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Topic

FEATURES

Addressing Opioid Abuse with Analytics, Population Health Strategies

Opioid abuse is reaching epidemic levels. How can providers leverage data analytics and population health management strategies to respond?

Source: Thinkstock

Opioid abuse is among the deadliest population health crises in America, with opioid-related overdoses taking an average of 44 lives each day.

Fueled largely by a precipitous rise in legal prescriptions for highly addictive painkillers, the number of deaths from prescription opioid misuse has quadrupled since 1999, leaving providers and public health officials desperately searching for ways to prevent prescription misuse, treat substance abuse disorders, and educate patients – and prescribers – about how to properly use this powerful class of drugs.

Healthcare officials have suggested a number of solutions to this **$25 billion problem (http://www.drugfree.org/wp-content/uploads/2015/04/Matrix_OpioidAbuse_040415.pdf)**, including research into **"abuse deterrent" opioids (http://blogs.fda.gov/fdavoice/index.php/2016/10/key-facts-about-abuse-deterrent-opioids/)**, an expansion of safe **drug disposal programs (http://www.fda.gov/ForConsumers/ConsumerUpdates/ucm101653.htm)** in community settings, and increased use of alternative methods of perioperative pain control.

They are also encouraging providers to be more responsible when prescribing pain management drugs, and to use the same population health management tools, strategies, and technologies employed in combating a number of other common public health issues, including diabetes, heart disease, and obesity.

A combination of better access to prescribing data, more effective analytics, and shrewder prescribing habits – underpinned by a population health management approach to delivering more effective care – may be the key to reducing the tragic impact of opioids on the United States population and preventing more patients from losing their lives and wellbeing to substance addiction.

"A REAPPRAISAL OF WELL-ENTRENCHED PRESCRIBING PRACTICES"

Too often, opioid addition starts with the prescription pad, says David B. Nash, MD, MBA, Dean of the Jefferson College of Population Health at Thomas Jefferson University, when patients undergo one of the 110 million inpatient and outpatient surgical interventions conducted each year.

Perioperative opioid use leads to long-term addition for one in fifteen patients, Nash wrote in the introduction to **an article (http://online.liebertpub.com/doi/full/10.1089/pop.2015.0144)** in the journal Population Health Management, due in large part to the routine use of controlled substances for managing nearly every type of acute pain, even after a minor procedure.

"There is compelling evidence that the routine use of these drugs could be decreased exponentially in the acute postsurgical setting where an opioid-centric analgesic approach is no longer necessary, appropriate, or safe," he said.

"Getting to the crux of the problem will require a proactive approach that minimizes the introduction of opioids into general circulation by reducing or eliminating avoidable exposure. This presents a formidable challenge because it entails a reappraisal of well-entrenched prescribing practices."

Opioids have been a mainstay of clinical practice since ancient times, bringing relief from chronic and acute pain to societies around the globe for centuries. In Western society, the use of opioids and narcotics reached its peak in the 19th century, when heroin, opium, morphine and cocaine were freely available at the corner drug store to treat an improbable variety of common ailments.

A swift backlash against what would come to be known as "the Great Binge" largely put a stop to heroin-laced cough drops, soft drinks laden with cocaine, and snake oil patent medicines with morphine as a main ingredient, but increased federal regulation and criminalization of opioids did not prevent clinicians from advocating for effective pain relief throughout the 20th century.

> *"Getting to the crux of the problem will require a proactive approach that minimizes the introduction of opioids into general circulation."*

By the year 2000, public opinion had swung back towards the broad use of opioids for pain management, leading to an enormous surge in prescriptions for narcotics including Oxycontin, Percocet, and oxycodone-HCl.

