

Addressing Data and Information Gaps Contributing to Opioid Use Disorder

Data and information gaps aren't the root cause of the opioid use disorder epidemic, but they constitute a real impediment to addressing it.

I. The Issues in Brief:

Efforts to address or mitigate the opioid use disorder crisis can frequently be hampered by multiple gaps in data and information exchanges throughout the health care system. As a result of these gaps, people throughout the system – patients, clinicians, and others – do not have timely information that they need to make informed decisions about the entire spectrum of prescribing and treatment options.

Patients in acute and chronic pain often do not have access to good information about opioids and opioid alternatives to pain relief. Clinicians do not have the information they need to prescribe approved opioid products appropriately, cannot always know in a timely way whether patients are misusing or abusing these drugs, and also lack information or face obstacles in prescribing non-opioid alternatives for pain relief. Many clinicians also lack information about effective

opioid use disorder treatment options and social supports for patients in recovery.

Although these data and information gaps weren't the root cause of the opioid use disorder epidemic, they constitute a real impediment to addressing it. There are multiple solutions at hand and a general sense that technology is being underutilized to address these problems.

This brief outlines the need for concerted action by stakeholders, including state and federal policy makers, health information technology providers, and others, as described in the Recommendations section in this brief. It was written and produced by NEHI based on a convening it held in April 2018.

II. The Background

In just one of many terrible legacies of the opioid use disorder epidemic, drug overdose deaths in the United States are now at unprecedented

levels. Opioids were involved in 42,249 deaths in the nation in 2016, according to the Centers for Disease Control and Prevention (CDC) – five times the rate in 1999, and more than in any previous year.¹ An estimated 40 percent of those deaths were related to use of prescription opioids (most of the balance of deaths were due to use of heroin and the synthetic opioid drug fentanyl).

Drug overdoses account for more deaths in America than either falls, guns, or traffic accidents. The economic burden from opioids was estimated to be \$94 billion in 2016.²

As has been well-documented, the epidemic began with over-prescription of legal opioid drugs, such as oxycodone, which are designated as controlled substances under federal law and thus require special permissions to obtain legally. (The law establishes five schedules of controlled substances ranging from Schedule I to V; substances in Schedule I, such as heroin, are deemed to have no known medicinal purposes, but drugs in Schedules II-V can be prescribed legally by physicians and other health care providers acting within their scope of practice).

A confluence of factors has coupled abuse of legal opioids with abuse of illicit, Schedule I drugs, as well as so-called synthetic opioids, such as fentanyl (a Schedule II drug) and carfentanil (a drug often used to tranquilize large animals that is 10,000 times more potent than morphine.)

Synthetic opioids are increasingly found in illicit drug supplies of heroin, cocaine, and methamphetamine, and counterfeit versions of legal opioids are also increasingly turning up on the market that are in fact made of these illicit synthetic opioids.³ The rock star Prince, for example, died in 2016 after taking a counterfeit version of the opioid Vicodin that was, in fact, laced with fentanyl.⁴

Although illicit drug use has largely remained a law enforcement issue in the United States, the over-prescription, misuse, and abuse of legal opioids lies squarely within the domain of the health care sector. Despite the growing use of illicit opioids, many more people still report misuse of prescription opioids than of illicit drugs. About 1.8 million people in the United States meet diagnostic criteria for a substance use disorder related to prescription opioids, about three times the number who meet that criteria for heroin use disorder (about 300,000 people meet the criteria for both).⁵

In addition to deaths from overdoses, the opioid use disorder epidemic is contributing to other health conditions, such as the spread of Hepatitis C and HIV among injecting drug users, as well as infectious endocarditis – infections of the inner lining of the heart’s chambers and valves caused by bacteria, fungi, and other infectious agents entering the bloodstream.⁶

In recent years, concerted efforts have been made to curb

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overprescribing of opioids because of their addictive properties, to find alternatives to opioids for management of acute and chronic pain, and to direct those who misuse or abuse opioids to substance abuse treatment programs. As widespread as these efforts have been, it is generally acknowledged that they are falling short in multiple ways.

Although progress has been made in reducing the overprescribing of opioids, more remains to be done. There are widespread failures to direct patients to effective alternative pain-management strategies, often for lack of knowledge among providers of these options, or because they are unable to override some health plans' restrictions on uses of these alternative therapies. In many parts of the country, there is a drastic shortage of effective substance abuse treatment providers and programs, especially with respect to medication-assisted treatment (MAT),⁷ in part because many providers are untrained or unwilling to provide such treatment.

Because there are multiple causes of the opioid use disorder epidemic, there will need to be multiple, coordinated solutions for addressing it. But at the heart of many of the failures described above is inadequate collection, use, or sharing of data and information throughout the health care system.

During a webinar that NEHI sponsored in February 2018, as well as a convening of stakeholders that took place on April 25, 2018, in

Washington, DC, participants pointed urgently to a number of information and data gaps that need to be addressed. In general, these gaps fall into two key areas, as described in sections III and IV in this brief.

