DEPARTMENT OF HEALTH & HUMAN SERVICES
Centers for Medicare & Medicaid Services
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CENTERS FOR MEDICARE & MEDICAID SERVICES
CENTER FOR MEDICAID & CHIP SERVICES

State Demonstrations Group

Daniel Tsai
Assistant Secretary, MassHealth
Executive Office of Health and Human Services
One Ashburton Place, Room 1109
Boston, MA 02108

SEP 2 5 2019

Dear Mr. Tsai:

This letter is to inform you that the Centers for Medicare & Medicaid Services (CMS) has approved the final evaluation for the 2014-2017 demonstration period of Massachusetts' section 1115(a) Medicaid demonstration, entitled "MassHealth" (Project Number 11-W-00030/1). We appreciate the thoughtful work you and your staff put into conducting and finalizing the evaluation. The final evaluation will be posted to Medicaid.gov shortly.

Your project officer for this demonstration is Eli Greenfield. He is available to answer any questions concerning your demonstration. Mr. Greenfield's contact information is:

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Center for Medicaid & CHIP Services
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E-mail: Eli.Greenfield@cms.hhs.gov

Official communications regarding this demonstration should be sent simultaneously to Mr. Greenfield and Mr. Francis McCullough, Director, in our Division of Medicaid Field Operations East Office. Mr. McCullough's contact information is as follows:

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Room 2325
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If you have any questions regarding this approval, please contact your project officer.

Sincerely,

[redacted]

Danielle Daly
Acting Director
Division of Demonstration
Monitoring and Evaluation

[redacted]

Angela D. Garner
Director
Division of System Reform
Demonstrations

Enclosure

cc: Francis McCullough, Director, Division of Medicaid Field Operations East
Julie McCarthy, Division of Medicaid Field Operations East

University of Massachusetts Medical School

August 8, 2019

MassHealth Section 1115(a) Demonstration 2014-2017 Evaluation Final Report

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Executive Summary

The Centers for Medicare and Medicaid Services (CMS) authorizes Medicaid Research and Demonstration Waivers under Section 1115(a) of the Social Security Act. These Demonstrations allow states to test and implement new policy approaches to their Medicaid programs while maintaining "budget neutrality," meaning that federal Medicaid expenditures will not exceed those spent without the Demonstration. CMS awarded the Commonwealth of Massachusetts its first 1115 Demonstration in July 1997.

On October 30, 2014, CMS approved an extension of the Commonwealth's Section 1115 Demonstration, for the period October 30, 2014 through June 30, 2019. The Demonstration was subsequently amended and extended and is currently approved for the period July 1, 2017 through June 30, 2022. The evaluation described in this document[1] focuses on the period October 30, 2014 through June 30, 2017. During this period, Massachusetts continued its health care coverage, delivery, and payment reform efforts with four established goals:

- Goal 1. Maintain near universal health care coverage for all residents of the Commonwealth;
- Goal 2. Continue the redirection of spending from uncompensated care to insurance coverage;
- Goal 3. Implement delivery system reforms that promote care coordination, person-centered care planning, wellness, chronic disease management, successful care transitions, integration of services, and measurable health outcome improvements; and
- Goal 4. Advance payment reforms that will give incentives to providers to focus on quality, rather than volume, by introducing and supporting alternative payment structures that create and share savings throughout the system while holding providers accountable for quality of care.

The 1115 Demonstration for the period October 30, 2014 through June 30, 2017 included four initiatives, each aligned with one or more of the Demonstration's four goals:

1. Monitoring of Population-Level Measures (PLM);
2. Express Lane Eligibility (ELE) program;
3. Delivery System Transformation Initiative (DSTI); and
4. Infrastructure and Capacity Building (ICB) grants to hospitals and health centers.

[1] The evaluation design is attached as Appendix 1 and is available at: https://www.medicaid.gov/Medicaid-CHIP-Program-Information/By-Topics/Waivers/1115/downloads/ma/MassHealth/ma-masshealth-eval-desgn-2014-2017-01302016.pdf

A 5th initiative, “Intensive Early Intervention Services for Children with Autism Spectrum Disorder”, which was described in the Evaluation Design, dated January 2016, was removed from the Demonstration, as such services became authorized under the Massachusetts State Plan, effective January 1, 2016.

Methods

The Commonwealth’s Executive Office of Health and Human Services (EOHHS) contracted with the University of Massachusetts Medical School (UMMS) to conduct an evaluation to understand how the four initiatives advance the Demonstration goals within the Commonwealth. As noted above, the time period for the evaluation was October 30, 2014 through June 30, 2017, which aligns with the timelines for the DSTI and ICB programs and ends just before the most recent extension period begins. The evaluation relied on a mix of qualitative and quantitative methodologies as appropriate to each initiative and included assessment of publicly available state-level health care delivery system indicators (PLM), quantitative analysis of enrollment data (ELE), and abstracting, coding, and analyzing data from existing documents (DSTI and ICB).

Key Findings

Findings presented in this evaluation report indicate that the Commonwealth made progress on all four Demonstration goals. Regarding maintaining near universal health care coverage for Massachusetts residents (Goal 1), 97.4% of the state's residents were insured by the end of the evaluation period, representing a decline in uninsurance of over two percent from the start of the period. PLM data collected during this evaluation period show that an increasing number of individuals accessed ConnectorCare subsidized health plans or received MassHealth, premium assistance to access employer-sponsored health insurance (ESI) during the Demonstration. Between October 2014 and June 2017, the estimated monthly average number of Demonstration eligible individuals who received ESI premium subsidies ranged between 3,564 and 11,200 individuals, representing between approximately 12% and 37% of Demonstration eligible individuals over the evaluation period. Enrollment in ConnectorCare reached approximately 184,000 individuals, representing 41% of those eligible for the program, by June 2017. Near universal health coverage rates were supported by several efforts under the Demonstration. Outreach and enrollment initiatives undertaken by ICB program grantees resulted in a number of residents applying for and receiving health insurance coverage. The ELE program, which streamlined the MassHealth renewal process, increased the likelihood that eligible members maintained health insurance coverage over time.

With respect to redirecting spending from uncompensated care to insurance coverage during the Demonstration period (Goal 2), uncompensated care payments decreased from an estimated $270 million in 2014 to $244 million in 2017. In addition, the number of individuals accessing the Health Safety Net (HSN) Trust Fund, which reimburses acute care hospitals and community health centers for certain health care services

provided to qualified residents, declined from over 336,000 residents to an estimated 280,000 residents during the evaluation period. The reduction in the number of individuals accessing the HSN Fund may be indicative of the ability of accessing a usual source of medical care for the residents taking up and maintaining health insurance coverage through the Demonstration's initiatives. Almost 90% of residents reported having a usual source of care, a rate that remained steady during the Demonstration timeframe.

Delivery system reforms (Goal 3) were addressed by the 48 hospitals and Community Health Centers that implemented 78 ICB-funded projects, primarily intended to enhance clinical and organizational integration. Twenty-nine sites implemented projects focused on enhanced clinical integration. Several sites developed or enhanced practice support centers that centralized patient phone calls and scheduling, allowing for a better response to patient needs. Others developed a system of complex care management based in primary care teams for high-risk patients. Complex care management was further developed by some sites through improved capacity to address behavioral health or substance use disorder needs through multidisciplinary care models and by implementing patient navigation services.

Additionally, seven safety-net hospitals implemented 47 DSTI-funded projects aimed at improving care management, care integration, and care transitions. Care management projects targeted populations such as the elderly, those with chronic health conditions, and patients with socioeconomic challenges. Several sites promoted team-based and multidisciplinary approaches to care, supported by new workflows and protocols that standardized care processes and ensured evidence-based care provision. Some sites developed relationships with off-site providers to expand access to needed services. Programmatic changes designed to improve care transitions included the use of a tool to standardize information that is verbally communicated between care staff and use of a standard form during the transition process. Discharge planning initiatives improved processes across the care continuum. Through activities such as gap analyses, stakeholder workgroups provided direction and guidance for tool and workflow development and contributed expertise.

Finally, advancing payment reforms that will give incentives to providers to focus on quality rather than volume (Goal 4) was evidenced by progress made under both the ICB initiative and DSTI. Many of the projects implemented under these two programs were designed to ready providers to participate under risk-based payment methodologies through improved health information technology and population-based analytic infrastructure as well as increased integration and coordination of patient care across the care continuum. Incentive payments to DSTI participants were tied to quality measure performance, a format that is a precursor to new payment models in accountable care organizations (ACOs). In addition, some providers were transitioned from receiving supplemental payments to incentive-based funding during this Demonstration, which served to prepare them for risk-based funding models. These payment reform readiness activities occurred in the context of the larger MassHealth changes – after the adoption

rate of MassHealth alternative payment methods (APM) held steady in 2015 and 2016, it increased in 2017 (mostly in the context of the Primary Care Clinician (PCC) Plan, the MassHealth Primary Care Case Manager plan, where the adoption rate rose more than 16%).[2] Increased APM adoption in MassHealth is expected as ACOs continue to be implemented, including during the upcoming Demonstration period.

With regard to projects implemented under DSTI and ICB that served to advance payment reform efforts, many sites undertook projects to enhance their population-level data management, warehousing, analytics, and reporting capabilities. This was achieved through such activities as upgrading or installing hardware and/or software, working with consultants on the technical aspects of data warehousing, and implementing dashboards and registries to track patient data. Some sites undertook activities to develop or expand governance structures and organizational infrastructures to facilitate ACO formation, such as developing and formalizing relationships with external care providers towards an integrated care model. All DSTI sites showed improvement on most or all population-focused improvement measures (i.e., Category 4A and 4B measures) aligned with their projects, which were designed to assess whether changes adopted through the projects affected delivery system performance.

The state encountered certain key challenges during this Demonstration period. When the DSTI program was approved in 2014, the state had not implemented a payment reform strategy that would complement the DSTI program. The state's fundamental concern was that DSTI participants were not able to integrate these incentive-based projects into their overall hospital financing, which could lead to changes in the way that they deliver care. However, participating hospitals were engaged in development of an ACO model during this time and knew this was on the horizon, they were incentivized to participate and succeed in DSTI. Another challenge was that the at-risk funding available under DSTI replaced supplemental funding. This design was intended to have hospitals be accountable for their care, as they needed to achieve success on quality metrics to receive payments, and, in turn, promote system reform. The evaluation found that sites were able to meet quality benchmarks during DSTI, making them eligible to receive payments. Finally, a challenge with the overall structure of the DSTI program is that while the hospitals were required to select projects from several broad categories, the projects varied from site to site. Some hospitals were more successful with improving outcomes, as demonstrated by performance on Category 4A and 4B measures in the DSTI section.

[2] Massachusetts Center for Health Information and Analysis. (2018). *Performance of the Massachusetts Health Care System (Annual Report 2018*). Available at: http://www.chiamass.gov/assets/2018-annual-report/2018-Annual-Report.pdf

Challenges in the ELE program related primarily to availability of data for internal program evaluation and technical aspects of aligning its renewal processes with the Affordable Care Act (ACA) requirements. MassHealth continues to work on improving these processes. In the ICB program, some grantees were challenged to complete their project deliverables during the grant period. To address this, program staff offered extensions to sites by request, enabling all participants to complete their projects.

The evaluation has several limitations. Site visits and key informant interviews planned for the DSTI and ICB grant program were not conducted. Data that was to be used for site selection for DSTI was not available in sufficient time to allow qualitative data collection and analysis before the end of the evaluation period. Qualitative data collection for the ICB grant program was not undertaken as the evaluation team, in consultation with EOHHS, refocused some resources towards preparing for a Demonstration extension. However, secondary data used for analysis provided a robust picture of the activities undertaken by participating organizations for both DSTI and the ICB grant program and were sufficient to address the research objectives of the evaluation. In addition, data collected from program staff provided details on programmatic challenges and the policy implications of program activities. A planned assessment of changes in preventable hospitalization and readmission measures, comparing the rates of DSTI and non-DSTI hospitals to describe the trend for 30-day readmission rates, was conducted by another vendor and the results were made available to the evaluation team for its analysis.

Conclusions

Overall, activities conducted in the four initiatives were successful in meeting the Demonstration's four established goals of maintaining universal health care coverage, redirecting spending towards insurance coverage, implementing payment reforms for care and clinical improvements, and readying providers for alternative payment methodologies. Through the DSTI and ICB grant program, participating hospitals and community health centers were able to make organizational changes that positively affected their ability to provide quality accountable care to MassHealth members and prepare them to participate in alternative payment methodologies. These activities are building blocks on which Demonstration participants intend to continue the work of health care delivery system transformation. The risk-based incentive structure of DSTI prepared participating hospitals to move towards using risk-based payment methodologies. The ELE program continued to help MassHealth consumers attain and maintain their health care coverage by streamlining the application and enrollment

processes for Medicaid. The positive trends in PLMs document the impact that Demonstration initiatives had on the state's health care environment.

Massachusetts and MassHealth have a long history of success with activities to deliver and finance health care for its residents that have been facilitated by Demonstrations and legislative acts[3]. The first Demonstration waiver, awarded in 1997, expanded coverage eligibility to approximately 300,000 residents and saw two safety net hospitals form their own managed care organizations and receive supplemental payments to support the transition. The second Demonstration extension, in 2005, continued those activities and created a Safety Net Care Pool (SNCP) of financial support to providers and programs serving MassHealth members. The SNCP was subsequently used by a newly established Commonwealth Care (CommCare) program to offer subsidized health coverage to low- and moderate-income state residents without access to other health insurance options. Activities conducted through these Demonstrations were instrumental in the state's 2006 health care reform bill, Chapter 58 of the Acts of 2006, which introduced the mandate requiring residents to have health insurance and created a health insurance marketplace. These efforts in providing near universal health coverage to residents have had national impact as the model for the ACA.

The state has received a sixth extension of the Section 1115 Demonstration for the period of July 2017 to June 2022[4]. This Demonstration will continue efforts to maintain near universal health coverage and support safety net providers in their work to increase access to health care services. It also expands substance use disorder services to address the opioid addiction crisis. Additionally, this Demonstration authorizes $1.8 billion for a Delivery System Reform Incentive Payment Reform (DSRIP) program that will support MassHealth ACO development activities, establish Community Partners to integrate behavioral health and long-term services and supports, and invest in the infrastructure and workforce capacity necessary for this transformation. Activities undertaken in the Demonstration evaluated here, particularly DSTI and the ICB grant program, have positioned participating hospitals to continue engagement in the new Demonstration period through participation in the DSRIP and MassHealth ACO program.

The planned evaluation[5] for the new Demonstration period will comprehensively assess Demonstration activities using an array of qualitative and quantitative methodologies

[3] Massachusetts Medicaid 50th Anniversary Timeline, available at: https://bluecrossmafoundation.org/publications/ma-medicaid-50th
[4] Massachusetts Delivery System Reform Incentive Payment Program, available at: https://www.mass.gov/info-details/massachusetts-delivery-system-reform-incentive-payment-program
[5] The evaluation design for the 2017-2022 Demonstration is available at: https://www.medicaid.gov/Medicaid-CHIP-Program-Information/By-Topics/Waivers/1115/downloads/ma/MassHealth/ma-masshealth-cms-apprvd-eval-desgn-01312019.pdf

designed to meet the analytical needs of each goal. A range of primary and secondary data will be collected and analyzed to determine whether and how the Demonstration met its goals. The robust nature and extended timeframe of this new evaluation should serve to mitigate the limitations experienced in this evaluation and deepen our understanding of the impact of Demonstration activities. As the evaluation is designed to assess the Demonstration from multiple perspectives, data sources include program and administrative documents, publicly available data, key informant and member interviews, and medical claims data. In addition, to provide context and guidance for other states, the evaluation will discuss relevant health policy concerns.