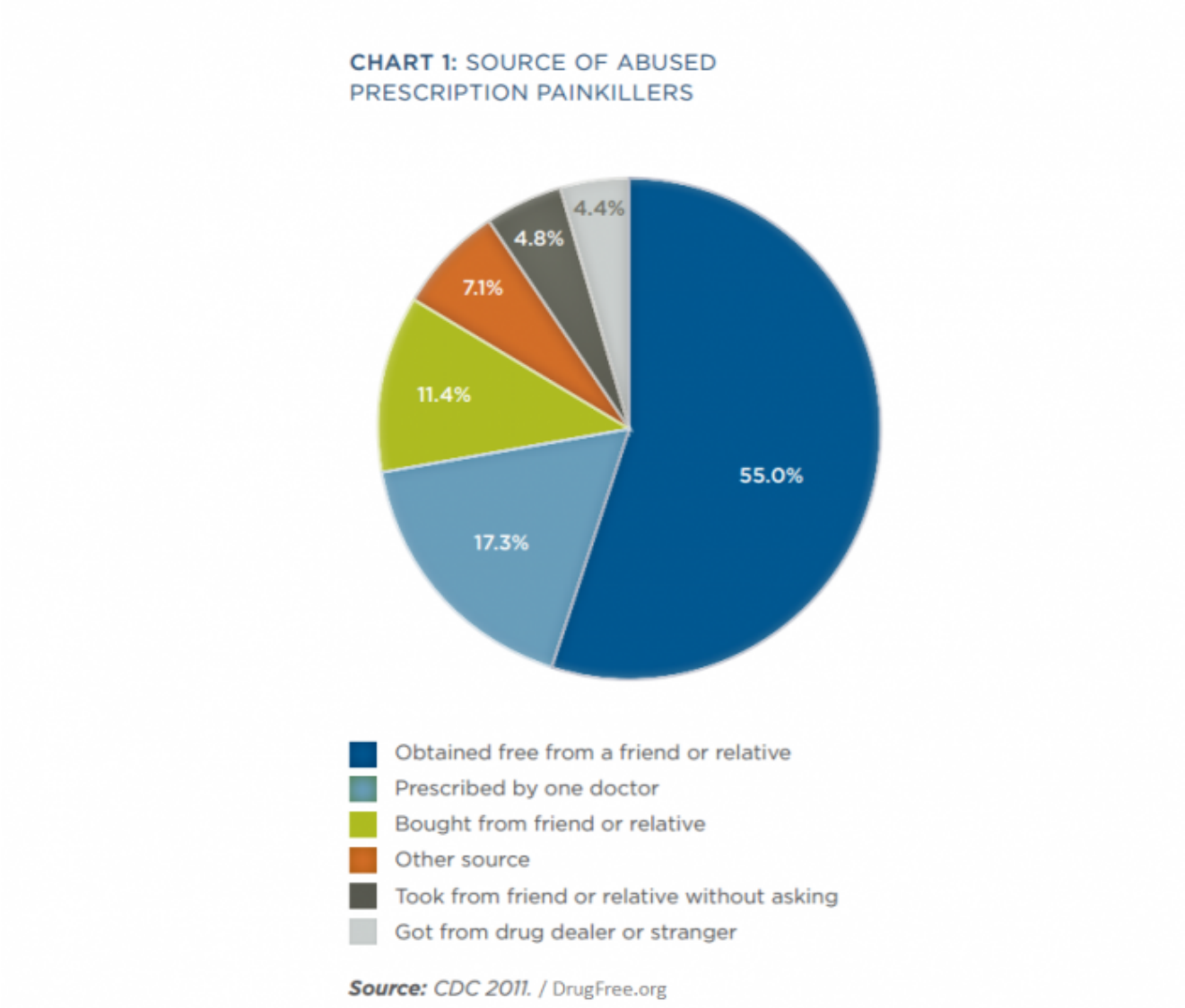
According to **one study (http://www.ncci.com/Articles/Documents/II_Prescription_Drugs-2013.pdf)** of worker's compensation prescription data in 2013, narcotics accounted for a quarter of all prescriptions issued that year, wrote clinicians and public health experts from Thomas Jefferson University in the *Population Health Management* article.

New formulations of oral opioids, patient-controlled analgesia pumps, and the development of adjunctive medications that allow patients to tolerate much higher doses of opioids without side effects have contributed to the ease of prescribing these medications to manage all types of acute pain.

Incomplete understanding of the addictive properties of opioids, coupled with a lack of patient education about using pain management medications after discharge, compounded the problem in the early years of the decade, setting the stage for a public health crisis of unimaginable proportions.

"In retrospect, our well-intentioned efforts to ensure total pain control have exposed patients to increasing numbers of potent opioid formulations at higher doses and in higher quantities," the article asserts, and adds that initial efforts to curb prescribing rates may actually have backfired.

"Recent restrictions on clinicians' ability to prescribe additional opioids via telephone have led to unnecessarily large initial prescriptions written 'just in case,'" say the researchers. "The unused pills can be abused by others; in fact, two thirds of individuals abusing opioids are taking someone else's prescription medication surplus."



