

THE EVOLVING ROLE OF HEALTH IT IN FIGHTING THE OPIOID CRISIS

Authored by:

Colin Konschak, FACHE, Chief Executive Officer, Divurgent

Dave Levin, MD, Chief Medical Officer, Sansoro Health

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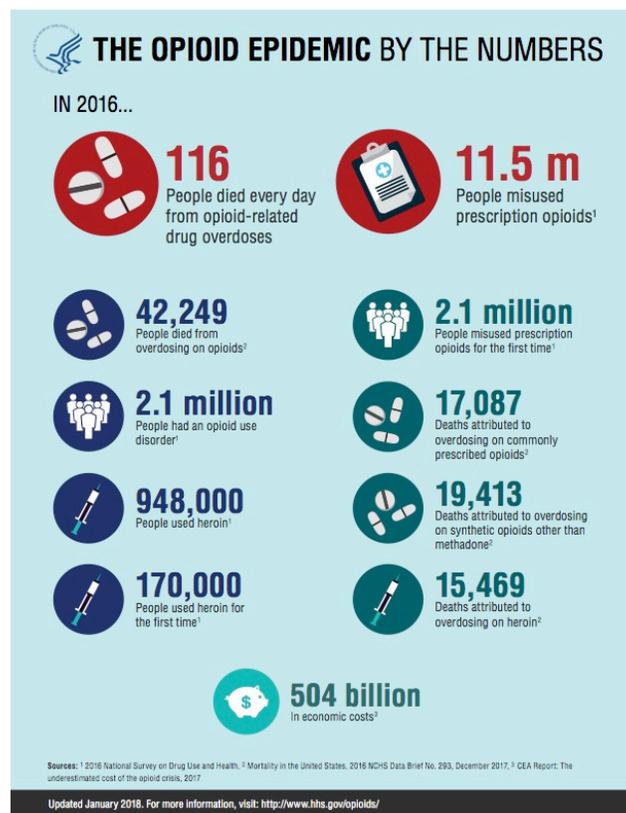
A collaboration across organizations to shed more light on the changing role of Health IT in the fight to end opioid addiction across the United States.

INTRODUCTION

On a Saturday in late March 2018, millions of people mobilized and marched with one voice to say “Enough!” to gun violence. The impetus of this movement was a startling statistic—on average, 96 people die from guns in the United States every day. A tragic number, making it a problem worth solving.

Now consider that the tragic statistic of daily gun-related deaths is exceeded by those associated with the Opioid crisis. In 2016, an average of 116 deaths every day in America involved opioids.¹ In that year, 42,249 drug fatalities in America involved opioids, about 66 percent of the total of the 63,600 lives lost that year to drug overdose. It was the deadliest year so far of a national public health crisis of opioid addiction.² These numbers are frightening, especially when considering that 2.1 million people misused opioids for the first time estimated in 2016.

Figure 1: Opioid Epidemic Statistics



We as a country are a long way off from ending this crisis, but many believe health information technology will be a major part of the solution. This whitepaper explores the benefits of health IT in the opioid crisis, the roles it can play, and what needs to be done to make the use of health IT more effective in the fight.