III. Information Gaps and Barriers that Affect Providers' Abilities to Prescribe Opioids Legally and Appropriately

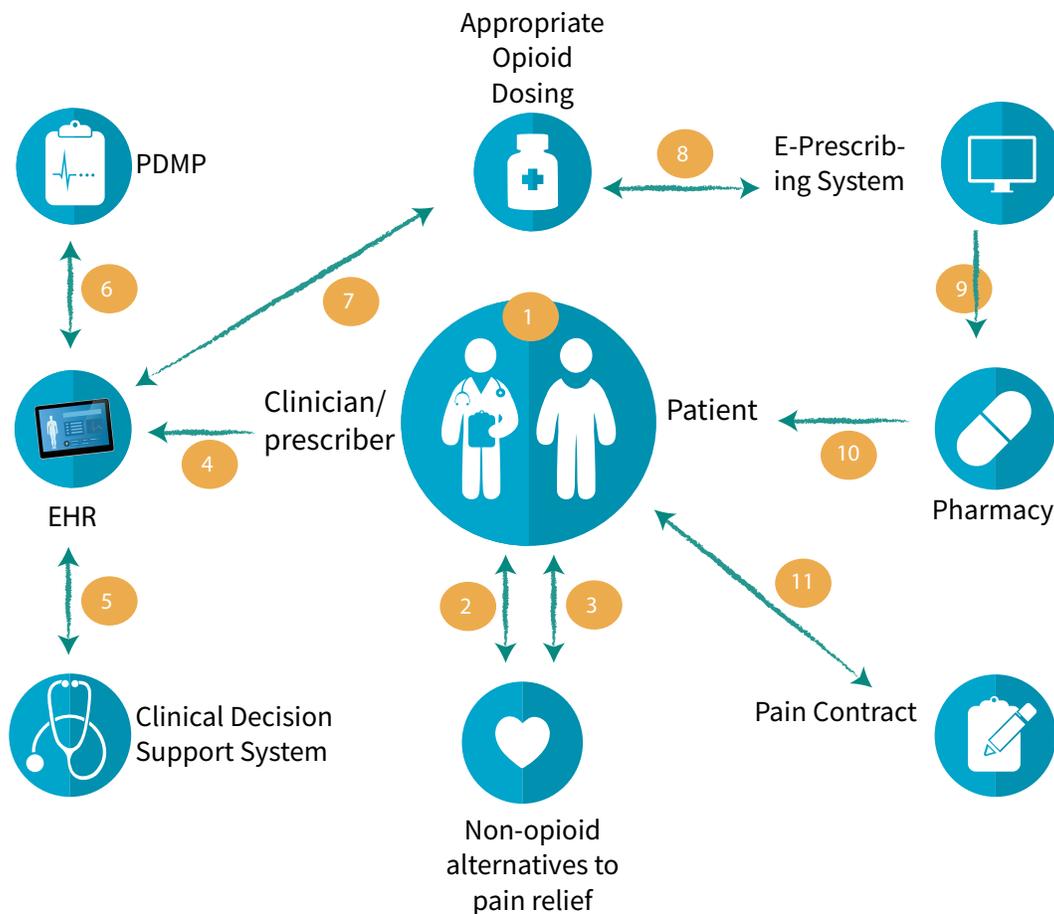
A number of systems have been put in place over the years to enable clinicians to assist patients experiencing acute and chronic pain, to prescribe FDA-approved opioid products appropriately for patients who need them, and to assist patients who develop opioid use disorder from misuse or abuse of opioid drugs. In optimal situations, these systems create a de facto pipeline that enables responsible clinicians to undertake the following steps (see infographic, page 4):

1. Evaluate the pain experienced by patients and determine effective treatments, including non-pharmacological approaches such as physical therapy or cognitive behavioral therapy, and use of non-opioid medications. Effective clinical decision support systems linked to electronic health records (EHRs) can contain such useful information – for example, that patients with moderate to severe chronic back pain or hip or knee pain from osteoarthritis do as well with

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Best Case: Ready Exchanges of Data and Information

In ideal circumstances, multiple capabilities, tools, and practices in health information exchange can support opioid prescribing that minimizes the likelihood of abuse and misuse.



1. The patient consults the clinician/prescriber for pain issues.
2. The clinician considers non-opioid alternatives, perhaps with the aid of the clinical decision support system.
3. The clinician counsels the patient on non-opioid alternatives.
4. If the pain is serious enough to merit an Rx for an opioid drug, the clinician consults...
 5. ...the clinical decision support system (CDS) via the EHR and then...
 6. ...accesses the state PDMP (prescription drug monitoring program) via the EHR. If the PDMP turns up no evidence that the patient is a misuser/abuser and/or is doctor shopping, then the clinician...
 7. ...consults the CDS system about appropriate opioid dosing; then...
8. The clinician e-prescribes the opioid drug through a secure e-prescribing system connected to the EHR.
9. The e-prescribing information goes to the pharmacy.
10. The drug is dispensed for the patient. The dispenser immediately reports that the drug has been dispensed to the state PDMP, which can share the information with all other state PDMPs.
11. The clinician initiates a pain contract with patient, who signs it. The pain contract is recorded in the EHR.

acetaminophen or a nonsteroidal anti-inflammatory drug such as ibuprofen as those who are prescribed morphine, oxycodone, or combination of hydrocodone and acetaminophen.⁸

2. Consult clinical decision support systems that incorporate the CDC's 2016 opioid prescribing guidelines,⁹ which help clinicians determine which opioids would be most appropriate for particular patients and appropriate dosing.