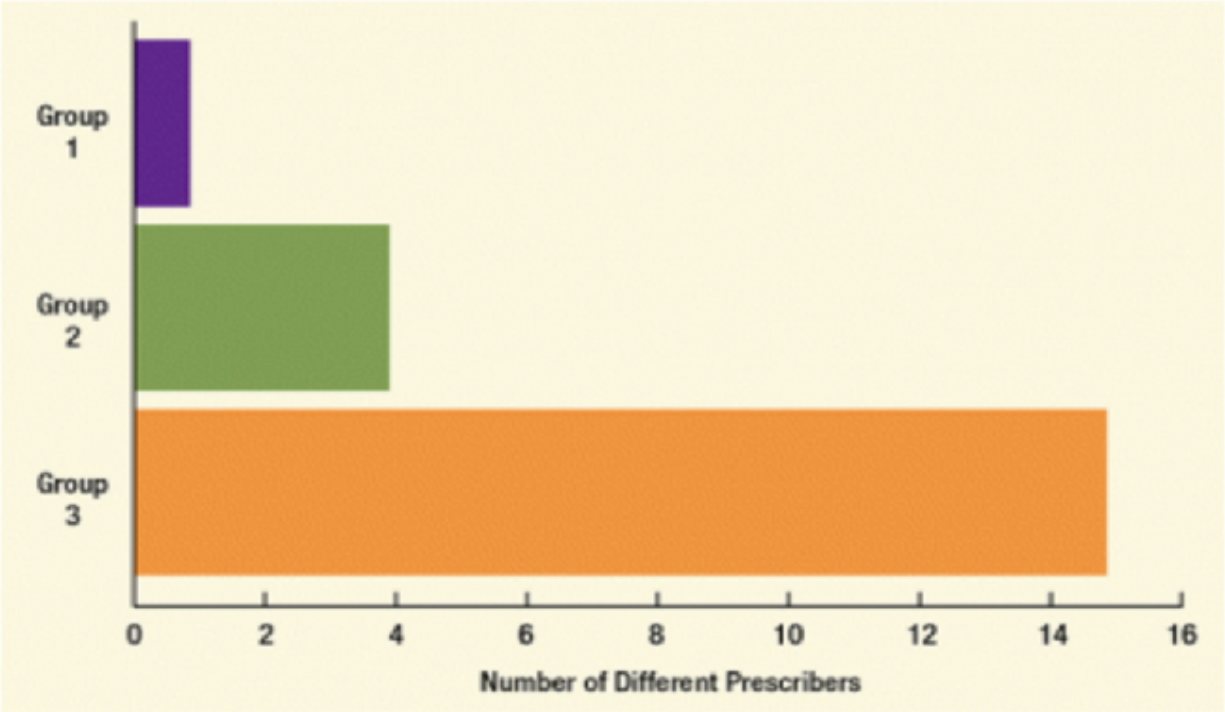
(https://healthitanalytics.com/images/site/features/_large/opioid_obtain.png)

Source: DrugFree.org

In 2014, close to two million Americans suffered from a substance addiction related directly to prescription pain killers, **according to (http://www.asam.org/docs/default-source/advocacy/opioid-addiction-disease-facts-figures.pdf)** the American Society of Addiction Medicine, including 168,000 adolescents using prescription pain killers for non-medical purposes.

Most adolescents obtain opioids from friends or family members who share unused prescriptions or fail to properly dispose of leftover pills.

In contrast, "doctor shopping" may be a relatively limited phenomenon, **says (https://www.drugabuse.gov/news-events/nida-notes/2014/05/although-relatively-few-doctor-shoppers-skew-opioid-prescribing)** the NIH's National Institute on Drug Abuse.



Group 1 consisted of patients who had visited only one prescriber for an opioid prescription during this period, Group 2 comprised patients who had received prescriptions from about 4 different prescribers, and Group 3 contained patients who had received prescriptions from about 15 different prescribers. The high number of different prescribers for the patients in Group 3 set this group apart from the other two groups, raising the suspicion that Group 3 contained patients engaged in doctor shopping.

(https://healthitanalytics.com/images/site/features/_large/Doctor_shopping.png)

Source: NIH

One assessment from 2008 indicates that only 0.7 percent of patients actively attempted to scam providers into issuing duplicate prescriptions – although a group of 135,000 "extreme" con artists were able to obtain an average of 32 prescriptions from ten different prescribers in less than a year.