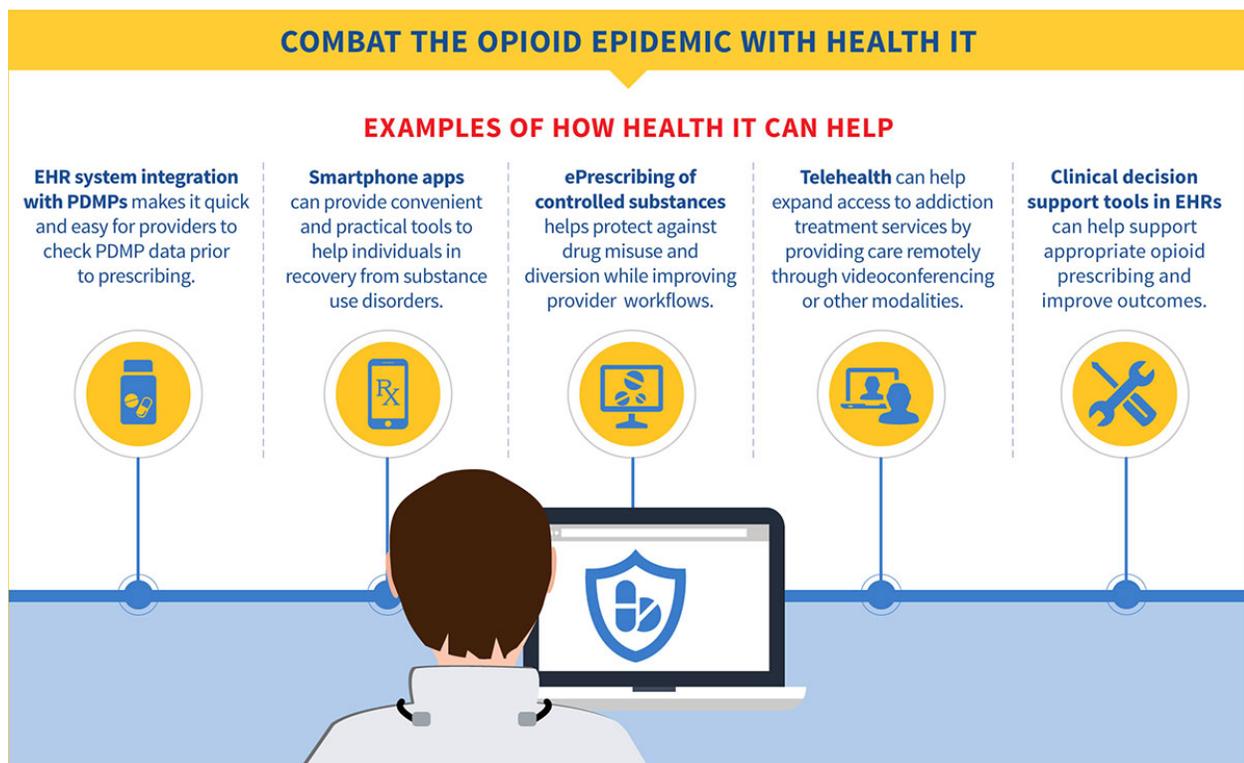
WHERE OUR OPIOID ADDICTION FIGHTING TECHNOLOGY STANDS TODAY

In October 2017, the President's Commission on Combating Drug Addiction issued its final report, which included 56 recommendations to help solve the opioid crisis. The success of at least half (28) of those recommendations are directly dependent on the effective use of health information technology while the success of several more are indirectly dependent.³

The Office of the National Coordinator for Health Information Technology (ONC) states that success has been documented in the use of Health IT in improving adherence to opioid prescribing guidelines and treatment protocols. Enhancing clinician access to prescription drug monitoring programs, increasing the safety for prescribing controlled substances, expanding access to addiction treatment and recovery supports are just some of the many implemented measures showing success.

According to the ONC's Health IT Playbook, the following are some examples of how Health IT tools can help in the opioid addiction crisis.⁴

