COMMONWEALTH OF MASSACHUSETTS
HEALTH POLICY COMMISSION

OPIOID USE DISORDER IN MASSACHUSETTS

An Analysis of its Impact on the Health Care System, Availability of Pharmacologic Treatment, and Recommendations for Payment and Care Delivery Reform

September 2016

About the Health Policy Commission

The Health Policy Commission (HPC) is an independent state agency established through Chapter 224 of the Acts of 2012, the Commonwealth's landmark cost-containment law. The HPC, led by an 11-member board with diverse experience in health care, is charged with developing health policy to reduce overall cost growth while improving the quality of care, and monitoring the health care delivery and payment systems in Massachusetts. The HPC's mission is to advance a more transparent, accountable, and innovative health care system through independent policy leadership and investment programs. The HPC's goal is better health and better care at a lower cost across the Commonwealth.

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EXECUTIVE SUMMARY

This report, required by Chapter 258 of the Acts of 2014, *An act to increase opportunities for long-term substance abuse recovery,* presents new information and data on the state of the opioid epidemic in Massachusetts, its disproportionate impact on certain residents, communities, and hospitals, and the statewide availability of opioid use disorder treatment. The report further identifies strategies to enhance access to treatment and promote the development of innovative care delivery and payment models that focus on at-risk populations.

This report is informed by, and is presented as a complement to, the extensive and far-reaching efforts of many in the Commonwealth to address the opioid epidemic, including Governor Baker's Opioid Addiction Working Group (Appendix 1) and recent enactment of landmark, nation-leading laws, including:

- *Chapter 55 of the Acts of 2016: An act requiring certain reports for opiate overdoses,* which directs the Department of Public Health (DPH) to assess factors contributing to increasing overdose rates using a multitude of datasets; and
- *Chapter 52 of the Acts of 2016: An act relative to substance use, treatment, education and prevention,* which in part, directs the Health Policy Commission (HPC) to take further steps to address the impact of the opioid epidemic on the health care system.

The HPC is an independent state agency established by Chapter 224 of the Acts of 2012, *An act improving the quality of health care and reducing costs through increased transparency, efficiency and innovation.* The mission of the HPC is to monitor the reform of the health care delivery and payment systems in Massachusetts and develop innovative health policy to reduce overall cost growth while improving the quality of patient care. Critical to this work is the integration of behavioral health into the health care system (both at the primary care and acute levels), which the HPC promotes through its research agenda, certification programs, investments, and promotion of alternative payment models that support care delivery reform.

The opioid epidemic in Massachusetts has struck communities across the state at an increasingly rapid pace, causing widespread morbidity and mortality, reduced productivity, and increased poverty and incarceration rates. A multitude of public and private entities are allocating tremendous resources to combat this public health threat. No one solution exists: preventing and treating opioid use disorder requires a multi-pronged approach, encompassing coordinated efforts among local communities, courtrooms, police and fire departments, schools, and the health care system.

This report focuses on the epidemic's impact on the health care system, and is being released concurrently with the Department of Public Health's (DPH) report on factors contributing to both fatal and non-fatal overdoses. Together, these reports provide the state with in depth assessments of opioid use disorder and opioid misuse that results in any hospital utilization, as well as that which results in overdose, at which point patients are at greatest risk.

While this report focuses on the impact of opioid use disorder on the health care system only, it does not dismiss the tremendous importance of other necessary prongs of intervention. Rather, the HPC seeks to add value to the wide-ranging activities already in motion by identifying areas where the HPC's specific role to promote health care system transparency, accountability, and efficiency can be leveraged as part of the Commonwealth's efforts to combat opioid use disorder.

DATA FINDINGS

In order to better understand the impact of the opioid epidemic on the healthcare system, the HPC analyzed:

- the rate of opioid-related hospital utilization across the state (including both emergency department (ED) and inpatient discharges);
- the total volume of opioid-related discharges by hospital (including both ED and inpatient discharges);
- the total volume of neonatal abstinence syndrome (NAS) discharges by hospital; and
- the availability of outpatient pharmacologic treatment for opioid use disorder.

The major findings include:

- Between 2007 and 2014, all opioid-related hospital discharges increased by 84%; those coded as heroin-related increased by 201%.

- In 2014, residents living in the Berkshires, Fall River, Metro South, New Bedford and East Merrimack regions had the highest rates of opioid-related hospital discharges.[i]
- In 2014, Boston Medical Center, Good Samaritan Medical Center, and Mercy Medical Center had the highest volume of opioid-related hospital discharges across all hospitals in the Commonwealth.
- In 2014, MassHealth paid for 42% of opioid-related discharges and Medicare covered an additional 24%. Opioid-related hospital discharges were highest among males, young adults, and individuals from low-income communities.
- Opioid use disorder can be effectively treated with pharmacologic intervention combined with evidence-based behavioral therapy.[1] In the Commonwealth, these providers are heavily concentrated in the most densely populated areas of the state and the majority are clustered in eastern Massachusetts.
- Many patients who had an opioid-related hospital discharge in 2014 live more than five miles from the nearest pharmacologic treatment provider, particularly those residing in the least densely populated areas such as the Berkshires and the upper North Shore.

POLICY RECOMMENDATIONS

In light of these findings, as well as the HPC's experience with other behavioral health-related policy work and investments, this report makes targeted recommendations for the Commonwealth to:

1. support ongoing data collection and analysis of the opioid epidemic;
2. integrate pharmacologic treatment interventions into health care systems to improve access to opioid use disorder treatment and wrap-around supports, particularly in the primary care and ED settings;
3. promote use of broad-based, multi-stakeholder coalitions between community hospitals, outpatient providers, patients and their families, and other key stakeholders to address the epidemic locally; and
4. invest in and promote innovative care delivery and payment models that focus on the most at-risk patients.

The report further identifies ways in which the HPC currently supports or plans to support innovative solutions in the health care system to manage patients suffering from opioid use disorder.

Policy recommendations are informed by the analyses generated for this report, extensive stakeholder input, and lessons learned from ongoing HPC activities. The recommendations are strategically aligned with the myriad ongoing efforts across the Commonwealth.

Recommendation 1: The Commonwealth should systematically track the impact of the opioid epidemic on the health care system and the availability of evidence-based pharmacologic treatment.

Recommendation 2: The Commonwealth should increase access to and effectiveness of evidence-based opioid use disorder treatment by integrating pharmacologic interventions into systems of care.

a) Payers should support the integration of opioid use disorder treatment into primary care.

b) Payers should contract with adequate networks of community-based behavioral health providers to improve access to community-based care.

c) Payers should support initiation of opioid use disorder treatment in acute care settings in coordination with accountable, integrated systems that allow for timely access to follow-up care.

d) Payers should facilitate the collaboration between providers of different levels of care to minimize loss to follow-up during transitions between settings.

Recommendation 3: The Commonwealth should support coordinated, multi-stakeholder coalitions to address the impact of the opioid epidemic locally.

i The 66 Hospital Service Areas (HSAs) in Massachusetts defined by the Dartmouth Atlas were merged into 15 larger HPC geographic regions. HPC's 15 geographic regions were identified according to where residents of those regions traveled for inpatient care. For more details on how HPC identified its geographic regions, please see http://www.mass.gov/anf/docs/hpc/2013-cost-trends-report-technical-appendix-b3-regions-of-massachusetts.pdf

Recommendation 4: The Commonwealth should test, evaluate, and scale innovative care models for preventing and treating opioid use disorder and related conditions, including through:

a) Initiation of buprenorphine treatment in the ED;

b) Innovative neonatal abstinence syndrome (NAS) treatment models; and

c) Telemedicine.

THE STATE OF THE OPIOID EPIDEMIC IN MASSACHUSETTS

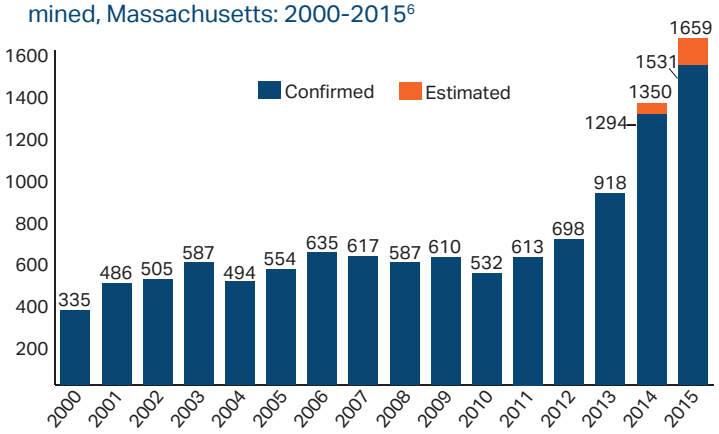
As rates of opioid-related hospital discharges and deaths continue to climb across the Commonwealth, public and private medical and behavioral health service providers struggle to keep pace with the growing demand for treatment services and prevention strategies.[2] To date, only opioid-related mortality has been consistently measured by the Commonwealth. Morbidity-related statistics by city/town, analogous to the mortality statistics published by the Department of Public Health (DPH) could be used to better identify areas of the state in which patients have particularly limited access to timely treatment. This report adds the following analyses to the statewide effort to track and address the growing opioid use disorder epidemic:

- the rate of opioid-related hospital utilization across the state (including both emergency department (ED) discharges and inpatient discharges);
- the total volume of opioid-related hospital discharges by hospital;
- the total volume of neonatal abstinence syndrome (NAS), a syndrome affecting infants exposed to opioids in utero, discharges by hospital; and
- the availability of outpatient pharmacologic treatment for opioid use disorder.

OPIOID-RELATED MORTALITY

The prevalence of opioid use disorder has reached epidemic status worldwide.[3] This trend is particularly concerning in the United States, where approximately 25% of all worldwide opioid-related deaths occur.[4] Locally, the proportion of opioid-related overdoses is also increasing significantly: as of August 2016, there were 1,531 confirmed unintentional and/or undetermined opioid-related deaths in Massachusetts in 2015, a 150% increase over 2011 and a 18% increase over 2014 (see **Figure 1**).[5]

Figure 1: Opioid-related deaths, unintentional/undetermined, Massachusetts: 2000-2015[6]

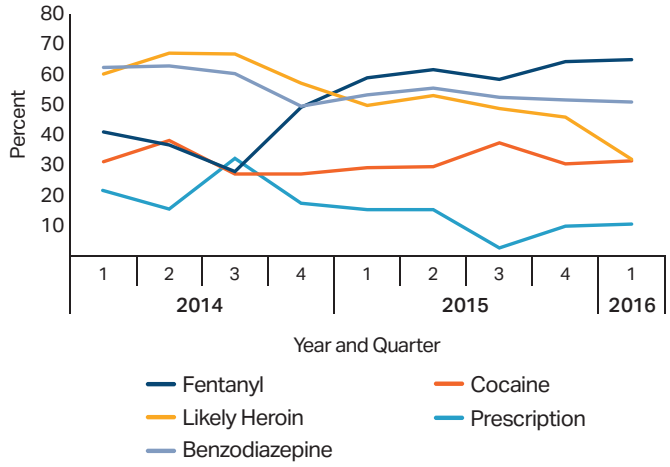


Source: Massachusetts Department of Public Health, August 2016

Note: Suicides are excluded from this analysis.

Heroin and fentanyl are causing the greatest number of fatal overdoses; in 2016, nearly 70% of opioid related mortality was caused by fentanyl, a stark increase from 2014, reflective of the quickly changing nature of the epidemic (see **Figure 2**).

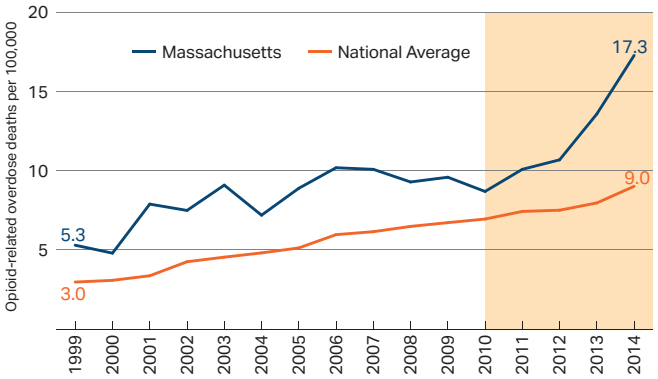
Figure 2: Percent of opioid-related deaths with specific drug present, Massachusetts: 2014-2016



Source: Massachusetts Department of Public Health, August 2016

Between 2010 and 2014, the rate of opioid-related drug overdose deaths in Massachusetts increased more rapidly than the national average, even as the state increased availability of treatment and overdose prevention services (see **Figure 3**).[ii]

Figure 3: Opioid-related drug overdose deaths per 100,000, 1999-2014, Massachusetts and US



Source: Multiple Cause of Death data (1999-2014) are produced by the Division of Vital Statistics, National Center for Health Statistics (NCHS), Centers for Disease Control and Prevention (CDC), United States Department of Health and Human Services (US DHHS)[iii]

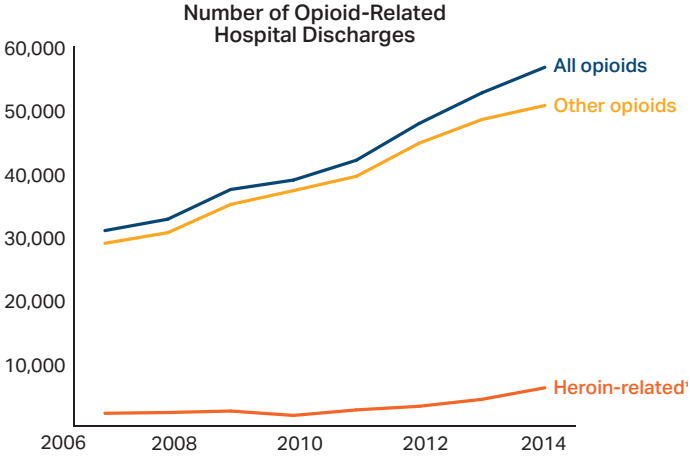
Note: Massachusetts numbers are not included in the age-adjusted weighted national average. 2015 data are not yet available from the CDC.

Rates based on NCHS data differ from DPH published rates because DPH uses a statistical file that is closed later than the NCHS file and includes more cases that have a final cause of death assigned.

OPIOID-RELATED HOSPITAL DISCHARGES

To further understand the extent of the impact of the epidemic beyond mortality, the HPC examined the toll of the epidemic on use of the health care system. The HPC found that between 2007 and 2014, heroin-related hospital discharges increased by 201% and opioid-related hospital discharges increased by 84% (see **Figure 4**).[iv] This reflects that misuse of prescription opioids continues to drive a significant and growing portion of opioid-related hospital utilization, whereas heroin and fentanyl drive the largest proportion of opioid-related deaths as described above.

Figure 4: Opioid-related hospital discharges, Massachusetts, 2007-2014



Rate of Change of Opioid-Related Hospital Discharges

Years	Heroin-related	Other opioids
2007-2008	6%	6%
2008-2009	11%	15%
2009-2010	-29%	6%
2010-2011	52%	6%
2011-2012	23%	13%
2012-2013	35%	8%
2013-2014	43%	5%

201% increase in heroin-related hospital discharges between 2007 and 2014

Source: HPC Analysis—CHIA, Hospital Inpatient Discharge Database, Outpatient Observation Database, and Emergency Department Database, 2007-2014

Note: Hospital discharges include ED discharges, inpatient discharges, and observation stay discharges. The remainder of analyses do not include observation stay discharges. Discharges with both a "heroin-related" and "other opioid" discharge code are counted only once in the "all opioids category", as well as in both of the sub-categories. For example, a patient coded with a heroin overdose and a non-heroin overdose would be counted once in the "heroin -related" category and once in the "other opioid" category. However, if a discharge had multiple diagnoses for the same sub-category (e.g., both a heroin overdose and heroin poisoning), the discharge would be counted only once in the heroin-related sub-category.

* This analysis is based on ICD-9 codes and includes discharges with an opioid-related primary or secondary diagnosis. As with all analyses dependent on ICD-9 codes, provider coding may not always fully accurately reflect the patient's clinical condition. In particular, heroin-related codes are considered specific, but not necessarily sensitive. For example, some hospitals may only use heroin-related codes for cases of poisoning/overdose. As result, some heroin abuse/dependence is likely captured in the "other opioids" category. Furthermore, some non-heroin opioid cases are likely captured in the "heroin-related" category.

ii In response to this trend, a number of key stakeholders in the Commonwealth enacted changes to prescribing and other clinical practices. As of January 2011, prescribers were required to complete education units on pain management, SUD identification, and counseling patients on the risks of addiction. In July 2013, DPH was directed to report on the number of schedule II prescriptions prescribed each month. In March 2014, then Governor Deval Patrick declared a public health emergency in response to the observed growth in opioid use disorder and overdose. Upon taking office in 2015, Governor Baker established the Opioid Addiction Working Group, which released 65 targeted recommendations in June 2015. For more information on these recommendations, please refer to Appendix 1.

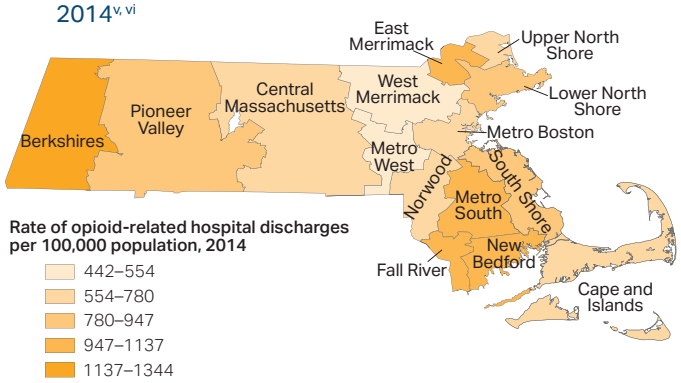
iii Drug overdose deaths (IDC-10 codes X40–44, X60–64, X85, Y10–Y14) that were opioid-related (ICD-10 codes T40.0, T40.1, T40.2, T40.3, T40.4, T40.6) between 1999 and 2014, were used in this analysis. CDC provided age-adjusted death rates per 100,000 for each state; for comparison purposes, the national age-adjusted death rate was adjusted for population.

iv See data note.

Opioid-Related Hospital Discharges: Impact on Communities

The opioid epidemic has had a particularly profound impact in discrete communities and on specific populations in the Commonwealth. Although there are pockets of high rates of opioid-related use of the health care system throughout the state, residents living in the Berkshires, Fall River, Metro South, New Bedford, and East Merrimack regions are disproportionately affected. Hospital utilization data calculated using patient zip codes suggest that there may be an especially high need for increased access to treatment in those regions (see **Figure 5**).

