

Strategies for Promoting the Safe Use and Appropriate Prescribing of Prescription Opioids

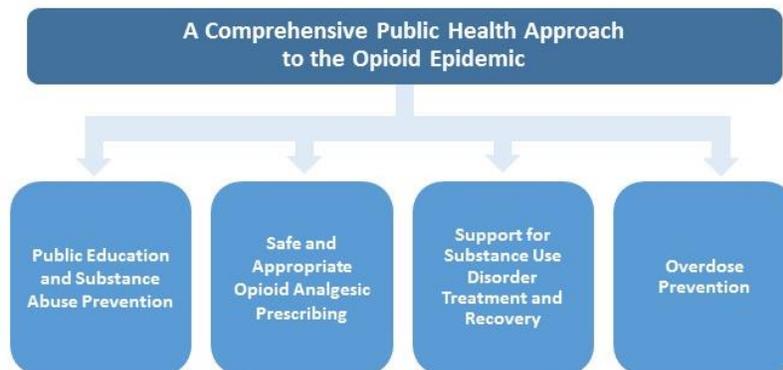
LANDSCAPE ANALYSIS

February 15, 2018

Executive Summary

Increased opioid prescribing has led to a growing crisis of misuse, addiction, and overdose in the United States, with prescription or illicit opioid-related overdose deaths totaling 42,249 in 2016. Many patients experiencing opioid-related harms—including misuse, Opioid Use Disorder (OUD), and overdose—may have been initially exposed to opioids through a prescription for the treatment of acute or chronic pain. To address this crisis while preserving access to appropriate pain treatment, stakeholders across the U.S. health system are attempting to implement strategies to ensure that opioids are safely and appropriately prescribed. Supporting safe and appropriate prescribing is only one component of a comprehensive public health approach to the opioid crisis that also includes evidence-based prevention, support for treatment and recovery from substance use disorders (SUD), and overdose prevention (see **Figure 1**).

Figure 1: Framework for a Comprehensive Approach to the Opioid Epidemic

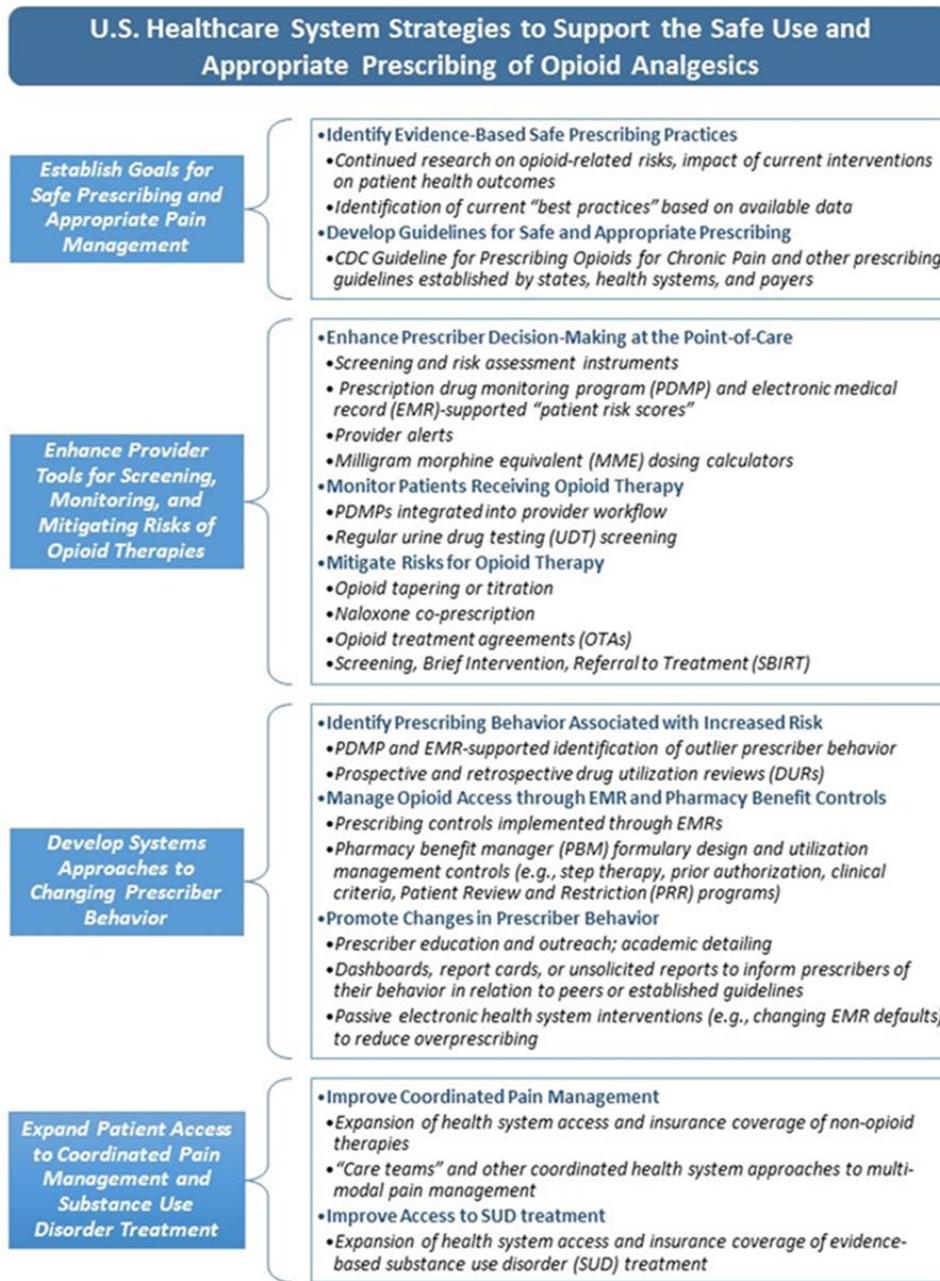


Given the alarming increase in opioid-related harms, reducing the supply of opioids vulnerable to misuse and mitigating risks through more judicious prescribing have been key priorities of the U.S. health system. While stakeholders—including policymakers, health system leaders, and healthcare payers—have acted quickly to implement these strategies, assessing their impact on patient health outcomes and public health is critical. Early indications of shifting prescriber behavior have been welcomed by many stakeholders as a necessary culture shift to “stem the tide” of new opioid users and mitigate risks for patients currently on opioid therapy. However, there are mounting concerns that efforts to reduce prescribing will result in stigmatization, barriers to appropriate treatment for both acute and chronic pain, and other adverse consequences for millions of patients currently prescribed opioids for the treatment of chronic pain.

To understand how safe prescribing strategies are being adopted in this fast-moving policy environment, as well as what is known about their impact on reducing opioid-related harms, the Duke-Margolis Center for Health Policy has undertaken a landscape analysis of interventions being used by the U.S. health system to ensure that opioid analgesics are safely prescribed as part of appropriate pain management (hereafter referred to as “safe prescribing strategies”). This analysis was conducted through a qualitative literature review as well as informal interviews with more than fifty policy and health system stakeholders. In addition to identifying tools and strategies at various levels of implementation, this landscape analysis also investigates how stakeholders are leveraging health information technology (HIT) to support safe prescribing strategies, identifies potential barriers to adoption or unintended consequences of such strategies, and explores how the success of safe prescribing strategies may be defined and measured. Strategies and tools examined in the course of this analysis include prescribing guidelines, Prescription Drug Monitoring Programs (PDMPs), screening and risk-assessment tools, and other interventions designed to change prescriber behavior, manage access to prescribed opioid analgesics, and improve patient care.

While coordinated safe prescribing strategies often involve a combination of these tools, a framework for understanding well-balanced approaches to supporting the safe use and appropriate prescribing of opioid analgesics includes: 1) establishing goals for safe opioid analgesic prescribing and appropriate pain management; 2) enhancing provider tools for screening, monitoring, and mitigating risks of opioid analgesic therapies; 3) developing systems approaches for changing prescriber behavior; and 4) expanding patient access to coordinated pain management and SUD treatment (see **Figure 2**). In order to reduce potential barriers to access to appropriate therapies, comprehensive approaches to safe use and appropriate prescribing must include expansion of alternative non-opioid therapies, coordinated multi-modal pain management, and evidence-based SUD treatment.

Figure 2: Framework for U.S. Healthcare System Strategies to Support Safe and Appropriate Opioid Prescribing



Although many safe prescribing strategies are in the relatively early stages of implementation, early evidence suggests that stakeholders have begun to reduce overall prescribing (as measured by total milligram morphine equivalent (MME) prescribed or overall number of opioid prescriptions) as well as limit some risky prescribing practices (such as co-prescribing of opioids and benzodiazepines, “high” daily MME dosage, or use of extended-release/long-acting (ER/LA) opioids in non-opioid tolerant patients). Still, preliminary information to evaluate such strategies is often based on broad measures of utilization and prescribing rather than granular clinical data that might help assess “appropriateness” of prescribing strategies or patient benefit. Moreover, these evaluations often lacked comparison groups. Even where comparisons were possible, evaluation of any one intervention can be challenging, due to potentially confounding effects from other efforts to curtail the opioid epidemic. Most importantly, relatively little evidence currently exists regarding how safe prescribing strategies affect downstream patient outcomes such as patient safety, avoidance of opioid-related harms, or pain management. Looking forward, some of these challenges may be addressed by building in evaluation efforts into strategy designs and implementation.

As advancements in research continue and information regarding safe prescribing strategies accumulates over time, there will be a continual need to refine this expanding evidence base to ensure that novel interventions are part of an overarching coordinated strategy that supports improved patient care and safety. Moving forward, U.S. health system leaders must learn to balance the competing demands of rapidly responding to an evolving public health crisis with the need to collect data, rigorously evaluate efforts, and developing best practices for future implementation. Policymakers, health system leaders, and payers must also balance the need to reduce prescribing practices that helped lead to the current crisis while also preserving access to opioids as a part of appropriate pain management. Overall, strategies to support the safe use and appropriate prescribing of opioid analgesics are an essential component of a comprehensive public health approach to the opioid crisis, but one that must be met with commensurate effort within the U.S. health system to expand access to SUD treatment and overdose prevention.

About the Duke-Margolis Center for Health Policy

The Robert J. Margolis, MD, Center for Health Policy at Duke University is directed by Mark McClellan, MD, PhD, and brings together expertise from the Washington, DC policy community, Duke University, and Duke Health to address the most pressing issues in health policy.

The Center's mission is to improve health and the value of health care by developing and implementing evidence-based policy solutions locally, nationally, and globally. For more information, visit healthpolicy.duke.edu.

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Methodology

As a means of understanding the landscape of strategies being used by U.S. health system stakeholders to support safe and appropriate prescribing, the authors of this landscape analysis undertook a qualitative systematic review of white (PUBLINE) and grey literature, including, but not limited to, provider association reports, statements, and letters, as well news media, industry press releases, state budget and policy documents, and other publicly reported information. Search queries related to opioids, opioid-related harms, and pain treatment, as well as policy, health system, and payer strategies to mitigate opioid-related risks. In addition to a literature review, interviews were conducted with more than 50 policy and health system stakeholders representing state and federal agencies, public and commercial payers, health systems, providers, addiction experts, pain experts, and patient advocates. As many strategies are in their nascent stages and have not yet been evaluated, informal stakeholder interviews provided early intelligence and context, as well as considerations for the ongoing implementation of such strategies. These interviews did not use a formal instrument and were exploratory in nature. During interviews, stakeholders were asked to discuss existing health system interventions to support safe prescribing, including utilization of data and health information technology (HIT), evidence and outcomes, and potential barriers or unintended consequences resulting from interventions.