Figure 2: Examples of Health IT Opioid Crisis Solutions

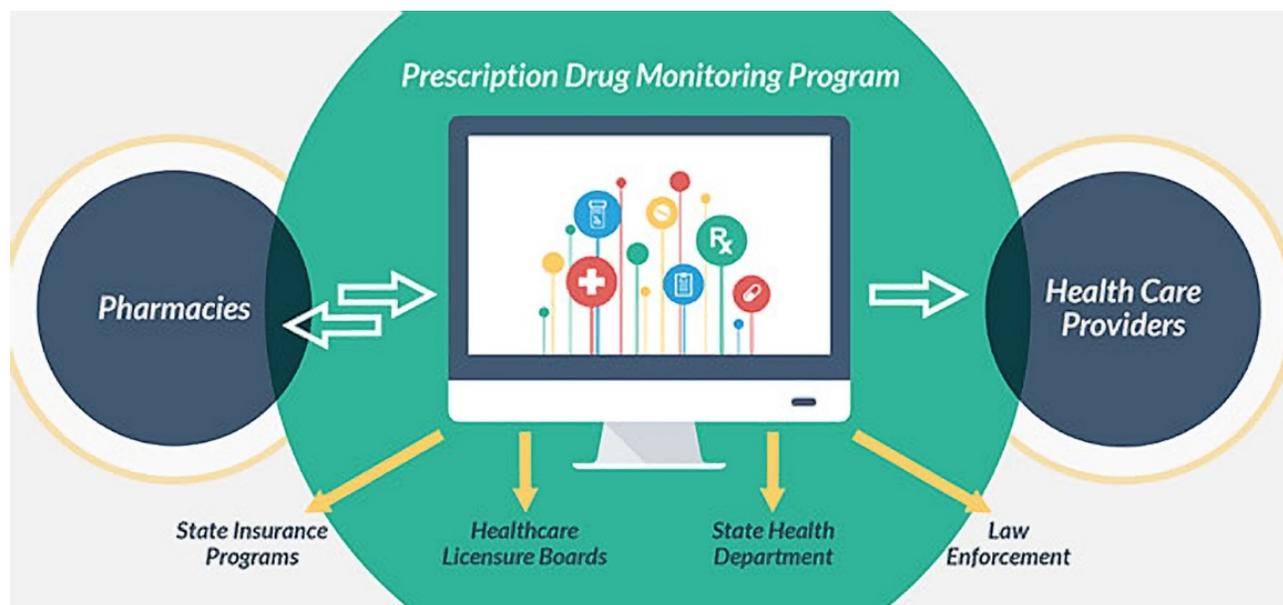


Source: Office of the National Coordinator for Health Information Technology. Health IT Playbook. <https://www.healthit.gov/playbook/>

Let’s look at the first ONC example above, “Integrating prescription drug monitoring programs with electronic health records systems makes it easy for providers to check prescription drug monitoring data prior to prescribing by bringing it directly into their workflow.” That statement is true in theory, but how have we done in putting that theory into widespread practice?

It is true that prescription drug monitoring programs (PDMPs) are perhaps one of the most effective tech tools we currently have to address abuse and misuse of opioids. Every state (except Missouri) has an operational PDMP, which is an electronic database with detailed information on controlled prescription drugs dispensed from retail pharmacies, hospital dispensing to emergency departments, practitioners dispensing in offices, and dispensing in VA facilities. The information from PDMPs gives clinicians and pharmacies information on a patient's prescription history with controlled substances and can help them distinguish between a patient with a legitimate need for controlled prescription drugs and a person who may be abusing them or diverting them for illicit distribution.

Figure 3: Prescription Drug Monitoring Programs



Source: Centers for Disease Control and Prevention Opioid Abuse website <https://www.cdc.gov/drugoverdose/pdmp/states.html>

PDMPs are not without their problems, however. As with many forms of health IT, integration and interoperability are significant obstacles. Even though PDMPs have been around for a decade, effectively integrating them into the workflow at the point of care with prescriber order entry, electronic health records and clinical decision support tools is a continuing challenge.

The President’s Commission addressed these problems in its recommendation 14, emphasizing “PDMP data integration with electronic health records, overdose episodes, and substance abuse disorder-related decision support tools for providers is necessary to increase effectiveness.”

In recommendation 15, the Commission stated electronic prescribing should be increased to prevent diversion and forgery, and the Drug Enforcement Agency should revise regulations regarding electronic prescribing.³

One barrier to this integration problem is a lack of uniform standards. On Feb. 27, 2018, the U.S. Senate Committee on Health, Education and Pensions held a hearing titled, "The Opioid Crisis: The Role of Technology and Data in Preventing and Treating Addiction." In that hearing, Sherry Green, co-founder of the National Alliance for Model State Drug Laws testified on the need for uniform standards that will help facilitate integration of PDMP data into EHRs, noting current standards vary from state to state about who can access the data and under what conditions they can be accessed.

"One of the best options we have with PDMPs is to facilitate widespread integration of the data into electronic health records and yet we have a number of states that do not allow the PDMP report to actually be placed into the electronic medical record, and they have different standards for access and use of that data once it's actually in the medical record," Green stated. "We need consistent standards for placing the PDMP report into the medical record and upon placement, allowing all of the same standards for use and disclosure that apply to other information in that medical record to apply to the PDMP data."⁵

A lack of integration between the PDMP and the EHR at the point of care disrupts the patient care process. For example, in a 2015 survey on PDMP use, disruptions and time constraints were cited as a major barrier to wider use. "Providers are already challenged by time constraints, thus there is minimal incentive to pursue another tool in their decision-making process," The researchers stated. "Not only does accessing the PDMP take time, but some noted that it detracts from patient flow, potentially worsening care that should be directed towards other patients. One provider stated, 'it means a time investment and it's a penalty to use it, unfortunately. It's a penalty in patient flow.'"⁶