Figure 5: Opioid-related hospital discharges by HPC region, 2014[v, vi]

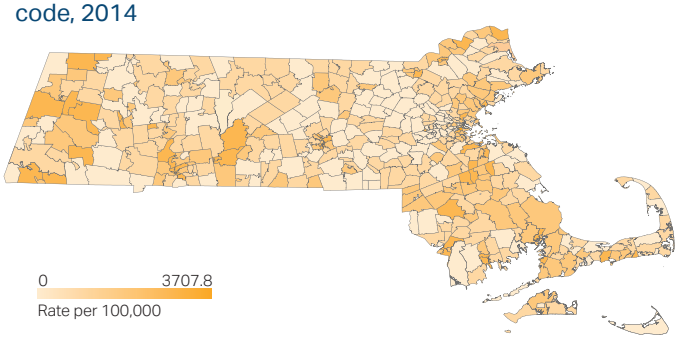


Source: HPC Analysis—CHIA, Hospital Inpatient Discharge Database and Emergency Department Database, 2014

Note: Hospital discharges include both ED and inpatient discharges, but not observation stays.

To drill down further than the regional level, the HPC mapped opioid-related hospital utilization by patient zip code (see **Figure 6**) and by city and town, creating an analog to DPH's opioid-related mortality statistics (see Appendix 4). The data also is broken down by gateway cities.[vii] As shown in Appendix 5, the zip codes in which residents are utilizing hospitals at the highest rates for opioid-related reasons are concentrated in the East Merrimack, Metro Boston, Metro South, South Shore, and Central and Southeastern Massachusetts regions.

Figure 6: Opioid-related hospital discharges by patient zip code, 2014

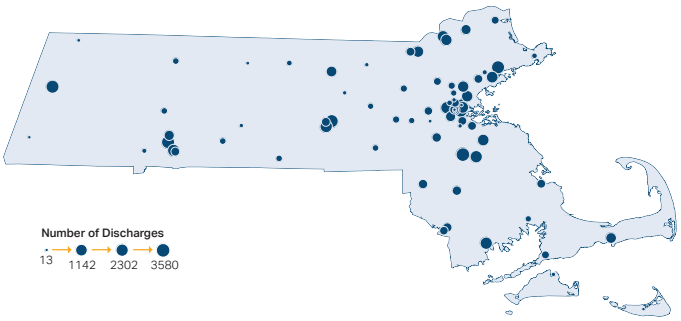


Source: HPC Analysis—CHIA, Hospital Inpatient Discharge Database and Emergency Department Database, 2014

Note: Hospital discharges include both ED discharges and inpatient discharges. To control for extreme values in small communities, the rates were truncated at the 98th percentile.

In addition to examining geographic distribution of patients, the HPC calculated the total volume of opioid-related discharges at each hospital in 2014 (see **Figure 7**). Hospitals across the Commonwealth treat large numbers of patients for opioid-related illness, but Boston Medical Center (Boston), Good Samaritan Medical Center (Brockton), and Mercy Medical Center (Springfield) had the highest volume of opioid-related hospital discharges. Appendix 6 includes each hospital by name as well as a "zoom in" of hospitals in Boston, given the density of hospitals in that area.

Figure 7: Opioid-related hospital discharges by hospital, 2014



Source: HPC Analysis—CHIA, Hospital Inpatient Discharge Database and Emergency Department Database, 2014

Note: Hospital discharges includes both ED discharges and inpatient discharges, but not observation stays.

v This and subsequent figures show the community impact as the number of discharges per 100,000 residents. The 66 Hospital Service Areas (HSAs) in Massachusetts defined by the Dartmouth Atlas were merged into 15 larger HPC geographic regions. HPC's 15 geographic regions were identified according to where residents of those regions traveled for inpatient care. For more details on how HPC identified its geographic regions, please see http://www.mass.gov/anf/docs/hpc/2013-cost-trends-report-technical-appendix-b3-regions-of-massachusetts.pdf

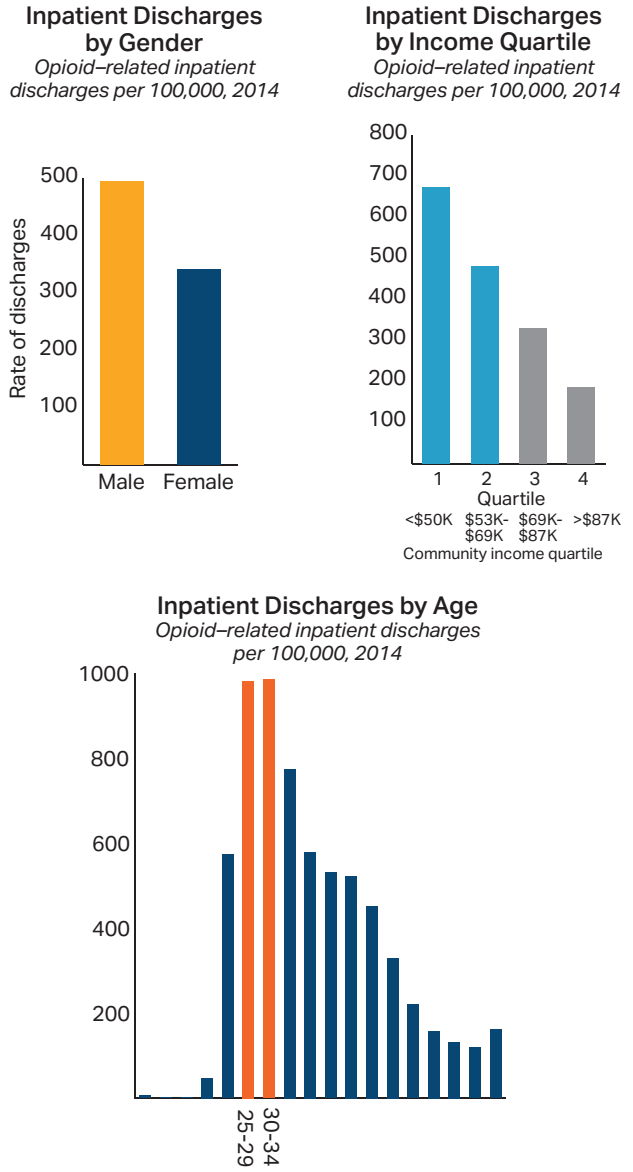
vi While rates of opioid-related hospital discharges are correlated with overall hospital use, there is much greater regional variation in opioid-related hospital discharges than there is in rates of overall hospital use (3 to 1 versus 2 to 1, respectively). The rate of opioid-related hospital discharges as a percent of all discharges was highest in the Berkshires (2.3%) and lowest in Metro West (1.1%).

vii A gateway city is one with a population between 35,000 and 250,000, median household income below the state average, and rate of attaining a bachelor's degree is below the state average. M.G.L. c. 23A section 3A. http://www.mass.gov/hed/community/planning/gateway-cities-and-program-information.html

Opioid-Related Hospital Discharges: Impact on Populations

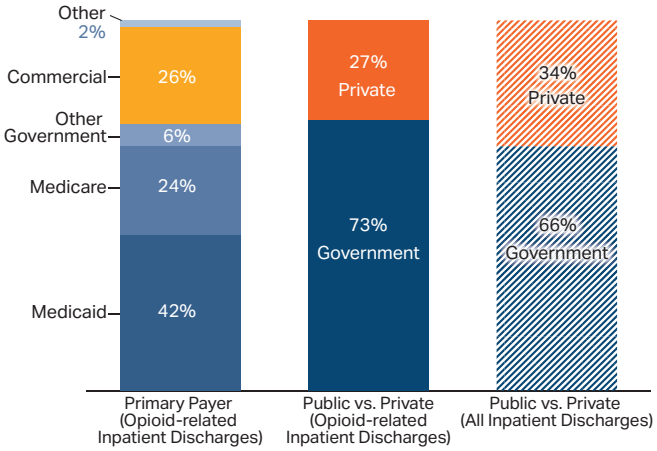
In addition to regional variation of opioid-related hospital utilization across the Commonwealth, the opioid epidemic is disproportionately impacting specific populations. Males, young adults, and individuals from low-income communities were relatively more likely to have had an opioid-related *inpatient* discharge in 2014 (see **Figure 8**). Public payers bear the overwhelming burden of the financial impact of the epidemic; in 2014, MassHealth, the Massachusetts Medicaid program, paid for 42% of all opioid-related *inpatient* discharges and Medicare covered an additional 24% (see **Figure 9**).

Figure 8: Rate of opioid-related inpatient discharges by gender, income, and age



Source: HPC Analysis—CHIA, Hospital Inpatient Discharge Database, 2014
Note: Data includes only inpatient discharges not ED discharges or observation stays.

Figure 9: Opioid-related inpatient discharges by payer, 2014



Source: HPC Analysis—CHIA, Hospital Inpatient Discharge Database, 2014
Note: The percentages indicate the principal payer for opioid-related inpatient discharges in 2014 (n=17,756). For those dually eligible for Medicaid and Medicare, Medicare is the principal payer. Data includes only inpatient discharges, and does not include ED discharges or observation stays.

Opioid-Related Hospital Discharges: Impact on Exposed Infants

The growing opioid epidemic not only results in increased morbidity and mortality for adults and adolescents with addictions, but also affects infants exposed to opioids in utero.[7] For example, about 60-80% of infants exposed to heroin or methadone in utero exhibit Neonatal Abstinence Syndrome (NAS) in the first few weeks of life.[8] NAS is a clinical syndrome marked by low birth weight, respiratory distress, feeding difficulty, tremors, increased irritability and crying, diarrhea, and occasionally seizures.[9,10,11] NAS is increasingly common; the number of affected infants nationally has increased 5-fold between 2000-2012.[12] While NAS is most commonly caused by in utero exposure to opioids, the use of other substances during pregnancy can also cause NAS (e.g., selective serotonin reuptake inhibitors,[13] benzodiazepines,[14] inhalants,[15] and methamphetamine[16]). Although the use of pharmacologic treatment (e.g., buprenorphine, methadone) to treat opioid use disorder during pregnancy can result in NAS, the American College of Obstetricians and Gynecologists (ACOG) recommends *against* tapering pregnant women off of pharmacologic treatment because of the associated risk of addiction relapse, which causes far greater harm to fetal and early child development.[viii, 17] In fact, access

viii While research demonstrates that abstinence during pregnancy does not have adverse effects on fetal development, such studies have not followed subjects after birth, when risk of relapse is highest. For more information, see: http://www.modernhealthcare.com/article/20160331/NEWS/160339989?utm_source=modernhealthcare&utm_medium=email&utm_content=20160331-NEWS-160339989&utm_campaign=dose

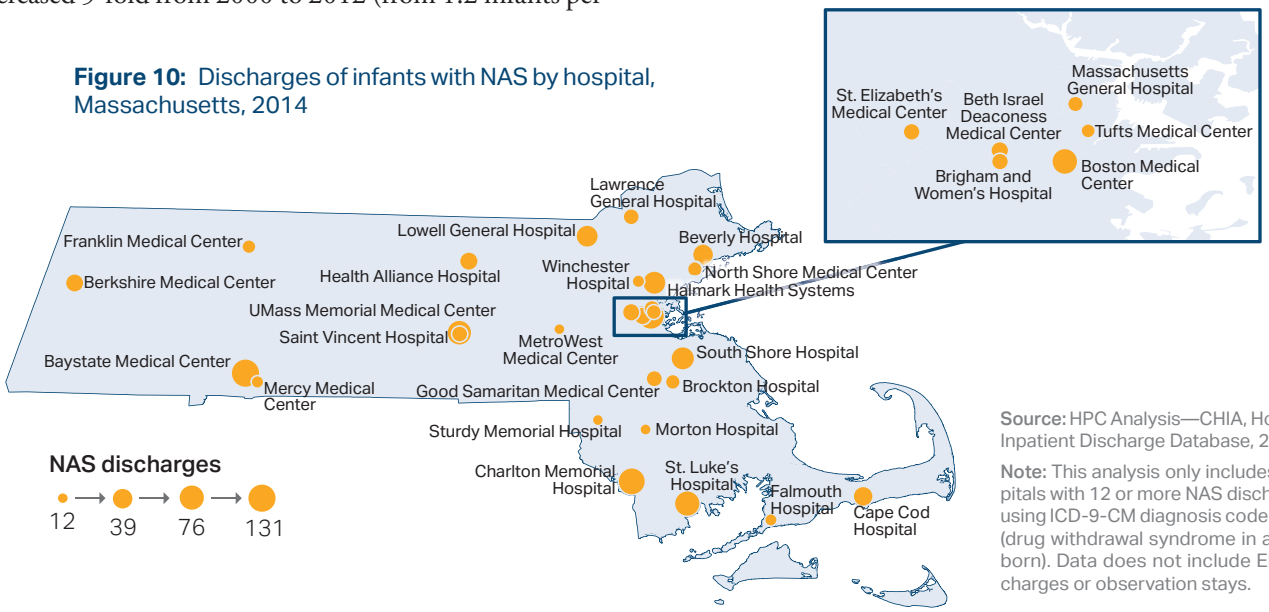
to pharmacologic treatment during pregnancy reduces total health care expenditures for the woman and infant by approximately 30% in the first 6 months of life.[18]

Treatment of NAS has traditionally been resource-intensive and associated with extended length of stay (LOS), but emerging evidence suggests that it can be appropriately and cost-effectively treated in lower intensity and lower cost settings of care (e.g., by reducing use of pharmacologic intervention and implementing protocols that promote low-stimuli approaches such as breast feeding, swaddling, and skin-to-skin contact).[19,20,21,22]

NAS is particularly prevalent in Massachusetts; in 2009, the rate was approximately 3 times higher than the national average.[23] At the national level, NAS prevalence increased 5-fold from 2000 to 2012 (from 1.2 infants per 1000 live births to 5.8 infants per 1000 live births).[24] The number of NAS discharges varies across the Commonwealth; hospitals with highest rates are located in regions most impacted by the opioid epidemic. These hospitals include Charlton Memorial Hospital in Fall River, St. Luke's Hospital in New Bedford, Cape Cod Hospital in Hyannis, Melrose-Wakefield Hospital in Melrose, and Berkshire Medical Center in Pittsfield (see **Figure 10**).

Not surprisingly, the distribution of NAS around the Commonwealth is reflective of the rate of opioid-related hospital utilization, but large NAS volume is also correlated with large total delivery volume, indicating that NAS discharges are not necessarily reflective of patient distribution (see **Figure 11**).

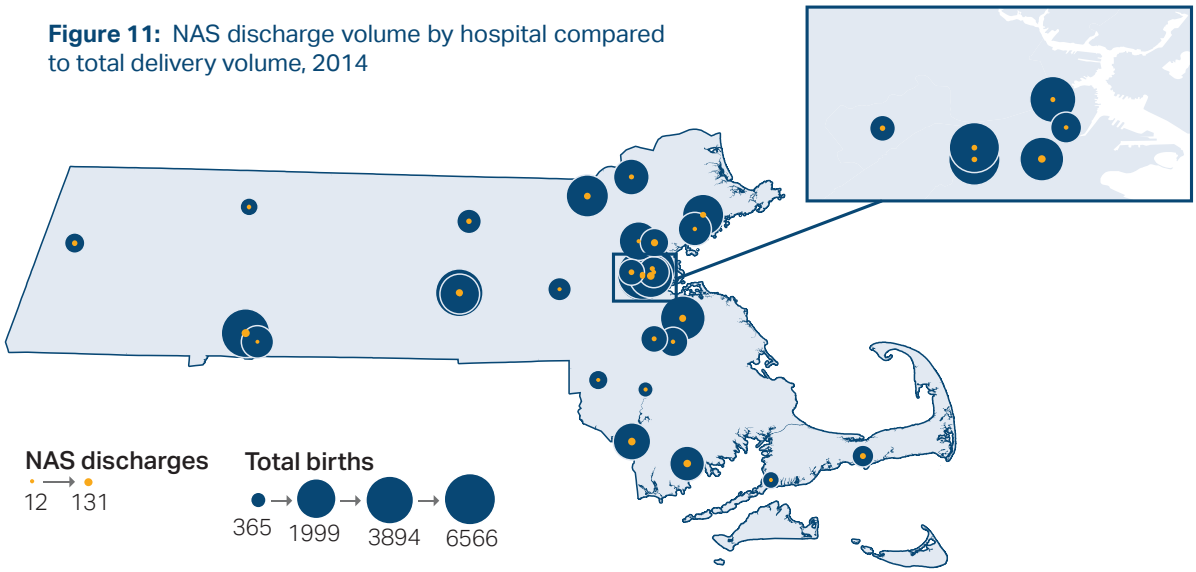
Figure 10: Discharges of infants with NAS by hospital, Massachusetts, 2014



Source: HPC Analysis—CHIA, Hospital Inpatient Discharge Database, 2014

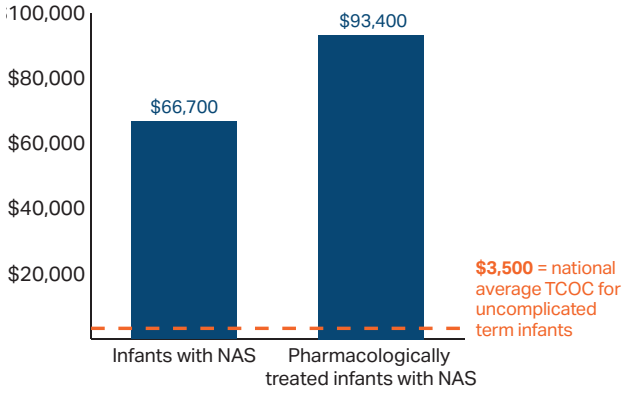
Note: This analysis only includes hospitals with 12 or more NAS discharges using ICD-9-CM diagnosis code 779.5 (drug withdrawal syndrome in a newborn). Data does not include ED discharges or observation stays.

Figure 11: NAS discharge volume by hospital compared to total delivery volume, 2014



Treatment of newborns with NAS is very expensive (see **Figure 12**). Costs are largely associated with LOS and time spent in higher intensity settings of care, such as the neonatal intensive care unit (NICU). The trend in prevalence of NAS in addition to the impact on healthcare spending makes NAS a particularly apt area for policy change and care delivery system improvement.

