

Measuring & Predicting Impact of Pharmacy Clinical Interventions

2021 National Workers Compensation and Disability Conference





Pharmacy Utilization & Data Analytics

Data & Visual Analytics



Data Visualization

Modern equivalent of visual communication



Over 90% of the information transmitted to the brain is visual



The human brain processes images 60K faster than text



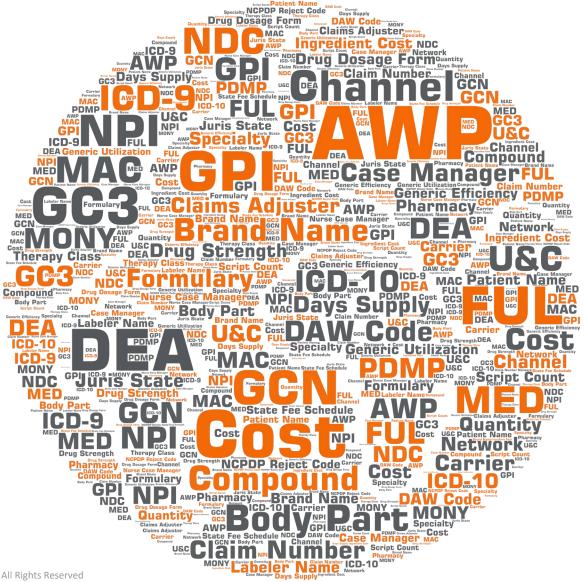
Over 95% of the world's data has been created in the past 3 years

"An ideal visualization should not only communicate clearly, but stimulate viewer engagement and attention"

- Fernanda Viegas and Martin M. Wattenberg, IBM

Workers' Compensation: A World of Data





The Ranking Dilemma



Patients Ranked by Claim Age (Months)

Claim Age Opioid Days Patient Supply (Months) 45 Patient D 31 Patient F 30 15 Patient C 25 120 Patient G 20 30 Patient E 15 70 Patient B 12 10

6

Patients Ranked by Opioid Days Supply

Patient	Claim Age (Months)	Opioid Days Supply	F
Patient C	25	120	
Patient E	15	70	
Patient A	6	60	
Patient D	31	45	
Patient G	20	30	
Patient F	30	15	
Patient B	12	10	

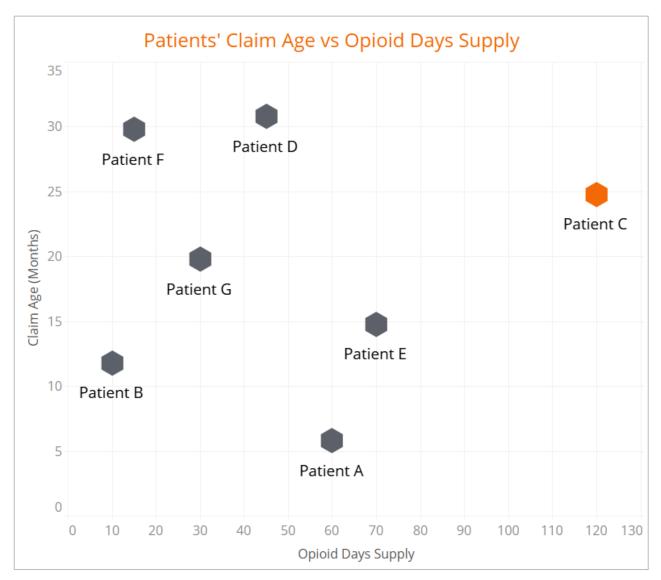
Which patient has the oldest claim <u>and</u> the highest opioid utilization?

60

Patient A

Using Data Visualization to Solve "The Ranking Dilemma"





Which patient has the oldest claim and the highest opioid utilization?

Answer: Patient C

"Scatterplot Visualization"

- Instantly identify outliers
- Displays large populations of data
- Useful for seeing correlations
- Fixed time period

Examples of Pharmacy Clinical Data Measures



- Antipsychotic Use
- Average Daily Morphine Equivalent Dose
- Beers Criteria Use
- Benzodiazepine Surplus
- Benzodiazepine Use
- Compound Use
- Concurrent Use of Benzodiazepines and Opioids
- Concurrent Use of Benzodiazepines, Opioids and Soma
- Concurrent Use of Buprenorphine and Opioids
- Concurrent Use of Gabapentin/Pregabalin and Opioids
- Concurrent Use of Long-acting and Short-acting Opioids
- High Dose Acetaminophen
- Long-Acting Opioid Surplus
- Multi-Source Brand Use
- Multiple Opioid Prescribers

- Multiple Pharmacies
- Naloxone Use
- New Start Long-Acting Opioid
- Opioid Adjunct Use Without Opioids
- Opioid Use
- Pharmacy Cost
- Polypharmacy
- PPI Use Without NSAID
- Sedative Hypnotic Use
- Short-Acting Opioid Surplus
- Skeletal Muscle Relaxant Use
- Specialty Medication Use
- SSRI Antidepressant Use
- Therapeutic Duplication
- Transmucosal Immediate Release Fentanyl





