PRECISE
Agility. Performance. Innovation.

Drug Safety Innovation

Application Development with 4IR Technologies

Igniting Innovation 2019
Conference and Awards
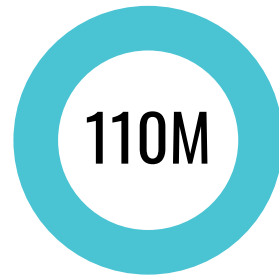
23 May 2019

Contents

Problem Statistics: Need for Drug Safety Misuse of Prescription Drugs

187M
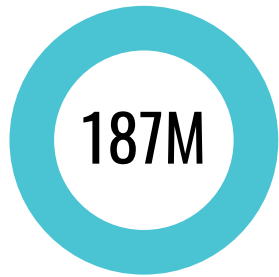
Americans use
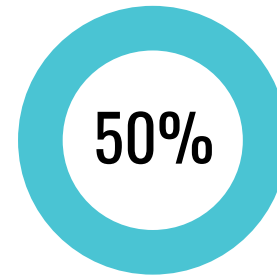prescription drugs

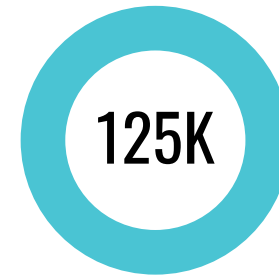Source: Network for Excellence
in Health Innovation [NEIH]

110M

Prescriptions per year
that are never picked up

Source: CVS Pharmacies based
on 2008 data

50%

Don't take medicines as
prescribed

Source: NEIH

125K

Americans die every year
as a result

Source: Research cited by the then-
US surgeon general in 2012

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Problem Statistics: Need for Drug Safety Opioids Use Disorder

21.29%
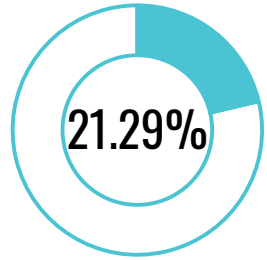
Patients prescribed opioids for chronic pain misuse them.

8.12%
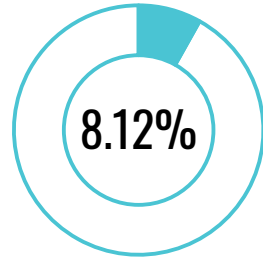
Develop an opioid use disorder.

4.6%
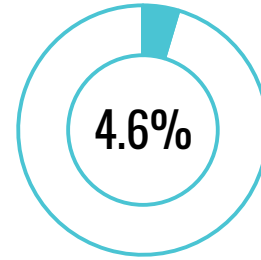
Misuse prescription opioids transition to heroin.

80%
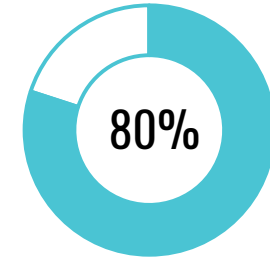
People who use heroin first misused prescription opioids.

30%
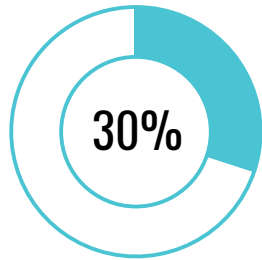
Opioid overdoses increased from July 2016 through September 2017 in 52 areas in 45 states.

70%
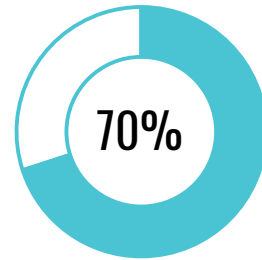
The Midwestern region saw opioid overdoses increase from July 2016 through September 2017.

54%
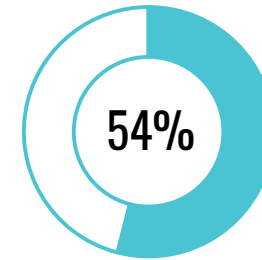
Opioid overdoses in large cities increase in 16 states.

Source: https://www.drugabuse.gov/drugs-abuse/opioids/opioid-overdose-crisis

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Adverse Medication Event

Precise Software is doing just that. Correctly identifying a pill based on its physical appearance is crucial for a patient to address medication safety concerns. Color, shape, and imprint uniquely identify a pill, including its name, dosage, and black box warning. Using Google AutoML Vision technology, Precise developed an advanced solution to recognize a pill from pictures taken on a mobile phone. This led us to develop PillSafe, a mobile app that leverages this ML technology solution to promote awareness of pills a patient is taking. The goal of PillSafe is to improve healthcare by streamlining the factors that contribute to public health, wellness, and awareness.