LANDSCAPE ANALYSIS

STRATEGIES FOR PROMOTING THE SAFE USE AND APPROPRIATE PRESCRIBING OF PRESCRIPTION OPIOIDS

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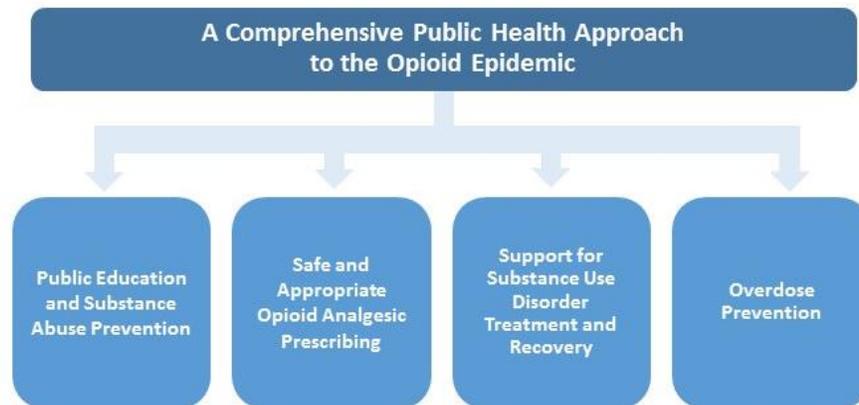
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Introduction

Increases in opioid prescribing, driven largely by prescriptions for use in non-cancer pain,¹ have contributed to a growing crisis of addiction and overdose in the United States. Morbidity and mortality associated with both prescription and illicit opioids is rising, with opioid-related overdose deaths totaling 42,249 in 2016.² Many patients experiencing opioid-related harms—including misuse, illicit drug use, Opioid Use Disorder (OUD), and overdose—may have been initially exposed through prescription opioids for the treatment of acute or chronic pain. To address the crisis while preserving access to appropriate pain treatment, stakeholders across the U.S. health system are implementing strategies to ensure that opioids are safely and appropriately prescribed. Supporting safe and appropriate prescribing is only one component of a comprehensive public health approach to the opioid crisis that also includes evidence-based prevention, support for treatment and recovery from substance use disorders (SUD), and overdose prevention (see **Figure 1**).

Figure 1: Framework for a Comprehensive Approach to the Opioid Epidemic



Given the alarming increase in opioid-related harms, reducing the supply of opioids vulnerable to misuse and mitigating risks through more judicious prescribing have been key priorities of the U.S. health system. While stakeholders—including policymakers, health system leaders, and healthcare payers—have acted quickly to implement these strategies, assessing their impact on patient health outcomes and public health is critical. Early indications of shifting prescriber behavior have been welcomed by many stakeholders as a necessary culture shift to “stem the tide” of new opioid users and mitigate risks for patients currently on opioid therapy. However, there are mounting concerns that efforts to reduce prescribing will result in stigmatization, barriers to appropriate treatment for both acute and chronic pain, and other adverse consequences for millions of patients currently prescribed opioids for the treatment of chronic pain.

To understand how safe prescribing strategies are being adopted in this fast-moving policy environment, as well as what is known about their impact in reducing opioid-related harms, the Duke-Margolis Center for Health Policy has undertaken a landscape analysis of strategies being used by the U.S. health system to ensure that opioids are prescribed safely as part of appropriate pain management (hereafter referred to as “safe prescribing strategies”). This analysis was conducted through a qualitative literature review as well as informal, exploratory interviews with more than fifty stakeholders representing state and federal agencies, public and commercial payers, health systems, providers, addiction experts, pain experts, and patient advocates. As many strategies are in their nascent stages and have not yet been evaluated, stakeholder interviews provided early intelligence and context, as well as real-world experience with safe prescribing strategies. In addition to identifying tools and strategies at various

levels of implementation, the landscape analysis also investigates how stakeholders are leveraging health information technology (HIT) to support safe prescribing strategies, identify potential barriers to adoption or unintended consequences of such strategies, and explore how the success of safe prescribing strategies may be defined and measured. Tools and strategies examined include prescribing guidelines, Prescription Drug Monitoring Programs (PDMPs), screening and risk-assessment tools, and other interventions designed to change prescriber behavior, manage access to prescribed opioids, and improve patient care.

While this landscape analysis is primarily intended to explore common tools and strategies adopted by stakeholders to support safe prescribing, it is not intended to evaluate existing evidence on opioid-related risks, nor is it intended to address the scope of policy or health system activities beyond safe and appropriate prescribing of opioids as part of a coordinated approach to pain management and patient care.

Following a brief overview of stakeholder roles in supporting safe prescribing at the state, federal, health system, and payer levels, the analysis examines:

- 1) The development of the *CDC Guideline for Prescribing Opioids for Chronic Pain*, its role in shaping safe prescribing approaches, and potential challenges to its implementation;
- 2) Health system efforts to leverage PDMP and electronic health data to enhance provider decision-making;
- 3) Health system strategies to change provider behavior and improve patient care; and
- 4) Payer and pharmacy benefit manager (PBM) strategies to manage opioid analgesic access and improve patient safety.

Table 1: Glossary of Commonly-Used Opioid-Related Terms

<i>Glossary of Terms</i>	
<i>Term</i>	<i>Definition</i>
Prescription Opioids	Unless otherwise explicitly noted, “prescribed opioids” or “prescription opioids” in this analysis refers to opioid analgesics for the treatment of pain, and does not refer to FDA-approved medication-assisted treatment (MAT) containing opioid products. Since publication of the <i>CDC Guideline for Prescribing Opioids for Chronic Pain</i> , the CDC has clarified that recommended milligram morphine equivalent (MME) dosage thresholds are not intended to apply dosing of opioid agonists/partial agonists used in the treatment of OUD. ³
Misuse	The use of a drug outside label directions or in a way other than prescribed or directed by a healthcare practitioner. This definition includes patients using a drug for a different condition than that for which the drug is prescribed, patients taking more drug than prescribed or at different dosing intervals, and individuals using a drug not prescribed for them although for therapeutic purposes. ⁴
Abuse	The misuse of a substance in a way that is not consistent with existing medical or legal guidelines to control mood or modify/alter a state of mind. ⁵
Diversion	Any intentional act that results in transferring a drug product from lawful to unlawful distribution or possession. ⁶
Substance Use Disorder (SUD)	A cluster of cognitive, behavioral, and physiological symptoms indicating that an individual continues to use the substance despite significant substance-related problems. A diagnosis based on pathological pattern of behaviors related to use of the substance. ⁷
Opioid Use Disorder (OUD)	A problematic pattern of opioid use leading to clinically significant impairment or distress within a 12 month period marked by at least two of twelve criteria that include impaired control, social impairment, risky use, and pharmacological criteria. ⁸
Medication-Assisted Treatment (MAT)	Use of medications in combination with counseling and behavioral therapies to treat substance use disorders and prevent opioid overdose. ⁹ Medicines approved by the Food and Drug Administration (FDA) to treat opioid addiction and dependency are buprenorphine, buprenorphine/naloxone (e.g. suboxone), and methadone. ¹⁰

Roles of State and Federal Agencies, Health Systems, and Payers in Supporting Safe Opioid Prescribing

Developing a comprehensive strategy for safe and appropriate prescribing requires collaborative, data-driven interventions along every point of the medication use cycle, including prevention, screening and monitoring, patient care, and interventions for patients at risk of SUD or other harms. Recognizing the need for multi-faceted intervention strategies in an already complex health system, the following section maps out federal, state, health system, and payer roles and responsibilities in the area of safe prescribing. Specific safe prescribing strategies advanced by these stakeholders are examined in greater depth in later sections.

U.S. Department of Health and Human Services (HHS) Support for Safe Prescribing Initiatives

A number of federal agencies directly or indirectly address issues relating to the opioid crisis. These responsibilities include funding a variety of programs, regulating systems, purchasing services, and administering care delivery. The U.S. Department of Health and Human Services (HHS) is comprised of various agencies including the U.S. Food and Drug Administration (FDA), the Centers for Disease Control and Prevention (CDC), the Centers for Medicare and Medicaid Services (CMS), the Substance Abuse and Mental Health Services Administration (SAMHSA), and the National Institutes of Health (NIH) that have direct responsibility for advancing many federal efforts for supporting safe and appropriate prescribing. In April 2017, HHS developed an overarching framework to coordinate agency efforts to address the opioid epidemic. Framework priorities include: 1) advancing the practice of pain management while reducing the inappropriate prescribing of opioids; 2) supporting public health data reporting and collection; 3) supporting research on pain and addiction; 4) increasing access to medication-assisted treatment (MAT); and 5) expanding efforts to reduce overdose deaths.¹¹

In support of this framework, the FDA has supported the goal of reducing inappropriate prescribing by approving opioid formulations with abuse-deterrent properties, improving safety labeling, strengthening requirements for post-market studies, and requiring opioid manufacturers to make training available to healthcare providers who manage patients with pain through a Risk Evaluation and Mitigation Strategy (REMS).^{12,13} The FDA has also announced that it will back the development of less addictive pain remedies, update the risk-benefit framework to consider the public health impact of misuse and abuse, and support the development of novel MAT options.¹⁴

Other key initiatives to support safe and appropriate prescribing advanced by HHS agencies include:¹⁵

- CDC's efforts to improve surveillance and public health reporting of the epidemic and advance pain management strategies through the *CDC Guideline for Prescribing Opioids for Chronic Pain* and other programs;
- NIH's work to coordinate and advance research on pain management and support for the *National Pain Strategy*;
- SAMHSA's initiatives to support evidence-based programs for prevention, treatment, and recovery support services; and
- CMS's efforts to advance the *CMS Opioid Misuse Strategy* and provide best practices to clinicians and patients connected through Medicare and Medicaid.

State Policy and Regulatory Support for Safe Prescribing Initiatives

Mitigating the toll of the opioid crisis is a major focus of policymakers on the state level, with governors, state legislators, state boards of medicine, and public health officials focused on developing approaches

to curtail misuse, OUD, and overdose within their states. The relative impact of the epidemic on individual states varies widely, as have the differing mechanisms that have been used to coordinate statewide safe prescribing strategies. Depending on the state, policies may be enacted through legislation, regulation, direction to state medical boards (where the state medical board does not operate independently), or at the recommendation of a state-led task force or commission. According to the National Conference of State Legislators (NCSL), state legislators have focused on a number of responses, including prescribing guidelines, PDMP administration, overdose prevention, pain clinic regulation, and “take back” programs to reduce the supply of prescribed opioids that might be subject to misuse or diversion.¹⁶ The Association for State and Territorial Health Officials (ASTHO) has also developed a framework with four key strategies for public health officials to use to address the opioid crisis in their respective states. These strategies include: 1) improving monitoring and surveillance of prescription and illicit opioid use; 2) expanding and strengthening evidence-based primary prevention and education strategies; 3) managing access to prescription opioid analgesics; and 4) improving access to and use of effective treatment and recovery support.

Healthcare Delivery System Support for Safe Prescribing Initiatives

Healthcare delivery systems, whether providing clinical care at the individual provider, community, or large hospital system level, have implemented safe prescribing initiatives designed to influence prescriber behavior and manage patient opioid analgesic access. The National Academy of Medicine’s Special Publication, “First, Do No Harm: Marshalling Clinician Leadership to Counter the Opioid Epidemic,” describes the challenges of supporting evidence-based strategies for the estimated five million healthcare providers actively managing care for patients with pain, which may include clinical care settings ranging from physician pain specialists to occupational therapists or dental hygienists.¹⁷ Within individual health systems, many efforts are led by multi-disciplinary safety committees composed of physician leadership, pharmacists, and other health system leaders. These teams identify problematic trends, assess evidence, and craft interventions that can be broadly implemented within different health settings. While there is no single method for designing a comprehensive health system approach to safe prescribing, examples of coordinated approaches often incorporate provider education, prescribing guidelines, risk-assessment tools, monitoring and coordination through electronic medical record (EMR) integration, and interventions to positively change provider or patient behavior.