It appears that three years later this has not changed to a great degree. In a recent article published in *Health Data Management*, Andrew Gettinger, MD, chief clinical officer in the Office of the National Coordinator for Health IT, said that when it comes to the "fluid workflow" of patient care and prescribing in the EHR, a challenge is that "in many cases, not all, they have to leave that workflow and log into their state's PDMP."⁷

In the same article, Gettinger stated other problems include a disconnect between how users are authenticated in EHRs vs. PDMPs, and other integration issues that could result in potentially harmful patient identification errors.⁷ The President's Commission also cites inadequate training on the use and complexity of some PDMP software programs as a problem.

WHERE ARE STRIDES BEING MADE IN INTEGRATION?

The news is not all gloomy. The following are just a few examples of where progress is being made in integrating EHRs and PDMPs to help ensure a seamless workflow.

By September 2017, Yale New Haven Health and Yale School of Medicine, both based in New Haven, Conn., had integrated their EHRs into the Connecticut Prescription Monitoring and Reporting System, which is the state PDMP. Yale implemented the integrated system with the state PDMP and analytics provider Appriss Health, enabling physicians to identify high-risk patients from within their Epic EHR workflow.⁸

In November 2017, the state of Washington passed a bill requiring the state department of health to report annually to the governor and legislature on the number of facilities, entities or provider groups that have integrated their federally certified EHR systems with the prescription monitoring program (PMP), using the state health information exchange (HIE).⁹

By December 11, 2017, the state of Washington’s emergency department information exchange had provided PDMP data to 87 emergency departments (ED) out of 97 acute care hospitals throughout the state. This data is requested automatically when the patient registers with the ED. Also, Valley Medical Center in Renton has rolled out the integration into the EHR system-wide. By December 2017, three health systems—Kaiser Permanente Washington, University of Washington and Providence/Kadlec Regional Medical Center—had begun testing a connection between their EHR and the HIE, and 118 health systems registered their interest with the department of health in connecting to the PDMP through the HIE.⁹

Pennsylvania is also integrating its PDMP data into EHRs statewide, and as of November 28, 2017, the Pennsylvania Prescription Drug Monitoring Program is sharing data with 16 other states and the District of Columbia. In addition, the state is covering the subscription fees associated with using the integration service for every health care entity in the state that decides to connect its health IT system to the PDMP through August 31, 2019.¹⁰ Geisinger, a large health care system located in Pennsylvania, recently held a webinar for CHIME members detailing how they cut opioid prescriptions in half through a variety of initiatives, including leveraging the state’s PDMP. For more information on Geisinger’s opioid initiatives, or the CHIME Opioid Task Force, visit chimecentral.org or knowhubcentral.org.

Clearly some states and health systems are responding by requiring meaningful integration and some HIE’s and PDMP vendors are offering API-based integration. This is progress, but it is limited because APIs are relatively new to most health systems and they may struggle to figure out how to configure their EHRs to take advantage of the PDMP API. A better approach would be for HIE’s and PDMP vendors to use APIs that are already plug-and-play with the major EHRs thereby eliminating guesswork on the part of the health system IT team.

In other words, rather than offer an API “plug” that requires the health system to build a custom EHR “socket”, the PDMP vendor should offer a plug that already fits an existing EHR socket. This will result in both rapid deployment and widespread adoption. Doing anything less is a dis-service to busy clinicians and puts patients at greater risk.

