it be solved?

The pharmaceutical industry has told Doctors and Medical Universities from the initial introduction of opioids that they were safe and had a very small chance to cause addiction, even convincing universities that the only education doctor candidates needed was to prescribe the use of opioids. No need to teach doctors how to look for signs that the patient was becoming addicted and may face life altering conditions, and certainly no need to provide a means to wean patients off of opioids when they are no longer needed.

Another very serious problem is that doctors find it difficult to prescribe an exact dosage for a patient because drugs are delivered in generic dosages based on assumptions more than exact empirical data, which leads to doses being too large and many tries at varying dosage levels until a happy medium is reached. But by then the patient's medical base line has been altered, because dosage levels have swung so widely and the opioid has already affected their chemistry and biology. There has to be a better way.

Perhaps there is.

Recommended approach

First build a patient's profile from their medical, biological, chemical, psychological, and environmental experiences which would provide doctors with the patient's medical base line information and their tolerance to drugs. This is accomplished through a doctor-patient relationship and medical testing.

There are *many companies offering this service to doctors and patients already*. A doctor would recommend that a patient have a blood sample sent to a lab for DNA analysis and they return a report detailing the patient's medical baseline and their tolerance to a wide range of drug types and doses. Consider these indicators as "Human Performance Key Indicators (HPKI)" that can be monitored.

Consider **monitoring result** by using "Human Key Performance Indicators (HPKIs)" as thresholds to be reacted to via alerts and actions to be taken when crossed (either Up or Down). Further consider using a personal medical detector (think Bio Monitor worn around your wrist like a watch) that is connected to your smart phone via Radio Frequency (Bluetooth and Wi-Fi) and capable of forwarding results to medical programs used to measure, manage, and react to HPKI fluctuations. Perhaps driving a response that automatically regulates dosage amounts (think Mobile Smart Phone Apps and Server Apps talking).

Next develop a **Drug Profile** from "Drug Performance Key Indicators (DPKI)" that would be used to guide doctors in selecting the right drug dosage to prescribe their patients (Drug Company developed).

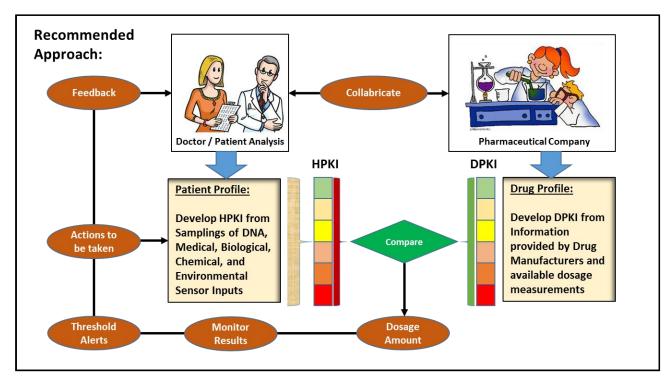


Figure 1: Determining Drug Dosage by comparing DPKI and HPKI, with feedback loop

Finally, create a **monitoring mechanism** that can provide understandable **feedback** to patients, doctors, pharmaceutical companies and regulators, so that problems can be uncovered and improvements made. The goal of this process is to get the perfect prescription dose the first time a drug is prescribed,

while providing feedback to all parties concerned so that progress can be made in overcoming problems and improving treatment.

Using Technology to address the problem

Having your Personal Medical Profile is a wonderful thing that will lead to better treatment, while utilizing monitoring technologies to measure, analyze, report, alert, and take actions – sometimes automatically, would make dramatic improvements in patient recovery. Following this path until a patient no longer needs treatment is certainly the right direction to take, but today doctors are sometimes very reluctant to follow the path that leads to no longer needing an opioid. Why?

Having a patient's Personal Medical Profile stored in his record on a HIPAA data base is nice but what happens if the person is in an accident and his records are not immediately available. How would that impact emergency treatment, especially if a patient has conditions that lead to strong allergic reactions to specific drugs and/or dosages? Let's consider changing the approach by storing a person's HPKI in a chip on a smart card that also serves as their Universal Personal ID Card. Adding Bio-Metric information would insure that the person is who they claim to be, so no mistaken identity and no delivery of incorrect drug dosages because of a fake ID.

Now we have a Universal Smart Card that can be used for transactions, to prove your identity, for a wide-range of services from both the private and public sector, and the healthcare industry – all without violating any laws and fostering a higher level of medical care to the population. This could be a world-wide response to an epidemic through the use of technology. This approach can be used for more medical and social conditions than Opioids and could result in improved healthcare around the world at a reduced cost.

Conclusion

I believe we have the tools, technology, and knowledge needed to address the Opioid problem in a manner that would improve mankind and help our population recover from this scourge brought on by a few greedy business people who were only concerned about making money. We need to make people aware of the history and impact made on society by these people so that a groundswell of human voices can be heard and actions forced upon our politicians to make the appropriate changes needed to assist mankind overcome this and potential similar problem in the future. It is the people who will take control and drive the political and regulatory direction leading to a cure for this blight.

The companies, people, and organizations responsible for this problem, should be made to pay for its resolution in a manner that sets an example and makes future perpetrators consider the consequences before traveling along this path again. It is too important to the survival of our society to simply kick this problem down the street like a tin can. We need to take action right now.