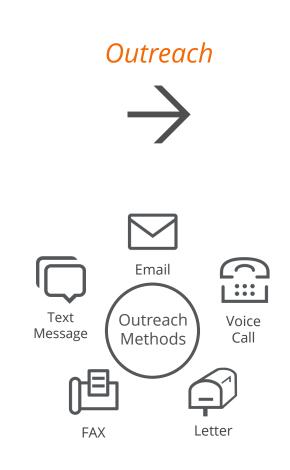
Utilizing Data to Drive Outcomes

What is a Pharmacy Clinical Intervention?





- Utilization Review
- Step Therapy
- Formulary
- Plan Edits
- Threshold Alerts
- Prescriber Consultation
- Patient Education
- *Etc.*

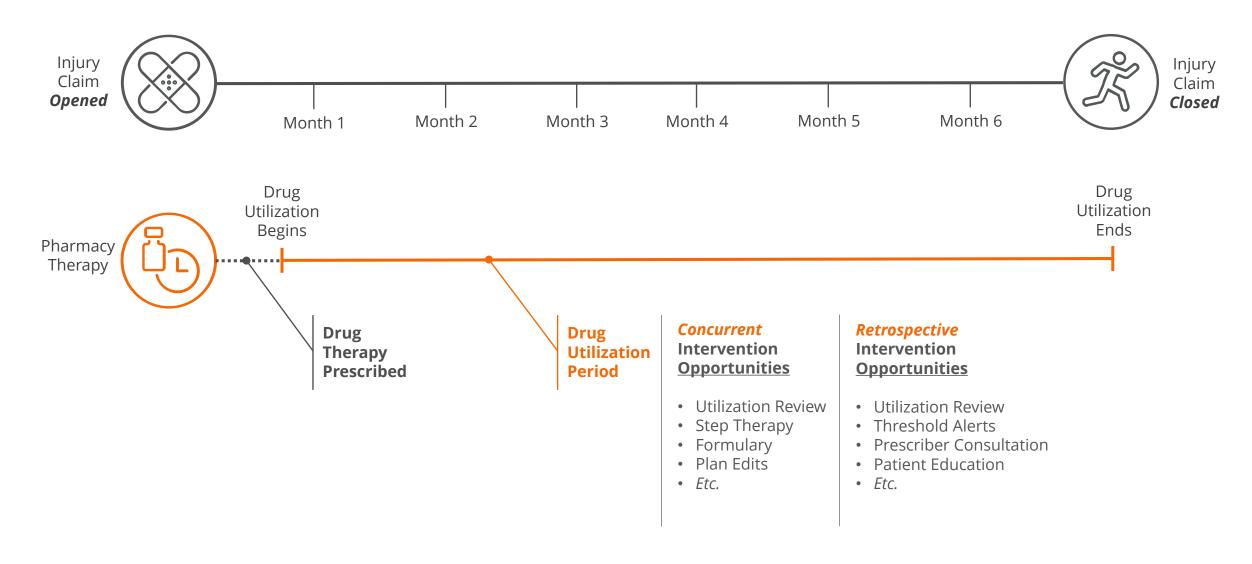




Pharmacy clinical interventions are designed to ensure pharmacy therapy efficacy, contain cost and deliver the best possible outcomes for an injured worker

Pharmacy Therapy in a Workers' Compensation Claim Lifecycle

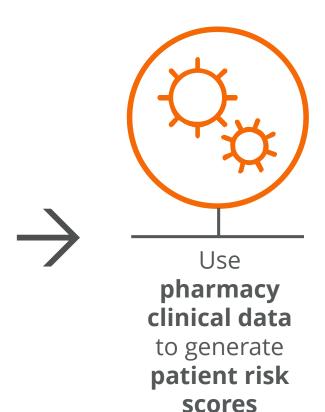




Transforming Pharmacy Clinical Data into Risk Scores



- Antipsychotic Use
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Overall Risk Score 60

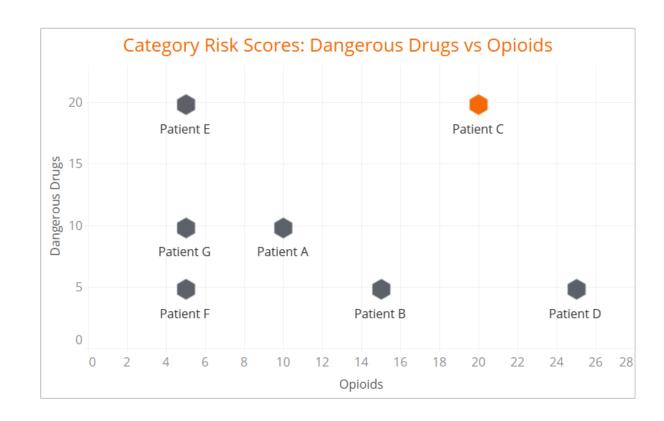
Using Data to Target Pharmacy Clinical Interventions