EVIDENCE-BASED PRACTICES CAN DRIVE MOMENTUM WITH PDMP’S

From 2012 through 2016, the Substance Abuse and Mental Health Services Administration (SAMHSA) funded projects in nine states through its PDMP Electronic Health Records Integration and Interoperability Expansion (PEHRIIE) program to study integrating PDMP data into health information technology (HIT) systems at the point of care. The project states were: Florida, Illinois, Indiana, Kansas, Maine, Ohio, Texas, Washington State, and West Virginia. The PEHRIIE report on lessons learned from the nine states concluded that increasing the use of PDMPs for clinical decisions and support interventions is a vital strategy for addressing the opioid crisis. The program activities worked toward facilitating prescriber and dispenser access to PDMP data and increasing interstate data sharing.¹¹

The report authors concluded that “Advancements made through project work are expected to bring about improvements in prescribing and dispensing practices, ultimately leading to decreases in prescription opioid abuse and improvements in health care.”¹¹

A December 2016 report titled, "Prescription Drug Monitoring Programs: Evidence-based Practices to Optimize Prescriber Use, written by researchers from the Institute for Behavioral Health, Heller School for Social Policy and Management at Brandeis University in collaboration with The Pew Charitable Trusts, describes eight evidence-based practices aimed at increasing prescriber utilization of PDMPs. They are:¹²

“Prescriber Use Mandates: Requiring a prescriber to view a patient’s PDMP data under certain circumstances, such as before writing an initial prescription for a controlled substance.

Delegation: Allowing prescribers to designate someone on staff, such as a nurse, to access the PDMP on their behalf to help manage workflow.

Unsolicited Reports: Proactively sending communications from PDMP staff to prescribers, dispensers, law enforcement, and regulators to flag potentially harmful drug use or prescribing activity based on PDMP data.

Data Timeliness: Uploading information into the database at set intervals, whether in real time, daily, weekly, or monthly. (Dispensers, which include pharmacies and prescribers who provide medications directly to patients, are responsible for uploading data.)

Streamlined Enrollment: Simplifying processes, such as instituting automatic PDMP registration triggered by state-controlled substance registration, to more easily enable prescribers to enroll in a PDMP.

Educational and Promotional Initiatives: Making efforts to promote the program, including prescriber training (via formats that include online videos and instructional materials) on how to access and use PDMP data.

Health Information Technology (IT) Integration: Combining PDMP data with other clinical data through technologies that are used to store, communicate, and analyze health information, such as electronic health records.

Enhanced User Interfaces: Implementing user-friendly technologies, such as dashboards and mobile applications that provide PDMP data in easily understandable formats.”

The report goes on to provide evidence-based examples of states that have found success in these areas. The report is available in pdf form at www.pewtrusts.org/~media/assets/2016/12/prescription_drug_monitoring_programs.pdf.

As noted in the CDC Guideline for Prescribing Opioids for Chronic Pain—United States, 2016, “As vendors and practices facilitate integration of PDMP information into regular clinical workflow (e.g., data made available in electronic health records), clinicians’ ease of access in reviewing PDMP data is expected to improve.”¹³

ELECTRONIC PRESCRIBING GAINS MOMENTUM

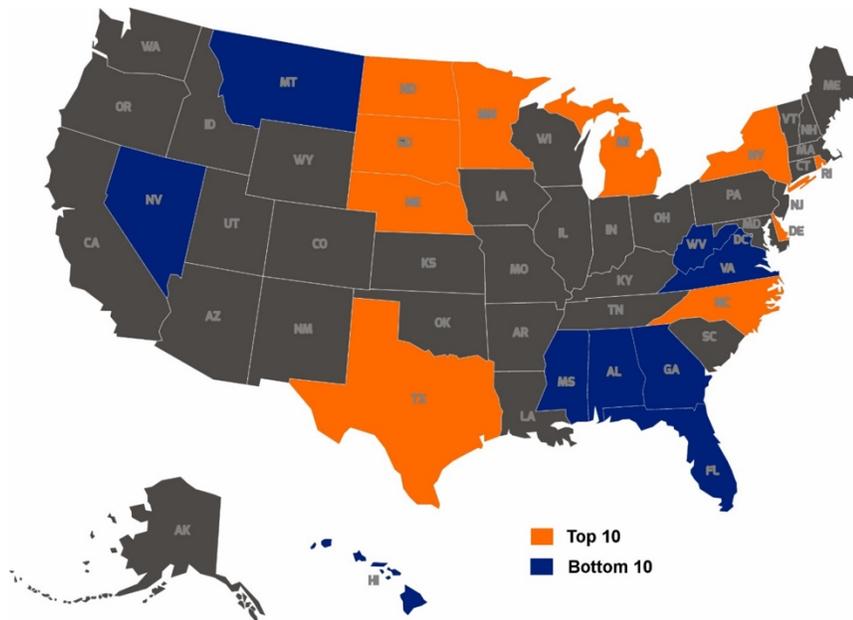
In June 2010, the Drug Enforcement Agency instituted a change to its regulations allowing electronic prescribing of controlled substances, commonly known as EPCS. The ultimate goal was to entirely eliminate paper prescriptions by allowing clinical prescribers to electronically write prescriptions for controlled substances. The regulations also permit pharmacies to receive, dispense and archive these e-prescriptions.