Appendix A – Human Performance Key Indicators

Bio-Sensor Ranges, per Category (developed through HPIKs)

HPKI Bio-Sensor Range, per Category									
HPKI Test:	Category:	DNA:	Medical:	Chemical:	Biological:	Environmental:			
HPKI-1	1	6	8	4	1	1			
HPKI-2	2	4	4	3	2	3			
HPKI-3	3	7	2	5	9	5			
HPKI-4	4	3	7	9	6	7			
HPKI-5	5	9	3	2	2	3			
HPKI-6	6	2	5	3	4	9			

Various Human Performance Key Indicator (HPKI) samplings are used to develop a Human Profile Baseline

A complete set of sensor readings are performed to develop a patient's Medical Baseline from inputs obtained through Human Performance Key Indicators accumulated through samplings from: DNA, Medical History, Chemical Analysis, Biological Analysis, Psychological Profiles, and the environment(s) the patient has experienced. If appropriate, a patient's psychiatric and family history can be included when developing a patient's medical baseline. Once established, the Patient's HPKI Medical Baseline will be compared against a drugs DPKI (Drug Performance Key Indicators) baseline

Human Profile Development (created by HPKI, Doctor, and Patient)

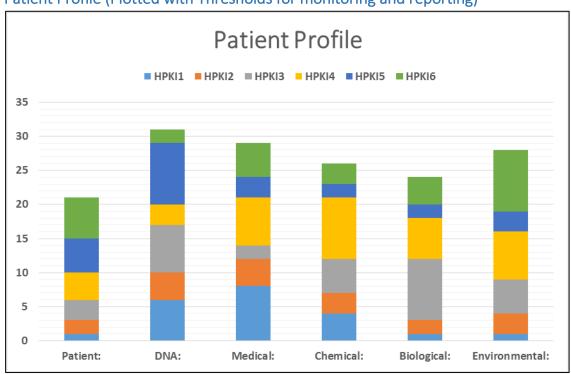
Truman Frome Development (created by Fir Ki, Doctor, and Fatient)								
Human Profile Baseline								
Category:	HPKI-1	HPKI-2	HPKI-3	HPKI-4	HPKI-5	HPKI-6		
DNA	6	4	7	3	9	2		
Medical	8	4	2	7	3	5		
Chemical	4	3	5	9	2	3		
Biological	1	2	9	6	2	4		
Environmental	1	3	5	7	3	9		
HPKI = Human Performance Key Indicator are used to help								
select Drug Dosage								

The Human Medical Profile is developed by the patient and doctor, with input from HPKI sensors. The Drug Companies develop a Drug Profile based on reactions to drugs by patients captured by Drug Performance Key Indicators (DPKI). Comparing the patient's HPKI with the drug's DPKI will result in a dosage recommendation

Drug Dosage Profile (provided by Drug Company)

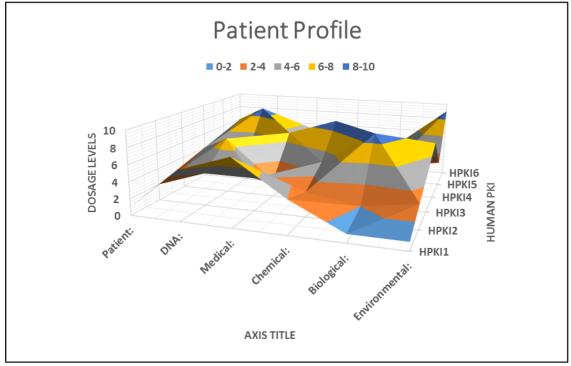
Drug Dosage Rating and Usage Recommendations, used to define a												
Drug Performance Key Indicator (DPKI)												
	Pharmaceutical Companies						Patient / Doctor Relationship					
	Drug Dosage Range: Available Drug Dosages:			sages:	НРКІ Ме	asurements	s Ranges:	Recommended Dosage:				
Drug Name:	Low:	Medium:	High:	Low:	Medium:	High:	Low:	Medium:	High:	Low:	Medium:	High:
Opioid 1	2	5	8	2	5	8	2	6	8	2	5	7
Opioid 2	1	3	7	1	4	7	1	3	6	1	3	6
Opioid 3	3	4	9	2	6	9	2	5	7	2	4	7
Opioid 4	2	5	8	1	5	8	1	4	6	1	3	6
Opioid 5	2	5	8	1	5	8	2	5	7	2	4	7
Opioid 6	1	4	6	1	4	7	1	3	6	1	3	5
Opioid 7	3	5	8	2	6	9	2	5	7	1	4	6
This chart can be used to compare available drugs and dosage rates, against HPKI values to select dosage amounts												

Patient Profile (Plotted with Thresholds for monitoring and reporting)



Use this profile to monitor the patient's reaction to drug dosages via feedback loops and automated dosage alterations to insure the patient's treatment is optimized.



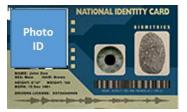


Fluctuations in a patient's medical profile will occur as feedback from monitoring techniques are applied to alternate drug dosage amounts. The goal is to stabilize the Patient Profile over the shortest time possible to optimize treatment.

Tools to use

- 1. Human Profile stored in chip on a Universal Personal Smart Card (encrypted), or even implanted.
- 2. RFID (Bluetooth, Wi-Fi) communications to smart phone.
- 3. Mobile and Server based applications to monitor, report, analyze, and take actions as fluctuations occur.

Smart Card Approach



- **Smart Card** Contains Biometric Information, HPKI, and RFID Receiver within Chip obtained via DNA Analysis, etc.
- **Smart Phone** to receive RFID data and forward to Doctor / App to moderate dosage as needed.
- Feedback loop to provide information and adjust dosage.