The CDC guidelines focus on the use of opioids in primary care settings for treating pain lasting longer than three months, or past the time of normal tissue healing (they are not intended for use in active cancer treatment, palliative care, and end-of-life care.) According to the CDC, patients prescribed higher opioid dosages are at higher risk of overdose death.¹⁰

Many clinicians who do not routinely prescribe these drugs are unaware of their degree of potency, which is calculated in terms of morphine milligram equivalents, or MMEs, but effective clinical decision support systems provide this information and fill this frequent clinical knowledge gap.

3. Determine whether patients have previously received prescriptions for these controlled substances, and from whom, by consulting Prescription Drug Monitoring Programs (PDMPs),¹¹ the state- specific electronic

databases that collect, analyze, and make available prescription data on controlled substances dispensed by non-hospital pharmacies and practitioners within the states.

Forty-nine states, the District of Columbia, and the territory of Guam have PDMPs; Missouri, by contrast, does not have a statewide PDMP, but 62 of the state's 115 jurisdictions do participate in the PDMP that currently exists in the state.¹²

Dispensers report data on the controlled substances prescriptions that they dispense to PDMPs, including information that identifies patients. According to the U.S. Drug Enforcement Administration (DEA), PDMPs enable a number of important functions: they support access to legitimate medical use of controlled substances; assist in identifying, deterring, and preventing drug abuse and diversion; facilitate and encourage the identification, intervention with, and treatment of persons addicted to prescription drugs; and inform public health initiatives through outlining of use and abuse trends.

4. Execute a so-called pain agreement or medication contract with patients, to ensure that patients and providers are in accord on key issues before a patient begins opioid therapy. Such agreements may require patients to acknowledge the

Forty-nine states have prescription drug monitoring programs (PDMPs), but Missouri does not have a statewide one.

risks of psychological and/or physical dependence and addiction associated with chronic use of controlled substances; acknowledge that, in event of addiction, the clinician will stop prescribing pain control medicines; and make a referral for treatment for substance use disorder when indicated.

Contracts may also require patients to undergo a urine drug screen every three months at random in order to maintain a controlled substance prescription.

5. Place an electronic prescription, or e-prescribe, these controlled substances through a dedicated technology framework as they typically do other drugs. E-prescribing allows prescribers to write and send prescriptions to a participating pharmacy electronically, instead of using handwritten or faxed notes or calling in prescriptions.

E-prescribing eliminates the risk that prescriptions written on paper will be stolen or forged. However, regulations imposed by the DEA require clinicians to prove their identity via two-factor authentication, or TFA, before e-prescribing a controlled substance. TFA requires not only a password and username, but also an additional piece of information that only an appropriate user could know (for example, a special code that is sent directly to the prescriber's

email address or mobile phone and must be entered as proof of identity).

This process is deemed necessary to make certain that prescribers are who they claim to be, and that only appropriate persons are in fact prescribing controlled substances.

6. In the event that clinicians determine that particular patients are misusing or abusing opioids, and have become addicted to them, they can take steps to help. They can refer patients to effective medication-assisted treatment by qualified providers, who will in turn prescribe medications such as buprenorphine or naltrexone.

They can e-prescribe “rescue kits” incorporating the drug naloxone, an opioid antagonist that is not a controlled substance, that displaces opioids from brain receptors, and that restores breathing and consciousness in individuals who have overdosed on opioids.¹³