1 Introduction

The Centers for Medicare and Medicaid Services (CMS) authorizes Medicaid Research and Demonstration Waivers under Section 1115(a) of the Social Security Act. Medicaid Demonstrations allow states to test new approaches, expand existing delivery systems, and modify payment methods while maintaining "budget neutrality", meaning that federal Medicaid expenditures will not exceed those spent without the Demonstration. The Commonwealth of Massachusetts (the Commonwealth) received its first 1115 Demonstration in July 1997.

On October 30, 2014, CMS approved an extension of the Commonwealth's Section 1115 Demonstration (Demonstration) for the period October 30, 2014 through June 30, 2019. The Demonstration was subsequently amended and extended and is currently approved for the period July 1, 2017 through June 30, 2022. The evaluation described in this document focuses on the period October 30, 2014 through June 30, 2017. During this period, the Commonwealth continued its health care reform efforts, which are designed to advance four established goals:

- Goal 1. Maintain near universal health care coverage for all residents of the Commonwealth;
- Goal 2. Continue the redirection of spending from uncompensated care to insurance coverage;
- Goal 3. Implement delivery system reforms that promote care coordination, person-centered care planning, wellness, chronic disease management, successful care transitions, integration of services, and measurable health outcome improvements; and
- Goal 4. Advance payment reforms that will give incentives to providers to focus on quality, rather than volume, by introducing and supporting alternative payment structures that create and share savings throughout the system while holding providers accountable for quality of care.

While the 1115 Demonstration authorizes a number of programs and services, this evaluation focuses on four initiatives to understand how they advance the Demonstration goals. Table 1 indicates how these initiatives align with each of the Demonstration goals:

1. Monitoring of Population-Level Measures (PLM);
2. Express Lane Eligibility (ELE) program;
3. Delivery System Transformation Initiative (DSTI); and
4. Infrastructure and Capacity Building (ICB) grants to hospitals and health centers.

Table 1. Demonstration Initiatives and Goals

Initiatives	Demonstration Goals			
	Goal 1: Near Universal Health Coverage	Goal 2: Redirection of Spending	Goal 3: Delivery System Reforms	Goal 4: Payment Reforms
Monitoring of Population Level Measures	**X**	**X**	**X**	
Express Lane Eligibility Program	**X**			
Delivery System Transformation Initiative			**X**	**X**
Infrastructure and Capacity Building Grants			**X**	**X**

The Commonwealth's Executive Office of Health and Human Services (EOHHS) contracted with the University of Massachusetts Medical School (UMMS) to design and implement the overall evaluation of the Demonstration. As noted above, the time period for the evaluation is October 30, 2014 through June 30, 2017, which aligns with the authorities for the DSTI and ICB programs.

In the sections that follow, for each of the four evaluated 1115 Demonstration initiatives, we include a brief description of the initiative, describe the evaluation approaches, report the findings, and discuss conclusions drawn from the data.

2 Continued Monitoring of Population-Level Measures (PLMs)

2.1 Background

Examination of population-level measures (PLMs) provides trend data on the potential effect of Demonstration initiatives over time. Table 2 details the seven specific PLMs that were tracked and examined as part of the Massachusetts 1115 Demonstration Evaluation. The table also indicates for each measure the specific Demonstration goal it is associated with and the data source(s). The PLMs were designed to align with the domains of interest identified in the Demonstration's Special Terms and Conditions. Thus, the goal of the evaluation was to document and assess the degree to which activities undertaken during the Demonstration period were associated with the following expected trends:

- Reductions in the number of uninsured;

- Increased number of Demonstration eligibles with employer-sponsored insurance (ESI) coverage;
- Growth in the CommCare Program through January 2015;
- Reductions in uncompensated care and supplemental payments to hospitals;
- Reductions in the number of individuals accessing the Health Safety Net (HSN) Trust Fund;
- Increased access to primary care providers; and
- Uptake of Qualified Health Plan (QHP) coverage through the ConnectorCare program.

2.2 Methods

Data Sources and Study Population

Data for specifying and tracking PLMs included datasets and operational statistics obtained from a variety of state agencies, including: the Massachusetts Center for Health Information and Analysis (CHIA); MassHealth; Massachusetts Health Connector, (Health Connector). For PLMs 1 and 6, the study population consisted of all Massachusetts residents. For PLM 2 the study population was Demonstration eligible residents who had access to ESI. For PLM 3, the study population was Demonstration eligible residents with income up to 300% who were eligible for CommCare. For PLM 4, all safety net hospitals and community health centers were counted. Uninsured individuals receiving health care covered by the HSN were enumerated for PLM 5. Demonstration eligible individuals with incomes up to 300 percent of the Federal Poverty Level (FPL) were enumerated for PLM 7.

Table 2: Population Level Measures (PLM) by Demonstration Goal and Data Sources

PLM [Reporting Timeframe]	Demonstration Goal	Data Source(s)
1.Number of uninsured in Massachusetts [yearly]	Near universal health care coverage	National Health Interview Survey (NHIS); Center for Health Information and Analysis (CHIA)'s Massachusetts Health Insurance Survey (MHIS)
2. Number of Demonstration eligibles with employer sponsored insurance (ESI) coverage [monthly]	Near universal health care coverage	MassHealth
3. Enrollment in CommCare* [monthly]	Near universal health care coverage	Massachusetts Health Connector

4. Uncompensated care and supplemental payments to hospitals [yearly]	Redirection of spending	MassHealth
5. Number of individuals accessing the Health Safety Net (HSN) Trust Fund [yearly]	Redirection of spending	MassHealth
6. Access to usual source of medical care [yearly]	Delivery system reforms	NHIS; CHIA MHIS
7. Number of individuals that take up QHP coverage with assistance of the Health Connector subsidy program ConnectorCare [monthly]	Near universal health care coverage	Massachusetts Health Connector

*Program ended in January 2015 and members were transitioned to ConnectorCare.

Data Analysis

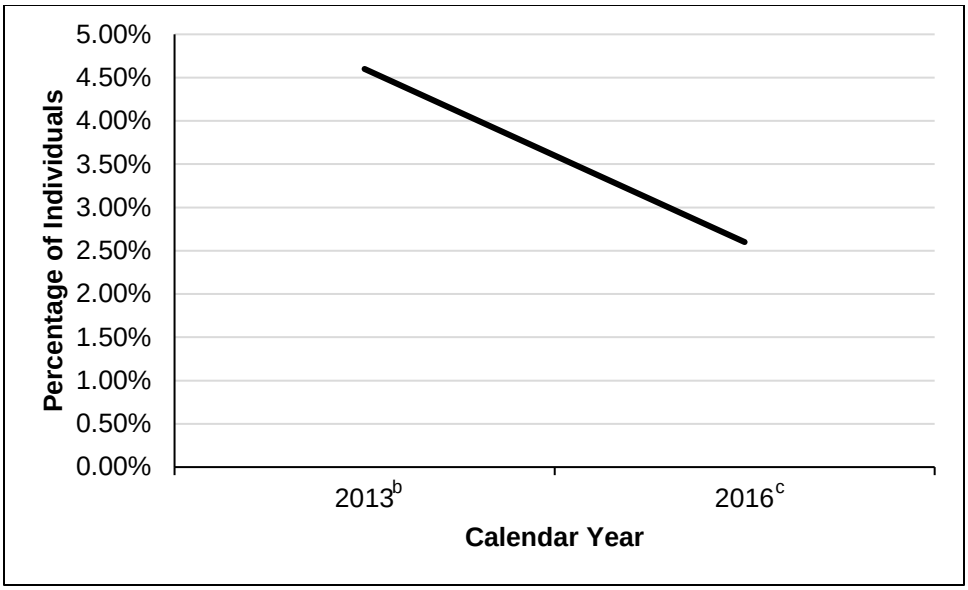
Qualitative assessment of changes in PLMs over the Demonstration period was used to determine whether the Demonstration period was associated with expected trends. Summary statistics for each PLM are reported herein. Where available, data from 2013 is also included to provide a reference point. Some data sources contain monthly capture of various activities (e.g., the number of Demonstration eligibles accessing ESI), while other data is calculated on an annual basis, as noted above in Table 2. The reporting of the data in tables and graphs reflects the reporting timeframe (monthly versus annual) as data were available. There was no comparison group for this study as the purpose was to develop population level measures for EOHHS to continue monitoring its progress towards Demonstration Goals 1, 2, and 3.

2.3 Findings

PLM 1: Number of Uninsured in Massachusetts

The Demonstration evaluation period was associated with an overall reduction in the percent of the Massachusetts population without insurance. In 2013, 4.6% of the population lacked insurance, compared to 2.6% in 2016, representing a decline of over two percentage points (Figure 1). Overall, in Massachusetts, the number of people who were uninsured as a percent of the state's total population remained substantially below the national average, where 9% were uninsured as of 2016 (Cohen, Zammitti, and Martinez, 2017).

Figure 1. PLM 1: Percentage of Uninsured in Massachusetts, 2013-2016[a]

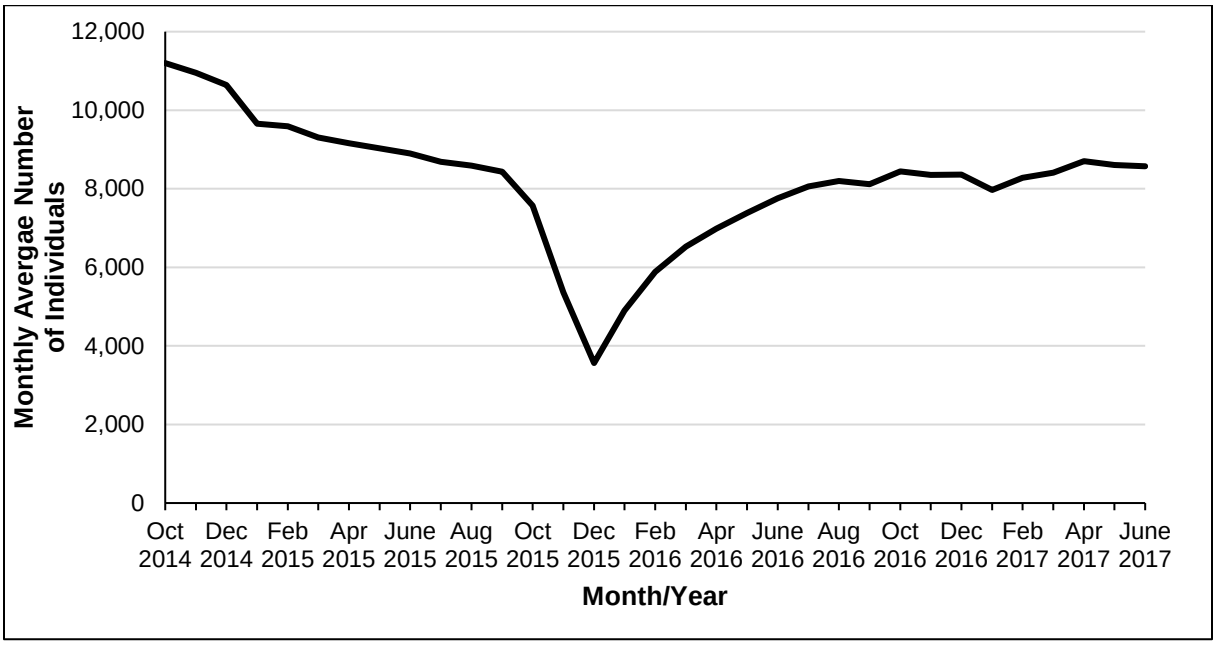


[a]Uninsured status at time of interview. Weighted proportional estimates for the Massachusetts population.
[b]Source: Cohen, R.A., Martinez, M.E. (2014). *Health Insurance Coverage: Early Release of Estimates from the National Health Interview Survey, 2013*. Hyattsville, MD: National Center for Health Statistics.
[c]Source: Cohen, R.A., Zammitti, E.P., Martinez, M.E. (2017). *Health Insurance Coverage: Early Release of Estimates from the National Health Interview Survey, 2016*. Hyattsville, MD: National Center for Health Statistics.

PLM 2: Number of Demonstration Eligibles with Employer-Sponsored Insurance (ESI) Coverage

Under the Demonstration, certain low-income employed individuals who were ineligible for other subsidized insurance could receive premium assistance from MassHealth to help them access qualified employer-sponsored health insurance (ESI). In October 2014, the start of the evaluation period, approximately 11,200 of 30,460 Demonstration eligible individuals (estimated monthly averages; 36.8%) received premium assistance for ESI (Figure 2). The monthly average number of individuals receiving premium assistance for ESI remained above 30% of eligible individuals for the next four months (November 2014 to February 2015) before trending down to 12.9% (approximately 3,564 of 27,553 average monthly eligible individuals) in December 2015. This large decrease was likely due to the termination of a larger than usual number of relatively higher income members (those more likely to have ESI) due to restarting annual redeterminations in late 2015 after temporarily suspending them, with CMS approval, due to eligibility system issues in 2014. The average monthly number of individuals receiving premium assistance for ESI rose to approximately 25% of Demonstration eligible individuals over the next ten months (January 2016 to October 2016) before falling slightly over the final six months of the evaluation period. In June 2017, the end of the evaluation period, the average monthly number of individuals receiving ESI premium assistance represented 23% (8,577 of 37,237) of those eligible under the Demonstration.

Figure 2. PLM 2: Number of Demonstration Eligibles With Employer-Sponsored Insurance (ESI) Coverage, October 2014-June 2017[a]

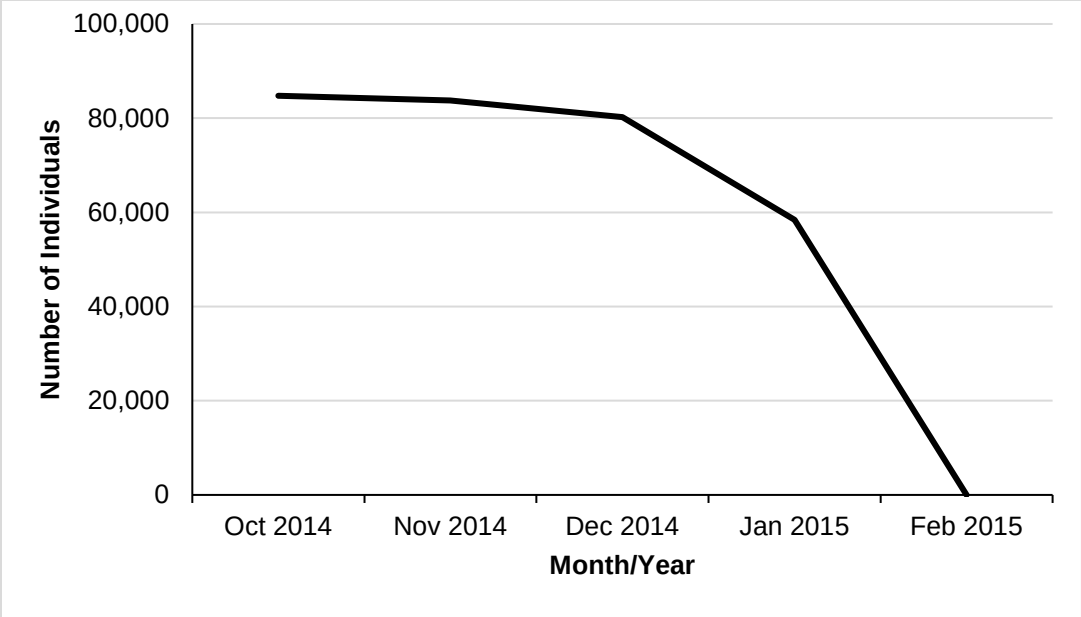


[a]Source: Nathan Bosdet, MassHealth Federal Finance, email communication, 5/15/19.