Payers and Pharmacy Benefit Manager (PBM) Support for Safe Prescribing Initiatives

Beyond clinical care, healthcare payers—including CMS, state Medicaid programs, commercial health plans, and PBMs—have begun to promote policies to improve safe prescribing and reduce the impact of opioid-related harms. In the United States, the financial burden of opioid-related harms on the health system alone was estimated to be over \$28 billion in 2013, the bulk of which was covered by insurance.¹⁸ The economic burden of opioid-related harms is particularly acute for public insurers, whose covered population prevalence of OUDs is ten times higher than commercial payers.¹⁹

Considering both the public health impact and financial burden of the opioid crisis, payers are beginning to experiment with a range of coverage and reimbursement policies, along with external engagement and interventions, to support safe prescribing strategies and intervene in cases of suspected misuse, abuse, or diversion. In terms of available tools to support safe prescribing, prospective and retrospective drug utilization reviews (DURs) may be used to pinpoint harmful prescribing or limit access to opioid analgesics at the point of prescribing or dispensing. Formulary design and utilization management controls (including prior authorization, preferred drug lists (PDLs), and patient review and restriction (PRR) programs (also referred to as “lock-in” programs limiting patients to one pharmacy or one prescriber) may be used to manage access to opioids and support more coordinated care. Payers are

also able to leverage relationships with providers, patients, and pharmacies to educate stakeholders, encourage the adoption of prescribing guidelines, and intervene in cases of risky prescribing. In January 2016, CMS issued an informational bulletin highlighting a number of strategies recommended for state Medicaid programs and managed care organizations to reduce overdoses, misuse, and addiction. These strategies include utilization of pharmacy benefit programs to reduce harmful prescribing, expand overdose prevention education, increase the use of naloxone, and expand access to SUD treatment.²⁰

Establishing Standards for Safe and Appropriate Prescribing: Adoption of Prescribing Guidelines Across Care Settings

A practical first step in the development of safe prescribing strategies is developing standards or guidelines for what constitutes safe prescribing and appropriate pain management based on the best available evidence on the expected benefits and risks of opioid therapy. Existing studies have supported the use of opioids for severe acute pain, cancer pain, palliative care, and end-of-life care.²¹ However, outside of end-of-life care, evidence of efficacy of long-term opioid therapy for chronic pain remains mixed. Limited evidence supports the efficacy of opioid treatments lasting longer than six weeks,²² and no studies have assessed the benefits of long-term opioid therapy (lasting more than twelve months) for outcomes related to pain, function, or quality of life.²³ While evidence of the benefits of opioids for chronic pain treatment is limited, overt risks for adverse events such as development of OUD, opioid-induced hyperalgesia (increased sensitivity to pain), respiratory depression, and accidental overdose are well-established within the present literature.²⁴

In light of these risks, the *CDC Guideline for Prescribing Opioids for Chronic Pain* published in 2016 (hereafter referred to as the “CDC Guideline”) was originally developed to provide recommendations for primary care clinicians treating chronic pain. Despite this relatively limited scope, the CDC Guideline was described by stakeholders as highly influential in shaping state and federal policy, health system, and payer strategies to support safe prescribing in both acute and chronic pain treatment settings. Specifically, stakeholders noted that a subset of recommendations within the CDC Guideline, outlining recommended prescribing limits for opioid dose, duration, or specific formulations that may pose additional risks for patients, have been adopted as primary strategy for many states, health systems, and payers seeking to mitigate the risks of opioid therapy.

Prescribing limits recommended by the CDC have aligned with a broader culture shift and efforts within the U.S. health system intended to reduce the overall quantities of opioids prescribed that might be vulnerable to misuse or diversion. Despite the apparent influence of the CDC Guideline on shaping standards for safe prescribing, assessing its implementation—or specific impact on access to care or patient safety—has been difficult. In exploring stakeholder efforts to establish standards or guidelines for safe prescribing, the following section discusses: 1) the development of key recommendations of the CDC Guideline; 2) how these recommendations are being interpreted and adopted across clinical care settings; and 3) the challenges and potential unintended consequences of adopting prescribing guidelines as well as how to measure their level of success.

Development of the *CDC Guideline for Prescribing Opioids for Chronic Pain*

The CDC Guideline was developed in response to the increasing incidence of opioid-related harms as well as provider concerns regarding medication misuse, addiction, and insufficient training in addiction and safe opioid prescribing.²⁵ It is intended to provide clinical recommendations to prescribers using the most recent scientific evidence regarding opioid-related risks.²⁶ Specifically, the CDC Guideline contains

a set of clinical recommendations for providers considering opioid therapy regarding: 1) when to initiate

CDC Guideline for Prescribing Opioids for Chronic Pain – Clinical Recommendations²⁹

1. No routine or first-line therapy use
2. Establish plan and measure goals for pain and function
3. Discussion of risks, benefits, and non-opioid therapies
4. Use of immediate release (IR) opioids over extended release/long-acting (ER/LA) when initiating treatment
5. Lowest effective dosage at the start – “Start low and go slow”
6. No greater quantity prescribed than needed
7. Follow-up and re-evaluate risk of harm, reducing the dose, tapering, or discontinuing as needed.
8. Evaluate risk factors for opioid-related harms prior to therapy and periodically throughout
9. Check PDMP for high dosages and prescriptions from other providers
10. Use urine drug testing (UDT) prior to opioid therapy
11. Avoid concurrent benzodiazepine and opioid prescribing
12. Arrange for evidence-based treatment for OUD

or continue opioids for chronic pain; 2) opioid selection, dosage, duration, follow-up, and discontinuation; and 3) how to assess risk and address associated harms of opioid use.²⁷ More broadly, the CDC Guideline is intended to “improve communication between clinicians and patients about the risks and benefits of opioid therapy for chronic pain, improve the safety and effectiveness of pain treatment, and reduce the risks associated with long-term opioid therapy, including OUD, overdose, and death.”²⁸

The recommendations within the CDC Guideline integrate work previously done by health systems and professional societies, including the American Pain Society/American Academy of Pain Medicine (2009), the Washington Agency Medical Directors Group (2015), and the joint U.S. Department of Veterans Affairs (VA)/U.S. Department of Defense (DOD) (2010) effort. As a result, the CDC Guideline shares some elements with previous guidelines, such as recommending the use of risk assessment tools, treatment agreements, and urine drug testing (UDT).³⁰ While past guidelines have focused more on instilling

clinical safeguards for patients identified as “high-risk” based on criteria outlined in the guidelines, the CDC determined that opioids pose a risk to all patients regardless of risk status, and current tools cannot identify individuals at no risk for serious harm.³¹

Key CDC Recommendations: Determining When to Initiate or Continue Opioids for Chronic Pain

The CDC Guideline recommends that prescribers carefully consider the risks and benefits associated with opioid therapy, clearly discuss known risks with patients, and establish clear goals for pain and function. The CDC Guideline also advises limiting initial exposure by opioid-naïve patients (i.e., patients who have not previously taken opioids) by encouraging non-opioid therapies as the first-line treatment for pain. A growing body of evidence suggests that non-pharmacologic therapies such as physical and occupational therapy, cognitive behavioral therapy, chiropractic care, exercise, implantable neurostimulators, and electrical nerve stimulation can be used in place of opioids for particular indications with comparable effectiveness.³²

Key CDC Recommendations: Opioid Selection, Dosage, Duration, Follow-Up, and Discontinuation

When opioids are considered the best therapeutic option, providers are encouraged to limit the supply of prescribed opioids to minimize the risk that no longer needed or unused opioids pose for accidental exposure, misuse, or diversion. Other CDC recommendations involve reducing the risk of adverse events by limiting opioid dosage, duration, and selection, as well as limiting the co-prescribing of additional controlled substances associated with elevated risk of adverse outcomes. Across systems, these prescribing limits are intended to address individual- and population-level risks by reducing prescribing practices believed to be associated with an elevated risk of misuse, OUD, and accidental overdose. The

recommendations include:

- **Prescribing immediate release (IR) opioids when initiating opioid therapy:** The CDC Guideline recommends prescribing IR over extended-release/long-acting (ER/LA) opioids as a first-line therapy, noting that the FDA has determined that some ER/LA opioids may only be appropriate for opioid-tolerant patients.³³
- **Limiting daily opioid dosage to less than 50 MME and avoidance, or justification, of dosages greater than 90 MME:** Given dose-dependent risks, the CDC endorses the lowest effective dose of opioids when initiating opioid therapy, with an additional individual risk-benefit reassessment when increasing dosage over 50 MME. The CDC also advises clinicians to avoid prescribing, or otherwise carefully justify, daily dosages over 90 MME.
- **For acute pain, limit duration of opioid therapy to three, and no more than seven, days:** Based on expert opinion of the typical duration of treatment needed for acute pain,³⁴ and citing a variety of guidelines from emergency rooms and other acute care settings,³⁵ CDC recommended between three and seven days as sufficient for most acute pain seen by primary care clinicians.
- **Evaluating benefits and harms frequently:** The CDC recommends evaluation of benefits and harms within four weeks of starting opioid therapy and every three months thereafter, and advises discontinuing opioid therapy if harms exceed potential benefits.

Key CDC Recommendations: Assessing Risk and Addressing Harms.

Lastly, the CDC recommends a variety of strategies to monitor patients, mitigate the risks of opioid therapy, and intervene with patients exhibiting symptoms of OUD. These recommendations include consulting PDMPs and conducting UDT both before initiating opioid therapy and on a continuing basis to determine whether a patient may be receiving high doses or combinations of drugs that have the potential to place them at additional risk of overdose. The CDC also advises against routine co-prescribing of opioids with other central nervous system depressants such as benzodiazepines, which are associated with a quadrupled risk of accidental overdose.³⁶ Finally, the CDC recommends that providers assess patients using OUD criteria, and either provide FDA-approved MAT or refer patients to quality, evidence-based SUD treatment.

Adoption of Prescribing Limits and Other Guidelines Across Settings

The CDC Guideline is intended to be voluntary rather than prescriptive, and does not seek to develop a specific standard of care. Furthermore, the CDC Guideline includes recommendations throughout the medication use cycle, beginning with initial risk assessment and patient communication and continuing through regular monitoring, benefit-risk assessment, and necessary referrals for follow-up care. However, despite this, many stakeholders believe that the CDC Guideline's most notable impact on practice has been the adoption of the CDC-recommended prescribing limits, which have been applied in both acute and chronic care settings. Although systemic adoption of the CDC Guideline in healthcare settings is not well studied or understood, prescribing limits recommended by the CDC (or other governing bodies) were often described by stakeholders as the basis for health system efforts to identify aberrant prescriber behaviors, assess patient "risk" of adverse events, and other systemic approaches to manage opioid access.

Compared to more complex interventions, prescribing limits are relatively simple to enact using EMRs, lend themselves to easier implementation and quantification, and may face fewer practical or costly obstacles. While not an explicit goal of the CDC Guideline, many stakeholder efforts have set specific goals for reducing overall opioid prescribing as a means of reducing overall population exposure to

opioids. Due to a lack of quantitative efforts to study implementation of prescribing guidelines across settings, publicly available information on the adoption of prescribing limits and other guidelines by states provides a useful frame for understanding current variability and challenges to adoption.

State Adoption of Prescribing Limits

According to NCSL, as of August 2017, 24 states had enacted some type of legislative prescribing limit, guidance, or requirement.³⁷ Due to the fact that a significant portion of opioid prescriptions are written for emergent acute pain,³⁸ many states have focused on implementing limitations within acute or emergency room settings. Therefore, a majority of statutory efforts limit the number of days that opioids can be prescribed to between three and seven days for patients not previously exposed to opioids (also known as opioid naïve patients). According to state legislative data compiled by the Prescription Drug Abuse Policy System (PDAPS), nine states have implemented the seven day supply limit for acute pain, while only Nevada has set limits for acute prescriptions to 14 days (see **Appendix A**).³⁹ A number of states, including Arizona, New Hampshire, Ohio, Oregon, Vermont, Virginia, Washington, and Wisconsin, have enacted legislation or executive orders directing other state entities (such as state departments of health or the appropriate state medical boards) to institute prescribing limits.⁴⁰

Other prescribing controls written into statute or regulation by states have included prohibitions on opioid prescriptions to minors, requirements to refer patients who are over a certain MME threshold to pain specialists, or requiring providers to perform certain monitoring or risk-mitigation procedures (such as checking state PDMPs or conducting urine screens). The majority of states with prescribing limits also carve out exceptions for cancer and/or end-of-life care and documented “medical necessities,” but these exceptions do not exist everywhere. In recognition of the underlying complexities involved with applying guidelines to a variety of contexts, professional medical societies and state authorities are working to adapt safe prescribing strategies into guidelines for various care settings, including emergency rooms. For example, in recent years the Ohio Governor’s Cabinet Opiate Action Team has issued guidelines for emergency rooms (2012), chronic pain treatment (2013), and acute pain treatment (2016).⁴¹

Factors Affecting Implementation of Prescribing Limits and Other Guidelines

The pragmatic need to assimilate guidelines into a variety of care settings, as well as the need to foster consensus amidst constantly evolving evidence, has resulted in variability in guideline implementation. Discrepancies seen in prescribing limits and other guidelines among different settings may be the result of provider preferences, political pressures, or system capacity. When considering factors that have the potential to influence or hinder the system-wide adoption of prescribing guidelines, stakeholders have pointed to a number of considerations. A series of interviews with state policy, health system, and payer experts revealed the following major factors:

- **Data:** Some stakeholders noted difficulty in reaching expert consensus on the interpretation of limited data sources, with ultimate decisions on prescribing limits or other guidelines reflecting “best guesses” or compromises between various parties.
- **Legal authorities and structures:** States, in particular, vary in terms of the structures and authorities overseeing medical boards, state departments of health, and other regulatory bodies that influence process and outcomes.
- **Technical capacity:** Health systems and states may have different capacities to adopt system-wide changes, and may have finite resources for pain specialists or non-pharmacologic therapy.
- **Leadership:** Degree of local impact of the opioid crisis, strong leadership commitment, and

collaboration within the local medical community were considered strong factors in determining stakeholders' willingness to adopt changes.