Critical Gaps

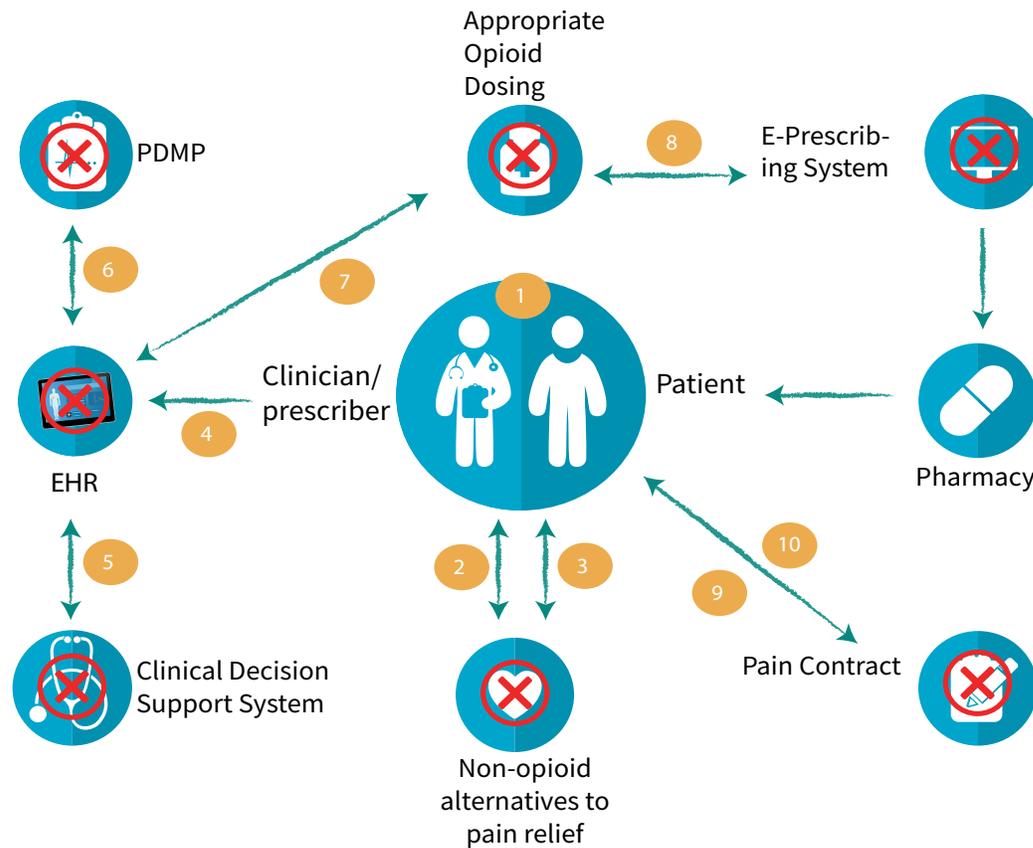
In each of the areas described above, however, important data and information gaps exist. The great variety across the nation in standards, technology, state laws and regulations, and other factors contribute to these gaps, as follows (see infographic 2, page 7):

- Most electronic health records systems can incorporate

E-prescribing eliminates the risk that prescriptions written on paper will be stolen or forged.

Worst Case: Data and Information Are Blocked or in Silos

All too often, multiple gaps exist in health information systems and data exchange that increase the likelihood of opioid misuse and abuse.



1. The patient consults the clinician/prescriber for pain issues.
2. The clinician does not consider non-opioid alternatives, perhaps because he/she is not aware of them or does not have assistance from any clinical decision support system.
3. The clinician disregards state and federal guidelines and does not counsel the patient on non-opioid alternatives and instead decides to prescribe an opioid drug.
- 4-5. The clinician does not consult the CDS system for any clinical decision support.
6. The clinician does not access the PDMP via the EHR, perhaps because the EHR system lacks direct access; or, the clinician does access the PDMP, but, in the five states and one territory where dispensers have from three to 14 days to report to the PDMP, the information it contains is not necessarily current.

Even if the clinician does access the PDMP, the fact that state

PDMPs are not always sharing information with each other means the clinician doesn't always know if a patient has already been given a prescription for an opioid drug in another state.

7. The clinician does not consult any system to determine the appropriate opioid prescription dosing for the patient.
8. The clinician does not e-prescribe the Rx for the patient but instead writes a paper prescription that can be stolen or forged.
9. The clinician does not require the patient to sign a treatment agreement or pain contract, as is required or recommended in 35 states and the District of Columbia; OR
10. A pain agreement is signed, but none is recorded in the EHR so that it is part of the patient's record.

Bottom line: Multiple avenues for misuse or abuse are created, and the patient is at serious risk of developing opioid use disorder.

Many clinicians undergo little training about pain management and do not always have information about alternatives to opioids for treatment of acute and chronic pain.

the CDC prescribing guidelines, so that providers can consult them readily before issuing prescriptions. However, health systems and others adopting EHRs are responsible for making decisions about what to incorporate in their medication orders, including whether or not to include the CDC guidelines.

As a result, they can adopt whatever prescribing guidelines they choose, or none. If they do not adopt the CDC prescribing guidelines and incorporate these into EHRs, provider systems may permit unsafe prescribing practices. Clinicians are often not well-informed about minimum doses of opioids that may be effective for patients, or are not in ready possession of other information that would allow them to “titrate” opioid use – that is, to determine the appropriate dose that reduces symptoms to the greatest possible degree while avoiding possible side effects, such as addiction.

- Many clinicians historically have undergone little training about pain management, and they do not always have at their immediate disposal information about alternatives to opioids for treatment of acute and chronic pain. They also lack the ability to advise patients about whether non-pharmacologic approaches to pain relief, such as acupuncture or physical therapy, will be covered by patients’ insurance policies and what

patients’ cost-sharing obligations might be.

- Most, but not all, EHR systems have clinical decision supports, analytics solutions, or other features embedded in them that encourage clinicians to “think twice” before prescribing opioids – for example, by prompting them to consider whether a closer review of a patient’s history is needed before a decision is made to prescribe an opioid. Geisinger Health System was able to nearly cut in half the number of opioid prescriptions written in its emergency departments, physician offices, and community practice clinics by using a provider dashboard linked to the Epic electronic health record.