PLM 3: Enrollment in Commonwealth Care (CommCare) Program

CommCare, administered by the Health Connector, was a premium assistance program for nonelderly adults (ages 19-64) with incomes up to 300% FPL who were not eligible for MassHealth or other forms of coverage, like Medicare or ESI. Enrollment in the CommCare program held relatively steady between October and December 2014, decreasing only slightly from 84,759 to 80,250 members (Figure 3). After December 2014, enrollment declined sharply, dropping to under 59,000 by the end of January 2015. This decline in enrollment was expected and coincided with MassHealth's implementation of coverage expansions under the ACA in 2014 and discontinuation of the CommCare program in January 2015, as members were transitioned to other coverage programs made available under the ACA.

Figure 3. PLM 3. Enrollment in CommCare Program, October 2014-January 2015[a]

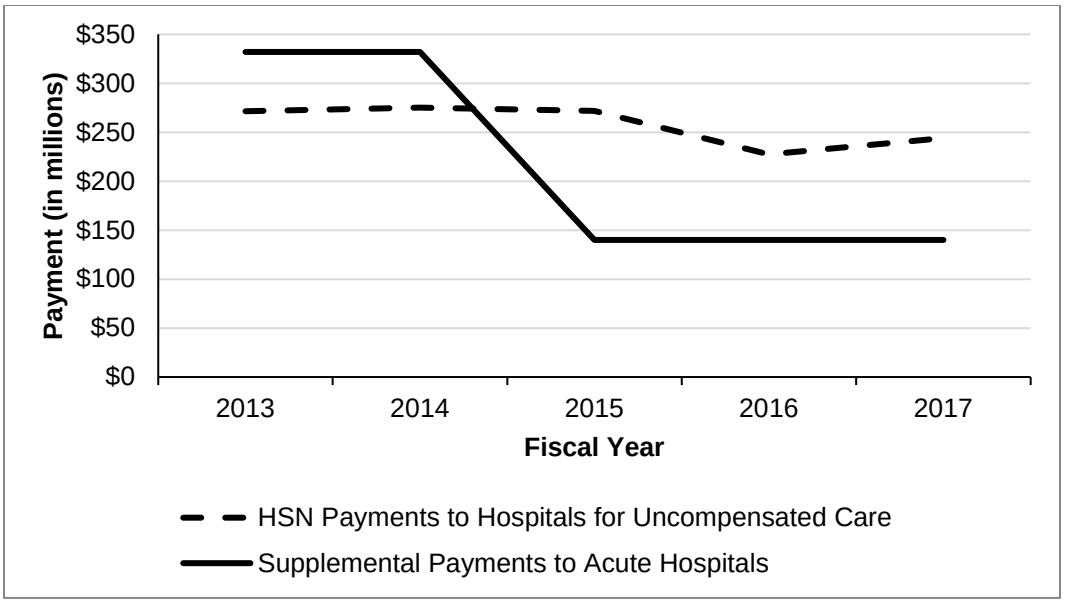


[a]Source: Nina Dubuisson, Massachusetts Health Connector, email communication, 9/20/16.

PLM 4: Uncompensated Care and Supplemental Payments to Hospitals

A long-standing goal of the Demonstration has been to redirect spending for uncompensated care to health insurance coverage and premium subsidies. The Health Safety Net (HSN) Trust Fund reimburses hospitals and community health centers for care not paid for by insurance or patients. Safety net hospitals are also eligible for supplemental payments, which support the costs of serving Medicaid populations that exceed what is covered by the Medicaid rate. During the Demonstration evaluation period, uncompensated care and supplemental payments both declined (Figure 4). During the first half of the Demonstration evaluation period (2014 and 2015), payments for uncompensated care held relatively steady, at approximately $270 million. In 2016 and 2017, the second half of the evaluation period, these payments dipped to $227 and $244 million, respectively. This decline in uncompensated care payments to hospitals was due to reduced funding provided by the state and increased claims reimbursement to Community Health Centers, which, in turn, reduced the funding available for payments to hospitals. Supplemental payments were $332 million in 2014 and declined to $140 million each year thereafter. This reduction occurred because some providers were transitioned to an incentive-based funding vehicle during this period, which offset the reduction in supplemental payments.

Figure 4: PLM 4: Uncompensated Care and Supplemental Payments to Hospitals, 2013-2017[a,b]



[a]Source for HSN Payments: Whitney Rudin, Director, HSN, email communication, 4/18/17 & Timothy Flaherty, Fiscal Operations Supervisor, HSN, email communication, 10/10/17; 2017 data is estimated.
[b]Source for Supplemental Payments: Elizabeth Arnold, Director, Federal Finance, Massachusetts Executive Office of Health and Human Services, email communications, 12/22/16 and 4/28/17.

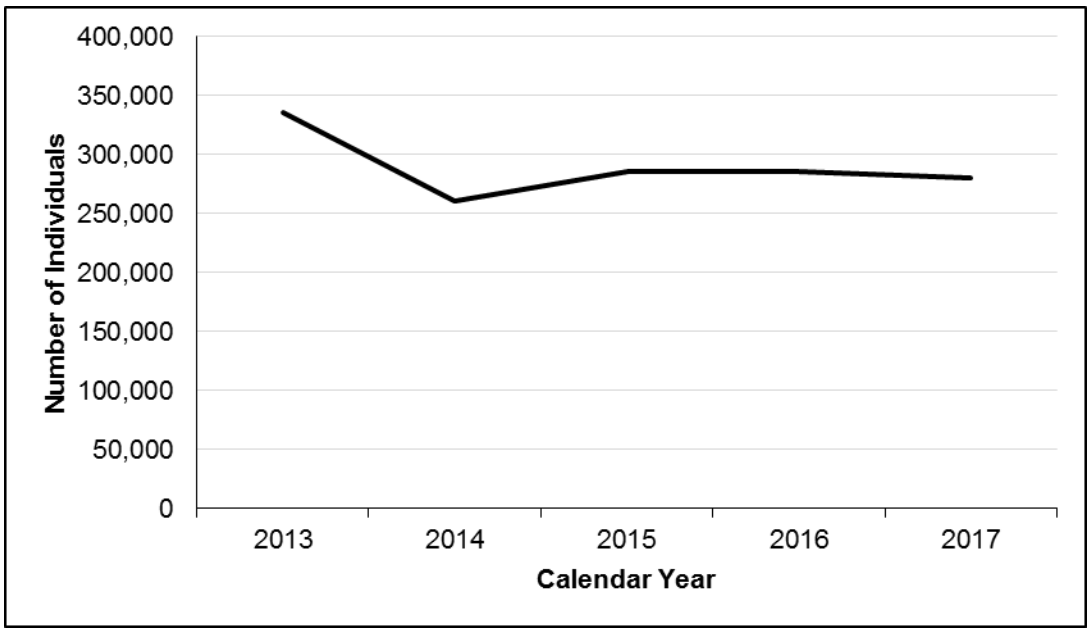
PLM 5: Number of Individuals Accessing the Health Safety Net (HSN) Trust Fund

Another way to assess the state's progress in redirecting spending from uncompensated care to health insurance coverage and premium subsidies is to track the number of individuals accessing the HSN Trust Fund. Between 2013 and 2017, the number of residents accessing HSN trended downwards, from a high of 336,278 individuals in 2013 to a low of an estimated 280,000 individuals in 2017 (Figure 5). Similarly, of those accessing the Trust Fund, the percentage of individuals who had no other insurance declined by six percent between 2016 and 2017, from 44% to 36%[6]. The HSN Trust Fund provided reimbursement for expenses related to medical, behavioral, and dental services, including co-pays, coinsurance, and deductibles, that were not covered by a primary payer. As might be expected, the HSN trend line mirrors shifts in the uninsurance rate. Specifically, between 2013 and 2014, the number of individuals accessing the HSN Trust fund dipped by 22%, which coincided with a sharp decline in the number of uninsured. However, between 2014 and 2015, the uninsurance rate continued to decline slightly while the number of individuals accessing the HSN Trust Fund began to tick up. This might imply that the newly insured were still facing medical

[6] Email communication with Scott Keays, Policy Manager, Health Safety Net, 1/7/19.

expenses they were unable to pay and that HSN was their secondary payer. From 2015 forward, the number of individuals accessing the Trust Fund remained relatively stable.

Figure 5. PLM 5. Number of Individuals Accessing the Health Safety Net (HSN) Trust Fund, 2013-2017



[a]Source for 2013-16 data: Monica Sawhney, Manager, MassHealth Special Initiatives, Executive Office of Health and Human Services, email communication, 11/22/16
[b]Source for 2017 data: Whitney Rudin, Director, HSN, EOHHS, email communication 4/18/17; 2017; 2017 is estimated, as final figures were not available at the time of this report

PLM 6: Access to Usual Source of Medical Care

The evaluation team secured state-level data points for three of the four Demonstration years for this measure. The percentage of Massachusetts residents who indicated that they have a place they usually go when they are sick or need advice about their health remained stable during this Demonstration period at just under 90%, ranging between 87.7% in 2014 and 89.0% in 2015 (Table 3). Massachusetts' rate of 89% in 2015 was 1.2% above the national average for that year[7].

[7] Clarke, T.C., Ward, B.W., Freeman, G., and Schiller, J.S. (2016). *Early Release of Selected Estimates Based on Data from the January-September 2015 National Health Interview Survey*. Available at: https://www.cdc.gov/nchs/data/nhis/earlyrelease/earlyrelease201602.pdf

Table 3. PLM 6: Access to Usual Source of Medical Care, 2012-2016

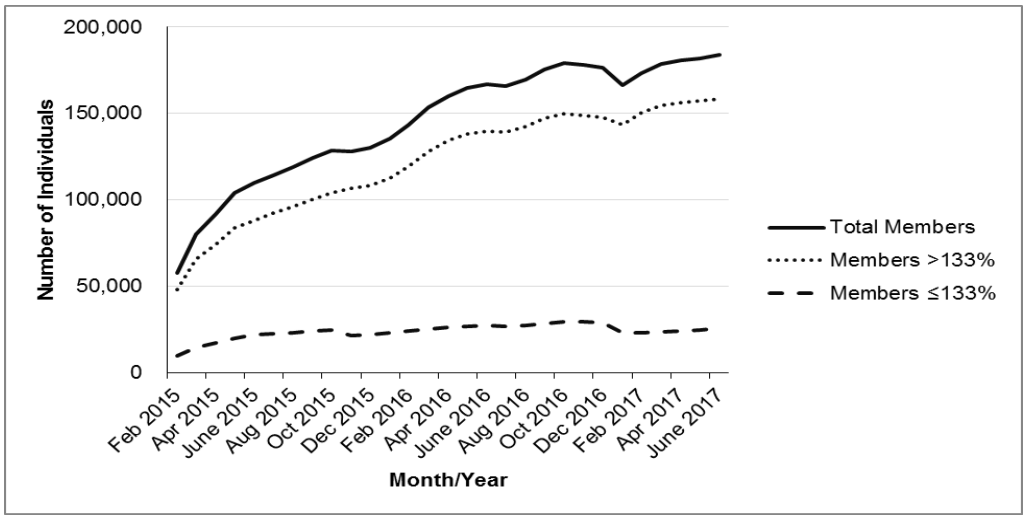
CY2014[a]	CY2015[b]	CY2016[c]	CY2017[d]
87.7%	89.0%	--	88.60%

[a]Source: Skopec, L, Long, S, Sherr, S, Dutwin, D, Langdale, K. (2015) *Findings from the 2014 Massachusetts Health Insurance Survey*. Boston, MA: Center for Health Information and Analysis.
[b]Source: Skopec,L, Long, S, Hayes, E, Sherr, S, Dutwin, D, Langdale, K. (2015). 2015 *Massachusetts Health Insurance Survey Key Findings*. Boston, MA: Center for Health Information and Analysis.
[c]MHIS survey not fielded this year; State-level National Health Insurance Survey data was not available.
[d]Skopec, L, Long, S, Sherr, S, Dutwin, D, Langdale, K. (2017) *Findings from the 2017 Massachusetts Health Insurance Survey.* Boston, MA: Center for Health Information and Analysis.

PLM 7: Number of Individuals that Take Up QHP Coverage with Assistance of the Health Connector Subsidy Program

With the implementation of the ACA, Massachusetts replaced the CommCare Program with a similar but newly named program called ConnectorCare, which launched in January 2014. However, due to technical issues with the Health Connector's website in 2014, enrollment did not begin in earnest until January 2015. Membership in 2014 numbered fewer than 1,000 people. ConnectorCare health plans are subsidized health insurance plans offered through the Massachusetts Health Connector to households with incomes that are at 300% FPL or lower. Individuals are eligible to enroll during open enrollment periods (which typically conclude in January) or when they have a qualifying life event; such as a change in household or insurance. Thus, enrollment numbers are higher during open enrollment periods than other months. Enrollment in the program is tracked along two cohorts: individuals at or below 133% FPL and individuals above 133% FPL. Overall, enrollment in ConnectorCare increased during this Demonstration period. In the initial five months of the program (January 2015 to May 2015), total enrollment quickly increased to just over 100,000 individuals (Figure 6) as CommCare members were transitioned to the program. Subsequently, enrollment rose steadily, to a high of almost 184,000 individuals as of June 2017. Enrollment averaged approximately 43% of eligible individuals over the evaluation period, ranging from 35% in December 2016 to 48% in May 2015. Enrollment among individuals with incomes at or above 133% FPL rose at a faster rate than enrollment of those below 133% FPL.

Figure 6. PLM 7: Number of Individuals that Take Up QHP Coverage with Assistance of the Health Connector Subsidy Program, February 2015-June 2017



*Source: Marissa Woltmann, Director of Policy and Applied Research, Massachusetts Health Connector, email communication, 8/9/17.

2.4 Discussion

Examination of PLMs provides trend data on the potential effect of the Demonstration initiative over time and with respect to Demonstration Goal 1 (near universal health care coverage), Demonstration Goal 2 (redirecting spending from uncompensated care to health insurance coverage and premium subsidies), and Demonstration Goal 3 (delivery system transformation). Our review of the seven PLMs indicates generally positive movement relative to the measures' expected trends and achievement of the Demonstration's goals.

Regarding goal 1, Massachusetts was able to maintain near universal health care coverage during the Demonstration period, supported by achievements in five PLMs (PLMs 1, 2, 3, 6, and 7). By the end of the period, less than 3% of state residents lacked coverage (PLM 1) and Massachusetts continued to lead the nation in the percentage of residents with health care coverage. Near universal health care coverage rates were supported by several efforts under the Demonstration. Continued expansion of the ELE streamlined application process (see subsequent section), which was designed to facilitate the MassHealth application and renewal process for certain eligible children, their parents/caregivers, and childless adults, increased the likelihood that members would maintain health insurance coverage over time, compared to residents who were not eligible for Express Lane applications. Similarly, efforts undertaken by grantees in the ICB program to outreach to and enroll eligible residents in MassHealth (see subsequent section) increased the number of residents who ultimately applied for and received health insurance coverage.