This high-using group purchased a total of 11.1 million grams of opioids, said researchers Dr. Douglas McDonald and Kenneth Carlson from Abt Associates, which equates to an overdose-level amount of drug for every day of the year.

"For every day out of the year, that's a lot of drug," McDonald commented. "Of course, we don't have X-ray vision or trackers on these people to know for certain they are abusing or distributing opioids. But we can draw some inferences about who these people in this extreme group are."

USING STATE MONITORING SYSTEMS TO REGULATE PRESCRIBING PRACTICES

Statewide electronic prescription monitoring databases have become a popular tool for identifying patients with abnormal opioid habits, are aimed, in part, at reducing the success rates of doctor shoppers.

But the healthcare system is still struggling to generate, gather, analyze, and disseminate relevant prescription drug data that could prevent providers from doubling up on pain killers, McDonald pointed out.

"These doctor-shopping patients are clearly different, and they are exploiting the absence of good data management right now. The best way to improve the situation is to get better information in the hands of doctors—ideally, in their lap in advance of an appointment," he said. "Ultimately, health care providers are the front-line defense against prescription drug diversion."

Every state in the nation, with the exception of Missouri, currently uses or is planning to implement an electronic monitoring system to record prescriptions for controlled substances and track potential doctor shoppers.

> *"Ultimately, health care providers are the front-line defense against prescription drug diversion."*

Statewide databases gather data from pharmacies about dispensation of controlled substances and may allow medical providers, law enforcement agencies, and state licensure boards to access to this information.

The National Alliance for Model State Drug Laws **states (https://www.deadiversion.usdoj.gov/faq/rx_monitor.htm)** that prescription drug monitoring programs (PDMPs) are designed to:

- *Support the ability for patients to access pain medications for legitimate clinical needs*
- *Identify, deter, or prevent drug abuse and potential overdoses*
- *Help providers, law enforcement agencies, and other entities to deliver substance abuse treatment to high-risk users*
- *Provide statewide data to inform public health programs and population health management initiatives*

Research indicates that these technologies may be having a positive effect on reducing the huge number of prescriptions emanating from primary care providers.

Using data from the National Ambulatory Medical Care Survey (NAMCS), researchers from Weill Cornell Medical College **found (http://healthitanalytics.com/news/state-monitoring-predictive-analytics-may-cut-opioid-abuse)** that more than forty percent of office visits result in a prescription for some form of pain management drug, says the study published in Health Affairs earlier in 2016.

Five percent of those prescriptions were for a Schedule II opioid, a category that includes drugs such as oxycodone, morphine, codeine, and methamphetamine.

However, implementation of electronic drug monitoring tools produced an "immediate effect" on prescribing habits, resulting in a 30 percent drop in the rate of prescriptions for Schedule II opioids.

"Our analysis of the NAMCS data suggests that the recent wave of implementations of prescription drug monitoring programs was associated with a sizable reduction in the prescribing of Schedule II opioids – the subset of prescription opioids deemed to be at the highest risk of misuse and abuse – while having limited effects on the prescribing of opioid analgesics of any kind and of other pain medication," the study says.

"We also found that the effect of implementation on the prescribing of Schedule II opioids and all opioids was immediate, and that after the first six months this effect remained strong for Schedule II opioids."

Missouri may not have a statewide PDMP initiative, but the state's Medicaid agency, MO HealthNet, has decided it has no other option than to **take on the challenge itself (http://healthitanalytics.com/news/big-data-analytics-cuts-medicaid-opioid-abuse-ups-patient-safety)**.

"Missouri winds up being a good place to be for people who are thinking about abusing drugs" because of the lack of a statewide monitoring system, Steve Calloway, Director of Pharmacy at MO HealthNet, told *HealthITAnalytics.com* in 2015. "We're surrounded by nine states, so we become a catch-all for folks from our neighboring states who do have prescription drug monitoring programs."

"A Vicodin-type product is the top prescription that we dispense and pay for. When you have something like that hit the top of your list in terms of what you're paying for month after month, quarter after quarter, it behooves you to do something about that."

Access to integrated Medicaid medical claims and pharmacy benefit claims is a key factor that helps HealthNet navigate the tricky landscape of pain management, Calloway explained, and a big data approach ensures that patients with legitimate needs aren't denied an important part of their care.

"We can correlate the diagnosis codes with the pharmacy claims, so we can see if there's a reason in the electronic medical record for the patient to keep getting these controlled substances," he said. "We might be looking for certain codes that would allow or not allow the prescriptions to go through."