Aimed especially at Geisinger sites that were issuing unusually high numbers of prescriptions for opioids, the dashboard walks clinicians through a standard education process for treating pain, including providing information about the differences between suitable treatments for neuropathic pain (caused by damage or disease affecting the nervous system) and somatic pain (skin, tissue, or muscle pain).

- State laws and regulations governing mandatory use of PDMPs vary. Forty-one states mandate that prescribers consult the PDMP before they write prescriptions for opioids and other controlled substances. Which types of prescribers are required to

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check the PDMP also varies among states, as does the class of drug that triggers such a requirement.

- Although most states do require it, provisions in some states would not compel prescribers to re-query a PDMP if they are re-prescribing a drug for a patient, or renewing a prescription within 90 days of the original one. This loophole may allow patients with substance use disorder to renew a prescription of an opioid and sell it to someone else – in part to finance patients' own drug procurement.
- There are disconnects in the information flow among PDMPs. Not all PDMP's are linked to state or regional health information exchanges. There is no mandatory sharing of information from one state PDMP to another, although more than 90 percent of state PDMPs are now doing so voluntarily, and every state except Hawaii is taking steps towards interstate data sharing.

New York State's PDMP, for example, is fully interoperable with the PDMPs of 25 other states and the District of Columbia, which means that the state's PDMP shares data with, and receives data from, the other states' systems, providing practitioners access to nearly 150 million patients' controlled substance history records.¹⁴ Not all states are achieving information sharing at this level, however.

- In 33 states, PDMPs are integrated into, or interoperate with, electronic health records, and additional states are working towards integration. In some states, prescribers must interrupt their work flow to access the PDMP (although most states allow a prescriber's or dispenser's delegate to query the PDMP on the prescriber's or dispenser's behalf). In some situations, clinicians must pause their work in the EHR, open up another system, and enter a new password, user name, and other authenticating information, to log into a PDMP.

According to the American Hospital Association, some emergency room physicians have complained that it can take as much as 15 minutes for them to log onto the state's PDMP, access what they need, and then log back into their EHR. By contrast, some state PDMPs allow access to the database directly from EHRs, so that a clinician can simply access the PDMP and become logged in automatically and pull up information on a given patient right away.

In most states, data must be reported to PDMPs within one business day or 24 hours. However, in other states, reporting intervals vary. In Oklahoma, for example, the required information about the prescription must be reported to the PDMP within five minutes of the time that the prescription is

dispensed. By contrast, in Oregon and Rhode Island, dispensers have up to three days to report to the PDMP; in California and Hawaii, dispensers have seven days; in Montana eight days; and in the territory of Guam, 14 days.¹⁵

The longer it takes for the information to be reported, processed, and inserted back into the PDMP for other providers to view, the more chance there is that relevant prescribing information will not be part of the decision process if a patient goes to another prescriber and tries to get the same prescription filled, noted Leigh Burchell, who heads government affairs for Allscripts and is the chairperson of the opioid task force of the Electronic Health Record Association, at NEHI's April 25 convening.

- Some providers, such as dentists and veterinarians, can both prescribe and dispense opioids and other controlled substances directly. Forty-two states require all dispensing practitioners to report to the PDMP, and 19 specifically require veterinarians to do so, but the balance do not.

As a result, it is possible for patients to go to a veterinarian on the premise that an animal that they own is in pain, and be prescribed an opioid product that they then take themselves, or sell.

- Seventy-three percent of all medication prescriptions

in the United States are now e-prescribed, as are 82 percent of non-controlled substances. Yet only 19 percent of controlled substances are e-prescribed, according to data compiled by Surescripts, the e-prescribing network that transmits nearly 4.8 million prescriptions daily in the United States, said Paul Uhrig, chief administrative, legal, and privacy officer of Surescripts.

The main reason is that prescribers are not adopting and using the technology; only 23 percent of prescribers nationally, for example, use electronic prescribing for controlled substances (EPCS). Some states, such as New York, have mandated EPCS for all prescribers; as a result, 75 percent of physicians in the state are now e-prescribing controlled substances.

- Special federal privacy and confidentiality protections that apply to the records of patients receiving alcohol and drug abuse treatment pose an obstacle for integrating information about that treatment into electronic health records, and readily sharing that information as “protected health information” with other care providers.

The regulation, known as 42 Code of Federal Regulations (C.F.R) Part 2, prohibits federally assisted programs (such as those that receive any federal funding) from disclosing any information that would identify a person as

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having or having had substance use disorder unless that person provides written consent for that information to be disclosed.¹⁶

The regulation in effect creates a barrier to communication between health care providers serving individuals with substance use disorders and other conditions, and has created silos of medical care, which can compromise both the quality of care and patient safety.

According to Nancy Foster, vice president for quality and patient safety policy at the American Hospital Association, one health care provider of whom AHA is aware, who treats women who are pregnant for substance use disorder, must keep two laptops – one to enter data on patients’ substance use disorder treatment, and the second for information on their other medical treatment, including prenatal care.