Figure 12: Average cost of infants with NAS, United States, 2009-2012[25]



Source: Patrick et al., Journal of Perinatology, 2015
Note: TCOC = total cost of care.

AVAILABILITY OF PHARMACOLOGIC TREATMENT FOR OPIOID USE DISORDER

Opioid use disorder can be effectively treated with pharmacologic intervention combined with evidence-based behavioral therapy (e.g., cognitive behavioral therapy, contingency management, group counseling, and other forms of social and behavioral support).[26,27] Some pharmacologic treatments reduce opioid cravings (e.g., buprenorphine, methadone); others have a blocking effect when combined with opioid ingestion, thereby deterring use (e.g., buprenorphine/naloxone, naltrexone).

Pharmacologic treatment should be prescribed based on patients' needs and preferences, to ensure care is patient centric. Addiction remains a stigmatized condition, creating intangible barriers to treatment. Patients report preferences for a supportive environment, engagement in their own care, and support and empathy from their providers.[28] Patients may require assistance in obtaining insurance coverage, money for transportation, connection to childcare services, or other forms of assistance in mitigating relevant barriers to treatment. Providers' awareness and consideration of patients' preferences and competing priorities is therefore essential to ensuring treatment compliance.

Pharmacologic treatments for opioid use disorder:

- **Methadone** is a daily opioid agonist treatment (e.g., a synthetic drug that binds to opioid receptors, thereby controlling symptoms of withdrawal) that can only be administered by a federally licensed Opioid Treatment Program (OTP).[29] This requirement can hinder access due to travel and cost constraints; many patients are not able or willing to attend and/or pay for daily visits.[30]
- **Buprenorphine** is a long-acting partial opioid agonist that reduces opioid cravings by acting on the same brain receptor targets that opiate analgesics (and heroin) target, without producing a "high" or dangerous side effects. Patients can receive a prescription to take the medication daily from any buprenorphine-waivered physician, rather than having to visit a clinic daily.[31] In other words, buprenorphine can be prescribed in any clinical setting, including in primary care as long as the prescriber is waivered.
  Both buprenorphine and methadone have street value, making precautions to prevent diversion critical.
- **Extended-release naltrexone** is an opioid antagonist delivered via a monthly injection. Naltrexone can be prescribed by any health care provider licensed to prescribe medications and administered in any medical clinic or prescribed for purchase at the pharmacy.[32] A full dose of naltrexone requires that the patient has not ingested or injected an opioid for at least 7-14 days. Such abstinence can be difficult for patients to achieve. Titration (determining the dose that reduces symptoms while avoiding possible side effects) is medically indicated to minimize adverse interactions between naltrexone and any remaining opioids in the patient's system.

Despite a strong evidence base, pharmacotherapy is underutilized. Nationwide, fewer than 50% of adults and adolescents suffering from opioid use disorder received pharmacologic intervention in 2012.[33] Some researchers estimate that access may be as low as 22% of patients with need.[34] Increasing access to pharmacotherapy for opioid use disorder is a fundamental component to making the health care system more responsive to the treatment needs of patients. Consistent and reliable access to both pharmacologic intervention and evidence-based behavioral therapy reduces rates of addiction, infectious disease transmission, and opioid-related hospital utilization.[35]

Moreover, data on availability of pharmacologic treatment – as well as behavioral therapy – are incomplete, in terms of availability to providers, state agencies, and patients. For example, buprenorphine prescribers can opt out of being listed in SAMHSA's publicly available database; naltrexone providers must opt in to being listed on a manufacturer's website (Vivitrol Provider Locator); and methadone clinics, while publicly available by location,

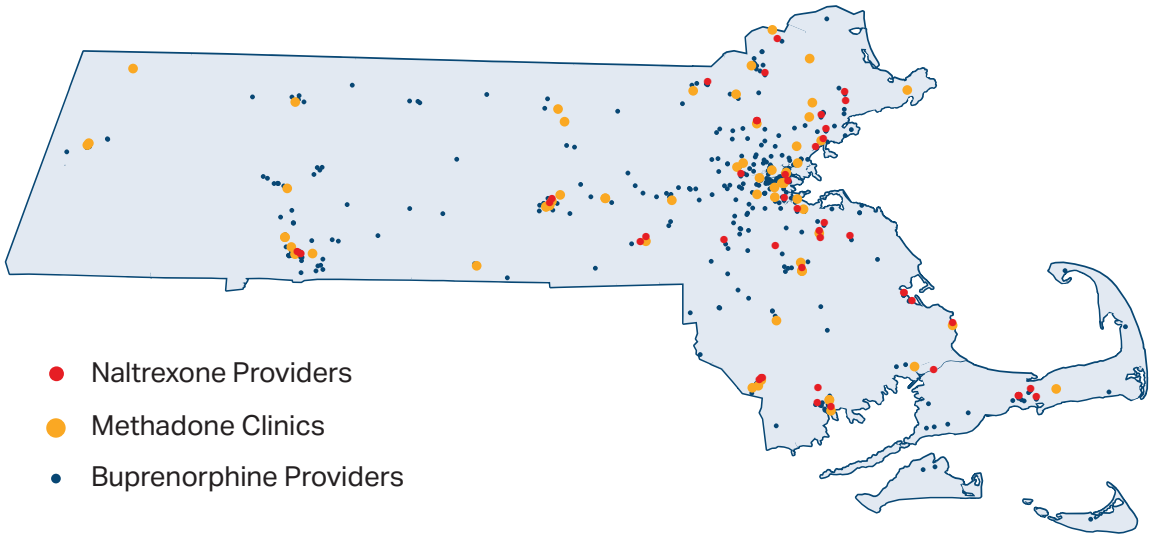
vary in patient panel capacity. Ensuring the availability of comprehensive, up-to-date information on provider licensure status, ability to accept new patients, and acceptance of public and private insurance is critical for increasing patients' and providers' ability to identify available treatment options, as well as for allowing the state to better identify the largest gaps in availability.

Despite imperfect data sources,[ix] the HPC conducted an analysis to identify the distribution of methadone, buprenorphine, and naltrexone providers across Massachusetts, given the national data on the underutilization of pharmacotherapy. The HPC found that providers are heavily concentrated in the most densely populated areas of the state, namely Metro Boston and Springfield, and the vast majority are clustered in eastern Massachusetts (see **Figure 13**). Because 2 of the 3 forms of pharmacotherapy can be prescribed and/or administered in any clinical setting, the state has an opportunity to increase the number of providers who engage in pharmacologic treatment of opioid use disorder.[x]

Many patients who had an opioid-related hospital discharge in 2014 live more than five miles from the nearest pharmacologic treatment provider, particularly those residing in the least densely populated areas (see **Figure 14**). For example:

- Residents in the Berkshire region experienced the highest rate of opioid-related hospital discharges in 2014 (68% higher rate of utilization than the state average) and would have to travel comparatively long distances to access pharmacotherapy (39% of patients would have to travel more than 5 miles to a buprenorphine provider, and 33% would have to travel more than 5 miles to a methadone clinic).
- Patients living in the Metro South region had a 42% higher rate of opioid-related hospital discharges in 2014 than the average for state residents, and there are 46% fewer buprenorphine providers per capita in that region than the state average.
- The Upper North Shore has the lowest availability of pharmacologic intervention, resulting in significant travel times for many patients (31% of patients would have to travel more than 5 miles to a buprenorphine provider).

Figure 13: Pharmacotherapy providers for opioid use disorder, all types



ix Providers may choose to opt out of SAMHSA's buprenorphine provider list. Additionally, some providers who appear on the list may not currently prescribe buprenorphine. There are also naltrexone providers who would not appear in **Figure 11** if they did prescribe Vivitrol for 10 or more patients between July 2014 and June 2015.

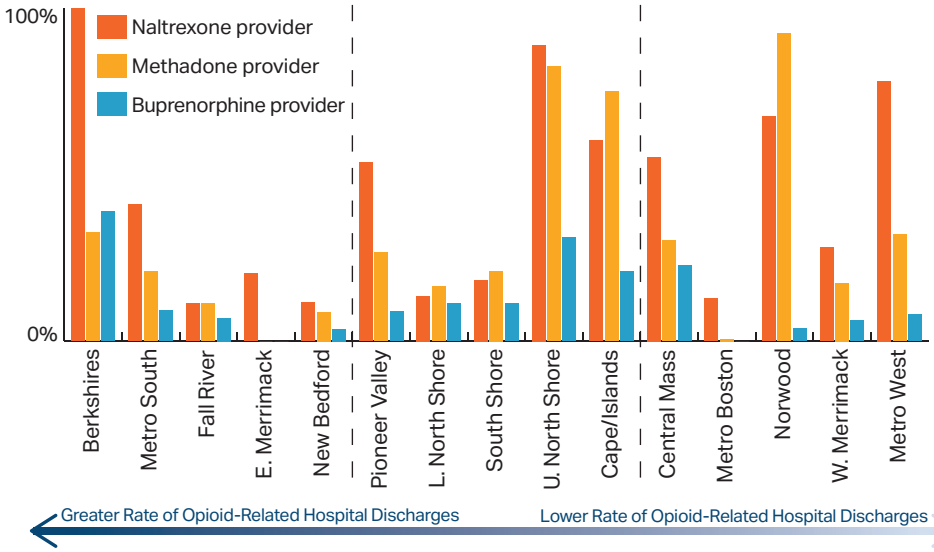
x The Office Based Opioid Treatment Program (OBOT) at Boston Medical Center (BMC) offers a Buprenorphine Hotline Program that provides callers with referrals to treatment resources throughout the Commonwealth. For more information, please see: (http://www.mass.gov/eohhs/gov/departments/dph/programs/substance-abuse/stop-pill-abuse/resources/massachusetts-helplines.html)

Source: Methadone: Substance Abuse and Mental Health Services Administration. Opioid Treatment Program Directory (data retrieved from http://dpt2.samhsa.gov/treatment/directory.aspx on 11/20/2015)

Buprenorphine: Substance Abuse and Mental Health Services Administration. Buprenorphine Treatment Physician Locator (data retrieved from http://www.samhsa.gov/medication-assisted-treatment/physician-program-data/treatment-physician-locator on 11/5/2015)

Naltrexone: Prescriber lists provided by Alkermes Pharmaceuticals (data received on 8/20/2015). Naltrexone list include only those who prescribed Vivitrol for 10 or more patients between July 2014 and June 2015

Figure 14: Patients who have had opioid-related hospital discharges who would have to travel more than 5 miles to access pharmacologic treatment



Note: Hospital discharges include both ED and inpatient discharges. Travel distances are defined as the distance between the patient's zip code of residence and the zip code of the nearest in-state provider.

Assessing the Impact of Regulation on Availability of Pharmacotherapy Providers

To examine the current provider capacity, the HPC surveyed buprenorphine prescribers. Buprenorphine prescribers are limited in the number of patients for whom they can provide pharmacologic treatment (at the time of this survey, physicians prescribing buprenorphine could not treat more than 100 patients at a time, a DEA restriction intended to reduce risk of diversion; providers can now treat up to 275 patients annually).[xi] The HPC survey was designed to assess the extent to which prescribers are operating to capacity, with respect to the patient cap, in primary care versus specialist settings.[xii]

The survey revealed that 54% of respondents licensed to treat up to 100 patients were treating 80 or more individuals; 65% of these providers were addiction specialists. Primary care providers (PCPs), on the other hand, reported that the significant demands on time associated with the treatment (e.g., requirements around pill counts, urine toxicology screens)[36] precluded them from approaching the 100 patient cap. The majority of all respondents, regardless of practice type, reported having a waitlist for new patients ranging from 2 days to 24 weeks.[37] An increase in the number of patients a buprenorphine prescriber can treat at any given time may increase the number that addiction specialists can serve, but increasing the total volume of prescribers, particularly by integrating pharmacotherapy into primary care settings, is likely also necessary to approach adequate access to treatment.[xiii, xiv]

xi In July 2016, HHS issued a final rule increasing the patient cap from 100 to 275 patients. A bill pending in Congress would increase the cap to 500. Either of these actions may increase access to licensed buprenorphine prescribers, although improved access likely also requires increasing the number of PCPs who prescribe buprenorphine. 42 CFR Part 8, 44576, Medication Assisted Treatment for Opioid Use Disorders Reporting Requirements, July 8 2016; S. 1455, Bill to provide access to medication-assisted therapy, and for other purposes, 114th Cong., 2d session. http://www.markey.senate.gov/imo/media/doc/TREAT%20managers%20amendment.pdf.

xii This survey was sent to 150 buprenorphine providers, identified using SAMHSA's Buprenorphine Physician Locator Tool. 48 providers responded (32% of the sample).

xiii Principles of the TREAT Act, which passed the HELP Committee in April 2016, were incorporated into Section 303 of the Comprehensive Addiction and Recovery Act (CARA), which became law in July 2016. CARA expanded buprenorphine prescribing privileges to nurse practitioners and physician assistants through October of 2021, although a they must complete a 24 hour training and must receive a DATA 2000 waiver from the DEA before they can legally prescribe buprenorphine. In many states, these providers will still need to be supervised by or work with a physician. Finally, CARA introduces flexibility to the limits on the number of patients to whom a given provider can prescribe buprenorphine (e.g., prescribers with existing limits of 100 patients can apply to have this limit raised to 275 patients, the HHS secretary has the option to exclude patients who receive medication directly at the point of service from the patient limit, etc.).

American Society of Addiction Medicine. Nurse Practitioners and Physician Assistants Prescribing Buprenorphine. Available from: http://www.asam.org/quality-practice/practice-resources/nurse-practitioners-and-physician-assistants-prescribing-buprenorphine

American Society of Addiction Medicine. Summary of the Comprehensive Addiction and Recovery Act. Available from: http://www.asam.org/advocacy/issues/opioids/summary-of-the-comprehensive-addiction-and-recovery-act

xiv In 2005, DPH conducted a similar survey of 235 buprenorphine prescribers in Massachusetts, and identified similar barriers to expanding patient panels, indicating a need for increased institutional support. Walley AY, Alperen JK, Cheng, DM, Botticelli M, Castro-Donlan C, Samet JH, Alford, DP. Office-based management of opioid dependence with buprenorphine: Clinical practices and barriers. Journal of General Internal Medicine. 2008(23): 1393-8.

In summary, data analyses on the impact of the opioid epidemic on hospitals, birthing centers, and the availability of pharmacotherapy providers highlight that the opioid epidemic is taking a substantial toll on the health care system. Between 2007 and 2014, opioid-related hospital discharges increased rapidly in Massachusetts. There is variable access to pharmacotherapy treatment throughout the state, but particularly for those residents in less populated regions of the Commonwealth who must travel long distances to access treatment.

HPC EFFORTS TO ADDRESS THE OPIOID EPIDEMIC

The opioid epidemic, including increasing morbidity, mortality, and a growing toll on communities, highlights the need for improvements throughout the health care system. Without timely access to evidence-based treatment, patients will continue to utilize high intensity settings of care for addiction treatment, both out of necessity and lack of other options.

The HPC is working closely with other state agencies, providers, payers, and a variety of stakeholders to help the Commonwealth address the opioid epidemic through investments, care delivery certification programs, and a research and evaluation agenda that support the triple aim of improving health outcomes and patient experience while simultaneously reducing expenditures. The HPC's care delivery vision calls for:

A health care system that efficiently delivers well-coordinated, patient-centered, high-quality health care, integrates behavioral and physical health, and produces optimal health outcomes and health status.

Through its experience with health care investments, provider certification programs, and research and evaluation, the HPC has identified specific models of care that could be scaled and leveraged to increase the quality and efficiency of the Commonwealth's response to the opioid epidemic, particularly the role of primary care providers (PCPs) in providing pharmacologic treatment to this population. These models of care fall broadly into four categories:

1. behavioral health integration into primary care;
2. fully integrated accountable care delivery systems;
3. broad-based community coalitions; and
4. investments in innovative pilots.

INTEGRATING BEHAVIORAL HEALTH INTO PRIMARY CARE

In Massachusetts, ~51% and ~86% of patients do not receive treatment for an existing mental illness or substance use disorder (SUD), respectively.[38] Behavioral health disorders exacerbate the total cost of care (TCOC) for patients. For example, TCOC for patients with major depression and diabetes is 2 times higher than for patients with diabetes alone.[39]

PCPs play a critical role in patient care by serving as the coordinators of care for timely and appropriate use of all health care services, including mental health and addiction treatment. However, many PCPs are not trained to screen for or triage mental illness and/or SUD.[40] The patient-centered medical home (PCMH) is one way to address this gap; the model uses a multi-disciplinary primary care-based team to provide comprehensive and coordinated care. The HPC is working to strengthen and support primary care practices in integrating behavioral health into primary care through its PCMH PRIME certification program.

PCMH PRIME layers 13 behavioral health integration criteria on top of the National Committee for Quality Assurance's (NCQA's) PCMH recognition standards, including screening for and treatment of opioid use disorder in the primary care setting.[xv] To be PCMH PRIME certified, a practice must meet at least 7 of the 13 PCMH PRIME criteria (Box 1) within a specified time frame, as well as be PCMH recognized by NCQA.

xv http://www.mass.gov/anf/budget-taxes-and-procurement/oversight-agencies/health-policy-commission/certification-programs/

Box 1: PCMH PRIME Certification Criteria

Criteria (practice must meet ≥ 7 of 13)
The practice **coordinates with behavioral healthcare providers** through formal agreements or has behavioral healthcare providers co-located at the practice site.
The practice **integrates behavioral health providers** within the practice site.
The practice collects and regularly updates a comprehensive health assessment that includes **behaviors affecting health and mental health/substance use history of patient and family.**
The practice collects and regularly updates a comprehensive health assessment that includes **developmental screening** for children under 3 years of age using a standardized tool.
The practice collects and regularly updates a comprehensive health assessment that includes **depression screening** for adults and adolescents using a standardized tool.
The practice collects and regularly updates a comprehensive health assessment that includes **anxiety screening** for adults and adolescents using a standardized tool.
The practice collects and regularly updates a comprehensive health assessment that includes **SUD screening** for adults and adolescents using a standardized tool.
The practice collects and regularly updates a comprehensive health assessment that includes **postpartum depression screening** for patients who have recently given birth using a standardized tool.
The practice **tracks referrals** until the consultant or specialist's report is available, **flagging and following up on overdue reports.**
The practice implements clinical decision support following **evidence based guidelines** for a mental health and substance use disorder.
The practice establishes a systematic process and criteria for identifying patients who may benefit from **care management**. The process includes consideration of behavioral health conditions.
The practice has at least one clinician who is providing **pharmacologic treatment** (naltrexone, buprenorphine, and/or methadone) **and providing behavioral therapy** directly or via referral, for substance use disorder.
The practice has at least one **care manager** qualified to identify and coordinate behavioral health needs.