"Then you have simply the pharmacy software itself that actually adjudicates the claims that allows you to know when a prescription was last billed, know what quantity was last dispensed, and that sort of thing. That's not a unique software there, but the fact that MO HealthNet integrates the medical claims with the prescription claims is what really created the opportunity for us."

From 2012 to 2015, Vicodin use **dropped (https://www.news.xerox.com/news/Xerox-Reduces-Prescription-Opioid-Abuse-in-Missouri)** by 30 percent and Percocet prescriptions fell by 16 percent. Providers serving Medicaid patients receive notifications about patients who may already have a current opioid prescription from another clinician. The letters include a patient profile and a recommendation for reevaluating the treatment plan, along with information about indicators of overutilization.

Within six months of beginning this part of the initiative, HealthNet saw a 73.9 percent reduction in the number of target patients flagged for overutilization and $44,000 in savings on intervention-related costs.

Allowing providers to access more data at the point of care may also help to prevent unintentional overdoses and unforeseen drug interactions, which put about **60 percent of opioid users (http://healthitanalytics.com/news/poor-medication-reconciliation-puts-60-of-opioid-users-at-risk)** at risk for serious harm.

"This is not just about trying to do something about drug abuse," said Calloway. "It really is about patient safety, too. Some of the overdoses and adverse events related to opioid use stem from abuse, but many others can be accidental or inadvertent. We want to make sure our participants are safe, and that's what this process is allowing us to do."

EXPANDING THE E-PRESCRIBING LANDSCAPE FOR CONTROLLED SUBSTANCES

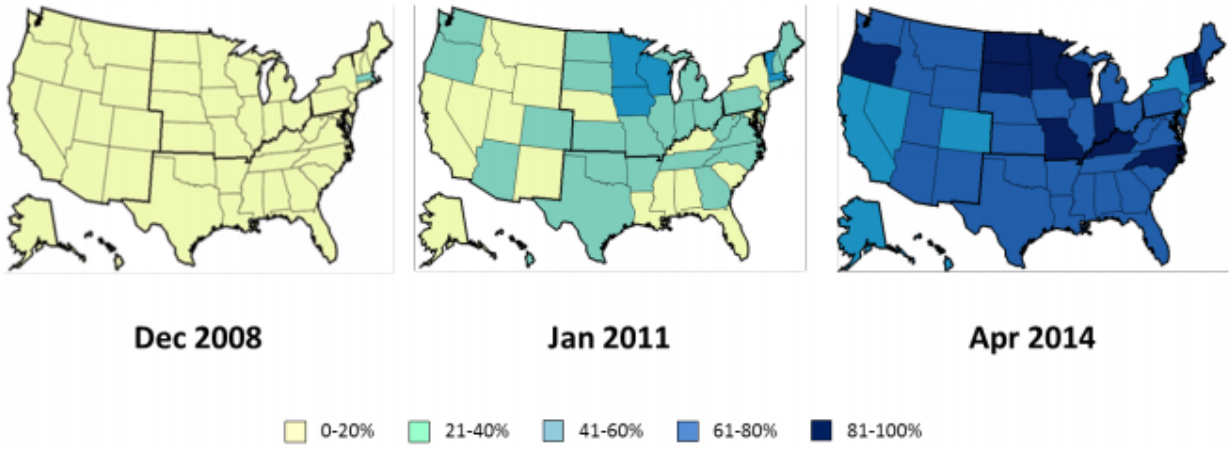
PDMPs are an effective first step for gathering data on prescribing patterns, but as the healthcare industry continues to go digital, e-Prescribing is becoming another favored strategy.

Thanks to the widespread adoption of electronic health records, the majority of physicians have access to electronic prescribing tools that send digital prescriptions straight to the pharmacy.

As of 2014, seventy percent of providers were engaged in e-prescribing, and 96 percent of community pharmacies were able to accept electronic data to fill prescriptions, **the ONC says (https://ehrintelligence.com/news/onc-data-70-of-providers-use-e-prescribing-through-an-ehr)**.

The percent of physicians e-prescribing using an EHR has increased in all 50 states and in the District of Columbia.

Figure 2. Percent of physicians e-prescribing using an EHR through April 2014, by state.