At the time the regulations were enacted, the DEA detailed the intent of the regulation change:

“The regulations provide pharmacies, hospitals, and practitioners with the ability to use modern technology for controlled substance prescriptions while maintaining the closed system of controls on controlled substances dispensing; additionally, the regulations will reduce paperwork for DEA registrants who dispense controlled substances and have the potential to reduce prescription forgery. The regulations will also have the potential to reduce the number of prescription errors caused by illegible handwriting and misunderstood oral prescriptions. Moreover, they will help both pharmacies and hospitals to integrate prescription records into other medical records more directly, which may increase efficiency, and potentially reduce the amount of time patients spend waiting to have their prescriptions filled.”¹⁴

Progress has been made in some of these areas. The Surescripts 2016 National Progress Report, released in June 2017, indicated that adoption of EPCS is gaining momentum among prescribers and pharmacies in the fight against opioid abuse. The report showed that 45.3 million prescriptions for controlled substances were delivered electronically in 2016, which is a 256-percent increase over the 12.8 million reported the year before. Four new states (North Dakota, South Dakota, Minnesota and North Carolina) entered the top 10 for EPCS enablement among prescribers and pharmacies. (See Figure 3) In New York, which mandated e-prescribing in 2016, prescriber enablement grew by 45.5 percent, resulting in a 54.2 percent increase in the number of controlled substances prescribed electronically. New York ranked #1 in the report with 98.1 percent of pharmacies EPCS-enabled, 72.1 percent of prescribers EPCS-enabled, and 91.9 percent of controlled substances prescriptions transacted electronically.¹⁵

Figure 4—EPCS Enablement and Transaction Volume



Source: Surescripts. (2016). National Progress Report. <http://surescripts.com/news-center/national-progress-report-2016/#/EPCS-readiness-by-state>

Despite the momentum, much more progress needs to be made, especially in prescriber enablement. Even when you look at #10 of the top 10 in the report (North Carolina) the number of EPCS-enabled pharmacies is relatively high at 94.1 percent, but the number of EPCS-enabled prescribers is down to 12.1 percent, and the number of controlled substances prescriptions transacted electronically is at 13.3 percent. Nationwide, 90.8 percent of pharmacies were EPCS-enabled, but only 14.1 percent of prescribers were EPCS-enabled, and only 14.1 percent of controlled substances were prescribed electronically.¹⁵

In November 2017, the American Medical Association House of Delegates modified its former policy to “continue to advocate before relevant federal and state agencies and legislative bodies for elimination of cumbersome, confusing and burdensome requirements relating to electronic transmission of physician-controlled substance prescriptions to pharmacies.” This includes the AMA advocating for universal acceptance of EPCS by pharmacies, removing burdensome paperwork requirements and eliminating Medicaid requirements in all states that require prescribers to hand-write paper prescriptions.¹⁶

CLINICAL DECISION SUPPORT TOOLS: THE LINK BETWEEN E-PRESCRIBING AND THE EHR

Computerized provider order entry (CPOE) and clinical decision support (CDS) systems have been used for a few decades in the pursuit of reducing medication error rates. In the opioid crisis, as the ONC states, CDS tools in electronic health records can help support appropriate opioid prescribing and improve outcomes.

As with any technology, the success of CDS tools depend on the human side of the equation—how intuitive and user friendly they are, and how well they fit into the big picture of system-wide efforts. Therefore, to integrate CDS tools, efforts must range from the micro to the macro, from issues such as creating non-intrusive alerts in EHRs, to implementing them as a part of wide-ranging EHR initiatives in large health systems.