- **Environmental factors:** Stakeholders located in rural or underserved, high-poverty locations noted that prescribing limits may pose specific barriers to patients' abilities to access appropriate pain treatment, including practical difficulties obtaining refills, limited availability of specialists and physical/occupational therapists, and the affordability of co-pays for multiple prescriptions, visits, or pricier non-opioid therapies.
- **Political factors:** Stakeholders pointed to the competing interests and influences of provider, patient, and industry advocacy in shaping prescribing guidelines and interventions.

As outlined in the November 2017 report by the President's Commission on Combating Drug Addiction and the Opioid Crisis, practical challenges reported by providers for implementation of prescribing guidelines included time-intensive administrative and documentation burdens, difficulty accessing alternative forms of pain control, a lack of information on how to taper current levels of prescribing, and concerns that the guidelines do not adequately address pain management needs for all populations.⁴²

Despite these factors leading to variability in implementation of prescribing limits and other CDC recommendations, there are numerous efforts to facilitate more consistent and widespread implementation of the CDC Guideline into care settings. These have included CDC efforts to develop clinical support tools, quality measures, and mechanisms that payers and PBMs can use to promote safer prescribing, as well as guidance by professional and healthcare quality organizations to facilitate better integration of safe prescribing strategies into clinical practice. In 2016, the Pharmacy Quality Alliance adopted a set of opioid-related quality measures aligned with the CDC Guideline intended to serve as a resource to evaluate quality care and facilitate quality improvement.⁴³ The Federation of State Medical Boards also issued "Guidelines for the Chronic Use of Opioid Analgesics," which is intended to help harmonize guidance across states and provide state medical and osteopathic boards with a resource for determining whether physicians are managing pain and prescribing opioids in a medically appropriate manner.⁴⁴

Challenges, Unintended Consequences, and Measuring Success in the Adoption of Prescribing Guidelines

Although a number of the interviewed providers, payers, and addiction experts expressed support for the CDC Guideline and broader efforts to reduce levels of opioid prescribing, there were those that cautioned that the evidence base for understanding underlying risks of opioid therapy is limited and still evolving. The CDC Guideline was developed through expert consensus, based off an existing landscape lacking high-quality evidence and an acknowledged need for a more comprehensively developed evidence base to inform future recommendations.⁴⁵ Although progress has been noted in prescribing reductions and PDMP utilization consistent with CDC Guideline recommendations, the American Medical Association (AMA) recently cautioned that "there has been no analysis, however, of whether and to what degree the policies and changes in practice implemented to date have improved pain care for patients."⁴⁶ Stakeholders emphasized that "one-size-fits-all" approaches to reduced prescribing may have deleterious safety consequences for the patient populations that they are intended to serve, and that the impact of prescribing guidelines must be carefully evaluated to better understand their impact on both public health and patient outcomes related to health and safety.

Assessing Public Health Impact: Guidelines and Reduced Opioid Prescribing

Citing the positive correlation between total quantity of opioids prescribed and population risk of

overdose death, many providers and addiction experts spoke of prescribing guidelines as a vital piece of the overall effort to “stem the tide” of new initiates to opioid therapy and reduce the overall supply of opioids that may eventually be subject to misuse or diversion. In pursuit of this goal, many states, health systems, and payers have had meaningful success in reducing overall opioid prescribing rates, although the impact of specific strategies (such as prescribing guidelines) are difficult to untangle from broader prescribing trends. Nationally, the most direct and quantifiable evidence of shifting practices surrounding the practice of prescribing opioids has been the reduction in individual opioid prescriptions since 2010 (although opioid prescribing remains high, with quantities of opioids prescribed still triple the rate of prescribing in 1999).⁴⁷ These reductions suggest that healthcare providers have responded to the opioid crisis by modifying their prescribing behavior⁴⁸ and may explain the recent stabilization of trends relating to new initiates to prescription opioid misuse as well as moderate reductions in prescription opioid-related overdoses.⁴⁹

Despite initial progress in reducing overall prescribing levels, evidence has not yet emerged that reductions in prescribing rates are translating to improved pain management or avoidance of opioid-related harms. Moreover, concerns continue to mount that the high prevalence of patients with untreated OUD is contributing to sharp increases in deaths related to heroin and illicitly manufactured fentanyl (IMF),⁵⁰ which have now overtaken prescription drug overdoses as the leading cause of opioid-related overdose deaths.⁵¹ Although only a small percentage of prescription drug misusers transition to heroin or IMF,⁵² four out of five new heroin users have engaged in prior nonmedical use of prescription opioids,⁵³ indicating a continued need to reduce misuse of prescription opioids while expanding access to treatment for OUD. While more study is needed to understand the relationship between reduced opioid prescribing and rising rates of illicit opioid use, experts suggest that unintended consequences (such as transition to illicit opioids) may be best achieved by a focus on *appropriate* prescribing rather than blunt supply reduction.⁵⁴ In light of these concerns, the National Quality Forum (NQF) is leading the charge on an “opioid stewardship” effort, similar to previous work involving antibiotics, convening a National Quality Partners Opioid Stewardship Action Team to develop resources for helping providers better manage their patients’ pain while simultaneously reducing the risk of addiction.⁵⁵

Assessing Patient Impact: Stigma and Access to Care

As prescribing guidelines are adopted across settings, some providers and patient advocates are issuing strong warnings that rigid application of prescribing guidelines are leading to patient stigmatization and barriers to appropriate pain treatment. One survey of primary care providers revealed that 89 percent were concerned about misuse, while 84 percent were stressed about managing chronic pain and 54 percent felt that they did not feel sufficiently trained and lacked confidence in prescribing opioids.⁵⁶ In particular, younger providers expressed the most reluctance to prescribe opioids, leading some stakeholders to speculate that increasing provider discomfort with prescribing opioids may lead to gaps in availability and access to pain treatment. Moreover, providers and patient advocates interviewed in the course of this analysis expressed concerns about the potential unintended consequences of opioid titration conducted in the absence of appropriate pain management or OUD treatment for the ten to twelve million patients currently on long-term opioid therapy. Specifically, stakeholders warned that opioid-dependent patients may suffer withdrawal or adverse events from being abruptly cut off from medication, and difficult-to-treat patients may be further stigmatized or “fired” from treatment without proper support, potentially placing dependent patients at an additional risk of transition to illicit opioid use, overdose, or suicide. For these reasons, stakeholders have brought attention to the need for a comprehensive pain mitigation and evaluation strategy. Many providers, addiction specialists, and advocates spoke of the need for “integrated, multimodal, and interdisciplinary” treatment approaches aligned with the NIH Interagency Pain Research Coordinating Committee’s National Pain Strategy.

Released in 2016, the National Pain Strategy is a population health-level strategy for improving the evidence base for pain prevention and interventions, developing health system strategies, and educating providers and the public.⁵⁷

Discussion: Building an Evidence Base for Safe Prescribing Strategies

Given the public health urgency of the epidemic, stakeholders have moved quickly to implement guideline-based strategies designed to limit overall prescribing of opioids and practices associated with additional risks of opioid-related harms. Many such efforts are in the early stages of implementation, with evaluations of guidelines and other safe prescribing strategies focused on demonstrated changes to prescriber behavior. To date, few studies have assessed the impact of such interventions on patient safety, pain management, or avoidance of adverse outcomes. Despite these limitations, some efforts are underway to better understand the impact of safe prescribing strategies on downstream health outcomes and public health. As of October 2017, the Patient-Centered Outcomes Research Institute (PCORI) has funded 59 comparative effectiveness clinical research studies related to chronic pain management and opioid misuse.⁵⁸ A number of funded studies specifically address provider-targeted interventions to prevent unsafe opioid prescribing⁵⁹ and prescription opioid management in chronic pain patients.⁶⁰

However, many of these studies are still underway, and considerable additional work is needed to bolster the current evidence base underlying safe prescribing strategies, analyze and assess progress in the implementation of prescribing guidelines, and evaluate the impact of such efforts on patient health outcomes. While much of the focus of health systems has been on high-risk prescribing, stakeholders emphasized the urgent need for health systems to place commensurate emphasis on appropriate, person-centered pain management and improving access to treatment for SUDs.

Improving Provider Decision-Making Tools to Support Safe and Appropriate Prescribing

In addition to guideline-based efforts to reduce population risk, concomitant efforts to improve safe opioid prescribing practices have focused on improving provider capacity to screen, identify, and monitor individual patients who may be at risk of opioid-related harms. The CDC cautions that there is limited evidence for currently available risk stratification tools.⁶¹ However, strategies such as regular UDTs and PDMP monitoring are supported as a means of identifying potential aberrant behavior or concurrent substance use.⁶² Despite limited evidence on the ability to successfully predict and identify aberrant drug behaviors using existing tools,⁶³ health system stakeholders are increasingly developing technology-driven tools that leverage PDMPs, health system data, administrative claims, and screening and risk assessment instruments to create provider decision-making tools at the point-of-care. These tools can be integrated into provider workflows through EMRs, which already centralize other aspects of patient medication management such as patient histories and formulary management.⁶⁴ It is hoped that these HIT tools may enable higher quality, real-time information to help providers identify patients at risk of harm and develop patient-centered risk mitigation and care strategies.

Screening: Assessing Patient Risk of Opioid-Related Harms

Individual risk of opioid misuse and abuse can be tied to a variety of psychological, social, physical, and genetic factors.⁶⁵ In current practice, screening patients undergoing opioid therapy can include assessing comorbid substance use or aberrant drug-related behaviors, risk factor stratification, and use of screening and risk assessment tools.⁶⁶ Patients with concurrent SUD and/or mental health disorders are

especially at risk of misusing prescription opioids, developing OUDs, and overdosing.⁶⁷ Additional patient-related risk factors for OUDs include adolescence⁶⁸ and depression,⁶⁹ while patient-related risk factors for accidental overdose include advanced age,⁷⁰ depression, sleep disorders,⁷¹ renal/hepatic impairment,⁷² or history of overdose.^{73,74} Multiple provider visits, which can indicate possible “doctor shopping,” are also associated with adverse events.⁷⁵ A retrospective study published by Geisinger Health System (GHS) using data from EMRs of patients with an opioid-related overdose identified a number of common predictors of adverse events, including frequent and high-cost health service use, as well as concurrent chronic disease, mental disorders, and use of psychotropic medications.⁷⁶

To assist providers with systemically recognizing these risks, there are an assortment of screening and risk assessment tools currently used by providers to identify patients at risk of opioid-related harm. These screening tools are generally used in clinical settings for three purposes: 1) to assess risks for patients who are being considered for long-term opioid therapy; 2) to screen for misuse once opioid treatments have begun; and 3) to screen for substance use not limited to opioid misuse. Factors influencing provider utilization of risk assessment tools include ease of administration and disruption to the existing clinical workflow.

Table 2: Examples of Screening and Risk Assessment Tools Currently Used by Providers

<i>Examples of Risk Assessment Tools (Adapted from the Collaborative for REMS Education (CO*RE))⁷⁷</i>		
<i>Tool</i>	<i>Number of Items</i>	<i>Administered by</i>
For patients who are being considered for long-term opioid therapy:		
Opioid Risk Tool (ORT)	5	Patient
Screeener & Opioid Assessment for Patients with Pain (SOAPP®)	24, 14, 5	Patient
Diagnosis, Intractability, Risk, & Efficacy (DIRE)	7	Clinician
For characterizing misuse once opioid treatments begin:		
Pain Medication Questionnaire (PMQ)	26	Patient
Current Opioid Misuse Measure (COMM)	17	Patient
Prescription Drug Use Questionnaire (PDUQ)	40	Clinician
Clinical Opiate Withdrawal Scale (COWS)	11	Clinician
Tools not specific to pain populations:		
Cut Down, Annoyed, Guilty, Eye-Opener Tool, Adjusted to Include Drugs (CAGE-AID)	4	Clinician
Relax, Alone, Friends, Family, Trouble (RAFFT)	5	Patient

Despite current knowledge of medication and patient risk factors associated with an increased risk of adverse events, no single test or instrument has been shown to accurately predict risk at the patient level.⁷⁸ Furthermore, clinical discretion remains an essential component to reducing misuse and diversion, and providers must assess a range of external information, including patient drug utilization, drug screens, and information provided by the patient or family members.⁷⁹ As health system tools provide avenues of access to increasing levels of real-time patient data, presenting and analyzing information in meaningful ways that supports improved decision-making will be a critical challenge.