Health insurance access appears to have translated into health care access, as the usual source of care measure remains steady (PLM 6). Some policymakers consider ESI and other private insurance to be an important part of maintaining high rates of health insurance. To that end, MassHealth subsidizes the purchase of employer-sponsored insurance and, the Health Connector, under the ConnectorCare program, subsidizes the purchase of individual market plans. .

Massachusetts saw an increase in enrollment in the ConnectorCare program, which totaled roughly 184,000 members, or 41% of eligible individuals, by the end the Demonstration evaluation period (PLM 7) (including members who transitioned over from CommCare). During most of the evaluation period, approximately 20-30% of Demonstration eligibles were able to access MassHealth premium assistance for ESI, with 8,577 of 37,237 Demonstration eligible individuals (23.0%; monthly average individuals) accessing it in June 2017 (PLM 2), a decrease from the approximately 37% at the beginning of the evaluation period. More generally, during this time period, there has been an overall decrease in ESI coverage in Massachusetts.[8] Other analyses have suggested that this change is related to changes implemented as part of Massachusetts' transition to the ACA.[8-9] Though the employer-sponsored health insurance rate dropped during this time, the overall private insurance rate rose from 67.1% in 2013[10] to 68.6% in 2017.[11]

With respect to the Demonstration's goal to redirect spending (Goal 2), HSN and supplemental payments to hospitals for uncompensated care, as well as the number of individuals accessing the HSN, all declined during the evaluation period (PLM 4). At the same time, payments to Community Health Center to reimburse claims increased during this period, which reduced payments made to hospitals. The reduced number of individuals accessing the HSN (PLM 5) and increase in CHC claims reimbursement may be reflective of increased insurance rates among the population and, consequently, the newly insured seeking medical care.

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[8] Sommers, B. D., Shepard, M., & Hempstead, K. (2018). *Why Did Employer Coverage Fall in Massachusetts After The ACA? Potential Consequences of A Changing Employer Mandate*. Health Affairs, *37*(7), 1144-1152. Available at: https://www.healthaffairs.org/doi/10.1377/hlthaff.2018.0220.

[9] SK Long & TH Dimmock. (2014). *Health Insurance Coverage and Health Care Access and Affordability in Massachusetts: 2015 update*. Available at: https://bluecrossmafoundation.org/sites/default/files/download/publication/MHRS_2015_Report_FINAL.pdf.

[10] Cohen, R.A., Martinez, M.E. (2014). *Health Insurance Coverage: Early Release of Estimates from the National Health Interview Survey, 2013*. Available at: https://www.cdc.gov/nchs/data/nhis/earlyrelease/insur201406.pdf.

[11] Cohen, R.A., Zammitti, E.P., Martinez, M.E. (2018). *Health Insurance Coverage: Early Release of Estimates From the National Health Interview Survey, 2017*. Available at: https://www.cdc.gov/nchs/data/nhis/earlyrelease/insur201805.pdf.

Lastly, successful efforts undertaken within the Demonstration related to delivery system reforms (Goal 3) are evidenced by the positive trend of residents' access to a usual source of care (PLM 6), as nearly 90% of individuals had a usual source of care over the evaluation period. Projects undertaken by hospitals as part of the DSTI sought to increase primary care utilization and to redirect individuals from Emergency Department use by connecting them to primary care (see subsequent section). Similarly, ICB grant projects aimed to divert individuals who used the Emergency Department for non-emergent issues to more appropriate sources, including primary care.

Initiatives undertaken in this Demonstration have coincided with the implementation of the federal ACA, modeled on the state's extensive health care reform efforts. Over the course of this Demonstration period, the state has continued its transformation activities and has maintained a high health insurance coverage rate during a time when health care costs continue to be a challenge for individuals, employers, and payers, within both Massachusetts and the nation. The state's reform efforts, which started and continue to evolve with the Demonstration, spurred statewide health care cost containment efforts, requiring growth benchmarks and quality reporting from payers and leading to increased state-level monitoring and oversight. Delivery system reform efforts such as ACOs and patient-centered medical homes (PCMHs), already underway in the state, will continue to play a part in reducing cost and ensuring quality care for residents.

3 Express Lane Eligibility (ELE)

3.1 Background

Express Lane Eligibility (ELE) is a streamlined application and renewal process, authorized by the Children's Health Insurance Program Reauthorization Act of 2009 (CHIPRA), intended to increase eligible children's enrollment and retention in Medicaid and Children's Health Insurance Program (CHIP). The 1115 Demonstration authorized MassHealth to create an ELE renewal process for certain MassHealth children and their parents/caregivers (and later childless adults) who also receive Supplemental Nutrition Assistance Program (SNAP) benefits administered by the Massachusetts Department of Transitional Assistance (DTA).

In order to encourage continuous, stable Medicaid coverage by streamlining renewal processes, states are authorized to use findings (including income) from an approved Express Lane Agency, e.g., SNAP, to conduct simplified eligibility and renewal determinations that enable members to automatically remain enrolled in Medicaid or CHIP as long as there are no changes in status (e.g., increase in income). In so doing, ELE reduces paperwork submission requirements that are known to be a barrier to members' benefit determination and re-determination and a burden for Medicaid enrollment staff. All eligible families who are enrolled in SNAP, therefore, are re-enrolled in Medicaid through ELE, while those not enrolled in SNAP continue with traditional re-enrollment processes.

Massachusetts' interest in an ELE renewal process resulted from its participation in the Robert Wood Johnson Foundation's (RWJF) "Maximizing Enrollment" grant program, which aimed to increase enrollment and retention of children in Medicaid and CHIP. Initially, MassHealth streamlined eligibility renewal for a subset of MassHealth members for which income eligibility was determined by the Social Security Administration.[12] Next, MassHealth sought to extend streamlined eligibility renewal to parents and caregivers of children enrolled in SNAP because Massachusetts determines eligibility for subsidized insurance plans by looking at an entire family group. The Commonwealth requested and obtained authority from CMS to expand ELE to parents and caregivers and eventually to childless adults under the 1115 Demonstration.

UMMS evaluated the ELE process during the first year after ELE implementation, September 2012 to August 2013, as part of its broader 1115 Demonstration evaluation. The evaluation findings suggested that ELE may have increased retention in MassHealth and reduced churn for households and individuals participating in the program.

Since the initial evaluation period, several changes were made to the ELE program.

1. During the first evaluation period, eligibility for parents in families that were eligible for CommCare (i.e., earning between 133% and 150% FPL) was automatically extended for a year.
2. In 2015, under the ACA implementation, these individuals were no longer eligible for CommCare (which was being discontinued) but received federal tax credits and state subsidies for QHPs through the Health Connector. Since renewals are done at a household level, children in these families must renew MassHealth enrollment through the Health Connector's renewal process. The Massachusetts Health Connector and MassHealth worked to align the renewals process for households that have members in both agencies' programs. To that end, MassHealth renewals for these kinds of households are completed in late summer, simultaneously with the annual redetermination of eligibility conducted by the Health Connector.
3. During the initial evaluation period, MassHealth defined children as up to age of 19 years. The age limit has since been raised to up to 21 years for individuals up to 150% FPL.

[12] Members who reside in long-term care, have disabilities, or are older than 65 years of age.

4. During the initial evaluation period, only qualified families with children were eligible for ELE. The ELE process was expanded in October 2014 to include childless adults.
5. During the initial evaluation period, ELE was processed through MA21, the legacy Medicaid eligibility system. ELE was implemented in the integrated HIX eligibility system in October 2016 for families and childless adults.

Given these changes, it was important to evaluate whether the improvements in the MassHealth annual renewal process found during the initial evaluation were maintained. The objective of this new evaluation was to continue assessing the potential impact of ELE on the redetermination process and on enrollment continuity. The study's specific aims were to:

1. Describe the households using ELE procedures for MassHealth renewal during each evaluation year, including demographic characteristics such as gender, age, and income; and
2. Compare MassHealth annual renewal during each year for ELE members to a comparison group, adjusting for demographic differences between members eligible and not eligible for ELE.

3.2 Methods

We used a retrospective, quasi-experimental design to examine changes in MassHealth enrollment among households that received the streamlined MassHealth renewal (ELE) compared with those that underwent traditional MassHealth annual renewal (non-ELE) from October 2014 through October 2016. The key outcome measure was loss of MassHealth eligibility during the 90 days following the ELE renewal date.[13]

Data Sources and Study Population

Data for the analysis was obtained from the MassHealth eligibility determination system (MA-21). Data from October 1, 2014 through October 31, 2016 was used for the analysis. Medicaid ID Number, Household ID Number, and Person ID Number were used to identify individuals who comprised a household, and MA-21 Annual Review Codes were utilized to identify inclusion in ELE. Other variables included demographic characteristics, household size, MassHealth aid categories, and date and reason for loss of MassHealth eligibility. Starting in February 2015, after the state implemented the

[13] Since the focus of the evaluation is loss of MassHealth eligibility due to the annual review process, we restricted the follow-up period to 90 days after the annual review date.

Health Insurance Exchange/Integrated Eligibility System (HIX/IES) as part of the ACA rollout, a large proportion of individuals below the age of 65 in the MA-21 data system were transferred to HIX/IES. As such, the demographic composition of both the ELE eligible and non-ELE eligible individuals remaining in the MA-21 dataset changed during the evaluation period. October 2016 was designated the end of the evaluation period because by that date virtually all individuals eligible for ELE had transferred to the HIX/IES and the data set was not available to evaluators at the time of the evaluation.

ELE households were identified based on:

- MA-21 Annual Review Codes in database indicating renewal through Express Lane Receipt of active SNAP benefits;
- Receipt of active Medicaid benefits concurrently; and
- Having children under the age of 19 years.

Non-ELE households were identified using the following criteria:

- Receipt of active Medicaid benefits;
- Gross income at or below 150% FPL;
- Having children under the age of 19 years; and
- No active benefits from SNAP; and
- No MA-21 Annual Review Codes in database indicating renewal through Express Lane

For households that had multiple review dates during an evaluation year, we used only the first review date.

The ELE program's development and initial implementation, which took place during the previous Demonstration period, were evaluated and reported in the 2011-2014 evaluation report. As a supplement to the analysis reported below, qualitative data was collected via an informal unstructured conversation with two staff responsible for ELE program implementation to learn about their experience during the Demonstration period.. Domains of interest were 1) program challenges during this Demonstration period and 2) policy implications of the ELE program.

Data Analysis

Given the changes in the MA-21 data system over the evaluation period, analyses were conducted for two separate periods: October 2014 – September 2015 (EP1); and October 2015 – October 2016 (EP2). For each evaluation period, demographic characteristics, disability, and household size between the ELE and non-ELE households were compared using t-tests for continuous variables and chi-square tests for categorical variables. ELE households and non-ELE households differed with respect to their age, gender race and ethnicity distribution, primary language, disability status, household size and income level. (See Table 1, Appendix B) To address this imbalance we attempted to select a comparison group from the non-ELE households matched on

key demographic factors. Due to the low number of households available as potential matches, we were not able to identify a matched comparison group. We therefore adjusted for the imbalance in observed characteristics between ELE and non-ELE households with inverse probability of treatment weighting (IPTW) methodology.[14] This methodology allowed us to use all available non-ELE households, each weighted by the inverse probability of their being in the ELE group based on their demographic characteristics. Weights were created using household demographic characteristics, disability status, income level, and household size. The outcome measure was loss of MassHealth eligibility during the 90 days following the annual review date. To further adjust for residual imbalance between the groups after using IPTW, the analysis further adjusted for the effect of household ELE renewal on loss of MassHealth eligibility, using Cox multivariable models to control for household demographic characteristics, disability, income, and household size. The models also identified household characteristics besides ELE status that predicted loss of MassHealth eligibility.

The reference group for gender was male. Race was measured using three categories: white, non-white (reference group), and unknown. Ethnicity was measured using three categories as well: Hispanic, non-Hispanic (reference group), and unknown. The "Unknown" category was used because of the significant number of ELE and non-ELE members who did not classify their race or ethnicity. Two categories captured primary language spoken: English and non-English (reference group). Disability[15] was constructed as a binary variable with 'no disability' used as the reference group. A dichotomous variable was constructed for household size: ≤ 3 and ≥ 4 (reference group). Family income was categorized as < 86%, 86%-111.99%, 112%, 113%, 114%-132.99%, and 133%-150% FPL.

The outcome measure was loss of MassHealth eligibility during the 90 days following the ELE renewal date, based on the hypothesis that the ELE renewal group would be associated with a lower risk of loss of MassHealth eligibility, even after controlling for demographic characteristics, disability, and household size.

We also evaluated annual trends in loss of enrollment of members with ELE and comparison group members from one year prior to the first evaluation period through August 2016, controlling for demographic characteristics. Member subgroups included families with children ≤ 133% of FPL, and childless adults ≤ 133% FPL. Trend analyses were conducted using unweighted data, as IPTW weighting was not available for the 2012-2014 period. We built a multivariable Cox proportional hazards model to compare

[14] Hogan J.W., Lancaster T. *Instrumental Variable and Propensity Weighting for Casual Inference From Longitudinal Observational Studies*. Statistical Methods in Medical Research; 2004.13:17-48.
[15] Disability was developed using MA-21 aid categories.

the overall trend in time to loss of enrollment over time in the ELE and comparison groups, adjusting for demographic variables. All statistical analyses were performed using SAS Version 9.4 (Cary, NC).

3.3 Findings

Characteristics of ELE and non-ELE Households

There were 106,895 ELE households in EP1 and 55,967 households in EP2. The IPTW-matched comparison groups of non-ELE households were comprised of 52,401 households in EP1 and 49,184 households in EP2. Table 4 shows the demographic characteristics, disability status, and household size for ELE and non-ELE households. The IPTW weighting resulted in comparison groups with roughly similar distributions of demographic characteristics to the ELE households, although differences between the measured characteristics in the ELE and comparison group members groups were statistically significant.