The HPC will offer technical assistance to practices who commit to reaching PCMH PRIME status within 18 months. HPC is working with Health Management Associates to create, monitor, and manage the technical assistance program that addresses each of the 13 PRIME criteria and will be tailored to meet the needs of each practice. For example, practices aiming to provide pharmacologic treatment for addiction could receive technical assistance in the form of clinical training and workflow redesign support to account for the additional tasks that accompany integrating addiction management into primary care (e.g., pill counts, urine toxicology screens).

FULLY INTEGRATED ACCOUNTABLE CARE DELIVERY SYSTEMS

Integrated primary care is foundational for improving care for patients with complex behavioral and medical conditions, but accountable care organizations (ACOs) have the potential to support and sustain coordinated, comprehensive care beyond the boundaries of primary care. An ACO is generally defined as a group of physicians, hospitals, and/or other providers whose mission is to improve health outcomes and quality of care while slowing the growth in overall costs for a specific population of patients.[41]

ACOs provide value by transforming care delivery through improvements in care coordination and integration, access to services, and accountability for patient outcomes and costs. ACOs are designed to systematically integrate behavioral health treatment, primary care, and specialty services, and thus have the potential to play a vital role in promoting more efficient treatment of opioid use disorder. ACOs are supported by alternative payment models (APMs), such as global budgets, which incent the level of collaboration necessary between primary, specialty, and hospital-based care by putting the PCP system at risk for both TCOC and health outcomes. In other words, APMs incent providers to work together to organize the medication and behavioral therapy components of pharmacotherapy, as well as wrap around social supports, as necessary, for patients who struggle to engage with and/or remain in treatment. ACOs should play a critical role in coordinating post-discharge treatment for those individuals who are transitioning back to the community from incarceration or inpatient treatment, when patients are most vulnerable to overdose due to decreased opioid tolerance.[42]

The HPC has developed standards for ACOs in the Commonwealth to validate value-based care and promote investments by all payers in efficient, high-quality, and cost-effective care across the continuum. HPC ACO certification promotes system wide care coordination, including between transitions of care (e.g., from the ED to outpatient settings) and amoung different types of providers (e.g., community-based providers, addiction medicine, social services, and pediatrics).

Through its ACO certification standards,[43] the HPC seeks to promote continued transformation in care delivery while ensuring that certification is within reach for systems of varying sizes, organizational models (e.g., hospital-led, physician-led), infrastructure and technical capabilities, populations served, and geographic locations. Specific ACO certification criteria developed by the HPC to better meet the needs of patients with behavioral health conditions include:

- The ACO must routinely stratify its patient population by risk and use the results to implement programs targeted at improving health outcomes for its highest need patients. At least one program must address behavioral health and at least one program must address social determinants of health to reduce health disparities within the ACO population.
- To coordinate care and services across the care continuum, the ACO must collaborate with providers outside the ACO as necessary, including behavioral health providers, specialists, post-acute and long-term care, and hospitals.
- ACOs should understand the needs and preferences of their patient population by routinely surveying social determinants of health (e.g. race, income, non-medical transportation needs, and food insecurity) and develop programs with community-based social services organizations in order to better meet those needs.

The HPC will develop technical assistance to support providers in developing models that meet its ACO certification standards with the intent of identifying and disseminating best practices, including those around opioid use disorder prevention and treatment. Technical assistance for ACOs will be designed to foster and facilitate multidisciplinary care coordination that is patient-centered and accountable. This is critical with respect to improving the status quo of opioid use disorder treatment; patients will only be able to access timely and appropriate treatment when medical and behavioral health providers are held jointly accountable for overall patient health.

BROAD-BASED COMMUNITY COALITIONS

Working together with patients and families, primary care, community-based behavioral health providers, and local emergency professionals (e.g. police, fire, and emergency medicine services), community hospitals can play a critical role in improving access to pharmacologic treatment and behavioral health care for opioid use disorder. The HPC is working to increase access to opioid addiction treatment, in part, through its Community Hospital Acceleration, Revitalization, and Transformation Investment Program (CHART). CHART supports eligible Massachusetts community hospitals to enhance their delivery of efficient, effective care. Several CHART programs are helping to address the opioid epidemic by:

1. assisting patients who present to the ED with an overdose to connect with treatment upon discharge (including preventing re-occurring overdose); and
2. improving retention in care by coordinating follow-up after hospital discharge.

Early experiences of CHART-funded hospitals highlight the potential for broad-based community coalitions to implement locally-informed health system change. The following CHART projects transform care by enacting ED-based coordination of care that facilitates linkage to treatment for patients who present in emergency situations.

Berkshire Medical Center

Berkshire Medical Center is working to address social issues that lead to recurrent acute care utilization, provide enhanced care for patients with chronic conditions, and increase access to behavioral health services. CHART Phase 2 funding is being used to support Berkshire in facilitating transitions to outpatient treatment from inpatient (acute or detoxification) and ED settings.

The majority of services are based in the *Neighborhood for Health* program, an outpatient medical center providing comprehensive behavioral health, chronic disease management, and social services, in partnership with the co-located *Substance Use Day Treatment Program of the Brien Center for Mental Health and Substance Abuse Services* (Brien Center). Brien Center social workers and group clinicians work at the on-site day treatment center

and collaborate with Berkshire social workers to create a "bridge" to the buprenorphine services at the Brien Center ("Suboxone Bridge Program").

Berkshire is integrating the use of technology, such as telemedicine and enhanced electronic medical records, to support care coordination across treatment settings. *Neighborhood for Health* care navigators visit hospitalized patients to assess behavioral health and social needs for which care will be necessary upon discharge. If an appropriate candidate for pharmacologic intervention, a patient can use a televisit with the *Neighborhood for Health* psychiatrist to initiate buprenorphine treatment, who they then see (with the assistance of the care navigator) within 1 day of discharge.

Once at *Neighborhood for Health*, patients meet with a buprenorphine provider 2 to 3 times per week for up to 3 weeks and participate in the Brien Center day program (or a similar evening program if an opening is not immediately available). Berkshire's retail pharmacy provides benefit support to ensure buprenorphine coverage regardless of plan coverage, including reimbursement for the medication in cases where it is not covered.

Beth Israel Deaconess Hospital–Plymouth (BIDH–Plymouth)

In CHART Phase 2, BIDH–Plymouth (South Shore region) is working to reduce ED utilization for patients with a primary behavioral health diagnosis through its Integrated Care Initiative (ICI). The ICI program is designed to address opioid use disorder through action at the individual, facility, and community levels by having the hospital lead efforts across outpatient providers (both primary and behavioral health) and in partnership with other community emergency professionals.

At the individual level, the ICI provides patients with an addiction assessment in the ED. This is coupled with follow-up services and linkage to detoxification, outpatient pharmacotherapy, and primary care.

At the hospital level, BIDH–Plymouth arranges for expedited referral from the ED to Clean Slate Centers and Harbor Health Services, both of which provide pharmacologic intervention (Harbor Health Services also provides primary care services). Additionally, ICI clinicians provide referrals to the Plymouth Drug and Mental Health Court for any patient with open charges that appear to be related to addiction. Patients not ready to engage in treatment are provided with information about recovery resources as well as follow up services through phone calls or a home visit, in an attempt to offer services post-discharge. All patients are provided with information on naloxone, including instructions on access and use.

At the community level, the ICI collaborates with Project OUTREACH (Opioid User Taskforce to Reduce Epidemic and Care Humanely) led by the Plymouth Police Department in collaboration with the Carver and Middleboro Police Departments, behavioral health providers (e.g., CleanSlate, Gosnold, and High Point), and the Plymouth District Court. As part of this collaboration, clinicians (with a plain-clothes police accompaniment) are sent to patients' homes following a naloxone reversal in the ED to encourage patients to seek treatment, as well as provide transportation directly to detoxification services. Through these community engagement visits, 85% of patients accepted and entered treatment in the first 4 months of the program.

Hallmark Health System

Through its CHART Phase 2 award, Hallmark Health System (Melrose-Wakefield Hospital and Lawrence Memorial Hospital) located in the East Merrimack and Metro Boston regions of the Commonwealth, is seeking to reduce ED utilization in part by implementing its Collaborative Outreach and Adaptable Care at Hallmark Health (COACHH) program. COACHH targets 3 patient populations: patients with frequent recurrent use of the ED, obstetric patients with substance use disorder (SUD), and patients presenting with an opioid overdose requiring a naloxone reversal. The COACHH program is designed to improve Hallmark Health's ability to meet the needs of opioid addiction at three levels: individual, community, and hospital.

At the individual level, eligible patients are seen in the ED by a team of community health workers supported by a social worker to coordinate post-discharge follow-up care. Patients who elect to participate in the COACHH program are engaged by a multi-disciplinary care team, including a social worker, 3 community health workers, a pharmacist, a nurse practitioner, and PCPs. Following a discharge from the ED, COACHH team members follow-up with a phone call, text, and/or written letter over the next several days and weeks to ensure the patient is aware of COACHH services and to enroll him/her if interested. Patients are provided support in enrolling in detoxification programs as needed, and connected with pharmacologic treatment and behavioral health therapy.

COACHH team members report that persistence in supporting patients over time, including those who are reluctant to engage in care, has proved critical to helping individuals initiate and adhere to treatment.

At the hospital level, Hallmark Health convened a substance use working group that is comprised of representatives from senior leadership as well as from the pharmacy, community services, marketing and communications, behavioral health, psychiatry, emergency medicine, and emergency preparedness departments. This working group meets monthly to identify ways in which the hospital can reduce the incidence of opioid addiction, including hosting the SCOPE of Pain training[xvi] as part of a national training curriculum offered to providers and pharmacists on safe and effective pain management.

Finally, at the community level, the COACHH program is collaborating with local police and fire departments to identify patients in need of treatment. For example, the fire department alerts the COACHH team when a patient is being transported to the ED following overdose and naloxone reversal in the field. Additionally, the police department provides updates about individuals who may refuse transport to the ED following an overdose reversal. COACHH team members contact these individuals and offer the same supports that are offered when a patient is encountered in the ED. In one instance, the team successfully referred a patient to methadone treatment following multiple overdose reversals, even though the patient never presented at the ED.

Harrington Memorial Hospital

Through its CHART Phase 2 award, Harrington Memorial Hospital aims to reduce recurrent ED utilization by increasing access to cross continuum care for patients with a primary or secondary behavioral health diagnosis. Services include inpatient treatment for patients with co-occurring mental health and SUDs, a SUD intensive outpatient program, a partial hospitalization program, behavioral health screening and assessment across the hospital, and community-based follow-up. Harrington Memorial Hospital has also partnered with the Dudley District Court to provide clinical support and case management for patients with opioid-related court involvement. Staff from Harrington Memorial Hospital regularly participate in case conferences for patients in the drug court program and provide the court with details of the patient's enrollment and engagement with treatment services.

Recognizing the disparity in care for patients with SUD, Harrington Memorial Hospital has implemented an integrated care model in the ED and inpatient units to screen patients for opioid use disorder, coordinate care with clinicians, and help patients engage with SUD and mental health treatment providers in the community. Social workers and care navigators provide supportive care across the continuum of care in the hospital and post discharge. This integrated care model enables caregivers to tailor care to the needs of the patient rather than requiring patients to navigate different services and insurance requirements without assistance. Harrington Memorial Hospital has also increased education for staff on addiction treatment, with the underlying goal of treating opioid use disorder and other SUDs with the same intensity and care as any other acute psychiatric issue.

HealthAlliance Hospital

Serving a catchment area severely impacted by the opioid crisis, HealthAlliance Hospital is using its CHART Phase 2 award to improve ED workflow processes and follow-up services through the use of risk stratification strategies. A health evaluation and comprehensive intake assessment are performed by a team of care coordination specialists, who educate patients about the Health Integrated Collaborative Care Coordination (HIc3) team.

HIc3 services include the scheduling of follow-up appointments, discharge planning, providing patients with primary care and behavioral health referrals, and long-term care follow up. Patients who present to the ED with a primary and/or secondary behavioral health diagnosis or concern receive a brief screening while still in the ED (when possible), and are triaged to a dedicated CHART area within the hospital for further assessment. The HIc3 team makes at least three attempts to follow up with patients that were missed while in the ED. For those patients that have previously declined services, the HIc3 team attempts to engage the patient at least once after discharge and every subsequent ED visit thereafter.

Once enrolled in the HIc3 program, patients are transitioned to community-based services with service intensity stratified by assessed need. The HIc3 team notes two early challenges and corresponding successes in serving opioid dependent patients: initial difficulty in achieving follow-up contact with this patient population and an inadequate

xvi Additional information about available resources and materials for SCOPE of Pain training can be found at https://www.scopeofpain.org/

supply of available referral sources (e.g., detoxification beds, pharmacologic treatment providers) for a growing demand.

INVESTING IN INNOVATIVE MODELS OF CARE

The HPC is investing nearly $10 million in multiple areas of innovation to encourage the testing and scaling of promising models of care delivery that improve access to and/or quality of behavioral health. Several of these funding opportunities target aspects of the opioid use disorder epidemic, including opioid-exposed newborns, innovative care delivery models to better coordinate care across medical, social, and behavioral care, telemedicine to increase access to providers, models that accelerate initiation of treatment, and data driven initiatives that improve provider performance.

Mother and Infant-Focused NAS Interventions

There are a number of proven, innovative care delivery models to improve care for pregnant and post-partum women with opioid use disorder and infants born with neonatal abstinence syndrome (NAS), a diagnosis that is growing in prevalence due to increased rate of in utero exposure to opioids. The following hospital-based examples have realized significant reductions in the use of pharmacologic treatment, LOS, and/or TCOC:

- Boston Medical Center realized reduced LOS for infants with NAS by 3.5 days (25.1 to 21.6 days) and total cost of care by approximately $9,000 per patient after implementing a quality improvement initiative that included resident education on NAS, nurse training on NAS scoring, and implementing protocols to reduce the number of infants receiving pharmacologic intervention (especially more than 1 pharmacologic agent), and increasing the number of infants swaddled in sleep sacks.[44]
- Dartmouth Children's Hospital (New Hampshire) reduced the percent of infants with NAS treated with pharmacologic intervention by 21%, average LOS for infants treated with morphine for NAS by 4.6 days (18.2 to 13.6 days), and average TCOC by over $8,000 after implementing a quality improvement initiative that included nursing education, prenatal parent education programming, introduction of cuddlers into nurseries, and rooming-in.[45]
- Nationwide Children's Hospital (Columbus, Ohio) saw a 36 day reduction in LOS over 5 years after creating an NAS taskforce and implementing a quality improvement initiative that included the introduction of standardized treatment protocols and nurse training on NAS severity scoring.[46]
- Yale New Haven Hospital (New Haven, CT) introduced the use of non-pharmacologic interventions including low-stimulation rooms, swaddling, feeding on demand, and rocking. These interventions yielded a decrease in LOS from 28 days to 8.5 days between 2003 and 2015 for patients in the NICU, a decrease in pharmacologic treatment from 98% to 44%, a reduction in pharmacologic dosage by 50% for those requiring pharmacologic intervention, and a total savings of $5.4 million between 2011-2015 (attributed to decreased LOS and reduction in morphine treatment).[47]

To promote the adoption of cost-effective and high quality treatment of NAS like the examples above, the HPC is investing over $4 million in hospital quality improvement initiatives that drive toward reducing TCOC between the delivery and discharge of opioid exposed newborns. The HPC is coordinating its efforts with DPH by expanding on a federal grant awarded to DPH from SAMHSA that seeks to identify pregnant women with opioid use disorder and promote collaborations between outpatient providers (e.g., obstetricians, PCPs, behavioral health providers) to increase engagement and improve retention in addiction treatment for pregnant and post-partum women. HPC and DPH are also building a technical assistance program for birthing hospitals across the state to disseminate best practices in the care of NAS and retention in opioid use disorder treatment.

Targeted Cost Challenge Investments

HPC's Targeted Cost Challenge Investments (TCCI) program will fund both payers and providers to collaborate in novel ways that increase access to and efficiency of care. This includes over $4.5 million in care delivery models that increase access to SUD and mental health treatment. These innovations will improve care coordination across providers and improve access to treatment. For example, HCII awardees will target patients with co-morbid and complex medical and behavioral health diagnoses, using patient navigators to steer patients who tend to over utilize emergency settings into primary care, and providing

bedside addiction consults for hospitalized patients with comorbid conditions.

Telemedicine

The HPC is investing nearly $1.8 million in telemedicine innovations that enhance community-based access to behavioral health services for residents of Massachusetts with unmet behavioral health needs, approximately one quarter of which will target patients with SUD. Telemedicine has a number of applications[48] that have demonstrated success in improving health outcomes and reducing acute care utilization, without sacrificing patient experience of care.[49] Telemedicine can facilitate direct interaction between providers themselves, and between providers and patients, or allow for remote monitoring programmed to alert a provider when intervention is necessary.

HPC's investments in telemedicine will fund, in part, a model that increases access to SUD treatment by funding bedside consults and post-discharge follow-up for patients hospitalized with co-morbid medical and SUD diagnoses who are not receiving treatment for their addiction.

Although the strongest evidence base for telemedicine treatment of SUD is limited to alcohol use disorder, there is no contraindication for its application to opioid use disorder.[50] Testing the utility of telemedicine treatment for opioid use disorder is the only way to establish its efficacy, and is a critical policy tool to address an epidemic complicated by workforce shortages.

ED-based Initiation of Buprenorphine Treatment

Studies have shown that buprenorphine's immediate impact on opioid seeking behavior (reduced craving) increases engagement and retention in treatment. For example, when initiated in an ED setting (e.g., after an overdose), patients are significantly more likely to follow up with outpatient treatment, remain sober 30 days after discharge, and are less likely to require inpatient addiction treatment as compared to patients discharged with referral to treatment only (i.e., without medication).[51] Nonetheless, no EDs in the Commonwealth, to the HPC's knowledge, are currently administering the first 72 hours of a buprenorphine dose. The HPC will invest in supporting EDs to adopt this practice, evaluate its results and disseminate lessons learned (the state legislature reallocated up to $3 million from the Distressed Hospital Trust Fund for the HPC, in consultation with DPH, to implement a 2-year pilot program).