Without patients’ opting into the information sharing, the information about patients’ substance use disorder treatment cannot be exchanged with obstetrician/gynecologists, neonatologists, and other health care providers.

- Even in instances in which patients present in emergency rooms having overdosed on opioids or other drugs, they are not always referred to medication-assisted treatment, given prescription orders for

naloxone, or identified as at especially high risk for another overdose leading to death. A retrospective study conducted by the Geisinger Health System found that of 2,039 patients with one or more overdoses who were admitted to Geisinger hospitals from 2005 to 2015, only 9 percent were given a prescription order for naloxone, and 9.4 percent died within 12 months.¹⁷

IV. Data and Information Gaps and other Barriers that Impede Effective Addiction Treatment and Recovery Care

Once opioid use disorders are evident in patients, multiple information and other barriers stand in the way of them achieving effective addiction treatment and recovery. The single biggest barrier is a shortage of medication-assisted treatment, which the evidence shows is the most effective form of therapy for opioid use disorder.¹⁸

A discussion of that gap in treatment capacity is beyond the scope of this issue brief. However, participants in NEHI’s convening identified the following issues that pertain to various information barriers and data gaps.

- Requirements that clinicians obtain burdensome prior authorization before referring patients to medication assisted treatment for opioid use disorder may inhibit clinicians from

The single biggest barrier to effective addiction treatment and recovery is a shortage of medication-assisted treatment.

Requirements that clinicians obtain prior authorization before referring patients to medication-assisted treatment for opioid use disorder may inhibit clinicians from making referrals.

making such referrals. Health plans around the nation are starting to remove these barriers, but they still affect a large share of the population in need of MAT.

Compounding the effects of prior authorization requirements are high patient cost-sharing requirements for these treatment programs. As Kathleen Blake, vice president of health care quality at the American Medical Association, noted at NEHI's convening, a number of large health plans have begun to remove some of these barriers, but not all have done so. There is no reason that it should be more difficult to access appropriate opioid use disorder therapy and medication assisted treatment than it is to obtain pain relief via an opioid prescription, she observed.

- In many states, there are ineffective information linkages between the criminal justice system and the health care or substance abuse treatment systems that can pave the way for continuing treatment and other optimal care for people with substance use disorder issues who are discharged from prisons or jails.

Clinicians who are referring patients to medication-assisted treatment programs are often unaware of the variety of social supports that patients may also need in recovery. Few are aware of directories such as Aunt

Bertha (auntbertha.com), which provides information about such resources as wellness counseling and education, individual and group therapy, and psychosocial rehabilitation.

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- There are inadequate links among patient registries, hospital mortality data, and other information sources that can shed light on when and where large numbers of patients are overdosing and thereby highlight potential for action. Registry and geocoding data could be combined to illuminate areas of a locality, state, or region where overdoses are occurring in excessively high numbers, and point the way to policy responses.

V. Recommendations

Considering the data and information gaps identified above, attendees at NEHI's convening expressed confidence that they can be addressed, and that health information technology itself is a major part of the solution. As Janet

Campbell, vice president of patient engagement at Epic, put it, technology is being underutilized based on what it can do today, and there are “immediate opportunities now to put technology and data to work.”

To that end, NEHI recommends the following action steps.

Recommendation #1: At the direction of the federal government, a broad stakeholder group should be assembled to describe and develop an optimal model of how fully integrated and interoperable information technology systems would best address the epidemic of opioid use disorder.

A stakeholder group of health care providers, payers, EHR companies, clinical decision support developers, e-prescribing systems, and others should partner with state and federal policy makers to develop a model of how fully integrated and interoperable information technology systems would best address the epidemic of opioid use disorder. The model would support optimal pain treatment with or without opioids, appropriate opioid prescribing, and optimal opioid use disorder treatment and supports for patients in recovery.

The mechanism for achieving the model would be technological interfaces and other arrangements to support the health of patients, and to enable clinicians to do “the right thing at the right time [and prevent] the wrong thing from being done easily,” as Michael Fadden, MD, a director and chief medical officer of Cerner, stated

at the NEHI April 25 convening.

The federal government should then create a national network to share best practices among health systems, EHR and clinical decision support providers, health plans, and others, and an action plan for achieving the model fully by a target date of 2020. Components of the model are discussed in the additional recommendations below.

Recommendation #2: A component of an optimal model devised by stakeholders should be specified capabilities for electronic health record systems and clinical decision support capabilities, as follows:

- EHR systems at a minimum should support the CDC’s 2016 opioid prescribing guidelines, or EHRs should be able to support so-called “plug and play” applications that provide such functions in consultation with the CDC guidelines.
- Effective clinical decision support systems and apps also must be updated as the science and evidence surrounding opioid use evolves. Clinical decision support embedded in EHRs, as well as relevant apps, should provide information about the potency of opioids prescribed, by reporting the morphine milligram equivalent, or MME, of the medication and dose that they are ordering.
- All EHRs should support the clinicians’ ability to have patients

Access to e-prescribing of controlled substances, and to PDMPs, should be enabled directly from EHRs.

sign pain agreements if opioids or other controlled substances are prescribed.