Monitoring: Supporting Provider Decision-Making with PDMP Data

PDMPs are one of the primary tools used by providers, pharmacists, and public health entities to improve safe prescribing. PDMPs are state-run electronic databases that can provide critical information to providers about a patient’s history of controlled substance use and prescriptions.⁸⁰ PDMPs are also used, to varying degrees in different states and dependent on state laws, to provide health authorities and law enforcement with real-time information about prescriber and patient behaviors to inform policy responses.⁸¹ States differ in their approaches to PDMP management, with variation in structures and

authorities, as well as disparate requirements for accessing or reporting information, timeliness of data, interoperability, and other factors. Although provider awareness of state PDMPs is generally high, nationally only 53 percent of all physicians surveyed in 2014 reported using their state PDMP.⁸² A 2017 study conducted using Florida's PDMP surveyed 88 providers out of which 21 percent reported rarely using the state's PDMP, more than half (51 percent) reported using the state's PDMP when suspicious of a patient's potential misuse of opioids, and only 3 percent used the PDMP each time opioids were prescribed.⁸³ In general, providers have cited a number of barriers to utilization, including PDMP accessibility, disruption to clinical workflow, and timeliness of information.⁸⁴

Prescription Drug Monitoring Best Practices

A joint report by the Heller School for Social Policy and Management at Brandeis University and the Pew Charitable Trusts identified eight best practices for increasing provider utilization of PDMPs:⁸⁵

- **Prescriber use mandates** such as requiring prescribers to access the PDMP before prescribing a controlled substance
- **Delegation** allowing provider staff to access the PDMP on behalf of the prescriber
- **Unsolicited reports** to providers, dispensers, regulators, or law enforcement regarding potential misuse or unsafe prescribing activity
- **Improved data timeliness** to allow real-time access to prescribing data
- **Streamlined enrollment**, including simplified processes or automatic registration
- **Educational activities** and prescriber training on how to use PDMP data
- **HIT integration** combining PDMP and clinical data into EMRs
- **Enhanced user interfaces** that provide PDMP data in understandable formats

Evidence regarding the impact of PDMPs is mixed, with studies conducted during the early implementation of state PDMPs showing either no impact⁸⁶ or modest impact⁸⁷ on overall dispensing of opioids or associated overdose deaths. A recently published study showed that the implementation of a state PDMP was associated with a reduction in opioid-related overdose deaths, but notes that more robust programs, such as those with increased timeliness of reporting, saw greater reductions in overdose deaths.⁸⁸ The study did not identify an association between mandatory PDMP use and reductions in overdose deaths. However, a separate study of several states adopting mandatory use requirements (Kentucky, New York, Tennessee, and Ohio), reported substantial increases in PDMP queries and reductions in opioid prescribing, with most states reporting decreases in suspected "doctor shopping" (as

determined by multiple provider episodes and other criteria set by the state).⁸⁹ As states continue to develop and improve PDMPs, many have sought to expand the accessibility and functionality of PDMPs for providers. Currently, 30 states have passed laws requiring prescribers to register with PDMPs, 38 require enrollment by the pharmacist,⁹⁰ and 24 states require prescribers to check the databases under certain circumstances.⁹¹

In support of improved PDMP capacity to support provider decision-making, Brandeis University's PDMP Training and Technical Assistance Center (TTAC) released a checklist of best practices that can help measure state-level implementation of key recommendations. Of the 51 PDMPs invited to complete the TTAC assessment in 2016, average adoption of practices across categories was 50 percent and varied widely within and across categories. Strategies such as integration within EMRs, health information exchanges (HIEs), pharmacy dispensing systems, electronic prescribing, and prescriber "report cards" were described as having significant potential to influence prescribing behavior but were not widely adopted by states.⁹²

Present-day challenges to better utilization of PDMPs include interoperability and provider workflow integration. Until recently, PDMP utilization by providers had often been optional, with PDMP data generally accessed outside the clinical workflow as an added, time-intensive element. Barriers reported by providers include a lack of usability and delayed access to data. To address the issue of usability and

workflow, multiple entities are developing HIT solutions to automatically integrate PDMP data with patient EMRs, providing better clinical decision-making support at the point-of-care. Leveraging Health Information Exchanges (HIEs) also can better facilitate scalability and accessibility for health systems. On a state level, for example, Nebraska automatically connects emergency department EMRs with the PDMP housed within the Nebraska HIE through the use of single sign-on capabilities for automated authentication, eliminating the need for duplicative data entry.⁹³

Integration of PDMPs and Other Provider Support Tools into EMR Systems

As data sources and possibilities for meaningful integration continue to mature, health system stakeholders are increasingly developing EMR-integrated tools meant to analyze prescribing data from a variety of sources into decision-making support tools for prescribers. Such tools are intended to leverage multiple sources of prescribing data (e.g., electronic health or PDMP data) that might otherwise be difficult to interpret and translate data into actionable information regarding a patient’s risk of adverse events. Simpler decision-making support tools might include a safety alert delivered to a provider within an EMR indicating that a patient has exceeded a certain number of concurrent prescribers or that a drug may be contraindicated for a specific population. For example, providers reported that some EMR systems were adapted to trigger alerts warning against codeine pain and cough medicines and tramadol pain medicines for pediatric populations following the FDA’s August 2017 announced restrictions for the use of such drugs in children under twelve.⁹⁴ More complex tools may rely on algorithms or predictive analytics to quantify risk into “patient risk scores” alerting providers to potential risks for adverse events. Although specific algorithms are often proprietary and may not be externally validated, common risk assessment criteria often include known medication-related risks (e.g., high daily dose, co-prescribing), patient risk factors (e.g., history of substance abuse, mental illness), and patient behaviors (e.g., multiple prescribers/pharmacists, multiple prescriptions). Risk scores may also be linked to other data sets such as emergency department utilization and legal records for opioid-related arrests and convictions, although such criteria have not been proven to be evidence-based.

Current examples of tools that are currently being adopted and tested within care delivery systems include Appriss Health’s NarxCare, a platform that uses data from PDMPs and other available data sources to identify patients who may be at heightened risk for misuse or other adverse events. Factors influencing risk scores include numbers of prescribers and dispensing pharmacies, total MME, and concurrent prescriptions.⁹⁵ Another example of a risk-quantifying provider support tool is the Medication Decision Support Suite (MeDSS), which applies predictive analytics to health system data in order to detect potential abuse and support prescriber decision-making. The MeDSS tool uses a stop light-type color-coding risk assessment based on daily MME, co-prescriptions, early refills, number of prescribers, and other factors.⁹⁶ Other data-supported risk assessment and monitoring tools are being developed for use in pharmacy settings – the National Council for Prescription Drug Programs (NCPDP) is currently developing a national patient safety system to automatically identify “red flags” and other safety issues for pharmacists. The system is intended to augment existing PDMP programs by providing real-time alerts based on prescribing histories for pharmacists that might not otherwise check the PDMP due time and workflow issues.⁹⁷ Although these risk assessment tools and others are in active use in a variety of settings—the Ohio Automated Rx Reporting System (OARSS), for example, announced that it will provide statewide access to NarxCare to prescribers and pharmacists⁹⁸—many predictive risk tools are in the early stages of development and implementation, with often limited or self-reported results. As tools continue to proliferate, critical evaluations are needed to validate the risk assessment capabilities of such tools and assess their impact on patient care.

Risk Mitigation Strategies for Providers

The CDC Guideline offers recommendations on initiating opioid therapy, opioid selection and duration, as well as monitoring and screening strategies to identify patient risk. Once a provider identifies potential misuse or an unfavorable risk-benefit balance, the CDC recommends a number of risk mitigation strategies to reduce the likelihood of adverse events and improve treatment. Across the spectrum of care delivery settings, health systems and provider associations have adopted a variety of strategies to help mitigate patient risk, including:

- **Monitoring using PDMP and UDT:** Regularly checking the PDMP and periodic UDT are complimentary strategies recommended by the CDC to monitor illicit drug use or the actual use of prescribed opioids as well as detection of other non-prescribed medications and potentially dangerous interactions of controlled substances with prescription opioids.
- **Opioid treatment agreements (OTAs) or patient contracts:** OTAs are considered formal agreements between a prescriber and a patient establishing expectations for continued opioid therapy. Although studies of treatment agreements found significant variation in content of OTAs, common elements include dose and refill frequency, risks and benefits of therapy, expectations, prohibited behaviors, and grounds for termination of the agreement.⁹⁹ While there is no single validated OTA, the NIH, American Academy of Family Physicians, and others offer similar patient agreements for provider usage.¹⁰⁰
- **Opioid tapering:** Tapering is intended to gradually reduce opioid dosage (generally no more than 10 percent per week) with the goal of maximizing pain treatment and minimizing opioid withdrawal symptoms. To assist with implementation in clinical practice, the CDC has created a “Pocket Guide: Tapering Opioids for Chronic Pain.”¹⁰¹
- **Referral to pain specialists or substance abuse treatment:** Coordination and referral to specialists for pain management needs or SUD treatment are strategies for managing patients with complex needs, although barriers to access remain.
- **Co-prescribing of Naloxone:** Naloxone, an opioid overdose reversal medication, can be co-prescribed along with opioids and has been recommended by both the CDC and the AMA for patients at elevated risk for overdose.¹⁰²

Discussion: Quantifying Patient Risk

Policymakers, health systems, payers, and PBMs are seeking to leverage data into HIT-enabled tools to identify aberrant drug behavior and patients with an elevated risk of opioid-related harms. These tools may assist with identifying and monitoring individual patients in need of interventions such as dose titration, case management, or referral for treatment. As tools continue to proliferate, additional data are needed to assess the relative impact of such tools on prescribing behavior and pain management, as well as how these tools can be better leveraged to aid in identifying appropriate courses of treatment. Research is actively being conducted on genetic screening that may provide additional information on a patient’s risk of addiction, but such tools are far from being implemented¹⁰³ and will require ongoing consideration of ethical issues (e.g., protecting patients from discrimination). During the course of stakeholder interviews, providers generally agreed that streamlined access to real-time patient data relating to risk factors and opioid utilization is beneficial to making an informed risk-benefit assessment and continued patient monitoring. Still, there was considerably more skepticism expressed among providers on the current state of the evidence or the concept that such tools could reliably quantify patient risk. In cautioning against an overreliance on monitoring and risk-assessment tools or drawing conclusions that any patient or population could be free of risk, providers and addiction experts noted that such strategies can only be one component of a treatment plan that should also include regular

monitoring and risk-benefit assessment. Likewise, better identification of potential aberrant behavior must also be accompanied by complementary strategies to link patients to quality SUD treatment.

Health System Strategies to Change Prescriber Behavior and Improve Patient Care

The previous sections detailed some of the ways in which health delivery systems are leveraging prescribing guidelines and EMR data to give prescribers access to decision-making tools that will assist in reducing the risks of opioid therapy. In tandem, health systems are also working to develop systemic approaches to mitigating risks while also improving system capacity to manage patient care. Some of these efforts include identifying prescribing behavior associated with increased harms, implementing systemic prescribing controls, developing interventions to change prescriber behavior, and improving system capacity to better manage pain and behavioral health.

Identification of and Intervention for High-Risk Prescribing in Health System Settings

Many health systems and states have developed strategies to identify and intervene in prescribing behaviors posing a potential risk to patients. According to interviews and publicly available reports, prescribing limits recommended by the CDC have been highly influential in establishing criteria for possible unsafe prescribing behavior. For example, health systems may seek to identify providers routinely exceeding recommended prescribing guidelines (e.g., a percentage of prescriptions exceeding 90 MME), prescribing potentially dangerous combinations of drugs, or prescribing in high quantities relative to peers. Additional data contained within EMRs and state PDMPs—including providers with a high proportion of patients suspected of doctor shopping, a high number of patients traveling long distances, or prescriptions paid for in cash—are considered indicative of possible criminal activity.¹⁰⁴ Depending on the setting, aberrant prescribing may trigger a variety of enforcement mechanisms ranging from outreach and education, administrative controls on prescribing, or referrals to state licensing boards or law enforcement for possible criminal activity.