Because ED providers can only prescribe the first 72 hours of buprenorphine treatment, prompt follow-up with a buprenorphine prescriber is critical. Thus, close collaboration between EDs and outpatient providers is crucial to the success of ED initiation of buprenorphine. The HPC's investment in this area will require hospitals to demonstrate partnerships that will facilitate referral to and connection with outpatient buprenorphine providers and behavioral therapy.

Data-Driven Provider Performance Improvement

A previous HPC investment in Hallmark Health System through the CHART program allowed the organization to test the efficacy of making data available to providers, including their own prescribing data and the extent to which they use decision making support tools. Hallmark Health System had identified substantial variation in opioid prescribing patterns after reviewing nearly 1,000 medical records. As it assumed accountability for TCOC across providers within its health system, Hallmark used HPC funding to conduct trainings on opioid prescribing best practices and to implement provider-facing "dashboards" that displayed prescribing patterns of themselves and their peers. The dashboards illustrated each ED provider's rate of prescribing and utilization of the Prescription Drug Monitoring Program (PDMP). Hallmark's two hospitals experienced a reduction in opioid prescription rates – by 26% at Melrose-Wakefield and by 43% at Lawrence Memorial (Appendix 7).

The HPC's work to transform the Massachusetts health care system into an accountable and integrated model includes: (1) research and evaluation; (2) certification programs that promote integration of behavioral and physical health; and (3) investments that incent adoption of innovative models of care. In collaboration with payers, providers, other state agencies, and the legislature, the HPC promotes policy advancements that will further support a movement towards a transparent and highly efficient system of care.

POLICY RECOMMENDATIONS

These policy recommendations are informed by the analyses published in this report as well as current HPC work. They are strategically aligned with ongoing work across the Commonwealth to address the opioid epidemic, identifying areas where the HPC's role in health care reform can add value to the myriad efforts to slow the rate of opioid related morbidity and mortality.

Recommendation 1: The Commonwealth should systematically track the impact of the opioid epidemic on the health care system and the availability of evidence-based pharmacologic treatment.

As rates of opioid overdoses continue to increase at an unprecedented rate in the Commonwealth, hospitals face growing pressure, both in ED and inpatient settings. To appropriately address the epidemic, the state must prioritize data collection – on hospitals experiencing the greatest volume of opioid-related discharges, on the availability of evidence-based pharmacologic treatment providers (both prescribers and behavioral health providers), and on health outcomes (e.g. rate of relapse, length of stay, breastfeeding rates for infants with NAS).

This report identifies areas of the Commonwealth where patients are experiencing opioid-related complications that result in hospital discharges at the highest rates. Systematic tracking of hospital discharges and outpatient provider supply (including wait list times), particularly at the municipal level, are critical to informing the appropriate allocation of resources throughout the health care system and in communities disproportionately affected by the epidemic. The HPC is beginning this work both by tracking the impact of the opioid use disorder on hospitals, conducting an analysis on availability of dual-diagnosis providers across the Commonwealth, and developing recommendations on increasing supply and accessibility, as necessary.

To ensure quality is systematically assessed, the Commonwealth should consider development of another dashboard to track outcomes and benchmark treatment performance for both opioid use disorder and NAS. This will allow the state to identify and promote those treatments that are most effective, scalable, and sustainable.

Recommendation 2: The Commonwealth should increase access to and effectiveness of evidence-based opioid use disorder treatment by integrating pharmacologic interventions into systems of care.

Given the significant and growing burden of opioid-related illness on hospitals – both on EDs and in inpatient settings – the Commonwealth must increase access to timely evidence-based treatment in order to reduce the rate at which patients are overdosing, as well as turning to high intensity settings for treatment and complications of opioid use disorder and overdose. Access to evidence based pharmacologic treatment and behavioral therapy is proven to facilitate long-term recovery, reduce relapse, and thereby reduce hospital utilization.[xvii]

Moreover, the Commonwealth could increase access to evidence-based treatment by promoting integration of addiction treatment into primary care, as well as incenting health care systems to facilitate access to and coordinate pharmacotherapy and behavioral health services. For example, ACOs should be appropriately incented to contract with an adequate number of behavioral health providers to provide a full continuum of care. Moreover, it is critical that ACOs are adequately motivated by payment model accountability to provide the social supports (e.g., transportation, peer support) necessary to enable patients to successfully engage in and remain in treatment.

Payers should support ACOs, including behavioral health providers and PCPs, by adequately reimbursing for the additional staffing resources necessary for compliance with regulatory requirements (e.g., urine toxicology screens, pill counts), as well as for increased care coordination and management that is necessary for the provision of pharmacologic treatment of addiction.

xvii The Commonwealth is working on several initiatives that would promote this goal, including a section 1115 Demonstration Waiver (1115 waiver) submitted to the Centers for Medicare & Medicaid Services (CMS), and a planning grant awarded by the Department of Health and Human Services to assist a number of state agencies in certifying behavioral health providers as Certified Community Behavioral Health Centers (CCBHCs). The state's 1115 waiver would make all SUD services Medicaid reimbursable, including those that are currently only reimbursed through BSAS (e.g., TSS and RRS), as well as fund peer-support services, dual diagnosis services, and the use of the Screening, Brief Intervention and Referral to Treatment (SBIRT) model in primary care settings. Massachusetts' CCBHC initiative would incent behavioral health providers to integrate primary care into settings where those with the most complex behavioral health needs seek treatment. For more information on both initiatives, see http://www.mass.gov/eohhs/gov/commissions-and-initiatives/healthcare-reform/masshealth-innovations/1115-waiver-proposal-information.html and http://mehi.masstech.org/ehealth/tour-specialty/ccbhc.

a) Payers should support the integration of addiction treatment into primary care

Although methadone can only be administered in standalone federally licensed opioid treatment programs, buprenorphine and naltrexone prescribing can both be integrated into the primary care setting, with appropriate coordination (or direct provision) of counseling and other behavioral health therapy. Integration of pharmacologic treatment into the primary care setting, including coordination or direct provision of behavioral therapy, will increase the number of prescribers delivering this service. Since 2006, the Bureau of Substance Abuse Services (BSAS), within DPH, has been funding office based opioid treatment-buprenorphine (OBOT-B), which utilizes an evidence-based, integrated, primary care delivery model at federally qualified health centers (FQHCs) throughout the Commonwealth.[52]

PCPs prescribing buprenorphine require expanded staffing case management capacity to comply with regulatory requirements around minimizing diversion and improper use. Absent additional financial support, PCPs maintaining full patient panels lack capacity to adjust workflows accordingly. Payers should account for the cost of these additional provider and case management tasks and reward PCPs for quality (i.e.., link payment to metrics such as reduced addiction related admissions and relapses, shorter wait times for treatment initiation, and fewer days missed work).

b) Payers should ensure adequate networks of community-based behavioral health providers to improve access to community-based care

Improving access to community-based behavioral health providers is an essential element of improving opioid use disorder outcomes. These providers must not only be available, but also have collaborative working relationships with hospitals and PCPs to facilitate effective coordination of varying levels of care. The Commonwealth should both incent ACOs to contract with these providers, as well as track availability to identify areas of particularly salient need.

c) Payers should support initiation of addiction treatment in acute care settings in coordination with accountable, integrated systems of care

Patients who present to EDs because of an opioid-related overdose are at high risk of relapsing upon discharge unless they are immediately connected with addiction treatment. Initiation of buprenorphine in the ED, before discharge, is proven to increase the rate at which patients engage with, and remain in, treatment as compared to patients who are simply referred to treatment upon discharge.[53] Payers could promote effective treatment of opioid use disorder by incenting health care systems to initiate buprenorphine in the ED, in coordination with follow up outpatient treatment. Public and private efforts to transform health care delivery and payment models should be designed to encourage meaningful collaboration across the care continuum and coordination with non-medical services.

d) Payers should facilitate the collaboration between providers of different levels of care to minimize loss to follow-up during transitions between settings.

Patients seeking treatment for opioid use disorder may require a number of services across the care continuum (e.g., detoxification services, residential treatment, intensive outpatient treatment, pharmacologic treatment, behavioral counseling). Payers can help to reduce gaps in treatment by working closely with providers to move patients efficiently between settings of care and tracking them to ensure there are not waiting periods between treatment modalities that make relapse more likely.

Recommendation 3: The Commonwealth should support coordinated, multi-stakeholder community coalitions to address the impact of the opioid epidemic locally.

The intensity of the opioid epidemic and the configuration of local resources varies across the Commonwealth. As demonstrated by the success of the HPC's CHART program initiatives, it is clear that broad-based community coalitions are critical to stemming the tide of the opioid epidemic. The Commonwealth should support community-based efforts that coordinate across all sectors—hospitals, public health departments, payers, outpatient providers, pharmacies, law enforcement, the

corrections system, schools, and social supports. Further, the Commonwealth should support community coalitions in identifying best practices, disseminating learnings, and evaluating outcomes at the local level. Such coalitions not only prevent the duplication of individual sector efforts, but leverage shared-learnings among multiple community stakeholders to exact a coordinated front against the epidemic. BSAS has funded two such coalitions since 2008: the Massachusetts Collaborative for Action, Leadership, and Learning (MassCALL2) and the Massachusetts Opioid Abuse Prevention Collaborative (MOAPC).[54,55] Both receive funding from SAMHSA and distribute grants throughout the Commonwealth for the purpose of combating opiate abuse and overdose.

Recommendation 4: The Commonwealth should test, evaluate, and scale innovative care models for treating opioid use disorder and related conditions.

As the Commonwealth works to respond to the growing opioid epidemic, the state should support providers in the testing, evaluation, and scaling of emerging best practices with respect to treatment of opioid use disorder, as well as conditions that emerge as a byproduct of the epidemic (e.g., neonatal abstinence syndrome, or NAS). This includes further testing of models such as ED-based initiation of buprenorphine and coordination of follow up care, scaling of innovative models of NAS treatment, using telemedicine to increase access to pharmacotherapy and behavioral therapy, and making practice pattern data readily accessible to providers to facilitate performance improvement. Due to the rapid pace at which this disease is affecting large numbers of patients, investing in and measuring the outcomes of innovative models of care is critical to identifying an effective response to the epidemic.

a) ED-based initiation of buprenorphine treatment

As the Commonwealth supports the evidence-based initiation of buprenorphine in the ED, coupled with outpatient follow up and coordination of care, it should continue to monitor outcomes and best practices, given the nascent nature of this care model. The HPC will invest in community hospitals to support implementation of this practice, partnering with outpatient providers that have demonstrated capacity to assure timely follow up after discharge.[56] Results from this initiative can inform state efforts to scale similar supports that have been shown to increase engagement and retention in treatment, as well as reduce rates of relapse, readmissions, and ED utilization.

b) Mother & Infant Focused Neonatal Abstinence Syndrome (NAS) Interventions

Infants exposed to opioids in utero are often treated in the highest intensity settings of care, despite evidence that the neonatal intensive care unit is often not the best option. Strategies associated with reduced cost of care (without decreases in quality) include reducing pharmacologic intervention (e.g., methadone, morphine) and making naturally soothing treatment modalities available. For example, allowing an infant to "room-in" with the birth mother, frequent feeding, using breast milk when possible; swaddling, and minimizing exposure to stimuli (e.g., low-noise, dim lighting) are proven to result in reduced total LOS as well as a reduction in the need for placement in a NICU, thereby decreasing expenditures significantly.[57]

The Commonwealth, including payers, should support and incent hospitals to adopt these practices, as well as continue to monitor the prevalence, intensity, and outcomes related to NAS throughout the state. Tying payment to improved quality and efficiency could reduce the burden of the growing rate of NAS on TCOC across the state.

c) Telemedicine

The Commonwealth could employ telemedicine as one strategy to increase access to pharmacotherapy. For example, PCPs can use telemedicine to link patients to licensed social workers who can provide tele-therapy and to connect with addiction medicine providers as expert consults on complex patients. Payers should support access to telemedicine services through APMs or as a billable service in order to facilitate access to treatment and establish a stronger evidence base for the utility of telemedicine with respect to opioid use disorder and rates of treatment adherence, relapse, and hospital utilization.

CONCLUSION

Increased rates of opioid overdoses have resulted not only in increased mortality, but also an escalation in rates of emergency department utilization and hospital discharges, taking a tremendous toll on the Commonwealth's health care system. Building on the recent efforts to combat the opioid epidemic, this report identifies ways in which the Commonwealth could further address the opioid epidemic in ways that relate to the HPC's mission – increasing transparency and accountability of the health care system.

While no one solution exists, preventing opioid overdoses and increasing access to addiction treatment requires a multi-pronged approach that encompasses coordinated efforts among local communities, courtrooms, police and fire departments, schools, and the health care system. This report has focused only on the latter, given the HPC's charge, but does not diminish the tremendous importance of other prongs of intervention.

Through this report, the HPC seeks to add value to the wide-ranging activities already in motion by identifying areas where the HPC's role in health care reform can be leveraged as part of the Commonwealth's efforts to combat opioid use disorder. The report identifies ways in which the state can drive innovation and promote an accountable care system that adequately addresses all health conditions, rather than only physical diagnoses.

It is critical that the Commonwealth establish a strategy to systematically track the impact of the opioid epidemic. Specifically, it will be important to not only monitor mortality rates, but also to monitor the health care system, communities, and the availability of evidence-based pharmacotherapy. Moreover, the state's support for integration of opioid use disorder treatment into primary and acute care, including by implementing alternative payment models, and investments in innovative approaches that improve treatment availability and/or efficiency, will be essential to alleviating strain on the Commonwealth's health care system and reducing unintended opioid related mortality.

DATA NOTES

For purposes of this report, opioid-related hospital discharges were identified in the Center for Health Information and Analysis (CHIA) Hospital Inpatient Discharge Database, Outpatient Observation Database, and Emergency Department Database, using ICD-9 diagnoses codes designated by the United States Department of Health and Human Services, Agency for Healthcare Research and Quality.[58] Discharges with opioid-related diagnosis codes, primary or otherwise, were included in this analysis. These opioid-related diagnosis codes include: 304.00-304.03 (opioid type dependence), 304.70-304.73 (combinations of opioid type drug with any other drug dependence),305.50-305.53 (nondependent opioid abuse), 965.00 965.01, and 965.09 (poisoning by heroin, opium (alkaloids), and related narcotics), E850.0 and E850.2 (accidental poisoning by other opiates and related narcotics), E935.0 and E935.2 (heroin and other opiates causing adverse effects in therapeutic use). Note, as of 2014 there was no specific diagnosis code for fentanyl. For more details, please see the Technical Appendix.

Notably, this methodology is distinct from that used by the Massachusetts Department of Public Health (DPH), which estimated that in 2013 more than 2,000 hospital discharges and 4,500 ED discharges were associated with opioid use disorder. DPH used a narrower set of ICD-9 codes: 965.00-965.02, 965.09 (poisoning by opiates) and E850.0-E850.2 (accidental poisoning by opiates).[59]

APPENDICES

Appendix 1: Mandate of the Governor's Opioid Addiction Working Group and Members

In June 2015, Governor Baker's Opioid Addiction working group, an 18 member committee tasked with identifying ways to address the opioid epidemic, released 65 recommendations, which are being implemented now and over the next 3 years, as appropriate.

Members of the Opioid Working Group:

- **Marylou Sudders,** Secretary, Executive Office of Health and Human Services
- **Maura Healey,** Attorney General
- **George Bell,** General Catalyst Partners
- **Monica Bharel,** MD, MPH, Commissioner of the Department of Public Health
- **Bill Carpenter,** Mayor of Brockton
- **Colleen Labelle** BSN, RN-BC, CARN, Program Director of the State Technical Assistance Treatment Expansion Office Based Opioid Treatment with Buprenorphine program at Boston Medical Center; Executive Director of the Massachusetts chapter of the International Nurses Society on Addictions.
- **Alan Ingram,** Ed.D., Deputy Commissioner, Massachusetts Department of Elementary and Secondary Education
- **Judy Lawler,** Probation Officer, Chelsea District Drug Court
- **Joseph D. McDonald,** Sheriff, Plymouth County
- **John McGahan,** The Gavin Foundation
- **Fred Newton,** President & CEO of Hope House, Inc.
- **Robert Roose,** MD, MPH, Chief Medical Officer of Addiction Services at the Sisters of Providence Health System
- **Cindy Steinberg,** National Director of Policy & Advocacy, U.S. Pain Foundation; Chair, Policy Council, Massachusetts Pain Initiative
- **Ray Tamasi,** President and CEO of The Gosnold on Cape Cod
- **Steve Tolman,** President, Massachusetts AFL-CIO
- **Sarah Wakeman,** MD, Medical Director, Substance Use Disorders, Center for Community Health Improvement, Division of General Medicine, Department of Medicine, Massachusetts General Hospital
- **The Honorable Paula M. Carey,** Chief Justice of the Trial Court
- **The Honorable Rosemary B. Minehan,** Plymouth District Court

1.1: Recommendations from the Governor's Opioid Addiction Working Group (June 2015)[xviii]

The Baker administration plans to spend $34.5 million to implement these recommendations (detailed below), which include:

- $800,000 for a public awareness campaign
- $5.8 million to move substance use disorder treatment out of prison and into Taunton State Hospital
- $14 million for recovery beds
- $5 million for school-based education
- $3 million for case managers and coordinators at MassHealth

Recommendations Related to Treatment	Time Frame
Realign Treatment System to Reflect Nature of Opioid Use Disorder as a Chronic Disease with Periods of Acute Needs and Periods of Stability • Increase points of entry to treatment, eliminating the need for individuals to access other levels of care only through acute treatment services (ATS) and clinical stabilization services (CSS) • Establish and promote a longitudinally based treatment system and continuum of care	1 – >3 yrs.
Increase Treatment Access by Matching Demand and Capacity • Develop a real-time, statewide database of available treatment services, making information available via phone and the internet • Increase the number of post-ATS/CSS beds (transitional support service, residential recovery homes) • Fund patient navigators and case managers to ensure a continuum of care • Pilot a program that provides patients with access to an emergent or urgent addiction assessment by a trained clinician and provides direct referral to the appropriate level of care • Establish revised rates for recovery homes, effective July 1, 2015	6 mos. – 3 yrs.
Increase Access to Evidence-Based Medication-Assisted Treatment • Increase the number of office-based opioid treatment programs and the number of practitioners prescribing buprenorphine and naltrexone • Enforce and strengthen the requirement that all licensed addiction treatment programs accept patients on an opioid agonist therapy	6 mos. – 3 yrs.
Promote Integration of Mental Health, Primary Care, and Opioid Treatment • Create a consistent public behavioral health policy by conducting a full review of all DPH and DMH licensing regulations for outpatient primary care clinics, outpatient mental health clinics, and BSAS programs removing all access barriers • Explore state mechanisms to establish opioid treatment programs as Health Homes • Conduct a review of the license renewal process for programs accredited by The Joint Commission or Commission on Accreditation of Rehabilitation Facilities (CARF) and evaluate whether Massachusetts should implement a "deemed status" for BSAS license renewals • Permit clinicians to hold an individual with a substance use disorder involuntarily in order to conduct an assessment of whether release poses a likelihood of serious harm	6 mos. – >3 yrs.