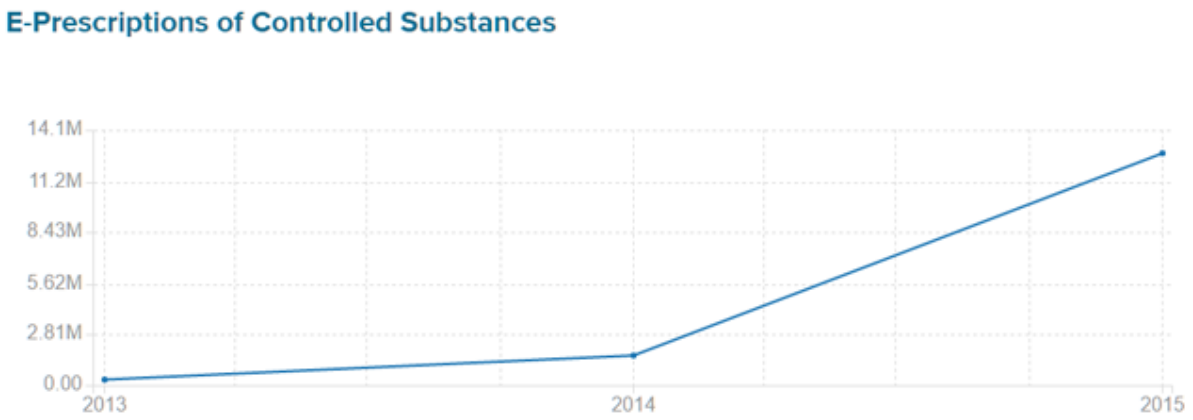
SOURCE: ONC analysis of physician prescriber data from Surescripts. Denominator from SK&A 2011 Office Based Providers Database.

Source: ONC

Electronic prescription network Surescripts **averaged (http://healthitinteroperability.com/news/surescripts-48-increase-in-health-data-exchanges-in-2015)** 3.8 million e-prescriptions each day in 2015, representing a 48 percent increase over the previous year. Controlled substance prescriptions comprised a large number of those transactions.

"The number of providers enabled to use electronic prescribing of controlled substances increased 359 percent in 2015, resulting in a more than 600 percent increase in e-prescriptions for these critical medications that require greater security and scrutiny to prevent fraud and abuse," said the company in an August press release.

"In December 2015, opioids, which include painkillers like morphine and oxycodone, comprised 32 percent of all controlled substance e-prescriptions."



Source: Surescripts

The uptick in electronic prescriptions for controlled substances may be partly due to the fact that several states, including New York and Maine, require prescriptions for controlled substances to be conducted electronically.

New York **implemented (http://healthitanalytics.com/news/new-york-requires-100-e-prescribing-but-adds-big-loopholes)** all-electronic prescribing for controlled substances at the beginning of 2016, and Maine **will give providers (https://ehrintelligence.com/news/maine-introduces-e-prescribing-for-controlled-substances)** until July of 2017 to comply.

"Patients can't alter [electronic prescriptions] like they sometimes would alter handwritten prescriptions," said Ken Whittemore, SVP of Professional and Regulatory Affairs at Surescripts, **to *EHRintelligence.com* (https://ehrintelligence.com/news/ny-e-prescribing-mandate-takes-on-controlled-substance-abuse)** when discussing the New York law. "And you don't have the issues associated with people stealing the official New York State prescription blanks and using them to write bogus prescriptions."

"In addition, because electronic prescribing gives providers access to patient medication histories, they also have that additional data source that they can see what other medications have been prescribed for a patient and by whom."

New York State's Internet System for Tracking Over-Prescribing (I-STOP) Act is also intended to promote use of the state's PDMP to prevent inadvertent duplicate prescriptions, Whittemore added.

"One of the changes it made was requiring that physicians access the PDMP database before they prescribe controlled substances, which obviously includes opioids," he said. "[During the first year of implementation], they have observed that has reduced doctor shopping by over 75 percent."

Providers in Maine will also be required to consult the PDMP before writing a prescription for an opioid or other controlled substances, and pharmacists will need to double-check the data before they can dispense prescriptions to new patients, non-state residents, and patients who are paying cash for prescriptions despite having insurance.

The state will also put a cap on how many opioids a patient can receive. Patients will be limited to 100 milligrams of morphine equivalent per day, which is in line with CDC guidelines. Patients with acute pain will be allowed to access a week's worth of medication, while chronic pain patients will be given a maximum of 30 days' worth of pain killers, unless they suffer from cancer pain, are in palliative care, or meet other potential exemptions.