Table 4: Characteristics of ELE and non-ELE Households

	EP1 (October 2014-September 2015)			*EP2 (October 2015-October 2016)*		
Characteristics	**ELE Households (N = 106,895)**	**Non-ELE Households (N = 52,401)**	**p-value**	**ELE Households (N = 55,967)**	**Non-ELE Households (N =49,184)**	***p*-value**
Age, mean (SD)[1]	43.9 (15.9)	38.1 (43.7)	<0.0001	47.7 (16.1)	41.3 (41.5)	<0.0001
Gender – Female, n (%)	80,563 (54.5)	118,278 (55.2)	<0.0001	48,679 (57.0)	89,488 (52.81)	<0.0001
Race, n (%)			<0.0001			<0.0001
White	48,119 (32.5)	67,828 (31.6)		28,222 (35.0)	56,549 (33.4)	
Non-White	20,825 (14.1)	25,293 (11.8)		11,553 (13.5)	17,650 (10.4)	
Unknown	78,959 (53.4)	121,297 (56.6)		45,705 (53.5)	95,261 (56.2)	
Ethnicity, n (%)			<0.0001			<0.0001
Hispanic	18,986 (12.8)	25,796 (12.0)		11,122 (13.01)	16,772 (9.9)	
Non-Hispanic	23,207 (15.7)	27,679 (12.9)		11,564 (13.5)	17,267 (10.2)	
Unknown	105,709 (71.5)	160,943 (75.1)		62,794 (73.5)	135,421 (79.9)	
Primary Language, English n (%)	127,387 (86.1	191,044 (89.1)	<0.0001	73,248 (85.7)	151,230 (89.2)	<0.0001
Disability[2], n (%)	23,654 (16.0)	50,313 (23.5)	<0.0001	25,881 (30.3)	71,719 (42.3)	<0.0001
Household Size, n (%)			0.6388			<0.0001
≤ 3 persons	128,544 (86.9)	186,467 (87.0)		74,945 (87.7)	154,795 (91.4)	
≥ 4 persons	19,359 (13.1)	27,951 (13.0)		10,536 (12.3)	14,665 (8.7)	
FPL Bands, n (%)			<0.0001			<0.0001
<86%	100,693 (68.1)	150,544 (70.2)		52,178 (61.0)	114,803 (67.8)	
86-111.99%	25,259 (17.1)	33,766 (15.8)		19,218 (22.5)	30,908 (18.2)	
112%	918 (0.6)	1282 (0.6)		645 (0.8)	1,121 (0.7)	
113%	1,147 (0.8)	1,394 (0.7)		704 (0.8)	1,029 (0.6)	
114-132.99%	17,041 (11.5)	22,123 (10.3)		9,966 (11.7)	17,078 (10.1)	
133-150%	2,844 (1.9)	5,308 (2.5)		2,769 (3.2)	4,519 (2.7)	

Loss of MassHealth Eligibility

Table 5 presents data on the loss of MassHealth eligibility during the 90 days following members' ELE renewal date. Among ELE households, 4.2% lost MassHealth eligibility compared to 22.2% among comparison group households during EP1. In EP2, 1.7% of ELE households lost coverage compared with 33.6% for non-ELE households. Loss of MassHealth eligibility in the IPTW-weighted comparison group was similar to unweighted results (see Table 2, Appendix B for unweighted results). Differences in the percentage losing eligibility between ELE and non-ELE households were statistically significant in both evaluation periods of EP1 and EP2. Of those who lost eligibility, 95% and 98% of comparison group members in EP1 and EP2, respectively, lost coverage because of 'failure to complete or return information or questions.' After adjusting for demographic characteristics, ELE households had hazard ratios of losing coverage of 0.19 in EP1 and 0.05 in EP2 compared with comparison households. This meant that the ELE group had an 83% and 95% lower risk of loss of MassHealth eligibility during the 90 days following the ELE renewal date, respectively, compared to the non-ELE group, in each evaluation period. While not being eligible for ELE was the strongest predictor of loss of coverage, other demographic characteristics were associated with loss of coverage in adjusted models, including male gender, non-white race, primary language other than English, having a disability, having a household size less than or equal to 3 persons, and having an income less than 86% FPL. Hazard ratios and 95% confidence intervals for the multivariable Cox models in each of the evaluation periods are presented in Appendix B.

Table 5. Loss of MassHealth Eligibility during the 90 Days Following ELE Renewal Date for ELE and non-ELE Households

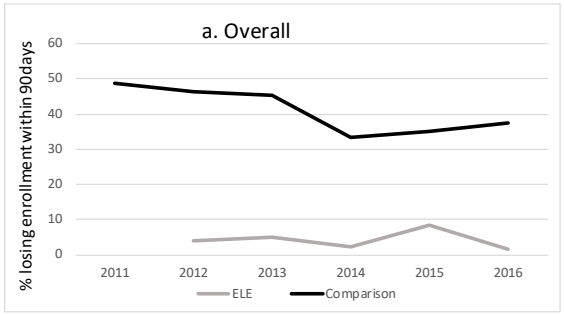
	ELE households	N (%) of those losing eligibility who were lost to follow-up*	Non-ELE households	N (%) of those losing eligibility who were lost to follow-up	p-value	Adjusted hazard ratio comparing ELE vs. non-ELE households	95% CI
EP1 (Oct 2014 – Sep 2015)	4,513 (4.2)	131 (2.9)	14,430 (22.2)	78 (0.5)	<.0001	0.17	0.17-0.18
EP2 (Oct 2015 – Oct 2016)	973 (1.69)	7 (0.7)	16,521 (33.6)	9 (0.1)	<.0001	0.05	0.05-0.06

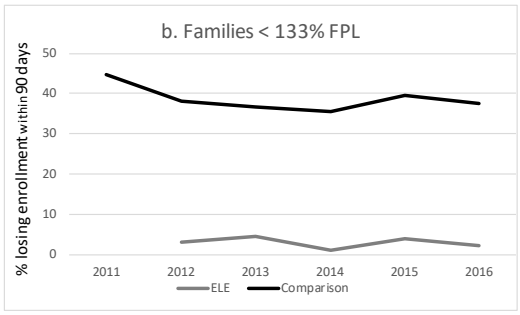
*Reason for coverage loss: whereabouts unknown, deceased, or moved out of state

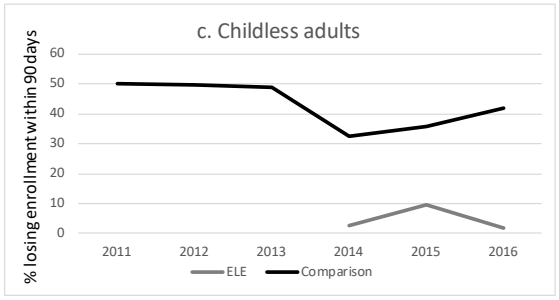
Trends in enrollment in the participant and comparison groups overall, among families <133% FPL, and among childless adults are presented in Figures 7 a – c. Overall, from 2011 through 2016, the percentage of comparison group households losing enrollment decreased from almost 50% in 2011 to 40% in 2016. Among ELE participants, the percentage losing eligibility was below 10% in all years. Trends were similar for families <133% FPL. For childless adults, which were eligible for ELE starting in 2014, the percentage of ELE comparison group members who lost eligibility dropped from 50% in 2011 to slightly above 40% in 2016. Adjusting for demographic characteristics, loss of

eligibility remained lower among ELE compared to non-ELE groups throughout the evaluation time frame (see model results in Appendix B). As the percentages losing eligibility in the unweighted and IPTW weighted comparison groups during the 2014 – 2016 evaluation period were similar, it is reasonable to expect that our findings of trends from 2011 – 2016 are similar to what we would have observed had we been able to use an IPTW-weighted comparison group.

Figure 7 a – c. Trends in loss of MassHealth eligibility within 90 days following renewal in ELE and matched non-ELE households, 2011-2016, overall, families < 133% FPL and childless adults







Program Implementation

Challenges identified during ELE program development and implementation, including communication with families and restrictions on ELE program eligibility, were addressed and modified prior to the current evaluation period.[16-17] As was found during the initial implementation, few challenges were experienced during this evaluation period.

[16] Willis, G., Posner, H., Aweh, G., Leary, A., Muhr, K., O'Connell, E. (2014). *MassHealth Section 1115(a) Demonstration waiver 2011-2014 evaluation Final Report*. Center for Health Policy and Research, UMass Medical School.

First, ELE program staff faced challenges determining how to access data needed to evaluate the ELE program and error rate measurements. To effectively evaluate ELE program processes, it was important that all data used to determine that participants met the program criteria was available to the ELE program team and that ELE participants were easily identifiable in the database. . As a result, the program team recommended that states carefully consider future reporting needs and data requests when implementing ELE.

Another challenge was aligning the renewal process using the Massachusetts HIX/IES system with the "automatic" renewal process mandated under the ACA. As the automated renewal process, which is used for members that have sufficient data from trusted data sources to have their MassHealth benefits automatically renewed, was already implemented in the HIX system, Massachusetts needed to ensure that the ELE renewal process could be introduced into the system without disrupting automated renewals. One strategy employed to resolve this was to create a hierarchy of renewal types that identified which renewals should be completed based on the members' specific eligibility characteristics. Program staff recommended that states work to coordinate all automated/streamlined renewal types in their eligibility system.

A final challenge related to a reduced pool of residents meeting the criteria for ELE due to the ACA requirements. Prior to the ACA, the state's 1115 Demonstration allowed the state to extend ELE renewal to families that included CommCare members. When the CommCare program transitioned to QHPs administered by the Massachusetts Health Connector, the renewal processes began following rules provided for QHP renewals, rather than Medicaid rules, allowing ELE renewal only for families where all members were eligible for MassHealth benefits. Federal expansion of the ELE process to Exchange programs offered under ACA would allow families eligible for Exchange programs, particularly those with Medicaid or CHIP eligible children already eligible for ELE, to participate in the streamlined renewal process, making it more likely they will maintain health insurance enrollment.

3.4 Discussion

The results of this analysis illustrate the continued positive impact of ELE implementation on MassHealth retention for households that receive SNAP benefits. Even when controlling for other potential influences for loss of MassHealth eligibility, the ELE group had a statistically significant lower risk of loss of MassHealth eligibility compared to a non-ELE group, matched through IPTW methodology on characteristics such as household demographic characteristics, disability status, income level, and household size. In fact, ELE participation

[17] Edwards, J., Rodin, D. (2013). *CHIPRA Express Lane Eligibility Evaluation: Case Study of Massachusetts' Express Lane Eligibility processes*. Mathematica Policy Associates.

was the strongest predictor of continuous coverage during the 90-day period following MassHealth annual review. Over the two evaluation periods, only approximately 2-4% of households whose MassHealth membership was automatically renewed through ELE lost coverage within 90 days, compared with up to 34% of non-ELE households. Analyses of trends overall and in subgroups (families < 133% of FPL and childless adults) demonstrate the continued success of ELE since the program's initiation in 2012, with the percentage of ELE participants losing eligibility staying below 10% in all years.

Results are subject to limitations. All eligible members who received SNAP benefits were enrolled in ELE, while those who were not eligible, or who were eligible but did not choose to receive SNAP, continued traditional re-enrollment procedures. It is possible that members who did and did not receive SNAP differed in their continued eligibility for Medicaid, thus accounting for the observed difference in loss of eligibility between the two groups. We did adjust our analyses for family income, which is the major factor in eligibility. Furthermore, we examined trends in loss of eligibility as far back as 2011, prior to initiation of ELE. The loss of eligibility in 2011, during which the comparison group population included both SNAP and non-SNAP members, was even higher than in 2012, a year during which the comparison group included only non-SNAP members. This suggests that SNAP members did not have substantially lower rates of eligibility loss in the 90 days following annual review than non-SNAP members.

Results should also be interpreted cautiously due to changes in the population in the MA-21 system over the evaluation period, which resulted in study groups with varying demographic characteristics during each evaluation year. Nevertheless, we used IPTW methodology to identify comparison groups in each evaluation period that were similar to ELE participants on important characteristics.

Similar to these analyses, the previous evaluation of the ELE program in Massachusetts demonstrated that during the first year of the program's existence, ELE participants were much less likely to lose eligibility than a comparison group. The findings in this report, from the second and third year after program initiation, reinforce those initial findings and demonstrate the sustainability of the program in reducing the percentage of MassHealth members who lose eligibility due to not completing the renewal paperwork. Moreover, interviews with key informants conducted during the first evaluation period identified few challenges to ELE implementation. To the extent that MassHealth members would otherwise have no insurance, a reduction in churn rate lends support to the goal of maintaining near universal coverage (Goal 1). For other states aiming to reduce churn, Massachusetts' experience offers an example of a successful streamlined Medicaid eligibility process for SNAP recipients.

4 Delivery System Transformation Initiative (DSTI)

4.1 Background

The Delivery System Transformation Initiative (DSTI) offers performance-based incentive payments to seven participating safety-net hospital organizations. The incentive payments encourage and reward these hospital systems for making investments in health care delivery initiatives and demonstrating achievement on various metrics towards the Demonstration's goals of both delivery system and payment reforms.

The seven safety net hospital systems participating in DSTI are:

- Boston Medical Center (BMC)
- Cambridge Health Alliance (CHA)
- Holyoke Medical Center (Holyoke)
- Lawrence General Hospital (Lawrence)
- Mercy Medical Center (Mercy)
- Signature Healthcare Brockton Hospital (Signature)
- Steward Carney Hospital (Carney)

Participating hospitals were required to implement at least two projects from two of the three categories listed below and one project from the remaining category. Hospitals selected specific projects from a menu of prescribed options.

- *DSTI Category 1: Development of a Fully Integrated Delivery System* – Category 1 projects employed the concepts of the PCMH to increase delivery system efficiency and capacity. Example projects included: investments in communication systems to improve data exchange; integration of physical and behavioral health care; and investment in patient care redesign such as patient navigators.

- *DSTI Category 2: Health Outcomes and Quality* – Category 2 projects included the development, implementation, and expansions of care models that have potential to improve patient experience, cost, and care management. Example projects included: implementation of enterprise-wide care management initiatives; improvement of care transitions and coordination across care settings; and adoption of process improvement methodologies to improve safety, quality, and efficiency.

- *DSTI Category 3: Ability to Respond to Statewide Transformation to Value-Based Purchasing and to Accept Alternatives to Fee-For-Service Payments that Promote System Sustainability* – Category 3 projects enhanced safety net hospital capacity to adopt payment reform and alternative payment models. Example projects included: enhancement of performance improvement and reporting capabilities; development of risk stratification functionalities; and development of systems to support integrated care networks.

DSTI also included a fourth category, *population-focused improvement measures*. These measures related to Category 1-3 projects and were further divided among Category 4A and 4B measures. DSTI hospitals were required to select a subset of measures that best aligned with their specific improvement projects (referred to as Category 4A measures); they were additionally required to report on ten Common Measures (referred to as Category 4B measures). Collectively, Category 4A and 4B measures aimed to assess whether system changes and investments adopted under Categories 1-3 affected care delivery performance. DSTI hospitals reported their performance measures twice per year for the duration of the Demonstration.

Incentive payments were distributed contingent on whether a hospital met the metrics it defined for each project specified in its approved DSTI plan. Hospital DSTI Semi-Annual Reports for Payment and Summary Reports for Payment to MassHealth described and documented progress made toward each project milestone and metric, along with requests for incentive payments. These reports were the basis for authorizing payment.

Whereas in the previous Demonstration period the DSTI program focused primarily on project implementation activities, the current DSTI shifted the focus increasingly toward measuring and linking payments to improvements in health outcomes and quality. Accordingly, the overarching evaluation question for DSTI was the following: To what extent do incentive payments to support investments in participating hospitals impact delivery system reform, as demonstrated by changes in care delivery practices and improvement in health outcomes?

With that in mind, the aims of the evaluation were to:

1. Assess whether participating hospitals were able to show improvements on measures within Category 4;
2. Determine whether some participating hospitals performed better than others in terms of improving measures within Category 4; and
3. Understand what factors and conditions explain the success of especially high performing participating hospital systems.

4.2 Methods

To address the goals of the evaluation, we used a multi-site comparative case study design to characterize the DSTI initiative, describe the specific Category 1-3 projects each hospital implemented and their achievement of Category 4 measures, and pinpoint the operational conditions associated with relatively more successful performance under the program.

As noted in the evaluation design (see Appendix A), the evaluation team planned to assess changes in preventable hospitalization and readmission measures, comparing the rates of DSTI and non-DSTI hospitals to describe the trend for 30-day readmission rates. However, EOHHS determined that the analysis would be duplicative of another EOHHS vendor's (The Lewin Group) activities. The evaluation team did not conduct this analysis, but The Lewin

Group's results were made available to the evaluation team for use in its evaluation. The evaluation team also planned to conduct site visits and key informant interviews to gather information on project implementation, the organizational and environmental context of initiatives, factors that facilitate and impeded delivery system transformation, and the relationship between organizational change and outcome effects to learn how intervention features influence outcomes. However, data that was to be used to determine appropriate sites and interview subjects was not available in sufficient time to allow data collection and analysis before the end of the evaluation period. Therefore, in consultation with EOHHS, the evaluation team determined that these activities could not be conducted due to time constraints. In lieu of this data collection, the team evaluated the available secondary data to respond to this evaluation aim.