xviii http://www.mass.gov/eohhs/docs/dph/stop-addiction/recommendations-of-the-governors-opioid-working-group.pdf

Recommendations Related to Youth & Parent Education & Interventions	Time Frame
Support the implementation of substance use prevention curricula in schools. School districts should have the autonomy to choose the evidence-based curricula and the grade level that it is implemented in their district. Programs must be proven to reduce nonmedical opioid use. Examples of programs include: LifeSkills and All Stars	6 mos. – 1 yr.
Integrate information about the risks of opioid use and misuse into mandatory athletic meetings and trainings for parents, students, and faculty	6 mos. – 1 yr.
Increase the use of screenings in schools to identify at-risk youth for behavioral health issues	1 – 3 yrs.
Develop targeted educational materials for school personnel to provide to parents about closely monitoring opioid use if their child is prescribed opioids after an injury, as well as, signs and symptoms of drug and alcohol use	6 mos. – 1 yr.
Partner with state universities that have strong education programs to develop substance use prevention curricula for school districts throughout the Commonwealth	1 – 3 yrs.
Require state universities that educate teachers to integrate screening and intervention techniques as well as substance use prevention education into the curriculum	1 – 3 yrs.
Recommendations Related to Neonatal Abstinence Syndrome, Prenatal Care & Neonatal Care	**Time Frame**
Outreach to prenatal and postpartum providers to increase training about: screening, intervention, and care for women with a substance use disorder	6 mos. – 1 yr.
Promote early identification and proper treatment, raise awareness of NAS within the public health and medical communities	1 – 3 yrs.
Review the costs and benefits of mandating testing for in utero exposure to alcohol and drugs at every birth	6 mos. – 1 yr.
Ensure adequate capacity for pregnant women in the treatment system	6 mos. – 1 yr.
Develop and institute a training program focused on NAS and addiction for Department of Children and Families staff	1 – 3 yrs.
Work with health care providers to ensure all infants with NAS are referred to early intervention by the time of hospital discharge	1 – 3 yrs.
Partner with early intervention (EI) leadership and developmental experts to study the value of increasing automatic EI eligibility for infants with NAS from one year to two years	–
Recommendations Related to Prescriber & Safe Disposal Practices	**Time Frame**
Mandate pain management, safe prescribing training, and addiction training for all prescribers as a condition of licensure (physician assistants, nurses, physicians, dentists, oral surgeons, and veterinarians)	1 – 3 yrs.
Allow partial refills across all payers with a one-time co-payment	1 – 3 yrs.
Eliminate prescription refills by mail for schedule II medications	1 – 3 yrs.
Improve the Prescription Monitoring Program (PMP): • Increase utilization by improving ease of use and expanding abuse alerts from the PMP to prescribers • Ensure data compatibility of the PMP with other states & interface the PMP with electronic health records • Enforce mandatory use of the PMP • Require PMP data to be submitted within 24 hours by pharmacies • Improve data analytics and educate prescribers about how to utilize the information	6 mos. – >3 yrs.
Implement electronic prescribing for opioids	1 – 3 yrs.
Partner with the medical and provider community to improve and increase educational offerings for prescribers and patients to promote safe prescribing	6 mos. – 1 yr.

Promote awareness and support for alternate pain therapies	>3 yrs.
Appoint individuals with expertise in addiction to the medical profession licensing boards	–
Develop universal distribution of easy to read materials at pharmacies on the safe use of medications	–
Expand and promote drug take-back days and permanent drug take-back locations, financed by pharmacies and manufacturers	–
Require practitioners, including dentists, to educate patients on the risks and side effects associated with opioids and document such discussions at the point of prescribing	1 – 3 yrs.
Increase screening for substance use at all points of contact in the medical system	1 – 3 yrs.
Appoint members to the drug formulary commission established under Chapter 258 of the Acts of 2014	6 mos. – 1 yr.
Recommendations Related to Reframing Addiction as a Disease	**Time Frame**
Create a public awareness campaign, with messaging that targets various ages, focused on: • Reframing addiction as a medical disease • Promoting medication safety practices	6 mos. – 1 yr.
Promote the Good Samaritan law	6 mos. – 1 yr.
Reduce stigma among medical and treatment professionals	>3 yrs.
Recommendations Related to Enhancing the Utilization of Data to Improve Transparency	**Time Frame**
Require and support universal and timely reporting of overdose deaths, through a partnership between the Department of Public Health, the Attorney General's Office, the Massachusetts State Police, the District Attorneys, local police departments, emergency medical services, hospitals, and others	6 mos. – 1 yr.
Make EMS overdose data available	6 mos. – 1 yr.
Utilize overdose reports to identify geographical hot spots for targeted intervention and to alert law enforcement, public health entities, community coalitions, and the public	6 mos. – 1 yr.
Create a unified EOHHS privacy policy and implement a process for sharing confidential data	–
Recommendations Related to Government & Provider Accountability	**Time Frame**
Establish a single point of accountability for the Commonwealth, Director of Addiction and Recovery Policy	6 mos. – 1 yr.
Enhance provider accountability by requiring treatment programs at all levels (inpatient and outpatient) to report on outcomes	1 – 3 yrs.
Incentivize and support providers to develop and test innovative treatment approaches	–
Create provider accountability for the successful transition from one level of care to the next and incentivize providers to reduce re-admissions; the current "system" inadvertently "rewards" providers for repeat detoxes and rehabs	–
Require the Department of Public Health to advance standards of care by establishing industry benchmarks	1 – 3 yrs.

Recommendations Related to the Court	Time Frame
Increase drug and specialty court capacity	1 – 3 yrs.
Increase access to beds for patients who are civilly committed under section 35 of chapter 123 of the General Laws and provide a roster of currently available beds to judges for section 35 commitments	1 – 3 yrs.
Review and revise discharge policies for section 35 patients; facilities must be required to follow the law and issue a written determination that release will not result in a likelihood of serious harm when individuals are discharged from the facility	6 mos. – 1 yr.
Improve the continuum of care for patients committed under section 35	1 – 3 yrs.
Ensure notification to the Court when a section 35 patient escapes from treatment	6 mos. – 1 yr.
Recommendations Related to Policing & Correctional Institutions	**Time Frame**
Transfer responsibility for civil commitments from the Department of Corrections to the Executive Office of Health and Human Services	6 mos. – 1 yr.
Suspend, rather than terminate, MassHealth coverage during incarceration	6 mos. – 1 yr.
Partner correctional facilities with community health centers to ensure individuals can access treatment upon release	–
Analyze treatment spending in correctional facilities • Inmates should be able to continue medication-assisted treatment while incarcerated • Inmates should be able to begin treatment while incarcerated and be connected to treatment upon release	6 mos. – 1 yr.
Encourage and support alternatives to arrest, making police a partner in obtaining treatment for individuals	6 mos. – 1 yr.
Bulk purchase opioid agonist and naltrexone therapies for county corrections	6 mos. – 1 yr.
Recommendations Related to Recovery & Support	**Time Frame**
Leverage and increase support for community coalitions to address the opioid crisis • Create an online repository of resources and best practices for community coalitions • Improve statewide coordination and information sharing among coalitions	1 – 3 yrs.
Expand peer and family support organizations such as *Learn to Cope*	1 – 3 yrs.
Pilot recovery coaches in emergency rooms and hot spots	6 mos. – 1 yr.
Implement a process to certify alcohol and drug free housing to bring accountability and credibility to this recovery support system	6 mos. – 1 yr.
Partner with businesses to remove employment barriers that recovering individuals experience, specifically review regulations related to CORI checks	1 – 3 yrs.
Incentivize employers to hire individuals in early recovery	1 – 3 yrs.
To improve outcomes for recovery, explore the benefits and costs associated with issuing certificates of recovery	6 mos. – 1 yr.

Recommendations Related to Naloxone	Time Frame
Investigate the feasibility of having Naloxone in public spaces	6 mos. – 1 yr.
Improve affordability of Naloxone • Through bulk purchasing agreements • By eliminating all copayment requirements	1 – 3 yrs.
Encourage Naloxone to be co-prescribed with opioids	6 mos. – 1 yr.
Recommendations Related to Insurance	**Time Frame**
Require the Division of Insurance to implement guidance for commercial insurers about the implementation of chapter 258 of the acts of 2014 prior to October 1, 2015	6 mos. – 1 yr.
Eliminate insurance barriers that impede integration of addiction and mental health care into the primary care setting	>3 yrs.
Require consistent coverage and prior authorization practices and policies throughout all MassHealth programs	–
Bring meaning to federal and state behavioral health parity laws through enforcement actions to remove inappropriate barriers to treatment	–
Encourage insurers to support non-opioid pain therapies	>3 yrs.
Prepare a public report on what non-pharmacologic treatments for pain are covered by all private and public insurers	>3 yrs.
Encourage insurers to support recovery coaches for individuals with a substance use disorder	6 mos. – >3 yrs.
Encourage insurers to support new pathways to treatment	>3 yrs.
Recommendations Related to Federal-State Partnerships	**Time Frame**
Partner with federal leaders to recommend that the American College of Graduate Medical Education adopt requirements for pain management and substance use disorder education for all medical and residency programs (i.e. surgical, pediatrics, internal medicine, family medicine, obstetrics, and gynecology)	1 – 3 yrs.
Partner with federal leaders to recommend that the Commission on Dental Accreditation adopt requirements for education on safe opioid prescribing practices for all dental programs	–
Partner with federal leaders to recommend that the American Veterinary Medical Association adopt requirements for education on safe opioid prescribing practices for all veterinary programs	–
Partner with federal leaders to increase support for substance use prevention, intervention, treatment, and recovery efforts uniquely tailored for our veterans	–
Request the Drug Enforcement Agency (DEA) to permit medical residents to prescribe buprenorphine under an institutional DEA registration number, thus allowing residents to learn how to manage patients with an opioid addiction	–
Implement nationwide standards for pharmaceutical take back programs •Require manufacturers and pharmacies nationwide to finance the disposal of unused prescription medication	–
Change the laws and regulations related to prescribing buprenorphine • Increase the cap - the number of patients a physician can treat - or remove it entirely • Permit nurse practitioners and physician assistants to prescribe buprenorphine	–
Facilitate the interoperability of prescription monitoring programs nationwide	1 – 3 yrs.
Review 42 CFR Part II to ensure that it facilitates integrated care and the use of electronic health records and does not exacerbate the stigma associated with a substance use disorder	>3 yrs.
Request that the Pain Management Question from the HCAHPS not be linked to hospital reimbursement	–

1.2: Updates from the Governor's Opioid Addiction Working Group (as of January 2016)

Updates from the Governor's Opioid Working Group (January 2016)[xix]	
Prevention	
July 2015	• Supplemental budget request filed by Governor Baker for $27.8 million to address the opioid crisis ($5 million for prevention education) • DPH sponsors free training for 138 people on evidence-based substance use prevention • MA Hospital Association publishes new screening tool for evaluating patients with substance use disorders
August 2015	• Participants in DPH training receive second evidence-based skills training in "Botvin LifeSkills" • Drug Formulary Commission holds first meeting • MA Medical Society publishes physician treatment and communication guideline and CME webinars on pain management and judicious prescribing • DPH publishes informational material for parents
September 2015	• 133 sites participate in National Drug Take-Back Day to collect unneeded prescriptions
October 2015	• Governor Baker files H.3817, which aims to increases access to training for providers, treatment for people with substance use disorders, prevention education, among others • Governor Baker and Mayor Walsh urge MA Legislature to pass H.3817 • DPH sponsors free training for school nurses on evidence-based substance use prevention
November 2015	• DCF/BSAS begins trainings on NAS • Governor Baker launches "#StateWithoutStigMA" campaign
December 2015	• DPH and MA Interscholastic Athletic Association launch partnership to provide parents and coaches educational material on opioids
February 2015	• "Botvin LifeSkills" trainings scheduled for school nurses and personnel through March 2016
Intervention	
July 2015	• Ch.46 of acts of 2015 signed into law, creating a bulk purchasing trust fund and regulations regarding compulsory use of PMP
August 2015	• DPH issues overdose death data to public in August quarterly report • AG Healey negotiates agreement with Amphastar for $325,000 to go into bulk purchase trust fund
September 2015	• DPH urges pharmacies to distribute opioid prescription drug fact sheet • DPH Commissioner urges prescribers to co-prescribe naloxone with opioid prescriptions
October 2015	• DPH releases overdose death data to public in October quarterly report • BSAS posts RFR for pilot programs focused on increasing access to walk-in treatment and appropriate referrals
November 2015	• DPH issues guidance to towns and cities on how to utilize Commonwealth Municipal Naloxone Bulk Purchase Trust Fund
December 2015	• DPH requires pharmacies to submit data on dispensing controlled substances to PMP (105 CMR 700.012) • DPH opens PMP for use by medical residents and interns • HPC announces $3.5 million to improve care for NAS • DPH awards contract to Appriss, Inc to implement a new, enhanced PMP

xix http://www.mass.gov/eohhs/docs/dph/stop-addiction/action-plan-update.pdf

Treatment	
June 2015	• 10 adult residential recovery home beds added in Westborough • 2 Clinical Stabilization Service beds added in Fall River
July 2015	• MassHealth issues new protocols to ensure eligible individuals receive coverage upon release from incarceration • DPH issues alert to all DPH providers, contractors, and stakeholders clarifying all addiction treatment programs must accept patients receiving MAT • Governor Baker's $27.8 million supplementary budget request to include $5.8 million to transfer women committed under Section 35 at MCI-Framingham to Taunton State, and $3 million to MassHealth to increase services • MassHealth begins to fast-track enrollment for qualified, uninsured DPH clients receiving detoxification services • DPH, DMH, and Division of Insurance issues new guidance on implementation of Ch.258
August 2015	• BSAS and MA League of Community Health Centers discuss strategies for increasing number of providers with DEA waivers to prescribe buprenorphine • DPH receives 3-year, $3 million SAMHSA grant to expand MAT and comprehensive services for pregnant women with opioid use disorders • MassHealth and DPH commit to create statewide database of relevant treatment services, to be complete in early 2016 • Celticare removes prior authorization requirements for Suboxone • 125 beds licensed by DMH opened in Dartmouth
September 2015	• 11 detoxification beds and 8 Clinical Stabilization Service beds opened in Plymouth • MassHealth notifies all MCOs to remove prior authorization for certain substance use treatment services • 23 adult residential recovery home beds added in Westborough • US HHS announces revisions to buprenorphine prescribing restrictions
October 2015	• 15 adult residential recovery home beds added in Lowell • 22 adult residential recovery home beds added in Boston
November 2015	• MassHealth issues guidelines to contracted health plans on how to reduce barriers to treatment, specifically MAT • BSAS posts RFR to increase office-based opioid treatment programs in community health centers • Governor, deans of the Commonwealth's medical school, and MA Medical Society launch new core competencies in primary, secondary, and tertiary prevention and management of drug misuse • MA League of Community Health Centers holds conference for over 70 suboxone prescribers with workshops about chronic pain and addiction • 20 Clinical Stabilization Service beds added in Haverhill
December 2015	• 23 detoxification beds added in Haverhill • DPH posts RFR to pilot recovery coaches in ED
January 2016	• DPH announces $466,450 in grants awarded to four provider organizations to improve treatment for youth and young adults with co-occurring disorders • DPH awards $700,000 in grants to 31 municipalities to support carrying and administering naloxone by police and fire departments • DPH awards $6.8 million in grants to 16 communities to implement evidence-based prevention programs, policies, and practices targeted toward 12 to 25 year olds • 24 ATS beds added in Boston • 28 section 35 treatment beds for women scheduled to open in Shattuck
February 2016	• 32 ATS and 32 CSS beds scheduled to open in Greenfield • 15 section 35 treatment beds for women scheduled to open in Taunton State Hospital
Spring 2016	• MassHealth plans to take steps to ensure Outpatient Treatment Programs that dispense methadone have the ability to bill MassHealth for buprenorphine and naltrexone in an effort to expand access to MAT

Recovery	
July 2015	• $27.8 supplemental budget request includes $14 million to increase compensation rates in recovery homes for individuals with substance use disorders
September 2015	• Recovery High School in Worcester opens
October 2015	• DPH awards two contracts for voluntary sober home certification process • Daily rate compensation rates in recovery homes for individuals with substance use disorders increases, and will be paid retroactively to July 2015
October to December 2015	• DPH hosts 3 trainings for residential treatment providers, and trains 147 individuals
January 2016	• Recovery Home Collaboration and MA Association of Sober House begin to certify sober homes

Appendix 2: Summary of recommendations of Special Senate Committee on Opioid Addiction Prevention, Treatment, and Recovery Options[60]

After holding a number of hearings, the Special Senate Committee on Opioid Addiction Prevention, Treatment and Recovery Options issued a set of recommendations, in September 2015, to strengthen prevention of opioid use disorder, intervention, treatment, and recovery options in the Commonwealth.[61] Below is the list of the committee's members followed by a summary table of its findings and recommendations. Note that many of these provisions were incorporated into recent legislation, namely Ch. 52 of the Acts of 2016, An act relative to substance use, treatment, education and prevention.