One critically important issue in integrating CDS tools is “alert fatigue” which refers to having so many alerts in the EHR that prescribers begin to ignore them. In 2016, Carolinas Health System, based in Charlotte, N.C., used funding from a CDC grant to develop and test an alert that would improve their narcotic electronic prescribing and encourage use.¹⁷

The effort began with forming a multidisciplinary expert panel that conducted literature review and then consensus building around choosing risk factors for misuse, abuse, or diversion of opioids or benzodiazepines to include in a rule within the EMR. Then they ran tests silently on the rule to test it and collect data.

“The data collected allowed us to choose triggers that did not cause the alert to fire too often, but successfully captured the at-risk population,” the authors wrote. “This was important to minimize the potential for alert fatigue. The data obtained was also helpful in deploying this intervention within the healthcare system by being able to illustrate the problem, as well as provide evidence that the alert would be minimally obtrusive.”¹⁸

Called PRIMUM (Prescription Reporting with Immediate Medication Utilization Mapping), the concept is now integrated at all the care sites that use its Cerner EHR system. This includes emergency departments, urgent care and outpatient clinics.

In 2017, a study published in the *Journal of Evaluation of Clinical Practice* detailing a Kaiser Permanente Southern California program found that “a comprehensive, system - level strategy has the ability to positively affect opioid prescribing,” and that “the basic components of the intervention are generalizable and applicable to other health care settings.”

Those components included prescribing and dispensing policies, provider education, organizational support and clinical decision support tools. Those CDS tools included adding EHR features to provide medication menus, medication and safety alerts, questionnaires to inform prescribing physicians of the risks, preferred and maximum doses, links to evidence-based guidelines, prompts for alternative treatments or medications, and patient treatment agreements. The study authors stated that they “strived to ensure that EHR alerts and pop-ups are optimized and do not interrupt work flow or introduce alert fatigue.” The CDS tools also included adding a link from the EHR to the California PDMP, known as the “Controlled Substance Utilization Review and Evaluation System.”¹⁹

These interventions resulted in reductions in all of the outcomes they tracked including:

- 30% reduction in prescribing opioids at high doses
- 98% reduction in the number of prescriptions with quantities greater than 200 pills
- 90% decrease in the combination of an opioid prescription with benzodiazepines and carisoprodol
- 72% reduction in the prescribing of Long Acting/Extended Release opioids
- 95% reduction in prescriptions of brand name opioid-acetaminophen products
- No increase in methadone prescribing during the study period.¹⁹

Another very promising area of CDS is the emergence of predictive analytics. While the CDS activities described above focus on helping providers understand the current situation and to prescribe within accepted guidelines, predictive CDS provides information about possible *future* outcomes. For example, several companies now offer predictive CDS that includes a risk score indicating if a specific patient will abuse or become addicted to opioids *before* a prescription is written. If experience in other industries is a guide, predictive analytics tied to CDS will play a vital role in the future.

MOVING FORWARD WITH FUNDING, RESEARCH AND IMPLEMENTATION

On March 22 and 23, 2018, Congress and the Administration backed up their often-stated commitment to solving the opioid crisis with funding, by passing and signing the omnibus budget bill for FY 2018. The legislation pumped nearly \$4 billion more than previously budgeted into the opioid addiction crisis, including \$1 billion in grants to states and tribal organizations for treatment and prevention, \$476 million to the Centers for Disease Control and Prevention (CDC) for opioid overdose monitoring, and \$500 million to NIH for research on addiction support.

Health IT does show promise in helping solve the nation's opioid crisis, especially when used in tandem with treatment programs, addiction support and prevention programs. As the CDC noted in its 2016 Guidelines:

“Activities such as development of clinical decision support in electronic health records to assist clinicians’ treatment decisions at the point of care; identification of mechanisms that insurers and pharmacy benefit plan managers can use to promote safer prescribing within plans; and development of clinical quality improvement measures and initiatives to improve prescribing and patient care within health systems have promise for increasing guideline adoption and improving practice.”¹²

Another area that is ripe for further use is telemedicine, unified communications and other technologies that virtualize healthcare delivery. These technologies hold the promise of both multiplying the impact of direct clinical services and bringing those services to areas where there are access issues. For example, access to medication assisted treatment (MAT) is recognized as a critical component in treating addiction and abuse. Unfortunately, there is mismatch between the demand for these services and the available supply. Telemedicine and other technologies can effectively reduce time and location as barriers to care and could be leveraged for expanded access and more efficient use of these precious resources.