- Clinical decision support embedded in EHRs should flag for prescribers whether or not a patient has a so-called “pain agreement” on file. Interoperability standards should be updated to incorporate a flag indicating for a given clinician whether the patient has a pain agreement on file with another clinician.

- Clinical decision support systems embedded in EHRs should be structured to issue alerts, in order to flag prescribers about key information that could affect their prescribing decisions – for example, any information available from state PDMPs indicating potential misuse or abuse of opioids.

- Clinical decision support systems linked to EHRs should incorporate information about non-opioid alternatives to pain relief. States such as Oregon and Vermont have expanded coverage in their Medicaid programs for treatments like acupuncture and cognitive behavioral therapy, but more data and evaluation is needed about additional pain-relief options.

- Algorithms should be created that allow providers to work through alternative pain approaches before prescribing opioids, and that enable clinicians to understand which

patients are most likely to benefit from different modalities of pain treatment.

Christopher M. Jones, Director of the National Mental Health and Substance Use Policy Laboratory at the Substance Abuse and Mental Health Services Administration (SAMHSA), noted that Veterans’ Health Administration data have been used to create an algorithm and risk score for opioid overdose risk. The algorithm tracks variables such as whether patients have been diagnosed with a mental health disorder, are being treated with drugs for a various condition, or have undergone recent hospital stays.

The resulting risk score helps to identify patients who may be more likely to benefit from specific interventions to prevent opioid use disorder.¹⁹ In addition to tools such as these, shared decision-making tools on pain management should also be made broadly available to enable clinicians and patients to consult together on alternatives to opioids for pain management.

- EHR and clinical decision support providers, along with health insurers and others, should develop algorithms and predictive analytics that allow clinicians and others to identify the potential for opioid misuse, abuse, and overdose in patients. Such algorithms and analytics should be based on

Clinical decision support systems linked to EHRs should incorporate information about non-opioid alternatives to pain relief.

EHRs should provide direct access to both state PDMPs and to e-prescribing of controlled substances, and there should be mandated data sharing from PDMPs into EHRs.

EHR data, claims data, and other information.

- EHRs should provide direct access by clinician/prescribers into state Prescription Drug Monitoring Programs (see further discussion in Recommendation #4 below).
- EHR and clinical decision support systems should include alerts and other triggers to make it more routine to prescribe naloxone for those who present in emergency departments with overdoses, or to initiate medication-assisted treatment, such as with buprenorphine, in the emergency department.

At least one federally funded study showed that patients who were initiated on buprenorphine and naloxone treatment in the emergency room, and then referred to primary care for ongoing treatment, were more likely to remain in treatment and reduce illicit opioid use two months later than patients who were simply referred on for treatment.²⁰

- An array of health information technology companies, EHR developers, and app developers should prioritize development of applications that will sit on top of EHRs via application program interfaces and create new tools for both clinicians and patients to manage aspects of opioid use disorder. Many emerging apps are based on SMART (Substitutable Medical Apps & Reusable

Technology), an open, standards-based technology platform that enables innovators to create apps that seamlessly and securely run across the health care system.

Using an electronic health record system or data warehouse that supports the SMART standard, patients, doctors, and health care practitioners can draw on this library of apps to improve clinical care, research, and public health. SMART apps based on the FHIR (Fast Healthcare Interoperability Resources) standards framework are designed to be interoperable across EHRs.

Apps can be developed to help support patients in recovery; these should be evaluated for costs and benefits and widely deployed if the results are positive. The federal government has already issued multiple challenges to stimulate the work of opioid app developers, and it should continue doing so to foster additional innovation

Recommendation #3: The federal government, EHR developers, and others should take steps to facilitate e-prescribing of controlled substances (EPCS).

- As an initial step, Congress should eliminate barriers to adoption of EPCS and promote incentives to spur voluntary uptake of EPCS by clinicians who register with the DEA.
- State or federal mandates for the electronic prescribing

Congress should eliminate barriers to electronic prescribing of controlled substances (EPCS), and promote incentives to spur voluntary uptake by clinicians who register with the DEA.

of controlled substances may ultimately be desirable, but before any more are implemented, the DEA should modify certain elements of its regulations governing EPCS.

- The goals at the federal and state level should be to decrease the cost and burden associated with EPCS technology, and to better integrate the technology into prescriber workflows, in order to increase the number of clinicians who register with the DEA to e-prescribe controlled substances.
- The DEA should reduce regulatory barriers and encourage innovation in EPCS.

To reduce the burden on clinicians, the agency should allow EPCS product developers to experiment with new technologies, such as finger print, face, or retina scanners, and other two-factor identification technologies that are commonly found in consumer electronic devices.

Congress should also direct the DEA to amend its rule on “Electronic Prescriptions for Controlled Substances” (75FR 16236, March 31, 2010) to allow for use of these technologies in place of two-factor authentication for identity proofing of prescribers.