Jennifer L. Flanagan (Chair)
Worcester and Middlesex District
Special Committee Chair

John F. Keenan
Norfolk and Plymouth District
Special Committee Vice Chair

Michael O. Moore
Second Worcester District

Richard J. Ross
Norfolk, Bristol and Middlesex District

Eric P. Lesser
First Hampden and Hampshire District

Anne M. Gobi
Worcester, Hampden, Hampshire and Middlesex District

Viriato M. deMacedo
Plymouth and Barnstable District

Joan B. Lovely
Second Essex District

Kathleen O'Connor Ives
First Essex

Recommendations excerpted from the Report of the Special Senate Committee on Opioid Addiction Prevention, Treatment, and Recovery Options
Training and Awareness of Good Samaritan Provisions: Establish Good Samaritan Awareness program as a required element of Municipal Police Training Committee (MPTC) basic training curriculum and as a periodically reviewed subject for in-service training.
Drug Formulary List of Non-opiate Pain Management Products: Direct the newly formed Drug Formulary Commission (which exists to develop Brand v. Generic, and Abuse-deterrent v. Non-abuse deterrent substitution lists) to also publish a list of non-opiate pain management products that may be used as lower risk alternatives.
Voluntary Non-opiate Directive: (a) Direct EOHHS to establish a voluntary program for any person to record a non-opiate directive. This would allow a person in recovery, or for any other reason of personal choice, to have a clear indicator in their patient record and in the PMP, that a health care practitioner or health care facility shall not administer, offer or prescribe opiate drugs to that person. (b) A person can have their own non-opiate order deleted and expunged for any reason. (c) Recording of a non-opiate directive would be on a standardized form published by EOHHS, and the form must comply with all federal requirements for privacy of addiction treatment records. The form must also present plain language information on how to remove the order. (d) Regulations to implement the program must cover health care proxy and guardianship override of the non-opiate directive, and the ability for treating clinicians to override the directive in an emergency situation and based on documented medical judgment. Should also include exemptions for emergency personnel acting in the field during an emergency.
Expanded SBIRT Screening: (a) Local school departments or boards of health shall require SBIRT screening at least once annually for all students in grades 8 or 9, and in grade 11. These screenings shall be performed by a nurse, physician, or other personnel approved for the purpose by the DPH. (b) Screening results shall be recorded without identifying information, and reported to the DPH.

Safeguards on High Risk Drugs:

(a) Chapter 258 of 2014 tasked the Drug Formulary Commission with identifying high-risk extended-release/long-acting drugs and alerting the public health commissioner, but the final version did not include any corresponding authority to act or any further safeguards on these high-risk products.

(b) This bill would limit opioid prescriptions in an emergency department to a 5-day supply, and would prohibit an ED from issuing prescriptions for the identified high-risk drugs. It would also require that prescriptions of these high-risk products be issued only on a determination that lower risk drugs are unsuitable, and with a pain management treatment agreement in place. The medical determination would be documented and placed in the patient's medical file.

(c) Language here is similar to what was passed in the Senate version last year, with regard to "heightened risk" drugs identified by the formulary commission.

Patient Choice in Prescription Volume:

(a) Legislation would allow patients to voluntarily reduce the quantity of an opiate drug that they receive, regardless of the quantity indicated on their prescription.

(b) Pharmacists would be required, in their routine consultation with a patient, to advise them of this option. The pharmacist would be authorized, with no further approval from the prescriber or modification of the prescription, to dispense the drug in a partial quantity.

(c) Notice of the partial prescription would be recorded and sent to the prescriber in a reasonable time, and the remaining quantity on the prescription would remain valid for 72 hours pursuant to federal regulations.

(d) Insurance carriers would be required to offer cost-sharing on a sliding scale based on quantity, to accommodate for a patient who voluntarily receives a lesser quantity.

Drug Stewardship:

(a) Establish, as a condition of selling or distributing a schedule II or III drug in Massachusetts, that the manufacturer of the drug establish and fund a stewardship program that allows patients to dispose of unused and unwanted drugs.

(b) Exemptions are included for veterinary products, drugs compounded on a per-patient basis, sharps products whose disposal is already covered under existing MGL, and drugs approved for use in medication assisted addiction treatment.

(c) Stewardship plans would be required to include a drug take-back or mail-back component; adequate provisions for the security, transport and disposal of returned products; provisions to incentivize participation; and public outreach and education.

(d) Plans would be approved by the Department and renewed every three years, with the ability to assess fines for violations or discontinuation of the stewardship plan, and with repeat violations being sent forward to the Attorney General for enforcement.

Individual Prescriber Trend Notifications:

(a) Utilize PMP data to learn more about the mean and median prescribing volumes for opiates in Massachusetts, and subsequently build individual prescriber profiles showing each prescriber their percentile with regard to their peers.

(b) Profiles would be confidential, shared only with the prescriber as an educational tool to help them shape their own practices. This would provide objective data about prescribing trends and best practices, rather than having prescribers rely on "guidance" from pharmaceutical sales teams about appropriate prescribing practices.

Access to Pain Management Specialty Consultation:

(a) Direct the Board of Registration in Medicine to create a pain management specialty certification. This would not restrict the current practice of anyone not certified, but it would identify practitioners who can provide specialized consultations.

(b) Establish a commission that will develop pain management consultation and temporary service guidelines, mirroring the model of the MCPAP program for child psychiatry. This would allow practitioners to leverage the expertise of their peers, making greater use of the currently limited number of pain management specialists.

Review of Coverage For Non-narcotic Pain Management:

(a) Legislation from the committee could include a requirement for the Division of Insurance to review pain management options; for insurance carriers to develop a pain management plan and post information on their public website about alternative pain management.

(b) Legislation could also include a requirement for insurance carriers to develop control methods against overprescribing and overreliance on pain medication, and to post this plan on their public website as well.

(c) Pain management plan and controlled substance safety plan would both become a part of the existing DOI accreditation process.

Transparency in Addiction Service Denial Rates:

(a) Require annual reporting on denied claims by each insurance carrier, categorized by medical/surgical and behavioral/addiction.

(b) Require that, with each denial of an internal grievance case relating to behavioral/addiction, the carrier must specifically describe the medical necessity criteria and treatment limitations relied upon for the denial.

Civil Liability Protection for Narcan Administration:

Massachusetts currently provides "Good Samaritan" legal protection to any person to possess and administer naloxone. However, this protection does not extend to civil liability. Closing this gap may remove the hesitations of some first responder agencies that have not yet adopted the use of this life saving product.

Gabapentin Monitoring:

Require that Gabapentin – a drug that is increasing in popularity for its enhancing effect on opiate misuse – be reported and monitored by the Prescription Monitoring Program.

MassHealth Lock-In Program Correction:

(a) Chapter 244 of 2012 included a section codifying the "Lock-In" program under MassHealth. However, in application and interpretation there are two gaps that can be addressed.

(b) The lock-in program is intended to limit patients, upon finding of certain risk indicators, to a single pharmacy and a single prescriber for their controlled substances. The language in Chapter 244 has been interpreted to only limit patients to a single pharmacy, not to restrict the number of prescribers.

(c) Currently, patients who receive coverage through an MCO and are enrolled in a lock-in program are removed from lock-in if they move from one MCO to another. This could be amended so that the person remains in the program regardless of an MCO change.

Appendix 3: Summary of the Center for Health Information and Analysis' SUD Report

As required by Section 30 of Chapter 258 of the Acts of 2014, the Massachusetts Center for Health Information and Analysis (CHIA) published its *Access to Substance Use Disorder Treatment in Massachusetts* report in April 2015.[62] CHIA's report describes the continuum of care for SUD treatment in Massachusetts and evaluates available coverage options for those services across payers including commercial health insurance plans, MassHealth, and the Bureau of Substance Abuse Services (BSAS). CHIA's report examines the accessibility of SUD services along the care continuum based on provider availability, potential barriers to accessing treatment and the capacity of providers to appropriately meet the treatment needs of the SUD patient population. The report categorizes treatment and access issues in 4 categories (prevention, intervention, treatment, and recovery).

CHIA's Continuum of Care in MA: Definitions, Examples, Coverage

Category	Examples	Funding/Coverage[xx]
Prevention	Community-focused initiatives to educate the public (e.g., radio and television public health campaigns) Often aim to restrict youth access to substances	Largely funded and administered by BSAS
Intervention	BSAS's Overdose Education and Naloxone Distribution program Learn2Cope Family Intervention pilot programs DPH Prescription Monitoring Program	Typically funded by BSAS (including subcontracting to consumer advocacy groups and treatment organizations)
Treatment	Inpatient detoxification centers Inpatient and outpatient Clinical Support Services and Transitional Support Services Medication Assisted Treatment (e.g., methadone, buprenorphine, naltrexone for opioid addiction)	Funded by commercial insurers, MassHealth, and/or BSAS
Recovery	Substance-free walk-in Recovery and Support Centers with peer mentoring and support Recovery high schools Sober housing	BSAS covers recovery high schools

xx May include out-of-pocket spending, private foundation support, government grants, donations and other forms of support.

CHIA's report also highlights gaps in treatment in the state, including inadequacy of services, long waiting lists, and geographic spread of providers. To address these issues, in part, chapter 258 eliminated prior authorization for patients receiving acute treatment services and stabilization services for the first 14 days of treatment, and MassHealth prohibits cost-sharing for SUD inpatient services.[xxi, 63] The table below provides a summary of coverage, capacity, cost-sharing, and expected additional capacity for given treatments.

Capacity, coverage, and cost-sharing for given treatments

Program Type	Capacity	Coverage & Cost-Sharing
Acute treatment services (ATS - detoxification)	Hospital-based: 4 programs; 150 total beds Free-standing: 20 programs; 710 total beds (serve approx. 3500 patients per month) Free-standing Section 35: 2 programs; 56 total beds Anticipated expansion: 32 beds in Greenfield and several pending licensure applications	Commercial ($69 - $500 for 24 hrs) MassHealth BSAS
Continuing support services (CSS - stabilization)	Non-Section 35: 11 programs; 297 total beds (approx. 600 patients served per month) Section 35: 2 programs; 142 total beds Anticipated expansion: 32 beds in Greenfield	Commercial ($69 - $500 for 24 hrs) MassHealth BSAS
Transitional support services (TSS - stabilization)	Non-Section 35: 9 programs; 339 total beds (approx. 331 patients served per month) Section 35: 2 programs; 80 total beds Anticipated expansion: 4 beds	BSAS
Outpatient Counseling (ongoing treatment)	119 programs Unknown number of independently-practicing behavioral health clinicians	Commercial (co-pays range from $16 - $31) MassHealth BSAS
Medication assisted treatment (MAT - ongoing treatment)	39 Methadone Opioid Treatment Programs 677 DEA certified physicians that can administer buprenorphine to 100 patients per year (in non-specialty setting only) 16 BSAS supported/staffed office-based opioid treatment programs in community health centers that administer buprenorphine and naltrexone Unknown number of providers can prescribe/administer naltrexone (note that HPC survey identified number – see section 4)	Commercial (co-payments for methadone average $20 - $30 per visit) MassHealth BSAS
Long-Term Residential (ongoing treatment)	Adult Residential: 79 programs; 2281 total beds Family Residential: 8 programs (serve approximately 110 families at a time) Adolescent Residential (age 13-17): 6 programs; 105 total beds Youth Residential: 2 programs; 30 total beds (serve approximately 600 patients per month)	BSAS

xxi Chapter 258 prohibits plans governed by state law from imposing prior authorization requirements on SUD treatment, which may obviate providers concerns about prior authorization being a barrier to prescribing any type of pharmacologic therapy for opioid use disorder, although it remains to be seen whether prior authorization will continue to be required for higher doses. For more information, see: https://malegislature.gov/Laws/SessionLaws/Acts/2014/Chapter258

Appendix 4: Opioid-related hospital discharges by city/town, 2014

The following table presents the number of opioid-related hospital discharges in each city and town. City/town is based on patient's resident zip code, not hospital address. This appendix is meant to serve as an analog to DPH's opioid-related mortality database.[xxii]

Due to terms of HPC's data use agreement with CHIA, where there were fewer than 11 ED visits and hospital discharges combined in 2014 in a given city or town, the exact number is not made publicly available.

City/town	Hospital Discharges[xxiii] (HPC analysis of CHIA data)
Abington	166
Acton	52
Acushnet	62
Adams	98
Agawam	119
Allston	88
Amesbury	171
Amherst	56
Andover	76
Arlington	114
Ashburnham	22
Ashby	14
Ashfield	Fewer than 11
Ashland	76
Ashley Falls	Fewer than 11
Assonet	23
Athol	93
Attleboro	475
Attleboro Falls	Fewer than 11
Auburn	62
Auburndale	30
Avon	32
Ayer	77
Baldwinville	21
Barnstable	13
Barre	36

City/town	Hospital Discharges[xxiii] (HPC analysis of CHIA data)
Becket	21
Bedford	35
Belchertown	71
Bellingham	79
Belmont	48
Berkley	49
Berlin	12
Bernardston	Fewer than 11
Beverly	414
Billerica	219
Blackstone	26
Blandford	Fewer than 11
Bolton	15
Bondsville	13
Boston	3,353
Bourne	26
Boxborough	15
Boxford	15
Boylston	16
Braintree	271
Brewster	37
Bridgewater	145
Brighton	163
Brimfield	14
Brockton	1,744
Brookfield	Fewer than 11

xxii For opioid-related deaths by city and town, see http://www.mass.gov/eohhs/docs/dph/quality/drugcontrol/county-level-pmp/town-by-town-listings-january-2016.pdf

xxiii HPC Analysis—CHIA, Hospital Inpatient Discharge Database and Emergency Department Database, 2014

City/town	Hospital Discharges[xxiii] (HPC analysis of CHIA data)
Brookline	81
Buckland	Fewer than 11
Burlington	139
Buzzards Bay	141
Byfield	12
Cambridge	479
Canton	130
Carlisle	Fewer than 11
Carver	134
Cataumet	Fewer than 11
Centerville	62
Charlemont	Fewer than 11
Charlestown	162
Charlton	52
Chatham	23
Chelmsford	91
Chelsea	286
Cherry Valley	Fewer than 11
Cheshire	19
Chester	Fewer than 11
Chesterfield	Fewer than 11
Chestnut Hill	32
Chicopee	716
Chilmark	Fewer than 11
Clinton	133
Cohasset	34
Colrain	12
Concord	20
Conway	Fewer than 11
Cotuit	25
Cummington	Fewer than 11
Dalton	106
Danvers	233
Dedham	255
Deerfield	Fewer than 11

City/town	Hospital Discharges[xxiii] (HPC analysis of CHIA data)
Dennis	19
Dennis Port	48
Devens	Fewer than 11
Dighton	22
Dorchester	236
Dorchester Center	506
Douglas	31
Dover	Fewer than 11
Dracut	202
Drury	Fewer than 11
Dudley	48
Dunstable	Fewer than 11
Duxbury	35
East Bridgewater	136
East Brookfield	Fewer than 11
East Falmouth	222
East Freetown	23
East Longmeadow	68
East Otis	Fewer than 11
East Sandwich	26
East Taunton	71
East Walpole	16
East Wareham	71
East Weymouth	208
Eastham	23
Easthampton	132
Edgartown	30
Erving	Fewer than 11
Essex	15
Everett	568
Fairhaven	106
Fall River	1,237
Falmouth	85
Fayville	Fewer than 11
Feeding Hills	105

City/town	Hospital Discharges[xxiii] (HPC analysis of CHIA data)
Fiskdale	12
Fitchburg	480
Florence	62
Forestdale	19
Foxborough	90
Framingham	412
Franklin	145
Gardner	141
Georgetown	37
Gilbertville	Fewer than 11
Gill	Fewer than 11
Gloucester	367
Goshen	Fewer than 11
Gosnold	Fewer than 11
Grafton	25
Granby	45
Granville	Fewer than 11
Great Barrington	46
Greenfield	189
Groton	27
Grove Hall	224
Groveland	27
Hadley	26
Halifax	76
Hampden	20
Hanover	64
Hanscom	Fewer than 11
Hanson	64
Hardwick	Fewer than 11
Harvard	11
Harwich	40
Harwich Port	Fewer than 11
Hatfield	15
Haverhill	911
Haydenville	Fewer than 11

City/town	Hospital Discharges[xxiii] (HPC analysis of CHIA data)
Heath	Fewer than 11
Hingham	68
Hinsdale	39
Holbrook	178
Holden	72
Holland	Fewer than 11
Holliston	32
Holyoke	803
Hopedale	29
Hopkinton	50
Housatonic	Fewer than 11
Hubbardston	18
Hudson	100
Hull	110
Humarock	Fewer than 11
Huntington	16
Hyannis	249
Hyde Park	198
Indian Orchard	100
Ipswich	64
Jamaica Plain	264
Jefferson	Fewer than 11
Kingston	57
Lakeville	67
Lancaster	38
Lanesborough	32
Lawrence	1,002
Lee	70
Leeds	40
Leicester	39
Lenox	12
Lenox Dale	Fewer than 11
Leominster	340
Leverett	Fewer than 11
Lexington	30

City/town	Hospital Discharges[xxiii] (HPC analysis of CHIA data)
Lincoln	Fewer than 11
Littleton	33
Longmeadow	34
Lowell	1,200
Ludlow	190
Lunenburg	50
Lynn	1,185
Lynnfield	64
Malden	558
Manchester-by-the-Sea	12
Mansfield	149
Marblehead	59
Marion	Fewer than 11
Marlborough	165
Marshfield	145
Marstons Mills	66
Mashpee	146
Mattapan	180
Mattapoisett	30
Maynard	39
Medfield	16
Medford	432
Medway	54
Melrose	130
Mendon	18
Merrimac	50
Methuen	503
Middleborough	187
Middlefield	Fewer than 11
Middleton	86
Milford	173
Millbury	80
Millers Falls	Fewer than 11
Millis	42

City/town	Hospital Discharges[xxiii] (HPC analysis of CHIA data)
Millville	Fewer than 11
Milton	75
Monroe Bridge	Fewer than 11
Monson	85
Montague	20
Monterey	Fewer than 11
Nahant	19
Nantucket	38
Natick	189
Needham	49
Needham Heights	20
New Bedford	1,297
New Braintree	Fewer than 11
New Marlborough	Fewer than 11
New Salem	Fewer than 11
Newbury	18
Newburyport	96
Newton	45
Newton Centre	26
Newton Highlands	15
Newton Lower Falls	22
Newton Upper Falls	Fewer than 11
Newtonville	31
Norfolk	52
North Adams	218
North Andover	91
North Attleboro	222
North Billerica	82
North Brookfield	22
North Chatham	Fewer than 11
North Chelmsford	32
North Dartmouth	84
North Dighton	13
North Easton	89
North Falmouth	40