Beyond identifying fraud or criminal activity, many prescriber intervention efforts at the health system level are designed to bring providers in line with recommended prescribing norms. Although it is established that prescribing levels vary substantially across the country,¹⁰⁵ recent data show high variation within medical specialties, even for prescribers treating the same patients in the same geographic region.¹⁰⁶ In one study conducted within an emergency room setting, providers identified as “high prescribers” were over 300 percent more likely to prescribe opioids than low-volume prescribers in the same hospital.¹⁰⁷ Thus, many behavioral health interventions seek to provide prescribers better real-time information on their practice relative to peers in an effort to “nudge” behavior toward preferred prescribing patterns. One tool for states and health systems has been an increased use of unsolicited PDMP reports, which can alert prescribers to either individual patient risks or overall high volume prescribing relative to peers within the state. Many states have also established procedures to provide real-time information to prescribers meant to inform prescribing practices and communicate best practices. For example, Arizona issues prescriber report cards rating prescribers relative to local averages for the past year, while a number of states, such as Tennessee, Massachusetts, and New York, proactively contact “high-risk prescribers” to urge enrollment in the PDMP and provide additional education.¹⁰⁸

Early evidence on these behavioral health approaches has been promising in terms of a general reduction in levels of opioid prescribing, although few studies have actually assessed whether such

Models for Integrated Health System Approaches

Kaiser Permanente Southern California¹⁰⁹

A retrospective study of Kaiser Permanente Southern California's comprehensive initiative to improve safe and appropriate prescribing showed reductions in all tracked outcomes, including reductions in high doses (30%), combination prescribing of benzodiazepines and carisoprodol (90%), ER/LA opioids (72%), and brand name opioid-acetaminophen products (95%). Kaiser's approach combined prescribing and dispensing policies, monitoring, clinical coordination, and follow up processes. Although long-term outcomes such as pain management or function or opioid-related adverse events were not evaluated, such outcomes are slated for further study.

Veterans Health Administration (VHA) Opioid Safety Initiative (OSI)¹¹⁰

The VHA's Opioid Safety Initiative is a coordinated response launched by the Veteran's Health Administration to reduce opioid prescribing associated with adverse outcomes. An evaluation of the initiative in select VHA facilities between 2012 and 2014 showed decreases in high-risk prescribing in five areas: (1) the overall trend of high-dosage prescribing; (2) co-prescribing of benzodiazepines; (3) patients per month receiving opioids greater than 100 MME; (4) patients per month receiving greater than 200 MME; and (5) outpatient prescribing. Components of the OSI included a dashboard tool to audit real-time prescribing information relative to other prescribers and identifying a clinical leader to implement system changes.

prescribing has led to more appropriate prescribing or reduced harms. In one study of providers within a managed care organization, alerts to prescribers regarding member opioid utilization resulted in reductions in the number of prescribers, dispensing pharmacies, and filled prescriptions.¹¹¹ However, a recent evaluation of a prescribing intervention enforced by the Massachusetts Department of Public Health demonstrates the limitations of these kinds of interventions. The evaluation determined that confidential reports to controlled substance prescribers (comparing mean and median rates to clinicians in the same specialty) resulted in no evidence of reduced opioid prescribing rates compared to other states, and also found no reductions in prescribing among the highest prescribers.¹¹² The study identified factors within the intervention that might have contributed to its lack of impact—including potential flaws in communication strategies or in the selection of information presented to prescribers—but highlights the challenges associated with rapidly identifying, implementing, and evaluating interventions in the midst of an evolving crisis.

Prescriber Education and Academic Detailing

Prescriber education, including Continuing Education (CE) courses made available under the REMS program through a number of CE provider organizations, are a core component of health system safe prescribing strategies. Building on the need for improved provider

education, academic detailing for opioid prescribers has emerged as an innovative strategy to drive behavioral change. Influenced by the promotional tactics used by pharmaceutical companies, academic detailing increases provider awareness and education through direct educational outreach to prescribers on optimal medication use and best practices.

Academic detailing for opioids has been established by the Veterans Health Administration (VHA), Kaiser Permanente, and a number of other large healthcare systems,¹¹³ and has been found to change self-reported clinical behavior.¹¹⁴ In one pilot study of a detailing campaign, the New York City Department of Health and Mental Hygiene conducted a number of visits to healthcare providers in Staten Island, providing them with one-on-one counseling and a number of resources including judicious opioid prescribing guidelines, borough-specific data on prescribing patterns, an online MME calculator, and patient information material. Results from the campaign showed improvements in provider knowledge of safe prescribing practices and also coincided with a drop in high-dose prescribing relative to other city boroughs. Although the specific impact of the public health detailing intervention is difficult to separate

from other concurrent opioid prescribing initiatives, New York City’s experience suggests that academic detailing may be a promising strategy for future interventions.¹¹⁵

Passive Interventions in Electronic Health Systems

Consistent with other injury prevention best practices, a number of health systems are actively examining implementation of passive interventions within clinical workflow to reduce prescribing. Such interventions rely on changing default processes with the intention of “automating” desired behaviors instead of specifically seeking to actively drive behavior change. During interviews, numerous providers noted that some degree of overprescribing was often generated by EMR default settings in excess of clinically indicated dosage or duration. In a recent study of patients undergoing seven different surgical procedures, 67 percent to 92 percent of patients reported unused opioids, suggesting that additional work may be needed to develop opioid prescribing guidelines for specific therapeutic areas or procedures.¹¹⁷ Other providers raised a lack of consistency or consensus in opioid conversion methods used to calculate MME as a barrier to consistent guideline implementation. As such, relatively simple HIT tools, such as a universally-recognized MME calculator or aligning EMR default options with clinical guidelines, have the potential to shift provider behavior. A number of health systems have moved to reduce prescribing through altered EMR prescribing defaults. In August 2017, Intermountain Health announced changes to its electronic health record system designed to steer providers toward fewer prescriptions through EMR prompts and default order sets.¹¹⁸ While current data on the impact of these sort of behavioral health interventions on opioid prescribing or patient safety is limited, a recently published research brief at the University of Pennsylvania found that changing the default prescribing option in the EMR from manual entry to a ten tablet default may alter physician prescribing patterns and “nudge” lower prescriptions of opioids.¹¹⁹

Discussion: Improving Coordinated Patient Care Approaches

Health systems have employed a range of systemic strategies to identify outlying prescriber practices and encourage positive behavior change. Although assessment of many initial efforts has been limited to documenting changes in prescribing behavior, a number of health system leaders interviewed for this analysis confirmed that plans for evaluating patient outcomes are underway. To the extent that best practices are identifiable, health system leaders emphasized the need to support coordinated patient care as well as access to quality SUD and pain treatment.

Improving strategies for screening, diagnosis, and access to evidence-based SUD treatment is a priority for health system leaders, although substantial barriers to access remain for the estimated 20 million people in the United States struggling with SUDs.¹²⁰ One tool used within health systems is Screening, Brief Intervention, and Referral to Treatment (SBIRT), an approach that has shown by a number of studies to be effective in certain conditions for addressing the harms of substance use and misuse.¹²¹ For patients determined to be at a higher

National Academies of Medicine: Clinician Opportunities to Counter the Epidemic¹¹⁶

- Use a team-based approach to providing care.
- Emphasize that substance use disorders are a treatable chronic neurological condition, requiring a sustained, multifaceted approach to disease management.
- Use precautionary prescribing that takes into account individual and social risk factors.
- Provide counseling to patients and caregivers on proper disposal of unused opioids and secure storage.
- Use the PDMP registry to identify unsafe drug use behaviors.
- Provide systematic follow-up by care team to monitor for signs of OUD or misuse.
- Co-prescribe naloxone to patients who are at an increased risk of overdose.
- Facilitate the use of medication-assisted therapy for OUD (e.g., buprenorphine) through provider training.
- Provide referrals for treatment assistance and follow-up with a care team.
- Engage with the community to enhance availability of vital substance use disorder treatment resources.

risk for harm, referral to treatment provides access to additional specialty care. Although recent research has cast some doubt on the effectiveness of Brief Negotiated Intervention (BNI) in primary care settings for illicit drug use,¹²² others note that this data indicates that easily accessible long-term treatment services and further developed primary care strategies may be needed.¹²³ A recent study of an approach referred to as STIR (Screening, Treatment Initiation, and Referral) for opioid-dependent individuals showed promising results and provided a potential intervention model, with 78 percent of patients maintaining engagement in addiction treatment at 30 days and decreased self-reported drug use compared to SBIRT or referral groups.¹²⁴

Expanded access to MAT, including expansion of evidence-based treatments like buprenorphine in primary care settings, is also a key component of comprehensive opioid strategies announced by HHS and CMS.¹²⁵ However, access and availability to such services continues to be a challenge. Beyond barriers to coverage of evidence-based MAT (covered in subsequent sections), availability and willingness of providers to offer MAT services has severely constrained access to substance use disorder treatment. As of December 2017, fewer than 45,000 providers have applied for a federal waiver permitting them to prescribe buprenorphine,¹²⁶ although far fewer exercise this authority. One small study of providers in Vermont showed that, of 133 waived providers, 29 percent reported having only a single buprenorphine patient while 48 percent reported treating five or fewer patients.¹²⁷ An additional study found that 60 percent of rural counties lacked a single physician authorized to prescribe buprenorphine,¹²⁸ demonstrating current barriers to access for patients, particularly in rural and underserved areas.

Payer and PBM Strategies to Manage Opioid Access and Improve Patient Safety

Faced with the mounting consequences of opioid misuse, OUD, and overdose, healthcare payers have begun to make substantial commitments toward stemming inappropriate prescribing of opioids. Both payers and PBMs have set public goals for reducing opioid prescribing. For example, among commercial insurers, Cigna has set a goal of reducing opioid prescribing by 25 percent by 2019¹²⁹ and Aetna has set a goal of reducing inappropriate prescribing by 50 percent by 2022.¹³⁰ Implementation of prescribing limits, consistent with CDC Guideline recommendations, has been an integral part of these strategies, many of which are implemented through formulary controls and utilization management programs. However, payers and PBMs also leverage relationships with provider networks and patients to advance safe prescribing principles. This section will examine key tools and strategies being utilized by healthcare payers and PBMs, as well as how these efforts are being advanced and evaluated.

Improving Identification of Inappropriate Prescribing Practices

Payers and PBMs benefit from rich sources of data—including prescription data and claims—that can contribute to identification of potentially unsafe prescribing, as well as misuse or fraud. Improving surveillance capabilities to monitor these activities has been key priorities of payer efforts to intervene and reduce aberrant drug use behaviors. Drug utilization review (DUR) programs are the principal tool used by both public and private PBMs to ensure that opioids are being prescribed safely within recommended guidelines. Prospective or concurrent DURs can screen opioid prescriptions against guideline-based prescribing criteria and enable safety alerts or edits at the point-of-sale. Retrospective DURs can analyze prescribing data to identify high-risk patients or prescribers in need of intervention, or to identify suspicious behavior indicative of fraud or abuse. Among other examples, CMS's National Benefit Integrity Medicare Drug Integrity Contractor (NBI MEDIC) is a tool used by Medicare to identify "trends, anomalies, and questionable physician and pharmacy practices."¹³¹ State Medicaid programs

and managed care organizations develop their own DUR processes and opioid utilization management controls, although both are required to report these activities to CMS, which compiles this information into the CMS Drug Utilization Review State Comparison/Summary Report.¹³² While most state Medicaid programs (and commercial payers) do not have access to state PDMPs, allowing access to such data can help inform utilization reviews by allowing the state to access information on transactions by Medicaid beneficiaries paid in cash. Two state Medicaid programs—Alaska and Mississippi—have expanded their DUR programs to include PDMP data.

As with implementation of prescribing guidelines generally, criteria used to identify inappropriate prescribing are variable across settings. Common examples of criteria triggering interventions by payers may include exceeding thresholds established within prescribing guidelines (for example, exceeding a certain MME), or patient behaviors such as multiple prescribers, pharmacies, or patterns of early refills. Patient utilization of multiple providers and pharmacies is often a trigger for patient management interventions, including PRR programs. Many commercial insurers and PBMs spoken to during the course of the review stated that DUR programs and prescribing limits were often (but not universally) aligned with the CDC Guideline, with specific parameters often influenced by provider preferences and system capacity. For example, CMS’s revised criteria for opioid analgesic overutilization in Medicare Part D outlines the dispensing of opioids exceeding 120 mg for 90 consecutive days with more than three prescribers and three pharmacies (excluding cancer or palliative care).¹³³ And as mentioned previously, the complexity and often-proprietary nature of many commercial risk-assessment algorithms makes them difficult to validate.