An adverse drug event (ADE) is an injury resulting from medical intervention related to a drug.1 This includes medication errors, adverse drug reactions, allergic reactions, and overdoses. The good news is that large majority of ADEs are preventable. Reducing ADEs is expected to result in safer and higher quality health care services, reduced health care costs, more informed and engaged consumers, and improved health outcomes.*

*https://health.gov/hcq/ade.asp

Adverse Event Alert

Initiates AE alerts by analysing user inputs and prevents escalation of incidents by enabling immediate rescue response.

Opioid Use Disorder

Precise Software is doing just that. Correctly identifying a pill based on its physical appearance is crucial for a patient to address medication safety concerns. Color, shape, and imprint uniquely identify a pill, including its name, dosage, and black box warning. Using Google AutoML Vision technology, Precise developed an advanced solution to recognize a pill from pictures taken on a mobile phone. This led us to develop PillSafe, a mobile app that leverages this ML technology solution to promote awareness of pills a patient is taking. The goal of PillSafe is to improve healthcare by streamlining the factors that contribute to public health, wellness, and awareness.

Opioid Crisis

Identifies opioids and offers patients preventative protection through interactive advice on best practices when taking opioid-based medications, and deduces possible addiction in patients to assist in identification and treatment.

Opioid use is habit-forming, especially when opioids are not taken as prescribed Opioid addiction can be described using three basic components:
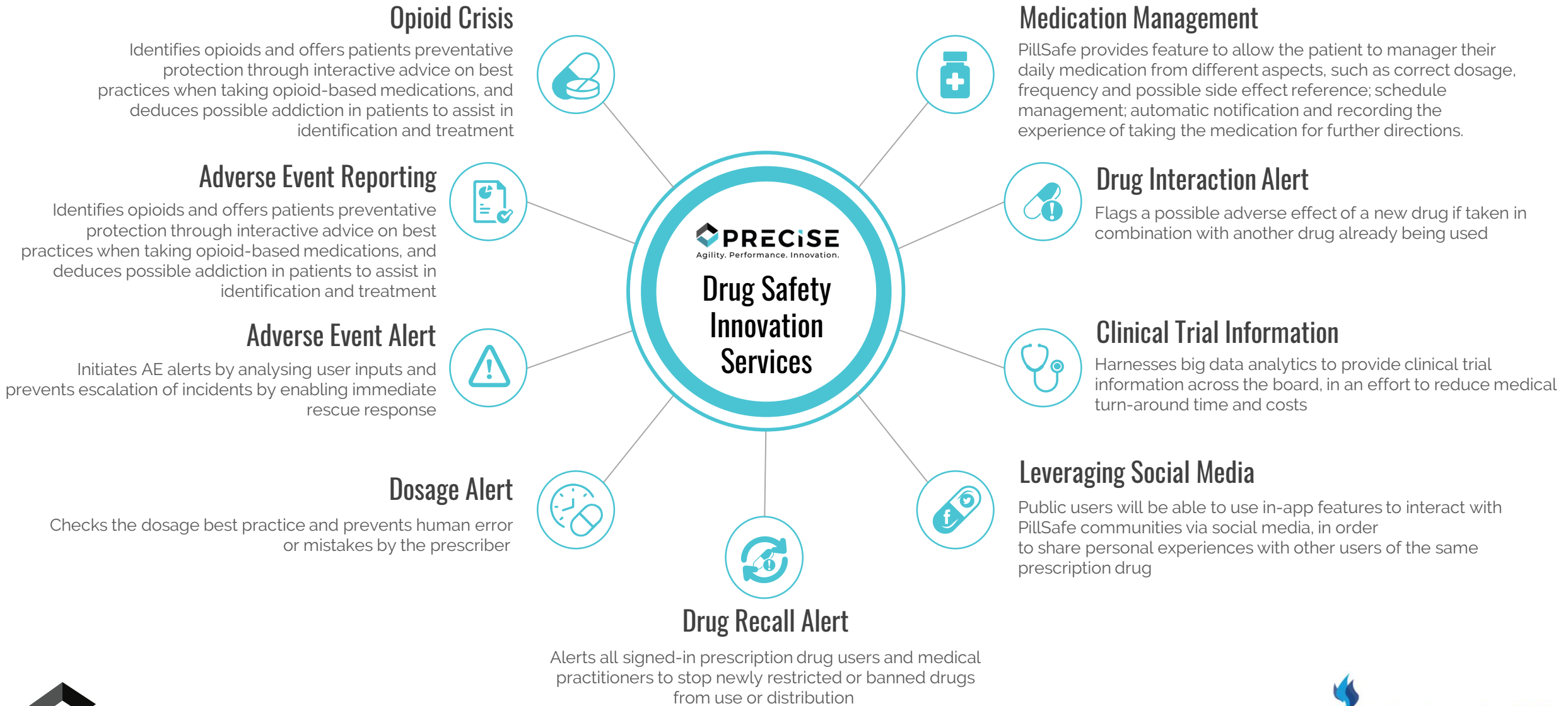- ✓ Overwhelming psychological desire to use opioids
- ✓ Increased tolerance to opioids
- ✓ Withdrawal symptoms when opioids are unavailable