Data Sources and Study Population

The principal data source was the DSTI Semi-Annual Reports for Payment submitted by each DSTI hospital detailing operational accomplishments and documenting progress on meeting all Category 4A and 4B performance metrics but one. MassHealth contracted with an outside vendor, The Lewin Group, to calculate one of the 10 common 4B measures, specifically the 30-day hospital readmission measure. The Lewin Group in turn made the measure available to the evaluation team (see Appendix C for the methodology applied.). Program staff involved with implementation of DSTI provided information about programmatic challenges and policy implications.

The study population for all but one of the 4A and 4B metrics consisted of all Demonstration eligibles served by the seven DSTI hospitals. MassHealth members were the population of interest for the 30-day hospital readmission measure (measure 4B (1)). The study design did not include a comparison group; rather, the design sought to leverage anticipated performance variation within the DSTI program so as to compare relatively high and low performing DSTI hospitals. The intent was to isolate the operational factors that appear to most influence performance.

Study Variables

The outcome measures of focus were the Category 4A and 4B performance measures but with special focus on the 30-day readmission measure. The evaluation prioritized this measure for two reasons: 1) reducing 30-day readmissions was a central goal of the DSTI initiative; and 2) the measure was specified by an outside entity (The Lewin Group) using a well-established, case-mix adjusted methodology and so was considered especially sound for cross-site comparison purposes (see Appendix C for The Lewin Group's methodology). The "explanatory" measures were the characteristics of the hospitals' specific projects and project elements implemented within each hospital.

Data Analysis

Data analysis involved content coding the narrative portion of each hospital's semi-annual and annual reports. For this purpose, a coding framework was developed representing core domains of interest by DSTI project: 1) target population and care continuum foci; 2) implemented care structures and processes; and 3) stakeholder engagement. Since our primary outcome measure of interest was the 30-day readmission measure, we focused our analysis primarily on DSTI projects that concerned elements of care delivery that had the strongest likelihood of affecting readmission rates. These included projects in the following three areas: emergency department (ED) diversion, care management, and discharge planning.

For the initial round of coding, individual DSTI projects were the unit of analysis; in subsequent rounds of coding, like-projects within a hospital were grouped together (e.g., all projects related to ED diversion). Hospital-level memos as well as Microsoft Excel files with data arrayed by hospital and project category were then developed to facilitate cross-hospital comparisons. In the final analysis, each hospital's performance, as measured by the Category 4 measures overall and the 30-day readmission measure, in particular, was used to array hospitals by high and low performance and facilitate further comparisons along this dimension.

4.3 Findings

Overview of DSTI Hospitals and Selected Projects

Under DSTI, participating hospitals are required to implement a minimum of five and a maximum of nine projects (selected among a total of 24 different projects across Categories 1, 2 and 3), including one required project (Project 3.8: Participate in Learning Collaborative). Of the seven hospitals, two implemented six projects and the remaining five implemented seven projects. Among the more frequently selected projects were those related to: improving care transitions (selected by five of the seven hospitals); integrating physical health and behavioral health (also selected by five hospitals); and care management interventions for patients with chronic diseases (selected by four hospitals). Less common projects, selected by one hospital each, were those related to: expanding or enhancing the delivery of care provided through the PCMH; implementing global or risk-based payments; and developing an integrated acute and post-acute network across the continuum of care. Within these project categories, individual project elements that were adopted varied across the hospitals, making the projects unique to each hospital. (See Appendix D for the specific projects each hospital implemented.)

Assessment of Population-Focused Improvement (4A and 4B) Measures Performance

Participating hospitals were required to select population-focused improvement measures associated with their projects, for which they would receive payments for reporting and/or achievement. Collectively the seven DSTI hospitals reported on 60 4A measures: BMC and Signature reported on seven 4A measures; Mercy reported on eight; Lawrence and Holyoke on nine; and Carney and CHA on 10 measures (see Appendix E). Overall, sites selected

approximately 25 different measures that were reflective of their specific projects; most measures were selected by more than one site. The most commonly selected measure, selected by five sites, was “Comprehensive Diabetes Care: Blood Pressure Control (<140/90).” Four sites selected the following measures: “Comprehensive Diabetes Care: Hemoglobin A1c Testing,” “Decreasing Emergency Department Utilization for High Utilizers,” “Depression: Utilization of the PHQ-9 Tool,” and “Screening for Clinical Depression and Follow-Up Plan. Five of the seven hospitals (BMC, CHA, Holyoke, Lawrence and Signature) met all their 4A measures in all evaluation periods. The remaining two hospitals (Carney and Mercy) met all but two of their 4A measures and in both these cases the hospital failed to meet the measure in only one of the two pay-for-performance time periods.

With respect to measure 4B (1), 30-day hospital readmissions, all but one hospital (Carney) met this measure (see Appendix C). Relative to their target readmission rate, CHA and Holyoke exhibited the largest positive change in their readmission rate between baseline and the final measurement period. For the remaining 4B measures (4B (2) - 4B (10)), three of seven hospitals (BMC, CHA, and Lawrence) met all, and the remaining four hospitals met most (see Table 6 below and Appendix F). Of the four hospitals meeting most but not all 4B measures, no hospital failed to meet more than two 4B measures: Holyoke missed one measure while Mercy, Signature and Carney missed two measures each. All sites that missed these measures did so only in the final DSTI demonstration year.

The most commonly missed 4B measure was 4B (2): Care Transition Measure Set, which was missed by three sites (Carney, Holyoke, and Mercy). No site was able to achieve the measure’s target score (55.9%) and score variance from year to year was generally small, but scores were above 44% across the evaluation period. Another measure missed by multiple sites was 4B (8): National Healthcare Safety Network Facility-Wide Inpatient Hospital-Onset Clostridium Difficile Infection Outcome Measures, which was missed by two sites (Carney and Mercy). Finally, two measures, 4B (3): Transition Record with Data Received by Patient at Inpatient Discharge and 4B (7): Early Management Bundle-Severe Sepsis/Septic Shock, were each missed by one site (Signature).

Achievement was notable for several of these 4B measures. One site (CHA) achieved substantial change on measure 4B (8): National Healthcare Safety Network Facility-Wide Inpatient Hospital-Onset Clostridium Difficile Infection Outcome Measure (Target score is a Standardized Infection Ratio of 1 or less), reducing their ratio score by almost a full point, which was highest rate of change among the sites. For measure 4B (6): Tobacco Use Treatment Provided or Offered at Discharge, five sites (BMC, CHA, Lawrence, Mercy, and Signature) started the evaluation period with scores of zero and improved between 18% and almost 88% during the Demonstration period. Two of seven sites (Mercy and Holyoke) improved their scores to almost 90% by the end of the evaluation. Four of six sites (Carney, Holyoke, Mercy, Signature) reporting on measure 4B (9): Alcohol Use Screening achieved scores over 94% in the final evaluation period, with one site reporting 100% achievement. Rates for this measure showed positive improvement across all Demonstration years.

Table 6: Achievement of 4A and 4B Measures

	BMC	Carney	CHA	Holyoke	Lawrence	Mercy	Signature
4A Measures (All)	**Met all**	**Met most**	**Met all**	**Met all**	**Met all**	**Met most**	**Met all**
4B (1)*	Met	Did not meet	Met	Met	Met	Met	Met
4B (2 - 10)	Met all	Met most	Met all	Met most	Met all	Met most	Met most
4B Measures (All)	**Met all**	**Met most**	**Met all**	**Met most**	**Met all**	**Met most**	**Met most**

* 30-Day Readmissions Measure.

Assessment of Delivery System Change

The performance variation identified in Table 6 served as the basis for stratifying DSTI hospitals as relatively high and low performing sites. In turn, the evaluation team used these strata to assess whether high and low performing sites differed with respect to the delivery system improvements they implemented in the areas of emergency department diversion, care management, and discharge planning (described below). The intent was to pinpoint potentially impactful and effective delivery system improvements for reducing 30-day readmissions. This analysis revealed relatively few patterns, but we do note the following. With respect to projects in the discharge planning category, Carney (the one site that did not meet the 4B (1) 30-day readmission measure), reported focusing their improvement efforts on all admitted patients, whereas the other DSTI sites focused on specific sub-populations. Carney also reported on fewer workflow adjustments than the other sites. With respect to care management initiatives, Carney reported on one project in this area while other sites implementing care management projects conducted two or more such projects. While these patterns should be interpreted cautiously, especially as the evaluation team only had access to secondary data documenting DSTI hospital-reported activities, they suggest that more targeted investments and more widespread delivery system adjustments are associated with more success with respect to reducing 30-day readmissions.

More generally, DSTI sites employed a number of strategies to support success in their projects and quality metrics. Sites reported using existing tools or programs, which could be immediately implemented, eliminating the need to spend time on development and testing. One site implemented the American Board of Internal Medicine Foundation's Choosing Wisely toolkit, which supports clinician-patient conversations about appropriate medical tests and procedures. Another site used the Nurses Improving Care for Health System Elders, or NICHE, nursing education and consultation program as part of their geriatric care. A third

site implemented the evidence-based Patient Activation Measure tool to measure patient self-management ability as a way to increase patient engagement.

Improved inter- and intra-organizational communication was cited as a strategy for many initiatives, particularly those focused on care integration. These workgroups were comprised of staff across hospital-based disciplines or stakeholders from both the hospital and the community, depending on the project's focus. The use of collaborative multidisciplinary workgroups brought together varied viewpoints to inform organizational changes. Efforts to create and maintain relationships with organizations outside of hospitals, such as care sites to which patients are transferred, resulted in improved workflow processes for patient care. Warm handoffs and the use of checklists between care sites created smoother, more informed transitions across the care continuum. This communication facilitated relationships with other provider organizations that allowed some sites to expand the reach and/or type of services that patients could access.

Many sites reported a focus on improving data collection, management, and exchange capacity, which helped to identify their target patient populations, inform project steps and patient care, fulfill project reporting requirements, and prepare for alternative payment methodologies. Some sites needed to develop staffing or purchase equipment to fill their information technology needs. Improved electronic medical record capabilities and interoperability with other systems has led to overall efficiencies and cost savings. Educational efforts at several sites about the need for and utility of data collection improved buy-in among site staff for what was seen an additional potentially burdensome activity.

During the initiative, administrative and clinical staff from the DSTI hospitals participated in learning collaboratives to share their experiences with their peers and learn about successes, challenges, and best practices. These were either hosted by a participating hospital or conducted via webinar and consisted of a variety of formats, including roundtables, presentations by participants, and small group discussions. These collaboratives were well-received by participants. Feedback solicited from participants led to improvements to the collaboratives over time.

DSTI sites experienced challenges in several areas at the organizational level and external to their organization during implementation. Many of these were expected, planned for, and resolved. Some sites reported that learning has come from these challenges and informed their future efforts. As challenges were generally unique to each site and initiative, few themes were found across sites.

Patient engagement was a challenge noted by several hospitals. To manage health care for homeless patients, who are hard to locate and engage due to not having a fixed address or telephone access, one site made efforts to create stronger relationships with them for appreciating better individual needs. Another site started making reminder calls through its call center to patients scheduled for Pulmonary Function Tests to decrease no show rates. A third site developed a list of talking points of the benefits of a primary care provider for staff to use with ED high utilizers. Data access was reported as difficult for a few sites, for

reasons including differing formats from a range of payers. For one site, the difficulty was due an EMR upgrade happening at the same time as its DSTI projects. At one site, additional resources were dedicated to data collection and reporting to mitigate this challenge.

Sites reported several challenges related to the larger health care environment that they worked towards resolving. Several hospitals noted that receiving adequate reimbursement for services, including behavioral health, was a barrier. For example, the criterion for who is considered 'home-bound' meant that some patients, such as complex patients with mental illness, were denied reimbursement for services. Another site reported that its patient demographics and service mix led to reimbursements that did not cover the actual service cost. As a solution, one site learned through its existing contracts with commercial and Medicare payers how to leverage global payment models to achieve cost efficiencies. Another hospital surveyed senior housing residents, most of whom would not meet criteria to receive home-based nursing, to learn their most emergent need was medication management assistance. Another challenge in this area was a lack of services in a geographic area, leading to long wait-times with existing providers. One site collaborated with a local behavioral health provider to create an integrated clinic to provide behavioral health and other medical services.

The following sections characterize the specific delivery system improvements implemented in the three key areas under DSTI: Care Management, Emergency Department Diversion, and Discharge Planning.

Care Management Projects

Six of the seven DSTI hospitals implemented one or more projects focused on care management: one hospital conducted one care management project; three hospitals conducted two projects in this area; and two hospitals conducted three care management projects. Sites varied with respect to the target population of their respective care management projects, with some sites focusing on elderly populations, others focusing on patients with chronic health conditions, and still others on patients with socioeconomic challenges (e.g., language, culture). Sites also varied with respect to where in the care continuum their care management programs were concentrated. While two projects involved the full care continuum (i.e., inpatient to community), the remaining projects focused on a particular part of the care continuum such as hospital departments, primary care offices, and community care sites.

A key component of care management projects across all sites was the implementation of new workflows and protocols aimed at standardizing care processes and ensuring the use of evidence-based care management approaches. For example, sites adopted a standardized delirium and detection management protocol (Carney); depression screening and medication reconciliation workflows (CHA); Choosing Wisely guidelines (BMC); and the use of chronic disease registries (Holyoke). In addition to focusing on evidence-based care management protocols, sites also implemented care process improvements aimed at

increasing patients' general access to care, such as open access and extended appointment scheduling (Signature) and standard operating procedures for admitting patients to psychiatric and detox units (Mercy).

Another central feature of care management projects was provision of provider and staff training and, in some instances, expansion of the care management work force. For many sites, provider trainings focused on best practices for managing specific conditions, such as diabetes, hypertension, and delirium (Carney, Signature, and Holyoke); for others, staff trainings focused on improving the overall efficiency of care management to reduce redundancies and unnecessary testing (BMC). Two sites additionally focused their education efforts on patients, aiming to increase health literacy and self-management skills. With respect to expanding the care management workforce, four sites hired staff or reconfigured staff roles to facilitate improved care management. For example, one site (CHA) hired two Community Health Workers (CHWs) to provide patient navigation services in its primary care practices. Another site (Signature) hired a Care Manager to facilitate risk evaluation screenings and to follow up with patients after post-discharge care visits. A third site (Holyoke) trained respiratory therapists as smoking cessation counselors to work with their target population of heart failure and COPD patients.

For many sites, efforts to improve care management also involved promoting a more team-based and multi-disciplinary approach to care management. For example, three hospitals (BMC, CHA, and Signature) established multidisciplinary care teams within their hospitals. BMC established a multidisciplinary Comprehensive Diabetes Management Care team to develop individualized care plans. CHA developed and implemented an interdepartmental strategy to improve care delivery, reduce avoidable ED utilization, and track a cohort of patients to measure reductions in avoidable ED utilization. The third site, Signature, established a multidisciplinary team for its complex care management intervention program. At other sites, stakeholder work groups were established to provide guidance and direction and to develop tools, workflows, and metrics in support of care management projects. For example, Holyoke established a Diabetes Advisory Council that met regularly to develop diabetes management strategies and protocols. Finally, stakeholder engagement at some sites extended to off-site community providers. For example, three sites (CHA, Mercy, Holyoke) developed relationships with off-site providers so as to expand their patients' access to needed services. One of these sites (Holyoke) expanded their trainings on care management for patients with diabetes to include staff at service providers in the community as well as the hospital's own internal staff.