Benefit Design and Formulary Controls

Pharmacy decisions and formulary design, undertaken jointly between plan sponsors and PBMs managing pharmacy benefits for health plans and large employers, play a key role in reducing access to potentially dangerous drugs and promoting a shift towards alternatives that might be safer or less costly. While state Medicaid programs do not have formularies and are required to pay for medically necessary outpatient drugs, removing drugs from Preferred Drug Lists (PDLs) can serve as a management tool by requiring providers to obtain approval prior to prescribing. CMS has recommended removal of methadone from PDLs due to overdose risks, and commercial insurers have taken steps to remove a number of commonly abused drugs from formularies.

In addition to reducing access to potentially harmful drugs, coverage decisions and formulary design are also vital to ensuring access to naloxone, MAT for OUDs, and non-opioid pain treatments. As payers have taken steps to limit opioid prescribing, many experts have expressed the need to remove current coverage barriers to non-opioid therapies with a lower risk profile. Non-opioid therapies may have a lower risk of misuse or overdose, but are often more expensive than generic opioids. As a result, many stakeholders noted that non-pharmacologic treatments effective for pain, including physical therapy, massage, acupuncture, and others, are often limited by coverage policies or lack of availability. Many public and private insurers made reference to efforts to expand non-opioid treatments, but also raised barriers related to large employers’ coverage decisions, availability of specialty providers or services, and patient resistance to additional co-pays for continuing services.

Increased access to naloxone is also a priority that can be advanced using formulary tools. To help states reduce accidental overdose and expand access to naloxone, the *CMS Informational Bulletin on Best*

Practices for Addressing Prescription Opioid Overdoses, Misuse, and Addiction recommends inclusion of naloxone in Medicaid PDLs. The report notes that states have employed a range of coverage policies for

Utilization Management Controls

When combined with formulary controls, utilization management controls have also been increasingly deployed to limit unsafe prescribing at the point-of-sale or to help manage continued patient care. Strategies such as prescribing limits, clinical criteria, prior authorization review, and step therapy can be used to limit potentially harmful prescribing consistent with established guidelines, while PRR Programs are frequently used to manage patients suspected of misuse or abuse. Previously considered opt-in programs, shifts are being made to make such utilization management programs automatic defaults.

Prescribing Limits

PBMs have increasingly used prescribing limits (also referred to as “quantity limits”) on dosage or duration of therapy—as a means of reducing overprescribing. In accordance with the CDC Guideline, many payers and PBMs have instituted prescribing limits for acute pain to seven days for patients who have not previously used opioids, as well as limiting overall dosage to 90 MME per day for the treatment of non-cancer pain. Quantity limits are also a strategy recommended by CMS for state Medicaid programs, although CMS notes that many states already apply limits for opioids prescriptions.

Both public and commercial payers emphasized the importance of the CDC Guideline as a resource for provider education as well as a foundation for safe prescribing guidelines enforced through utilization management controls. To support further industry adoption of the CDC Guideline and to begin developing benchmarks for measuring performance, America’s Health Insurance Plans (AHIP) has announced its Safe, Transparent Opioid Prescribing (STOP) Initiative. As a preliminary step, AHIP has developed a methodology to measure adoption of six CDC recommendations by prescribers, including the ratio of IR to ER/LA opioid prescriptions, the number of concurrent benzodiazepine prescriptions, the percentage of prescriptions with UDT

PBM Models for Integrated Approaches

Express Scripts, CVS Caremark, and OptumRx are the three largest PBMs covering over 238,000,000 million patients. In recent months, all three large PBMs have launched multi-faceted approaches to reducing opioid-related harms.

Express Scripts

In June 2017, Express Scripts announced an Advanced Opioid Management strategy to address over-prescribing and progression to overuse and abuse through prescriber tools, enhanced prior authorization, patient education and outreach, pharmacy intervention, seven day initial prescribing limits, and advanced analytics. A year-long pilot study of patients new to opioid therapy published by Express Scripts reported a 38 percent reduction in hospitalizations and a 40 percent reduction in emergency room visits.¹³⁴

CVS Caremark

In September 2017, CVS Caremark announced that it would be aligning its opioid utilization management program with the CDC Guideline, limiting initial acute prescriptions to seven days, limiting daily dosages of opioids, and requiring prior authorization for ER/LA opioids. CVS will also be strengthening counseling and education for patients on opioid-related risks and safe disposal of unused opioids.¹³⁵

OptumRx

In August 2017, OptumRx announced preliminary results from its Opioid Risk Management program aimed at reducing opioid use and prescribing. The program focused on prevention and education, minimizing early exposure and reducing inappropriate supply consistent with the CDC Guideline, intervening in high-risk prescribing, and supporting treatment guidelines. Based on its initial launch with 400 clients, OptumRx announced an 82 percent decrease of prescriptions above the CDC Guideline recommended dose, a 65 percent decrease in prescriptions written above a seven-day supply, a 68 percent decrease in prescriptions over 90 MME for current chronic opioid users, and a 14 percent reduction in average dose of all opioid prescriptions.¹³⁶

screens, and the dosage and duration of therapy for acute and chronic pain in excess of recommended guidelines.¹³⁷

Clinical Criteria, Prior Authorization, and Step Therapy

Clinical criteria, prior authorization, and step therapy are also formulary tools used to manage access to opioid therapies. Medicaid programs or PBMs can require that certain criteria be met or that prior authorization be obtained before claims will be paid for certain opioid formulations or dosages. Within state Medicaid programs and commercial plans, prior authorization is often required for ER/LA opioid prescriptions for opioid-naïve patients, dosage exceeding 90 MME per day, and for specific formulations that may be associated with a higher risk of overdose, such as fentanyl patches. Blue Cross Blue Shield of Rhode Island reported that implementing a prior authorization requirement on ER/LA opioids resulted in a 25 percent reduction in ER/LA prescriptions in 2014.¹³⁸ Clinical criteria may require certain diagnoses or claims information (such as diagnoses and treatment related to cancer) before permitting higher MME doses than recommended under current prescribing guidelines. Similarly, step therapy may require that a prescriber establish that a patient has already tried a preferred therapy. These restrictions have not necessarily been applied as broadly as they could be: an analysis of formulary coverage restrictions in Medicare Part D between 2006 and 2015 found that formularies are increasingly using quantity limits and prior authorization requirements to limit allowable daily dosing, but that unrestricted coverage continued for prescribing practices described by the authors as associated with a higher risk of overdose.¹³⁹

Patient Review and Restriction Programs

PRR (or “lock-in”) programs are strategies used by both public and commercial programs to manage overutilization of controlled substances and medical services. When payers identify patients at risk of misuse or fraud—often based on criteria such as filling multiple prescriptions from multiple prescribers—patients are placed in a PRR management program limiting payment for prescriptions to one provider and one pharmacy. In a survey of 37 PRR programs within state Medicaid programs, the Pew Charitable Trusts found high variability in enrollment criteria, with three-quarters of states using five or more criteria such as multiple prescribers, multiple pharmacies, filling a certain number of prescriptions, or a high number of emergency room visits.¹⁴⁰

PRR programs are routinely utilized by commercial payers, and are operational in most state Medicaid programs. In addition, PRR programs have been authorized for Medicare Part D beneficiaries under the Comprehensive Addiction and Recovery Act (CARA) passed in July 2016.¹⁴¹ While PRR programs have demonstrated success in reducing access to controlled substances, evidence regarding their efficacy on decreasing misuse or improving patient outcomes is somewhat limited. In one assessment of a lock-in program operated by the North Carolina Medicaid program, researchers determined that North Carolina’s PRR program reduced the odds of PRR-enrolled individuals submitting a payment claim for opioid prescriptions to Medicaid by 84 percent, but could not assess the number of prescriptions filled with cash or opioids accessed illicitly.¹⁴² Another qualitative study examining a number of Medicaid programmatic evaluations observed that PRR programs often show favorable outcomes in reducing opioid prescription claims, medical services claims, and insurance benefit expenditures, suggesting success in reducing fraud and abuse. However, there is little evidence that PRR programs contribute to broader improvement of patient or public health outcomes.¹⁴³ A roundtable of experts convened by the Pew Charitable Trusts suggested a number of potential improvements for PRR effectiveness, including

linking PRR programs to state PDMPs to capture cash transactions, standardizing enrollment criteria, and better linking PRR participants to case management or treatment services.¹⁴⁴

Patient and Provider Engagement Strategies

Successful payer strategies employ a range of interventions beyond prescribing limits. Although formulary tools are one of the primary ways by which payers and PBMs attempt to limit opioid-related harms, public and private payers, along with PBMs, described efforts to leverage relationships with providers. These included prescriber and patient outreach and education efforts as well as tools to link patients to appropriate SUD treatment. As part of its Opioid Misuse Strategy, CMS supports promotion of prescribing guidelines and other prescriber education initiatives through the Quality Improvement Organization's (QIOs) Learning and Action Networks. The CMS Transforming Clinical Practice Initiative (TCPI) conducts outreach and disseminates best practices for providers.¹⁴⁷ Many commercial payers have also sought to conduct outreach strategies to provider networks. Cigna, for example, has asked participating providers to sign former U.S. Surgeon General Vivek Murthy's "Turn the Tide" pledge, making commitments to reduce opioid prescriptions, pursue alternative pain management methods, and screen and connect patients to evidence-based treatment options.¹⁴⁸ To address rising rates of prescribing, Aetna conducted targeted outreach to 1000 providers identified as "super prescribers" in the top one percent of opioid prescribers.¹⁴⁹

Other engagement strategies used by payers include direct patient outreach and education. In one instance of a direct patient intervention, a subset of patients identified as "high-risk" by Express Scripts received both an educational letter as well as a phone call from a specialist pharmacist. According to Express Scripts' self-published pilot study, patients receiving an intervention demonstrated a 19 percent reduction in number of days supplied after six months compared to patients who received no intervention.¹⁵⁰

Linking potentially at-risk patients to treatment resources and coordinated behavioral health management was also a key strategy used by payers. Insurers emphasized the role of coordinated care teams, investment in developing specialist networks, behavioral health crisis lines, and reducing formulary controls and co-pays on MAT as key strategies for improving patient care. Although serious parity and network barriers remain, a number of commercial providers have eliminated formulary restrictions for MAT medications, investing in provider networks and community-based strategies, or removing barriers to care. Blue Cross Blue Shield of

Models for Integrated Approaches for Commercial Insurers

Blue Cross Blue Shield Massachusetts (BCBS MA)

A 2016 CDC study found that BCBS MA had reduced the monthly rate of opioid prescriptions by fifteen percent and the number of members using opioids by up to nine percent as a result of its Prescription Pain Medication Safety Program.¹⁴⁵ Prescribing best practices implemented by this initiative included:

- Prior authorization for all new short-acting opioid prescriptions for more than 30 days
- Prior authorization for all new long-acting opioid prescriptions
- A treatment plan between prescribers and patients that considers non-opioid options
- A risk assessment for addiction signed by the patient
- An opioid agreement between the patient and prescriber outlining expected behavior of both parties

A follow-up report from the Blue Cross Blue Shield Association reported that 14 percent of Blue Cross Blue Shield members in Massachusetts filled an opioid prescription in 2015 compared to 21 percent nationally. While use of medication-assisted treatment significantly lagged behind OUD diagnoses, Massachusetts BCBSA members had the second highest rate of MAT utilization in the country.¹⁴⁶

Vermont, for example, eliminated co-pays for daily SUD treatment.¹⁵¹ By 2020, Aetna has pledged to increase the percentage of its members with OUD treated by MAT by 50 percent.¹⁵²

Discussion: Improving Evaluations of Payer Strategies

Many comprehensive payer and PBM strategies built on the CDC Guideline are in the infancy of their implementation, with self-reported evaluations of these efforts claiming initial reductions in overall or high-risk prescribing. As an example, Anthem announced in August 2017 that it had achieved its goal of reducing opioid prescribing by 30 percent two years earlier than anticipated.¹⁵³ However, industry-reported studies based on oft-proprietary information may have serious flaws or limitations. Moreover, in the course of interviews, numerous payers have acknowledged a lack of data on the impact of these interventions on outcomes beyond short-term prescribing measures, including cost-effectiveness or outcomes related to patient care. Rigorous and transparent peer-reviewed evaluations are needed to further assess the impact of safe prescribing strategies on patient safety and care. As provider organizations have voiced concerns about “one size fits all” approaches to reduce prescribing,¹⁵⁴ it is important to further assess how these efforts impact access for chronic pain patients or might contribute to rising rates of illicit opioid use.