Vermont is planning a similar strategy to sharply curb the number of pills prescribed for certain procedures. Patients undergoing minor surgical interventions will not be given more than 12 doses of opioids, which may help to reduce the number of unused pills available for non-medical use or illegal resale.

The proposal is designed to prevent non-users in acute pain from becoming addicted inadvertently, **said (http://www.nytimes.com/2016/10/20/us/vermont-governor-proposes-limits-on-painkiller-prescriptions.html?_r=2)** State Health Commissioner Dr. Harry Chen to the *New York Times*.

"These are people who don't normally take opioids. We want to reduce the variability in terms of what prescribers are prescribing."

LEVERAGING PREDICTIVE ANALYTICS AND BIG DATA FOR RISK IDENTIFICATION

Population health management is often defined as the process of using big data to identify patients at risk of developing costly and conditions down the line. While diabetes, COPD, and congestive heart failure have thus far been the most popular use cases for data-driven population health tools, similar predictive analytics strategies can easily be applied to flagging patients headed for an opioid problem.

Geisinger Health System has taken the lead in population health management across many domains, and a **recent study (http://www.prnewswire.com/news-releases/geisinger-researchers-profile-overdose-patients-and-predictors-of-death-300278769.html)** indicates that EHR data could be used to develop risk profiles for opioid users, as well.

Geisinger addiction researcher and senior epidemiologist Joseph Boscarino, PhD, MPH and his team analyzed records on more than 2000 patients, including those who had experienced an overdose, in an attempt to predict what characteristics may indicate a higher likelihood of suffering an adverse event.

"Patients who are taking a higher doses of prescription opioids combined with psychotropic medicines may need closer monitoring to avoid death and other serious complications," Boscarino said.

Other risk factors included being unmarried, uninsured or publicly insured, and having a history of previous addiction, mental illness, or chronic disease.

A **2014 study (http://www.ajpb.com/journals/ajpb/2014/ajpb_septemberoctober2014/understanding-predictors-of-opioid-abuse-predictive-model-development-and-validation)** in the *American Journal of Pharmacy Benefits* also used historical medical, claims, and pharmacy data to predict potential opioid abuse, and came to similar conclusions. Patients with psychological diagnoses had an adjusted odds ratio of developing opioid addiction of 2.36, while those with a history of substance abuse were more than 5 times more likely than other patients to become addicted to pain killers.

Other risk factors included a history of mental health-related physician visits and being diagnosed with hepatitis or lower back pain.

Clinical decision support (CDS) applications may be able to incorporate these types of risk factors into point of care alerts for providers, the Office of the National Coordinator **says (https://ehrintelligence.com/news/onc-highlights-role-of-health-it-use-to-fight-opioid-crisis)**, and clinical decision support forms one component of the **National Pain Strategy (https://iprcc.nih.gov/docs/HHSNational_Pain_Strategy.pdf)**, a federal interagency effort to reduce the negative impacts of chronic pain and its potential to lead to substance abuse.

The framework urges the healthcare industry to develop standardized clinical quality measures related to pain management, and notes that "the impact of clinical decision support on safety, quality, and outcomes of care should be assessed to guide **further refinement (http://www.cdc.gov/drugoverdose/prescribing/common-elements.html)** of effective clinical decision support tools and allow for identification and discontinuation of support for tools that are not effective in improving safety, quality, or outcomes of care."

Pain management quality metrics and associated decision support activities may be included in future incentive programs, the document hints.

ADOPTING PATIENT-CENTERED CARE STRATEGIES TO FORESTALL ADDICTION

The National Pain Strategy also encourages providers to develop coordinated, patient-centric strategies for treating pain, educating patients about appropriate use of opioids, and ensuring that patient have access to holistic pain management options, including mental health and behavioral health counseling.

The industry has struggled to **integrate behavioral healthcare programs (http://healthitanalytics.com/features/why-hie-data-analytics-are-critical-for-behavioral-healthcare)** into the primary care ecosystem, however, due to data interoperability woes, lack of financial incentive, and insufficient resources to shepherd patients through multiple appointments at disparate organizations.

But overcoming these obstacles may reap significant rewards for patients, providers, and payers alike.

A 2015 study from Humana **indicates (http://healthitanalytics.com/news/substance-abuse-help-cuts-population-health-management-costs)** that including substance abuse counseling options in population health management programs reduced emergency department

visits by 16 percent, slash hospital admissions by 67 percent, and cut care costs by an average of 46 percent. Patients were also more likely to remain enrolled in Humana's insurance plans.