Emergency Department Diversion Projects

Three of the seven DSTI hospitals implemented one project each focused on ED Diversion. All three projects focused on trying to connect patients who utilized the ED for non-emergent care to primary care and at one hospital to post-acute care. Sites varied, however, in the strategies they adopted for facilitating these primary care/post-acute care connections. One site (Carney) established a Patient Navigation team to work with patients identified by ED or

primary care staff, enrolling identified patients in health insurance and facilitating access to primary care service. The second site (Lawrence) developed a network of preferred post-acute care providers, including a PCMH, with the goal of creating an integrated system of standardized care delivery for shared patients to reduce unnecessary ED visits. Lastly, the third site (Mercy) focused on providing education to patients that used the ED for non-urgent care about using alternate care sites, specifically primary care for non-urgent and preventive care needs.

Populations targeted for ED diversion varied across the three hospitals. One site (Carney) focused on patients with limited English proficiency. Another site (Mercy) focused on a range of patients deemed at high risk, including: patients with 12 or more ED visits in a year; medically-fragile patients; homeless patients; and complex patients, defined as patients with two or more chronic conditions, such as chronic heart failure, diabetes and/or behavioral health issues. The third site (Lawrence) targeted patients discharged from the hospital to post-acute care providers.

As part of their efforts to address avoidable ED use, two sites implemented improvements to their IT system. One site (Carney) established an Electronic Medical Record (EMR) platform to allow care plans to be shared among various providers and to facilitate ED-to-primary care referrals, while another site (Lawrence) developed a dashboard to measure and compare data on key measures across their post-acute network. In addition, all three sites leveraged data and analytics to support decision-making. Two sites (Mercy and Lawrence) reviewed utilization trends of the target population and developed reports. The third site (Carney) completed a community needs assessment to identify health-related social issues that could influence ED utilization (e.g., violence, care access and cost, community health issues).

All sites hired new staff to support their ED diversion efforts, specifically case managers to work with patients to apply for and enroll in insurance, secure a primary care provider, and access other social supports. One site (Carney) additionally re-vamped their patient navigation services for high-utilizer patients from what had been primarily a CHW-based approach to a team-based approach involving emergency medicine physicians, nurses, case managers, behavioral health providers, PCPs, and patient advocates all working with the target population to reduce their dependence on the ED.

To further support ED diversion initiatives, all three sites developed some form of a task force or committee and in so doing brought key stakeholders together to address ED diversion. One site (Carney) developed a task force comprised of local community health centers, social service agencies, religious organizations, and community groups. This task force focused on developing a database of social and allied health care resources in the community that were available to patients. Another site (Lawrence) developed a work group comprised of post-acute providers that participated in a health information exchange initiative. All sites indicated that establishing connections with community providers was an especially important component of their ED diversion projects. As an example, one site

(Carney) collaborated with Boston Emergency Services to evaluate and direct patients to behavioral health services following their ED visit.

Discharge Planning Projects

Six of the seven DSTI sites implemented initiatives aimed at enhancing the discharge planning process. One site (Holyoke) implemented two discharge planning projects, while each of the remaining five sites implemented one project in this area. Projects primarily focused on improving the post-discharge care transition process by establishing stronger linkages with post-discharge care providers while educating and providing resources to patients to enable them to better manage their own care following a hospitalization. Five of the six sites focused on specific high-risk sub-populations, such as patients with one or more health conditions, high utilizers, or geriatric patients. The sixth site (Carney) took a more expansive approach and focused on all admitted patients. Sites varied in the methods they used to identify at-risk patients who might benefit from more intensive discharge planning. For example, one site incorporated readmission assessments into multidisciplinary inpatient rounds (CHA); another placed a social worker in the ED (Lawrence) to identify super utilizer patients; and another developed an EMR-based risk assessment (BMC).

With respect to improving care transition processes, sites introduced programmatic changes designed to improve communication between the hospitals and post-discharge care sites. One site (Carney) implemented use of the "Situation, Background, Assessment, Recommendation" (SBAR) tool to standardize information verbally communicated between patient care staff during care transitions. This site also implemented "Ticket to Ride/Passport," a standardized form which facilitates communication during the care transition process. A second site (Mercy) developed a 10-step checklist for use by staff during warm handoffs between care providers. Finally, a third site (Holyoke) restructured its Transitional Care Department and developed new processes to manage the care of patients with complex needs.

Relative to enhancing patients' care self-management skills, sites developed a number of educational processes and resources. For example, one site (BMC) established a process for pharmacists to make outreach phone calls to at-risk patients within 72 hours of discharge while another site (Lawrence) designed a postpartum depression care referral program. An additional site (Carney) implemented use of the "Teach Back" tool, which allows nursing staff to confirm that patients understand the information conveyed by care providers, and an "After Hospital Care Plan" for newly discharged patients that outlines their post-discharge care needs, such as medication and follow-up appointments.

To implement these new workflows and protocols, several sites designed new staff roles within their hospitals and/or undertook staff training. Two sites hired staff into new nursing-level roles, one for discharge nurses (Carney) and the other for nurse navigators (Holyoke). One of these sites also created a CHW role and hired several CHWs for its Transitional Care and Community Navigation Departments (Holyoke). A third site added a home care liaison to its patient rounding team to enhance cross continuum care (Mercy). Skill-based

training efforts for staff, reported by four sites, included education on the Teach Back nursing communication tool (Carney), care transitions (Holyoke), geriatric patient needs (Lawrence), and use of case reviews as a teaching tool (CHA).

For most sites, improvements to discharge planning processes involved working with key stakeholders within their hospitals and across the care continuum. For example, in-house multidisciplinary workgroups were convened by five sites to provide assistance with project tasks. One of these sites (BMC) created an inpatient clinical operations committee to provide support and guidance for its initiative and a workgroup that developed discharge education materials for patients. Other sites established multidisciplinary care teams that engaged in such diverse activities as conducting a gap analysis of current discharge processes (Carney), holding weekly case review discussions to identify discharge process changes that support readmission reduction (CHA), and developing patient education materials (BMC). Cross continuum teams, developed at three sites, engaged stakeholders in efforts to improve patient care and communication between care sites. For example, one site's team (Holyoke) comprised a range of service providers, including skilled nursing facilities, home health agencies, long-term acute care hospitals, primary care and mental health providers, aging service access points, as well as patient and family representatives. The team piloted programs designed to allow the hospital and its cross-continuum partners to provide post-discharge medical care for several chronic conditions.

4.4 Discussion

The overarching goal of the evaluation of DSTI was to learn the extent to which incentive payments, received by achieving 4A and 4B metrics, impact delivery system reform, demonstrated by system change and health outcome improvements. The seven DSTI hospitals succeeded in implementing projects to increase the integration of care services across the care continuum, to improve care quality and outcomes, and to enhance DSTI hospital capacity to respond to the State's transformation to value-based purchasing. DSTI appears to have helped participants with preparation for future delivery reform (Goal 3) and payment reform (Goal 4). During the second half of the evaluation period, use of alternative payment methodologies by MassHealth Managed Care Organizations (MCOs) was fairly steady, at approximately 36%. In MassHealth PCC plans, use of APMs rose 16%, to almost 40% of PCC plan practices, between 2016 and 2017.[18] All DSTI participants have since joined a MassHealth ACO.

[18]Center for Health Information and Analysis. (2018) *Performance of the Massachusetts Health Care System Annual Report 2018*. Available at http://www.chiamass.gov/assets/2018-annual-report/2018-Annual-Report.pdf

Collectively, the seven DSTI hospitals implemented 47 projects (each hospital implemented between six and seven projects) and reported on 60 performance metrics associated with these projects (4A measures). The highest concentration of projects was in the areas of care management for high risk patients and discharge planning followed by ACO/ICO structure development and behavioral health integration. Across these projects, DSTI hospitals invested in workforce development, hiring and training new staff to take on new case management functions; developed and implemented new work flows; invested in information technology and data analytics to support system change; and engaged key stakeholders in the transformation process.

All but one site implemented projects that focused on care management, with most of these directed at one aspect of the care continuum. Primary activities involved standardizing workflows, training hospital staff on best practices and efficiencies, and promoting team or multi-disciplinary care approaches. Similarly, all but one site engaged in discharge planning projects to improve the transition process between settings for high-risk patients. These projects focused on improving relationships and communication with post-discharge care sites and implementation of communication tools. Communication with patients was a feature of several projects, to ensure continued patient engagement and follow-through. Emergency Department diversion, to connect patients to more appropriate care settings, was a project focus for three hospitals. Hospital-based information technology improvements facilitated care referrals as well as data collection and reporting. New staff needed to be hired for these projects, mostly for care managers to work with patients to gain health insurance that would allow access to other care settings.

Two aims of the evaluation were to assess whether hospitals were able to show improvement in the Category 4 measures and whether some of them performed better than others. As the intent of these measures was to hold the hospitals accountable for their performance, thus adding risk, it was expected that hospitals might not meet all measures. Reported progress on project metrics suggest that DSTI hospitals achieved their implementation goals: three of the seven hospitals met all 4A and 4B measures (BMC, CHA, and Lawrence); two hospitals met all 4A measures and all but one or two 4B measures (Holyoke and Signature); and two hospitals met most but not all of their 4A and 4B measures (Carney and Mercy).

Overall, DSTI hospitals succeeded in meeting nearly all 4A and 4B measures and showed improvement from year to year during the evaluation period. It is difficult to draw specific conclusions (e.g., comparisons between hospitals) about the reasons for their success, since the projects across hospitals did not align. However, several 4B inpatient clinical measures, such as reducing readmissions and Hospital-Onset Clostridium Difficile Infection or managing Sepsis, were missed in only the final DSTI Demonstration year, and may require substantial organizational and workflow changes over a longer period of time and consistent patient engagement to address. Some sites were able to make substantial positive change on 4B quality of care measures, including offering tobacco treatment at discharge or screening patients for alcohol use, which may require fewer system changes or

involve fewer components, making organizational change easier and, in turn, getting reflected more quickly in related metrics. Discharge planning projects, which involved patient follow-up to ensure post-discharge care compliance, may have positively influenced achievement of 4A and 4B measures.

A central goal of DSTI investments was to reduce 30-day hospital readmissions (one of the 10 required 4B performance measures). Thus, the third aim of the evaluation was to leverage expected performance variation across the DSTI hospitals with respect to 30-day readmissions to pinpoint the operational and programmatic conditions associated with effective delivery system transformation. Based on an analysis completed by The Lewin Group, all but one hospital met their target for this measure by the end of the Demonstration period. Given the disparate category 1-3 projects conducted by the seven DSTI hospitals, few patterns were observed to determine differences between high- and low-performers to inform reduced 30-day readmissions. Sites that reduced their rates implemented multiple care management projects while focusing their overall efforts on specific sub-populations. This suggests that a targeted population focus coupled with wide-spread clinical care adjustments were associated with more success. More research is needed to test the generalizability of this finding and to determine the other organizational and system-level factors that may either impede or facilitate a hospital's ability to reduce 30-day readmissions.

These results can provide guidance to other states looking to transform health care delivery on a broad scale. DSTI activities that contributed to the state's health care reform efforts were undertaken during a period when health care costs were high, making insurance coverage and reimbursement a challenge. Participating hospitals designed and implemented these large-scale efforts while incurring the risk of not receiving financial payments for site-specific metric targets that were not met. The activities conducted by sites translated into achievement of 4A and 4B measures, for which they received incentive payments that were critical to their project work. It appears that the risk-based measures served to prepare them for the value-based payment models and provided incentive to succeed with delivery system reform efforts.

5 Infrastructure and Capacity Building (ICB)

5.1 Background

The Infrastructure and Capacity Building (ICB) grant program provided funding to eligible MassHealth participating hospitals and community health centers (CHCs) to support the development and implementation of heath care infrastructure and capacity-building projects that would benefit MassHealth members. Through these projects, EOHHS sought to advance provider readiness for alternate payment methodologies. The program also advanced EOHHS' efforts to improve delivery system performance. In December 2015, EOHHS awarded $20 million in ICB funding representing 80 projects across 49 provider sites (hospitals and CHCs combined). Each provider site was awarded funding for a six-

month contract beginning in December 2015 and ending in June 2016, with the option to extend the contract for up to an additional six months, to December 2016. The overall goals for the ICB grants were to:

- Encourage delivery system integration through forming teams of providers across the care continuum;
- Improve cross-continuum information exchange and clinical integration;
- Improve provider readiness and capabilities for population management;
- Improve provider readiness for operating under APMs for the MassHealth population; and
- Advance the specific objectives of each of the projects a given awardee proposes to implement.

To advance the goals of the program and to qualify for ICB funding, applicants implemented one or more projects selected from five broad areas. There was no requirement to do more than one project. The ICB program further defined these project category areas with specific projects and subprojects from which grantees could select. The five broad project category areas were (see Table 7 for a complete listing of specific projects within each area):

A. Enhanced Data Integration, Clinical Informatics, and Population-Based Analytics

B. Shared Governance and Enhanced Organizational Integration

C. Enhanced Clinical Integration

D. Outreach and Enrollment

E. Catalyst Grants for Integration

The objective of this evaluation was to assess the potential effects of the ICB grants that allow participating providers to advance the Commonwealth's goals related to delivery system integration, provider readiness and capabilities for population management and for operating under APMs. To respond to the objective, the evaluation of the ICB program had three primary aims. The first was to describe the portfolio of projects funded in the project period in terms of awardee type, funding amount, project and subproject type(s), and other key characteristics. The second aim was to assess grantees' level of success during the grant period in implementing the planned infrastructure and capacity-building projects and related activities. The third aim was to determine the organizational and system-level factors that facilitate grantees' effective program implementation. Together, these aims formed a basis for grantees to enhance readiness for delivery system reform (Goal 3) and payment reform (Goal 4).

5.2 Methods

To address the evaluation aims, we used a qualitative and descriptive research design and relied exclusively on secondary data sources. These secondary data sources comprised ICB awardees' funding proposals, progress reports, and/or final reports, as available. Grantees submitted these proposals and reports to EOHHS, as required by the program; EOHHS in turn made the data available to the evaluation team. To facilitate analysis, we established a data collection deadline of March 31, 2017. Sites that asked for and received an extension to their contract may have submitted a final report after our data collection deadline.

ICB grantee proposals detailed information about proposed projects, including staffing, budget, project partners, and the grantees' capabilities for carrying out their planned activities. Progress and final reports detailed in narrative form the grantees' progress in advancing their planned projects and completing deliverables. As the data is self-reported by the sites, sites may not have explicitly addressed activities related to each subproject in their progress or final reports. Program staff involved with implementation of ICB provided information about programmatic challenges and policy implication.

The evaluation team examined site-level quantitative metrics (e.g., ICB funding amount, number of projects awarded, deliverable completion rate) to assess the scope and scale of the grant program, as well as the degree to which project deliverables were completed as planned. In addition, the evaluation team coded and analyzed the narrative components of ICB awardees' proposals and reports to characterize the specific projects each site undertook with their ICB funding. To guide the qualitative analysis, a coding framework was developed and used to capture key information from the narratives about core program characteristics, activities, and outcomes. This information in turn was used to develop memos for each of the five broad project category areas (A-E), describing the specific projects and subprojects adopted under each category, and the accomplishments achieved by the end of the grant period. The evaluation team intended to complement its analysis of the ICB grant program with site visits and key informant interviews at high-performing provider sites to address evaluation aim three. In consultation with EOHHS, this activity was not conducted due to time constraints. In lieu of this data collection, the team evaluated the available secondary data to learn about and report on facilitators and impediments to implementation. In addition, ICB program staff provided information regarding programmatic challenges and the policy implications of the grant program.