*https://health.gov/hcq/ade.asp

PillSafe Drug Safety for Better Health, Better Live

Opioid Crisis
Identifies opioids and offers patients preventative protection through interactive advice on best practices when taking opioid-based medications, and deduces possible addiction in patients to assist in identification and treatment

Adverse Event Reporting
Identifies opioids and offers patients preventative protection through interactive advice on best practices when taking opioid-based medications, and deduces possible addiction in patients to assist in identification and treatment

Adverse Event Alert
Initiates AE alerts by analysing user inputs and prevents escalation of incidents by enabling immediate rescue response

Dosage Alert
Checks the dosage best practice and prevents human error or mistakes by the prescriber

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Drug Safety Innovation Services

Medication Management
PillSafe provides feature to allow the patient to manager their daily medication from different aspects, such as correct dosage, frequency and possible side effect reference; schedule management; automatic notification and recording the experience of taking the medication for further directions.

Drug Interaction Alert
Flags a possible adverse effect of a new drug if taken in combination with another drug already being used

Clinical Trial Information
Harnesses big data analytics to provide clinical trial information across the board, in an effort to reduce medical turn-around time and costs

Leveraging Social Media
Public users will be able to use in-app features to interact with PillSafe communities via social media, in order to share personal experiences with other users of the same prescription drug

Drug Recall Alert
Alerts all signed-in prescription drug users and medical practitioners to stop newly restricted or banned drugs from use or distribution

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Google Cloud AutoML for Better Health, Saving Lives

AutoML Vision BETA

Start with as little as a few dozen photographic samples, and Cloud AutoML will do the rest.

AutoML Natural Language BETA

Automatically predicts text categories through either single or multi-label classification.

AutoML Translation BETA

Upload translated language pairs to train your own custom model.

Dataset

AutoML

Generate Predictions with a rest API

Train

Deploy

Serve

We leverage Google Platform products to enable our developers to train our models using Google's high-tech transfer learning and Neural Architecture Search technology. We leverage machine learning, image recognition, sentiment analysis, and predictive analytics within the PillSafe app

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Training with Google AutoML Vision Platform for Drug Safety

Step1: Prepare images

Step2: Train model

Step2: Predict

Innovation Alignment In Every Solution for Better Health

IT Modernization and Digitalization

PillSafe is an AI-powered cloud-based platform. It Incorporates the most advanced technologies in machine learning, neural networks and search based algorithms to give stakeholders very personalized and effective solutions to medical care.

Data, Accountability and Transparency

Our system incorporates advanced data filtering and authorization capabilities to enable accountable data mining and enable effective decision making for healthcare.

Improving Customer Experience

Our intended features solve many pains that patients, medical practitioners and the regulatory bodies have had in the past in the field of medical care. But the most important aspect will be that of empowering drug users to know the impact of their actions on their health.

Sharing Quality Services

It is the desire of every person to access the best medical attention possible. Through our analysis of cause and effect in medical care, we will be able to provide people with information about which medical services are serving similar cases best.
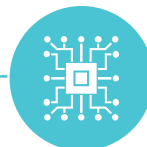
Improving Transfer of Federally-Funded Technologies

The US Government has funded a lot of research into technologies that could benefit its citizens, especially in the medical sector. We will blend these technologies into our solution, even as we strive to lead the way in showing other businesses how they can leverage these technologies for other use cases for better products and services in all sectors.

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ABOUT PRECISE

Precise Software Solutions, Inc. (Precise) is a nimble and fast-growing SBA 8(a) certified small business focusing on strategy and IT consulting services to public sector customers. We are proud of our strong reputation for overcoming obstacles and delivering innovative, quality work with measurable results. For detail information, please visit us at www.precise-soft.com

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FDA U.S. FOOD & DRUG ADMINISTRATION

Washington Technology FAST 50

CEO report
CONNECT·INFORM·INSPIRE
2018 WINNER
Velocity Growth AWARDS

WASHINGTON BUSINESS JOURNAL
2018
TOP 30
SMALL TECHNOLOGY COMPANIES
Precise Software Solutions, Inc.
#28

Come Meet Us to Discuss More Innovation for Better Health

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Thank You

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