"The improved health outcomes results clearly reflect the benefits that population health can achieve by integrating substance abuse programs," said Dr. Larry Weinstein, Chief Medical Officer for LifeSynch, a wholly owned subsidiary of Humana that provides behavioral health services.

"By taking a proactive approach, as opposed to a reactive one, we were able to reach people at risk for medical and psychiatric complications from substance use disorders. This enabled us to take the necessary steps to help people improve their health."

An NIH panel on chronic pain also **suggested (https://www.eurekalert.org/pub_releases/2015-01/nodp-pcn011315.php)** that providers look at patients individually when assessing the need for pain management, and that healthcare organizations should invest in risk stratification and clinical decision support tools that provide tailored recommendations for how to proceed with prescribing.

"Persons living with chronic pain have often been grouped into a single category, and treatment approaches have been generalized with little evidence to support this practice," said Dr. David B. Reuben, panel chair and professor of medicine at the David Geffen School of Medicine at the University of California, Los Angeles.

"Clearly, there are patients for whom opioids are the best treatment for their chronic pain. However, for others, there are likely to be more effective approaches," he said.

"The challenge is to identify the conditions for which opioid use is most appropriate, the alternatives for those who are unlikely to benefit from opioids, and the best approach to ensuring that every patient's individual needs are met by a patient-centered health care system."

A holistic, team-based approach to pain care is essential, agrees the National Pain Strategy. Providers can no longer focus only on dampening the physical manifestations of chronic pain. They must consider the patient's history, unique responses to pain, and the influences of the environment on his or her experiences.

> *"The challenge is to identify...the best approach to ensuring that every patient's individual needs are met by a patient-centered health care system."*

"Despite the complexity of pain and its care, pain education, research, and treatment historically have focused narrowly on the pathophysiological mechanisms involved in chronic pain," the document says. "This approach inadvertently encourages a 'magic bullet' approach to treatment, deemphasizing the many other factors that, if overlooked, may result in futile treatment and rehabilitation."

"Viewing chronic pain from a public health perspective allows patients, families, clinicians, and policymakers to benefit from available public health knowledge and disease models and adds precision to the concept of pain prevention. This melding of a public health mindset and

personalized treatment offers the best chance to improve all Americans' access to high quality and more cost-effective pain care."

Providers may wish to engage in one or more of the following activities to help them develop patient-centered pain management competencies:

- *Form a partnership with **mental health (http://patientengagementhit.com/news/how-pcps-can-improve-mental-health-communication-care-value)** and behavioral healthcare providers within the community to deliver substance abuse treatment to vulnerable patients*

- *Explore relationships with local pain management specialists to close knowledge gaps in opioid prescribing guidelines*

- *Utilize health information exchange, **admission discharge and transfer (ADT) (http://healthitanalytics.com/news/how-data-driven-care-management-improves-population-health-in-nc)** notifications, and PDMP databases to improve medication reconciliation and reduce the risk of doctor shopping*

- *Spend time with patients experiencing chronic pain to understand their concerns, symptoms, and challenges before prescribing or denying opioids*

- *Implement care coordination frameworks, such as the **patient-centered medical home (http://healthitanalytics.com/features/breaking-down-the-basics-of-the-patient-centered-medical-home)**, to ensure that patients experience smooth transitions of care*

- *Develop opioid education programs for patients undergoing surgical interventions to ensure they do not use more medication than required*

- *Promote safe drug disposal programs within the community to prevent unauthorized access to opioids in the home environment*

- *Use available clinical quality measures to gauge provider performance on substance abuse screenings and treatment*

- *Understand the **socioeconomic challenges (http://healthitanalytics.com/features/identifying-care-disparities-for-population-health-management)** of attributed patients and develop programs to address access to care, chronic disease management, and food or housing insecurity*

- *Be proactive about approaching and engaging with patients who exhibit risk factors for opioid abuse to prevent negative outcomes*

The nation's substance abuse crisis does not appear to be abating any time soon, but healthcare providers do have a number of tools and strategies at their disposal to help prevent more patients from falling under the influence of opioids.

A combination of data analytics, health information exchange, more careful prescribing habits, and a population health approach to patient management may start to reduce the availability of pain killers for non-medical users, closing down pathways to abuse before patients can succumb to their addictive properties.

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