By ranking **Overall Risk Score**, intervention candidates can be easily identified:

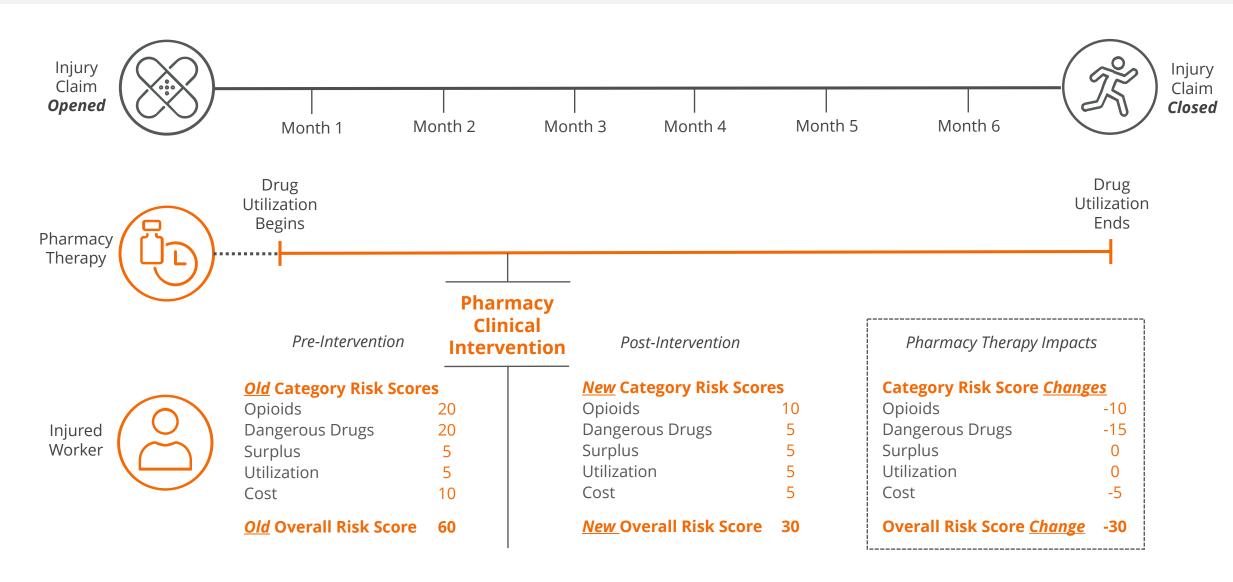
Patients Ranked by Overall Risk Score							
Patient =	Opioids	Dangerous Drugs	Surplus	Utilization	Cost	Overall - Score	
Patient A	10	10	20	5	30	75	
Patient D	25	5	15	15	5	65	
Patient C	20	20	5	5	10	60	
Patient B	15	5	10	5	15	50	
Patient E	5	20	5	5	5	40	
Patient F	5	5	10	5	10	35	
Patient G	5	10	5	5	5	30	

Alternately, comparing Category Risk Scores will reveal additional outliers:



Measuring Impacts to Pharmacy Therapy





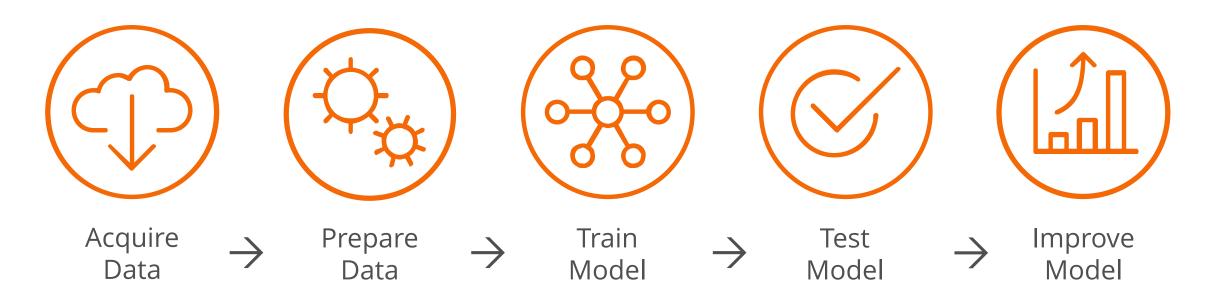




Predicting Intervention Impacts

Steps to Predictive Modeling Using Machine Learning & Al





Model Input "Feature" Data

- Pharmacy clinical data measures
- Category risk scores
- Overall risk scores
- Patient demographics
- Other historical data

Model Output "Predicted" Data

- Targeted pharmacy clinical data measures
- Category risk scores
- Overall risk scores
- Cost

Predicting Impacts to Pharmacy Therapy









Thank you