Conclusions and Next Steps

Each year, prescription opioids are used to treat millions of patients suffering from acute or chronic pain. Patients exposed to opioids face dose-dependent risks of serious harm. Furthermore, evidence continues to emerge that an epidemic of untreated OUD is contributing to spiking rates of illicit opioid use and overdose. Stakeholders across the U.S. healthcare system have undertaken a concerted effort to reverse upward prescribing trends as well as practices associated with increased risk of opioid-related harms.

Although the specific tools utilized by healthcare stakeholders vary across (and within) policy, health system, and payer settings, a framework for understanding well-balanced approaches to supporting the safe use and appropriate prescribing of opioids includes: 1) establishing goals for safe and appropriate opioid prescribing and appropriate pain management; 2) enhancing provider tools for screening, monitoring, and mitigating risks of opioid therapies; 3) developing systems approaches for changing prescriber behavior; and 4) expanding patient access to coordinated pain management and SUD treatment. To this effect, **Figure 2** (Appendix B) demonstrates interventions and tools currently being adopted by U.S. health system stakeholders to support these goals. While this framework represents the range of available strategies and tools that are being used across diverse care settings, practical implementation varies. Despite widespread adoption of prescribing guidelines and other safe prescribing strategies, adoption of such interventions has not been well understood and is in need of further study.

Given the alarming increase in opioid-related morbidity and mortality, system-wide efforts to support safe and appropriate prescribing are an essential component of a comprehensive public health approach to mitigate the opioid epidemic. Policymakers, health system leaders, and payers have acted quickly to implement such strategies, leveraging prescribing guidelines and increasingly sophisticated HIT tools to support provider decision-making and systemic approaches to changing prescriber behavior. Although many safe prescribing strategies are relatively early in implementation, early evidence suggests that stakeholders have begun to reduce overall prescribing (as measured by total MME prescribed or overall number of opioid prescriptions) as well as limit some risky prescribing practices (such as co-prescribing

of opioids and benzodiazepines, “high” daily MME dosage, and use of ER/LA opioids in non-opioid tolerant patients).¹⁵⁵

Still, preliminary information to evaluate such strategies is often based on broad measures of utilization and prescribing habits rather than granular clinical data that might help assess “appropriateness” of prescribing or patient benefit. Moreover, these evaluations often lacked comparison groups. Even where comparisons were possible, evaluation of any one intervention can be challenging, due to potentially confounding effects from other efforts to curtail the opioid epidemic. Most importantly, relatively little evidence exists regarding how safe prescribing strategies affect downstream patient outcomes such as patient safety, avoidance of opioid-related harms, or pain management. Looking forward, some of these challenges may be addressed by building in evaluation efforts into strategy designs and implementation.

As advancements in research continue and information regarding safe prescribing strategies accumulates over time, there will be a continual need to refine this expanding evidence base to ensure that novel interventions are part of an overarching coordinated strategy that supports improved patient care and safety. Moving forward, leaders across the U.S. health system must learn to balance competing demands such as rapidly responding to an evolving public health crisis with the need to collect data, rigorously evaluate efforts, and developing best practices for future implementation. Stakeholders must also balance the need to reduce prescribing practices that helped lead to the current crisis while also preserving access to opioids as a part of appropriate pain management. Overall, strategies to support the safe use and appropriate prescribing of opioid analgesics are an essential component of a comprehensive public health approach to the opioid crisis, but one that must be met with commensurate effort within the U.S. health system to expand access to substance disorder treatment and overdose prevention.

Summary Points—Strategies to Support the Safe Use and Appropriate Prescribing of Prescription Opioids

1. In order to address the growing crisis of opioid misuse, addiction, and overdose, stakeholders have moved quickly to adopt prescribing guidelines and other safe prescribing strategies. Implementation of these strategies is highly variable due to unique needs, capacities, and considerations across settings.
2. The *CDC Guideline for Prescribing Opioids for Chronic Pain* has been highly influential in shaping safe prescribing strategies by policymakers, health systems, and payers. In particular, prescribing limits based on the CDC recommendations have been adopted in many acute and chronic care settings.
3. The landscape of evidence informing opioid-related risks is limited and still developing, with a more comprehensive evidence base needed to inform future recommendations.
4. HIT tools, including PDMPs and EMRs, can be leveraged to enable better quality, real-time information within provider workflows to help identify risk of harm and develop care strategies.
5. Early evidence suggests that safe prescribing strategies are contributing to overall reductions in opioid prescribing as well as reducing many prescribing behaviors associated with a higher risk of harm.
6. There is little evidence on the impact of safe prescribing strategies on downstream patient or public health outcomes, and concerns exist that efforts to reduce opioid prescribing will create unintended consequences and barriers to access for patients with legitimate treatment needs.
7. Future evaluations should assess the impact of safe prescribing strategies on patient safety, avoidance of opioid-related harms, and pain management.
8. Building evaluations into strategy design and implementation may allow for faster refinement and identification of best practices.
9. Safe prescribing strategies should avoid “one-size-fits-all” approaches and be balanced with improved multi-modal pain management and access to evidence-based SUD treatment.

APPENDIX A

An Overview of Opioid Prescription Guidelines by State

Data accessed from the Prescription Drug Abuse Policy System (PDAPS) (last updated July 2017)

State	Has the state adopted opioid prescription guidelines for acute and/or emergency care?	Through what means were guidelines adopted/implemented?					Are there opioid prescription limits for acute pain?	Do the guidelines recommend or require a lowest effective dose?	Are prescribers mandated to check PDMP for initial opioid prescription?*
		Statute	Regulation	Medical board guidelines	State department guidelines	Other			
Alabama	Yes		X					No	
Alaska	Yes		X	X				Yes	
Arizona	Yes				X		Recommend	Yes	
Arkansas	Yes		X					Yes	
California	Yes			X			Recommend	Yes	
Colorado	Yes			X	X		Required	No	
Connecticut	Yes	X		X			7 days' supply	Yes	
Delaware	Yes		X				7 days' supply	No	
District of Columbia	Yes		X					No mandate	
Florida	Yes		X					No mandate	
Georgia	Yes		X					No	
Hawaii	Yes	X		X				No mandate	
Idaho	No							No mandate	
Illinois	No							Yes [†]	
Indiana	No							Yes	
Iowa	Yes		X					No mandate	
Kansas	Yes		X		X			No mandate	
Kentucky	Yes		X	X			2 days' supply	No	
Louisiana	No							Yes	
Maine	Yes	X	X	X			7 days' supply	Yes	
Maryland	Yes	X					Required	Yes	
Massachusetts	Yes	X					7 days' supply	No	
Michigan	Yes			X				No mandate	

* **Supplemental information:** Pew Charitable Trust (last updated January 2018)

<http://www.pewtrusts.org/en/multimedia/data-visualizations/2018/when-are-prescribers-required-to-use-prescription-drug-monitoring-programs>

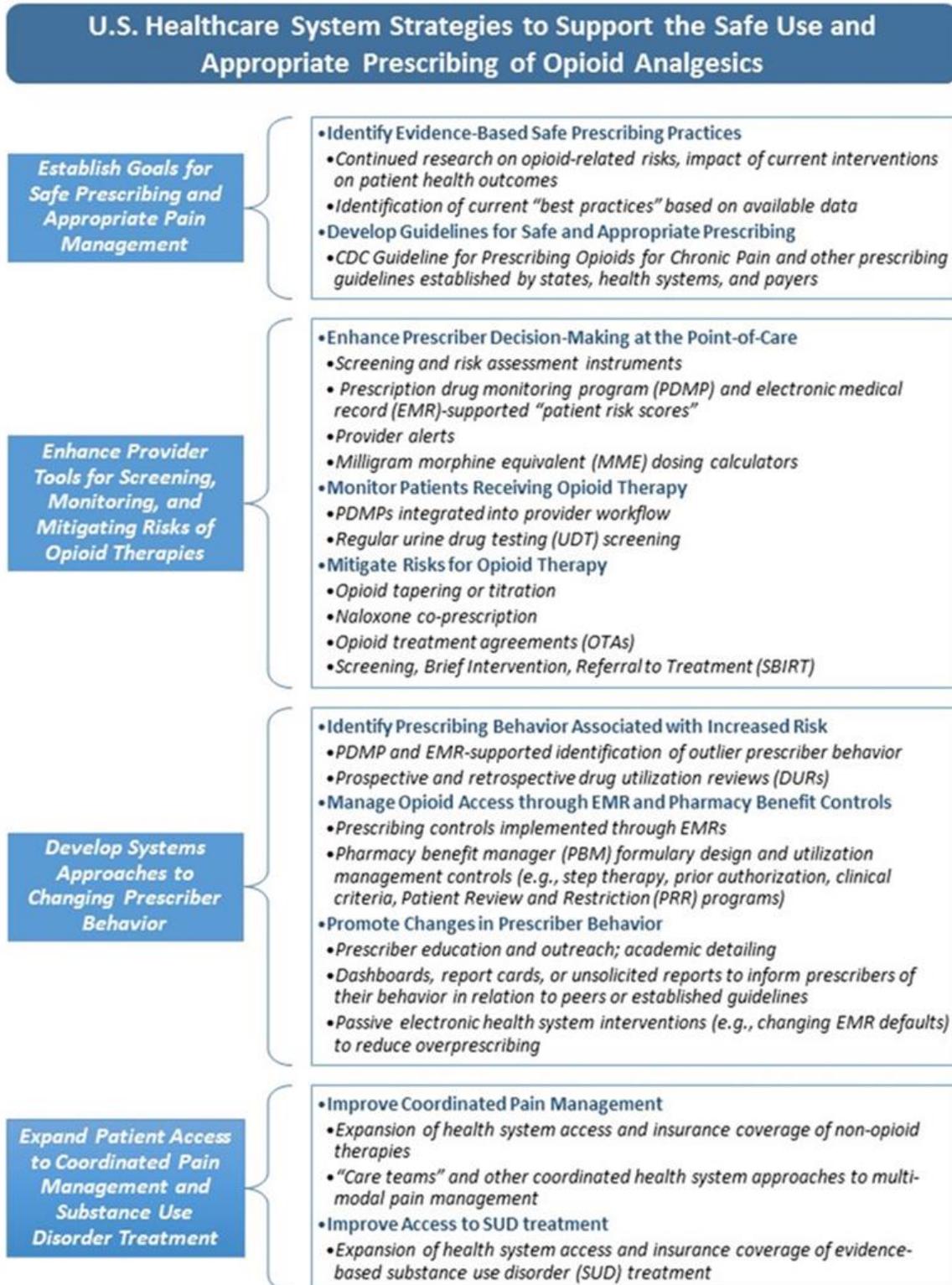
[†] **Supplemental information:** New law (effective January 1, 2018) <https://www.ilpmp.org/PDF/Newlaw.pdf>

Minnesota	Yes			X	X			Recommend	No
Mississippi	No								No
Missouri	Yes			X					No mandate
Montana	Yes			X					No mandate
Nebraska	Yes			X					No mandate
Nevada	Yes		X						Yes
New Hampshire	Yes		X					Recommend	Yes
New Jersey	Yes	X	X				5 days' supply	Required	No
New Mexico	Yes	X	X					Recommend	Yes
New York	Yes	X	X				7 days' supply		Yes
North Carolina	No						5 days' supply*		No
North Dakota	No								No
Ohio	Yes				X	X		Recommend	Yes
Oklahoma	Yes	X			X			Recommend	Yes
Oregon	Yes				X		7 days' supply	Recommend	No mandate
Pennsylvania	Yes	X	X		X				Yes
Rhode Island	Yes		X		X		Other		Yes
South Carolina	Yes			X					No
South Dakota	No								No mandate
Tennessee	No								Yes
Texas	No								Yes
Utah	Yes	X	X		X		7 days' supply	Recommend	No
Vermont	Yes		X				7 days' supply	Recommend	No
Virginia	Yes		X				7 days' supply	Required	No
Washington	Yes		X		X			Recommend	No
West Virginia	Yes			X					No
Wisconsin	Yes			X			5 days' supply	Recommend	Yes
Wyoming	Yes			X					No mandate

* **Supplemental information:** National Conference of State Legislature (NCSL) report (last updated August 2017)
http://www.ncsl.org/Portals/1/Documents/Health/prescribingOpioids_final01-web.pdf

APPENDIX B

Figure 2: Framework for U.S. Healthcare System Strategies to Support Safe and Appropriate Opioid Prescribing



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