- EHR developers also have a role to play in creating systems that allow for seamless

e-prescribing of controlled substances and all other prescription medications. Access to e-prescribing of controlled substances, and to PDMPs, should be enabled directly from EHRs so that prescribers can check readily on patients’ prescription histories.

- EHRs and e-prescribing systems should make it more apparent to clinicians if they are about to order doses that are of high potency, or that they are about to prescribe more than several days’ supply of pills for common conditions, such as short-term pain relief following surgery.

Recommendation #4: The federal government and states should take action to improve the effectiveness of prescription drug monitoring programs by addressing interoperability and other key issues.

- State-based PDMPs should be upgraded with the aid of federal funding, and should be mandated to exchange data with all other states or EHRs.

Although several federal agencies provide support to PDMPs, the Justice Department’s Bureau of Justice Affairs and the U.S. Centers for Disease Control and Prevention (CDC) are the primary federal funders (BJA funds PDMPs directly and the CDC provides funds through state departments of health). The omnibus federal spending bill adopted in March

EHRs should provide direct access to both state PDMPs, and existing data sharing standards should be employed to mandate data sharing from PDMPs into EHRs.

2018 requires CDC to provide funds for enhancing the utility of state PDMPs to make them more interconnected, in real-time, and usable for public health surveillance and clinical decision making.

However, participants in NEHI's convening argued that more federal funding and oversight is needed to improve the timeliness of data collection so that prescribers can better identify instances of doctor shopping, particularly across state lines. Congress should also enact legislation mandating that any state that receives federal grant funding for its PDMP to make the information in that database available according to national data standards to EHRs and to clinicians in other states.

- As noted in recommendation #2, EHRs should provide direct access to both state PDMPs, and existing data sharing standards should be employed to mandate data sharing from PDMPs into EHRs. For example, Nebraska's PDMP is housed within the statewide health information exchange, making it easy for providers to access both patient records and prescription drug information in the same place.

The state of Washington has integrated its PDMP into providers' EHR systems in hospital emergency departments and are working with the state's health information exchange

to make that happen. Federal policies should support additional state innovation along these lines.

Recommendation #5: Congress should consider rewriting federal law to make the privacy standard issued under the Health Insurance Portability and Accountability Act (HIPAA) the applicable standard governing substance use disorder treatment, to bring this type of care under the same privacy umbrella as all other aspects of health care.

Congress should consider rewriting federal law along the lines of the proposed Overdose Prevention and Patient Safety Act (OPPS Act), H.R. 3545, and the Protecting Jessica Grubb's Legacy Act (Legacy Act), S. 1850. Both bills are good starting points that would align Part 2 with HIPAA for the purposes of health care treatment, payment, and operations, and also strengthen protections against the use of substance use disorder records in criminal proceedings.

At the same time, before finalizing any legislative language, Congress should consider carefully whether the stigma that continues to exist around substance use disorder treatment still warrants particular provisions for protected health information involving substance use disorder within the overall HIPAA construct.

In the meantime, to deal with the constraints imposed by the privacy requirements under 42 CFR Part 2, states should create standardized

Congress should rewrite federal law to make the privacy standard under HIPAA apply to substance use disorder treatment. Gaps in health care data and information have made it far harder than it should be to address the crisis.

patient consent forms for patients to consent to having information about their substance use disorder shared with other clinicians. Michigan has created a standardized and centralized consent form that can be used across the state, and it is developing an electronic version of the form. Rhode Island's health information exchange allows full integration of physical and behavioral health data once patients have consented to the sharing of the data.

Recommendation #6: Take other steps to harness data to attack the opioid epidemic.

Payers, health systems, e-prescribing systems, and others should collaborate to mine all existing data sources for novel approaches to attacking the opioid use disorder crisis. Payers could aggregate claims data with other data to create "risk scores" that would enable health care providers to identify as early as possible patients at risk of developing opioid use disorder.

The University of Pittsburgh Medical Center has matched up claims data with EHR data and geolocation tools to flag familial opioid relationships – instances, for example, in which a grandson may have developed an opioid use disorder after taking unused medication from the grandparent for whom the

medication was originally prescribed. And outside of state PDMPs, much data on patients' medication histories exist within the dispense records of pharmacies that are reported daily.

These, too, can be vital sources of data that can be aggregated, analyzed, and mined for insights that could be put to use in multiple ways to combat opioid use disorder.

VI. Conclusion

Opioid use disorder constitutes the major U.S. public health crisis of the 21st century, with more people dying annually from opioid-related overdoses now than died at the peak of the HIV/AIDS pandemic.²¹

Significant gaps in health care data and information have made it far harder than it should be to address the crisis. By drawing on numerous solutions that marry public policy changes with advanced health information technologies, major progress could be made in narrowing the scope of the epidemic and speeding more people into effective treatment and recovery.

The recommendations for action described in this issue brief constitute an important roadmap for engaging stakeholders to address these critical action steps.

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NEHI is a national nonprofit, nonpartisan organization composed of stakeholders from across all key sectors of health and health care. Its mission is to advance innovations that improve health, enhance the quality of health care, and achieve greater value for the money spent.

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