City/town	Hospital Discharges[xxiii] (HPC analysis of CHIA data)
North Grafton	35
North Hatfield	Fewer than 11
North Oxford	Fewer than 11
North Reading	74
North Truro	Fewer than 11
North Weymouth	108
Northampton	176
Northborough	37
Northbridge	36
Northfield	16
Norton	167
Norwood	403
Oak Bluffs	22
Oakham	Fewer than 11
Orange	41
Orleans	26
Osterville	Fewer than 11
Otis	11
Oxford	80
Palmer	135
Paxton	Fewer than 11
Peabody	506
Pembroke	138
Pepperell	66
Petersham	Fewer than 11
Pittsfield	959
Plainfield	Fewer than 11
Plainville	83
Plymouth	457
Plympton	18
Princeton	Fewer than 11
Provincetown	15
Quincy	999
Randolph	193
Raynham	107

City/town	Hospital Discharges[xxiii] (HPC analysis of CHIA data)
Reading	145
Rehoboth	34
Revere	630
Richmond	13
Rochdale	Fewer than 11
Rochester	14
Rockland	289
Rockport	33
Rowe	Fewer than 11
Rowley	21
Roxbury	58
Royalston	Fewer than 11
Russell	Fewer than 11
Rutland	19
Sagamore	13
Sagamore Beach	34
Salem	443
Salisbury	143
Sandisfield	Fewer than 11
Sandwich	25
Saugus	347
Savoy	Fewer than 11
Scituate	68
Seekonk	12
Sharon	50
Sheffield	29
Shelburne Falls	20
Sherborn	Fewer than 11
Shirley	33
Shrewsbury	87
Shutesbury	Fewer than 11
Somerset	103
Somerville	406
South Chatham	Fewer than 11
South Dartmouth	69

City/town	Hospital Discharges[xxiii] (HPC analysis of CHIA data)
South Deerfield	22
South Dennis	49
South Easton	89
South Ergemont	Fewer than 11
South Grafton	34
South Hadley	104
South Hamilton	26
South Lee	Fewer than 11
South Walpole	Fewer than 11
South Weymouth	165
South Yarmouth	74
Southampton	31
Southborough	23
Southbridge	161
Southfield	Fewer than 11
Southwick	34
Spencer	92
Springfield	1,787
Sterling	15
Stockbridge	Fewer than 11
Stoneham	182
Stoughton	247
Stow	13
Sturbridge	28
Sudbury	20
Sunderland	Fewer than 11
Sutton	19
Swampscott	70
Swansea	82
Taunton	716
Templeton	17
Tewksbury	219
Three Rivers	33
Topsfield	29
Townsend	49

City/town	Hospital Discharges[xxiii] (HPC analysis of CHIA data)
Truro	Fewer than 11
Turners Falls	71
Tyngsboro	38
Tyringham	Fewer than 11
Upton	16
Uxbridge	53
Vineyard Haven	32
Waban	11
Wakefield	228
Wales	Fewer than 11
Walpole	99
Waltham	382
Ware	141
Wareham	152
Warren	19
Warwick	Fewer than 11
Watertown	123
Wayland	17
Webster	173
Wellesley	Fewer than 11
Wellesley Hills	16
Wellfleet	13
Wendell	Fewer than 11
Wenham	Fewer than 11
West Barnstable	Fewer than 11
West Boylston	38
West Bridgewater	59
West Brookfield	24
West Chesterfield	Fewer than 11
West Dennis	13
West Harwich	Fewer than 11
West Hatfield	Fewer than 11
West Newbury	Fewer than 11
West Newton	46
West Roxbury	192

City/town	Hospital Discharges[xxiii] (HPC analysis of CHIA data)
West Springfield	309
West Stockbridge	Fewer than 11
West Tisbury	Fewer than 11
West Townsend	Fewer than 11
West Wareham	27
West Warren	Fewer than 11
West Yarmouth	84
Westborough	80
Westfield	284
Westford	48
Westminster	18
Weston	Fewer than 11
Westport	64
Westwood	52
Weymouth	174
Whately	Fewer than 11
Whitinsville	95
Whitman	153
Wilbraham	65
Williamsburg	Fewer than 11
Williamstown	17
Wilmington	176
Winchendon	63
Winchester	25
Windsor	Fewer than 11
Winthrop	184
Woburn	305
Woods Hole	Fewer than 11
Worcester	2,094
Worthington	Fewer than 11
Wrentham	51
Yarmouth Port	27

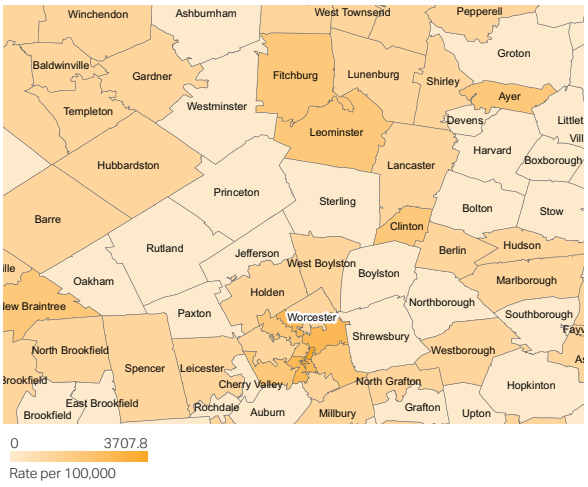
Appendix 5: Rates of opioid-related hospital discharges in gateway cities

Under M.G.L. c. 23A section 3A, a Gateway City is defined as a municipality that has the following characteristics:

- Population between 35,000 and 250,000;
- Median household income below the state average; and
- Rate of educational attainment of a bachelor's degree or above that is *below* the state average.[64]

Out of 26 gateway cities in Massachusetts, the 12 in which residents are utilizing the hospitals for opioid-related reasons are concentrated in just 4 areas of the state: (1) Central Massachusetts; (2) Southeastern Massachusetts; (3) Merrimack Valley; (4) Metro Boston; (5) Metro South; and (6) the South Shore.

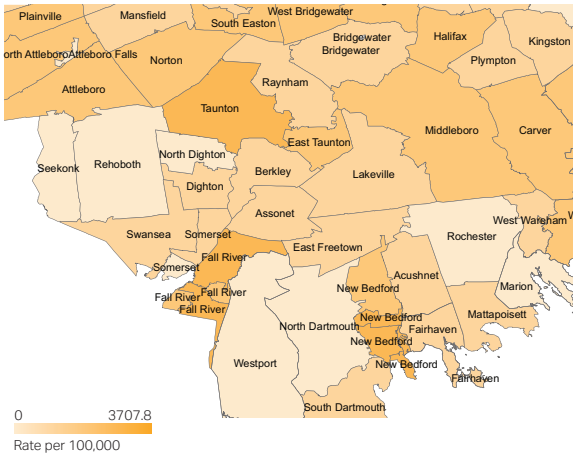
5.1: Total rate of opioid-related hospital discharges in Central Massachusetts



Source: HPC Analysis—CHIA, Hospital Inpatient Discharge Database and Emergency Department Database, 2014

Note: Hospital discharges include both ED discharges and inpatient discharges.

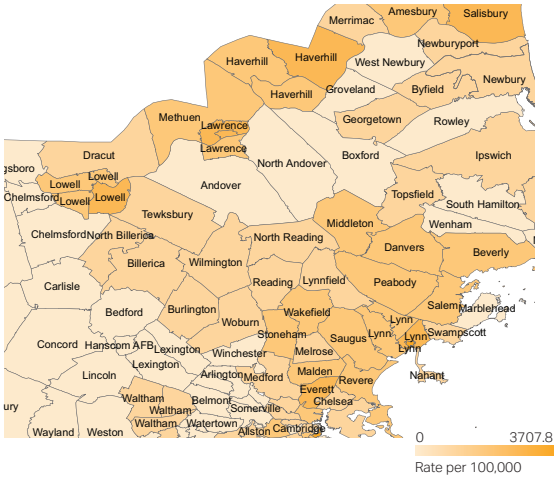
5.2: Total rate of opioid-related hospital discharges in Southeastern Massachusetts



Source: HPC Analysis—CHIA, Hospital Inpatient Discharge Database and Emergency Department Database, 2014

Note: Hospital discharges include both ED discharges and inpatient discharges.

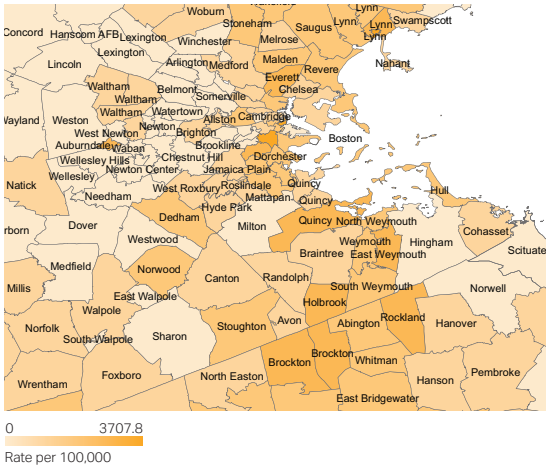
5.3: Total rate of opioid-related hospital discharges in the Merrimack Valley



Source: HPC Analysis—CHIA, Hospital Inpatient Discharge Database and Emergency Department Database, 2014

Note: Hospital discharges include both ED discharges and inpatient discharges.

5.4: Total rate of opioid-related hospital discharges in Metro Boston, Metro South, and the South Shore

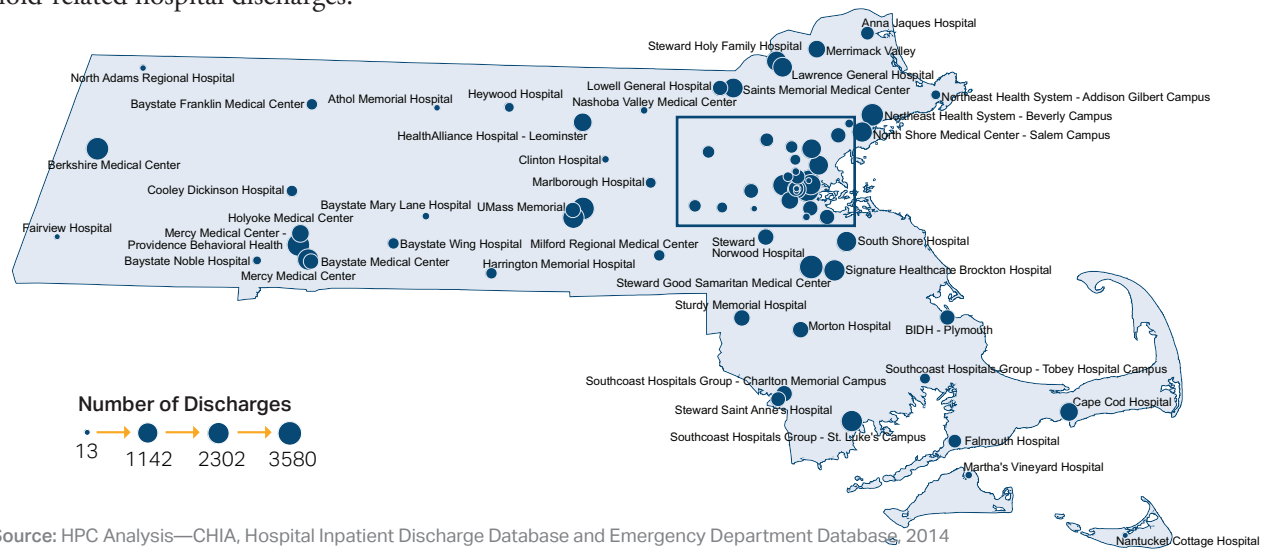


Source: HPC Analysis—CHIA, Hospital Inpatient Discharge Database and Emergency Department Database, 2014

Note: Hospital discharges include both ED discharges and inpatient discharges.

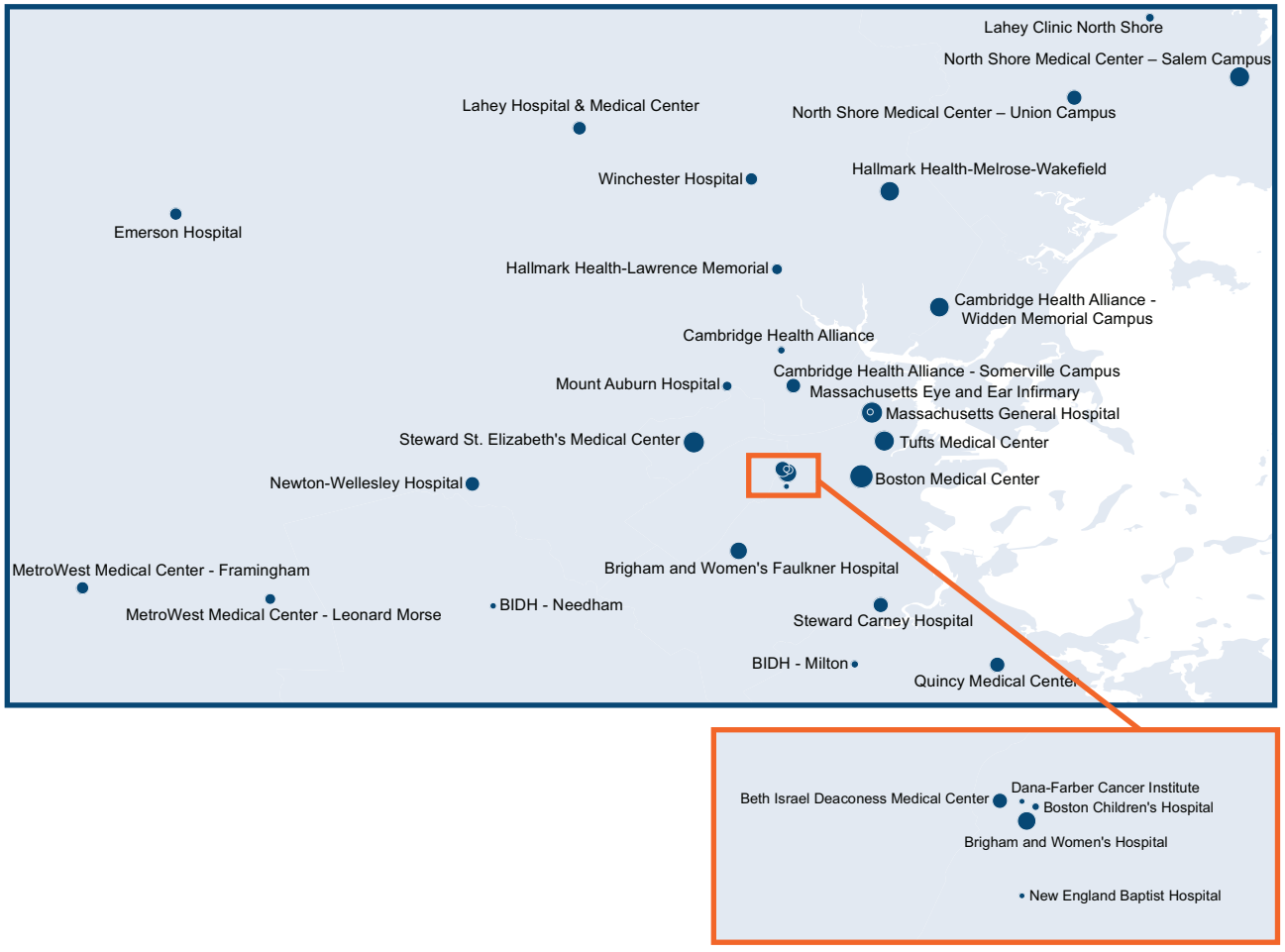
Appendix 6: Opioid-related hospital discharges, Massachusetts and City of Boston, 2014

Massachusetts' hospitals treat large numbers of patients for opioid-related illnesses. Boston Medical Center (Boston), Good Samaritan Medical Center (Brockton), and Mercy Medical Center (Springfield) had the highest volume of opioid-related hospital discharges.



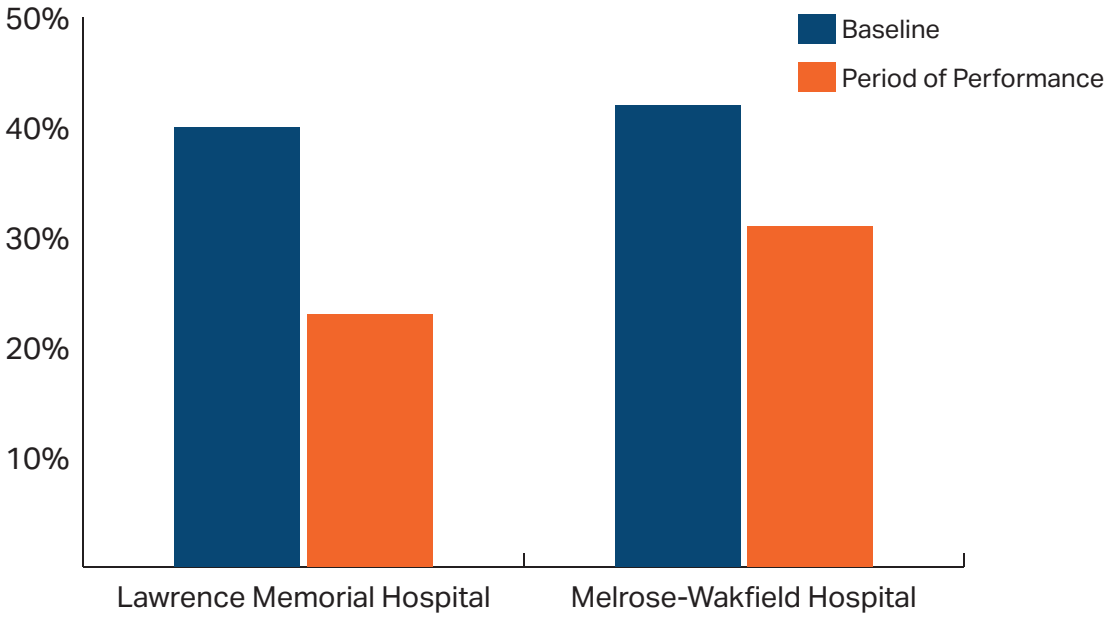
Source: HPC Analysis—CHIA, Hospital Inpatient Discharge Database and Emergency Department Database, 2014
Note: Hospital discharges includes both ED and inpatient discharges, but not observation stays.

The City of Boston experiences a large volume of opioid-related hospital discharges in comparison to other cities in the Commonwealth.



Appendix 7: Value of providers having access to prescriber-level data

Opioid prescription rates in Melrose-Wakefield and Lawrence Memorial Hospital EDs before and after access to practice pattern data.



Source: Data provided by Hallmark Hospital System. Figure adapted from the Health Policy Commission Community Hospital Acceleration, Revitalization, and Transformation Program: Phase 1 – Foundational Investments for Transformation Report

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