CONCLUSION

Several key healthcare information technology interventions have been identified that bring success to efforts to fight the opioid abuse epidemic in America. The basic first step is integrating PDMPs into the EHR in a manner that encourages, rather than discourages their use so that there is wider adoption.

This means work must continue toward uniform standards for integrating PDMPs into EHRs at the point of care. Integration needs to happen so that the fluid workflow of care is retained. Efforts at smooth integration, such as those at Yale and on the state level in Pennsylvania and Washington, should be emulated around the country.

Clinical decision support tools should continue to evolve, with design focused on a comprehensive, seamless clinical care process, like that of the system developed at Carolinas HealthCare System. A system-wide strategic approach should be considered, in the manner of that employed by Kaiser Permanente Southern California. This model, which they say, “is generalizable and applicable to other healthcare settings,” incorporates several of the factors needed for success on a system level, including an effectively functioning statewide PDMP that is incorporated into the EHR to encourage adoption and careful design and tuning of alerts to minimize alert fatigue for users.

Advanced analytics including predictive models hold great promise as well. Developing, validating and successfully integrating these powerful tools into the clinical workflow will be essential if they are to have an impact.

Likewise, Telehealth and related technologies that support virtualization of services hold out the promise of more efficient use and easier access to critically needed resources and interventions that are currently in short supply or not efficiently allocated.

Finally, government needs to continue funding for treatment, prevention and research into best practices. The healthcare IT tools and organizational processes used in the opioid abuse epidemic fight need to be continuously improved, and the use of them must be encouraged where they are not being effectively employed.

Successful strategic innovations will make use of a variety of technologies and should deploy them as part of a larger, more holistic systems approach. Many will have to be pursued as a series of practical experiments that address current gaps and provide insights for future innovation and improvement. Sustainability and scalability are also essential in ensuring long-term success in addressing this enormous problem.

The opioid abuse crisis is real. Hundreds die weekly, tens of thousands die annually and many, many more are suffering. Given the statistics, it is likely that many of you reading this paper have been personally touched by the epidemic. This is truly an “all hands-on deck” moment and healthcare IT has much to contribute.

ABOUT THE AUTHORS

Colin Konschak, FACHE | CEO, Divurgent

www.divurgent.com | [Follow Colin on LinkedIn](#)

Colin is the Chief Executive Officer at Divurgent. He is a highly accomplished executive with over 20 years of experience with extensive experience in healthcare operations, P&L management, account management, strategic planning and alliance management.

His broad healthcare sector experience encompasses pharmaceutical, provider, payer, information technology and consulting. He is a registered Pharmacist, possesses an MBA in health services administration, is board certified in healthcare management and is a Six Sigma Black Belt. Colin is a Fellow in both the Healthcare Information Management System's Society (HIMSS) and the American College of Healthcare Executives (ACHE).

Colin is the author of numerous industry papers and textbooks, most recently co-authoring "Hacking Healthcare: Understanding Real World Threats"; the healthcare industry's only text on the topic of cybersecurity. Colin has been an adjunct professor in both Old Dominion University and William and Mary's MBA program, teaching courses in Healthcare Operations and Strategy.

Dave Levin, MD | Chief Medical Officer, Sansoro Health

<http://www.sansorohealth.com/> | [Follow Dr. Levin on LinkedIn](#)

Dave Levin, MD is the Chief Medical Officer at Sansoro Health where he focuses on bringing true interoperability to healthcare. Dave is a physician executive with over 30 years of experience in healthcare information systems, clinical operations and enterprise strategic planning. Prior to co-founding Sansoro, he served as Chief Medical Information Officer (CMIO) for the Cleveland Clinic Health System (CCHS), where he led the Clinical Systems Office. Dr. Levin has founded several healthcare IT startups and served as an advisor to many more. He is a nationally recognized speaker and has appeared in academic, industry and consumer media. He currently serves on multiple industry and private equity advisory boards and non-profit governance boards. Dr. Levin received his MD and his BA from Brown University.

Divurgent is a Foundation Supporter for the Opioid Task Force, aimed to eradicate the disease; you can read more about our partnership, [here](#). Through the collaborative use of the resources available to CHIME members, the organization, and their strategic partners, Divurgent is confident the task force will provide solutions to rein in this epidemic.

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