5.3 Findings

Scope and Scale of the Program

Our final study sample comprised 78 projects across 48 unique sites (Tables 7 and 8). One site returned its funding after determining that it could not support its two planned projects under the final award amount, and therefore, has been excluded from this analysis. Of these

48 sites, 29 were CHCs and19 were hospitals. Across the five project category areas, Enhanced Clinical Integration (C) had the highest concentration of projects, with 38 (49%) projects funded in this category. The second largest project area was Enhanced Data Integration, Clinical Informatics, and Population-Based Analytics (A) (24 of 78 projects (31%) were in this area). Less frequently funded projects related to Shared Governance and Enhanced Organizational Integration (B) and Catalyst Grants for Integration (E). Sites varied in the number of funded projects they had. Overall, 60% of sites implemented one project while 40% implemented two or more (Table 8). In total, MassHealth awarded $19,274,288 to these participating sites. Across the 78 projects, funding amounts ranged from $5,690 to $1,668,229. The average project funding amount was $247,106.

Table 7: Number of Projects by Category Area

Category Area	Total # of Projects	# of Projects by CHC	# of Projects by Hospital
A: Enhanced Data Integration, Clinical Informatics and Population-Based Analytics	**24**	**16**	**8**
A1: Data Integration and Analytics Across the Continuum of Care	16	10	6
A2: Data Warehousing and Reporting	6	4	2
A3: Mass HIway Connection and Utilization	2	2	0
B: Shared Governance and Enhanced Organizational Integration	**2**	**1**	**1**
C: Enhanced Clinical Integration	**38**	**18**	**20**
C1: Implement Primary Care Based System of Complex Care Management for High-Risk Population(s)	12	6	6
C2: Redirect Non-Emergent Emergency Department Visits	5	0	5
C3: Reduce Variations in Inpatient Care for Patients with High-Risk Conditions	2	0	2
C4: Implement Improvements in Care Transitions	4	0	4
C5: Develop Clinical Integrated Acute and Post-Acute Network Across the Continuum of Care	2	1	1
C6: Design and Implement a Practice Support Center	13	11	2
D: Outreach and Enrollment	**13**	**13**	**0**
E: Catalyst Grants for Integration	**1**	**1**	**0**
Total	78	49	29

Table 8: Number of Projects per Site

Number of Projects	Total # of Sites	%	# of CHCs	%	# of Hospitals	%
1 Project	29	60.4%	16	55.2%	13	68.4%
2 Projects	11	22.9%	7	24.1%	4	21.1%
3 Projects	6	12.5%	5	17.2%	1	5.3%
4 or More Projects	2	4.2%	1	3.4%	1	5.3%
Total	**48**	**100%**	**29**	**100%**	**19**	**100%**

Program Accomplishments

Across the 78 projects, 57 (73%) were completed during the data collection period (as measured by all deliverables associated with the project being completed prior to the end of our data collection period), with the remainder being completed afterwards. . Analysis across the large number of participant sites and variety of projects produced few patterns that pointed to high or low performing sites. A number of program-level factors facilitated participants' success in completing their planned deliverables, which all sites achieved during the Demonstration. The grant program format offered five content areas under which sites could design projects that would be responsive to the grant program's goals. It required, in most cases, that sites choose from a specified set of subprojects under those larger categories, which served as areas of focus within the larger categories. This intentionally flexible program format allowed sites to develop projects within the framework of the five target categories that were tailored to their specific aims. In addition, no limits were placed on proposed budgets within the total funding available for the program. This increased the likelihood that projects were funded appropriately to attain project goals and further allowed sites flexibility in developing projects that met individual participants' needs. The breadth and uniqueness of the 78 projects is reflected in the awarded funding, which ranged from a low of $5,700 up to $1.1 million.

The program format was both a facilitator and challenge to project completion. The grant program provided a source of funding for small-scope projects that could better position sites to develop larger health care-related initiatives. A number of sites indicated plans for project-related activities that would occur after the grant period. It also allowed sites to attempt projects that were innovative, the results of which might lead to larger funding opportunities.

Some sites were challenged to plan, complete, and evaluate their projects within the six-month grant period. To maximize the grant period and allow sites to focus their time on project-related work, the program was designed to have contract and reporting requirements that were not complex. In some cases, the short initial ICB grant period was not enough time to fully complete a deliverable, particularly if it was complex, related to infrastructure changes, or was dependent on completion of another deliverable. As noted above, some sites experienced unanticipated challenges that delayed their progress. To address this challenge and facilitate project completion, sites were able to request from program staff an extension to the timeframe of up to six months in which to complete their remaining deliverables.

Participants reported unforeseen challenges that arose while completing their projects and were able to work through most of them. As an example, to resolve complications that arose when implementing technology, two sites worked with their Information Technology Departments and Electronic Medical Record vendors. Another site developed a Case Manager position to work with the Nurse Practitioner and Psychiatrist on patient care coordination when a Psychiatrist position could not be filled. Some participants experienced

challenges outside of their control that impacted their deliverable achievement. These included staff turnover, impeded access to clinical data from outside organizations, and reduced health insurance enrollment numbers due to the ACA enrollment period not coinciding with that grant period.

Sites learned many organizational lessons during project implementation and many noted that they would be able to apply these to future efforts. Several sites found that engaging those who would be impacted by changes, such as the end user or the non-clinical staff was helpful to establish buy-in and acceptance of new tools or workflows. Sites that experienced issues implementing technology suggested that such projects are difficult, and that time should be built in to workplans in anticipation of issues that might arise. Others indicated that working in partnership with vendors provided a resource for expertise and was conducive to project completion. One site reported that requiring training completion before allowing access to CareSentry tools ensured that staff fully benefitted from the tools and promoted it to other staff, creating an environment where staff were actively seeking training. Another site is applying their experience establishing legal and privacy controls around data sharing to its negotiations with new partners.

Below are summaries of activities that the funded sites accomplished under the five broad project category areas. More detailed descriptions are available in Appendix G.

Category A: Enhanced Data Integration, Clinical Informatics, and Population-Based Analytics

Twenty-two sites implemented 24 projects in Category A. These projects aimed to enhance clinical decision-making by strengthening the use of data and analytics. Category A projects included three project areas: 1) data integration and analytics across the continuum of care; 2) data warehousing and reporting, and; 3) Mass HIway connection and utilization. Of the 17 projects dealing with data integration and analytics across the continuum of care, many sought to enhance provider capacity in data sharing and analytics by purchasing new software, hardware or consulting support. The nine data warehousing and reporting projects generally focused on improving provider sites' ability to perform population-level analytics, establishing disease registries, and/or making investments in data warehouse functionality. Two sites selected the project area related to improving capacity in enrolling, connecting and using the state's Health Information Exchange. Both sites were successful in exchanging data with another organization via the Mass HIway by the end of the ICB grant period, however one noted that it needed to troubleshoot why it was unable to read documents received via the MassHIway.

Category B: Shared Governance and Enhanced Organizational Integration

Two sites implemented a project in this category. Category B projects were designed to further the development of ACOs by investing in activities that expand provider relationships across the continuum of care. As part of their projects, both sites conducted a needs assessment and formalized relationships with community partners via contracts with the

goal of establishing integrated service delivery models. One site focused on relationships with providers that specifically serve the homeless population, while the other site partnered with various providers across the care continuum that serve a range of patient populations.

Category C: Enhanced Clinical Integration

Twenty-nine sites implemented 38 projects in Category C. Six specific project areas that collectively aimed to enhance clinical integration through improved care coordination and management of high-risk populations were included in this category. A number of funded projects in this category focused on developing or enhancing a practice support center for routing calls more effectively to appropriate departments, schedule patient appointments, conduct patient outreach, and better respond to patients' clinical needs. Many projects entailed implementing a primary care-based system of complex care management (CCM) for high-risk populations. Several projects involved redirecting patients with non-emergent health concerns from the ED to more appropriate care sites. Four projects focused on improvements in care transitions by developing multidisciplinary care teams and determining causes of 30-day readmissions. Finally, two projects were designed to reduce variations in inpatient care, with one focused on diabetes management and the other on COPD.

Category D: Outreach and Enrollment

Thirteen sites each implemented one Category D project. Sites with Category D projects used their ICB funding to conduct targeted outreach and enrollment activities aimed at connecting individuals to public health insurance programs. Outreach activities fell into three broad areas: dissemination of print materials designed to build awareness about health insurance; media campaigns (online, radio, and television) similarly designed to reach and educate target populations; and phone calls to patients to notify them about upcoming enrollment events. All sites also provided on-site health insurance enrollment services and several sites broadened the reach of their activities by offering offsite insurance enrollment services at locations in the community or distributing information at community events. Additionally, several sites used their ICB funding to provide post enrollment services, such as educating patients about navigating the health care system or helping individuals find and access care.

Category E: Catalyst Grants for Integration

One site implemented a project from Category E. The goal of the project was to facilitate planning and preparation for participating in Alternative Payment Models. The site hired an information technology consultant to conduct a technical, financial, and clinical evaluation of its current EMR. Based on the evaluation, the consultant identified and recommended needed adjustments to the EMR system in order for the site to be able to operate under new payment models. The consultant also developed a strategic plan for the hospital's IT infrastructure.

5.4 Discussion

Collectively, these projects represent achievement of the five ICB grant program goals and, in turn, the Demonstration's goals of delivery system reform (Goal 3) and payment reform (Goal 4). Overall, the 48 ICB grant program participants succeeded in implementing 78 projects aimed at improving delivery system integration or advancing provider capacity to operate under new payment methodologies. Of the five broad category areas from which sites could choose, a majority of projects focused on enhancing clinical service integration, followed by strengthening data analytics capacity, both of which are key baseline activities for building towards delivery system integration and enhancing population management. Many sites undertook multiple projects directed at managing the care of high-risk patients, with a subset of these focusing their efforts on care for patients with chronic diseases. A large number of sites implemented projects aimed at making improvements in care transitions or integrating physical and behavioral health.

Sites invested in infrastructure improvements to support clinical decision-making and care integration, developed practice support centers that improved care coordination, established business relationships across the patient care continuum, conducted outreach activities to connect individuals to clinically appropriate care, and began preparations for new payment models. Several sites developed projects to establish or strengthen their ACO/ICO structure, including those that would support their organization's payment reform readiness. These included initiatives to build data warehouse functionality and analytics or reporting capacity and to enhance IT infrastructure.

The achievements and experiences of the ICB grant program participants provide lessons for other states planning to offer grant funding for small-scale innovative projects aimed at delivery system reforms and preparation for the alternative payment environment. The flexible program format of this program and participants' ability to both develop a manageable project scope and address challenges facilitated successful completion of all projects during the Demonstration. Many sites were easily able to complete their projects in the six-month timeframe, which may indicate that their project scopes were developed with the grant timeframe in mind. Program staff, however, suggest that a longer timeframe might be more suitable for such a program, as a number of sites needed an extended time period for project completion, in part due to unforeseen challenges. The ICB grant program was intended to provide the opportunity to attempt small-scale projects that were innovative or would meet internal organizational goals. Many sites designed projects that were a building block to larger initiatives or a bridge to future funding. Several sites noted that evaluation efforts are underway to assess their initiatives' impact and guide future efforts.

6 Conclusions

Overall, activities conducted in the four initiatives were successful in meeting the Demonstration's four established goals of maintaining universal health care coverage,

redirecting spending towards insurance coverage, implementing payment reforms for care and clinical improvements, and readying providers for alternative payment methodologies. Through the DSTI and ICB grant program, participating hospitals and community health centers were able to make organizational changes that positively affected their ability to provide quality accountable care to MassHealth members and prepared them to participate in APMs. These activities are building blocks on which Demonstration participants intend to continue the work of health care delivery system transformation. The risk-based incentive structure of DSTI prepared participating hospitals to move towards using risk-based payment methodologies. DSTI participants' achievement on 4A and 4B measures show a positive trend in care quality efforts. The ELE program continued to help MassHealth consumers attain and maintain their health care coverage by streamlining the application and enrollment processes for Medicaid. The positive trends in PLMs document the impact that Demonstration initiatives had on the state's health care environment.

The state has received a sixth extension of the Section 1115 Demonstration for the period of July 2017 to June 2022[19]. This Demonstration extension will continue efforts to maintain near universal health coverage and support safety net providers in their work to increase access to health care services. It also expands substance use disorder services to address the opioid addiction crisis. Additionally, this extension authorizes $1.8 billion for DSRIP program that will support MassHealth ACO development activities, establish Community Partners to integrate behavioral health and long-term services and supports, and invest in the infrastructure and workforce capacity necessary for this transformation.

The planned evaluation[20] for the new Demonstration period will comprehensively assess Demonstration activities using an array of both qualitative and quantitative methodologies that will vary as needed to meet the analytical needs of each goal and mitigate the limitations experienced in the evaluation of the 2014-2017 Demonstration period. A range of primary and secondary data will be collected and analyzed to determine whether and how the Demonstration met its goals. Qualitative data collection and analysis includes document review, key informant and member interviews, and case studies that will evaluate stakeholder and member experiences with delivery system changes. Quantitative data, such as enrollment data from Demonstration-funded programs, will describe characteristics of the participating MassHealth populations and assess program-related experiences. Analysis of

[19] Massachusetts Delivery System Reform Incentive Payment Program, available at: https://www.mass.gov/info-details/massachusetts-delivery-system-reform-incentive-payment-program

[20] The evaluation design for the 2017-2022 Demonstration is available at: https://www.medicaid.gov/Medicaid-CHIP-Program-Information/By-Topics/Waivers/1115/downloads/ma/MassHealth/ma-masshealth-cms-apprvd-eval-desgn-01312019.pdf

medical claims data and review of administrative data will inform quality metrics achievement. A Scientific Advisory Committee of recognized experts with expertise in evaluating Medicaid programs will be engaged to provide guidance to the evaluation.

Activities undertaken in the Demonstration period evaluated in this report, particularly the DSTI and the ICB grant programs, have positioned participating hospitals to continue engagement in the new Demonstration period through participation in the DSRIP and MassHealth ACO programs. The efforts undertaken to meet the goals of the 2014 – 2017 Demonstration continued meaningful progress towards health care system transformation in an evolving health care marketplace, leading to affordable quality care for Massachusetts residents and valuable lessons for the national health care arena. The activities and accomplishments achieved in these programs are evidence of continued success and provide guidance to other states looking to affect similar health care delivery system transformation while working in an evolving health care marketplace.

Appendix A. Evaluation Design Submitted to CMS

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Section 1: Introduction

The Centers for Medicare and Medicaid Services (CMS) authorizes Medicaid Research and Demonstration Waivers under Section 1115(a) of the Social Security Act. Medicaid Waivers allow states to test new approaches, expand existing delivery systems, and modify payment methods while maintaining "budget neutrality", meaning that federal Medicaid expenditures will not exceed those spent without the waiver. The Commonwealth of Massachusetts (the Commonwealth) received its first 1115 Waiver in July 1997. CMS approved the most recent extension of the Commonwealth's Section 1115 Demonstration Waiver (Waiver) to cover the period October 30, 2014 through June 30, 2019. During this period, the Commonwealth will continue its healthcare reform efforts which are design to advance four established goals:

- Goal 1. Maintain near universal coverage for all residents of the Commonwealth;
- Goal 2. Continue the redirection of spending from uncompensated care to insurance coverage;
- Goal 3. Implement delivery system reforms that promote care coordination, person-centered care planning, wellness, chronic disease management, successful care transitions, integration of services, and measurable health outcome improvements; and
- Goal 4. Advance payment reforms that will give incentives to providers to focus on quality, rather than volume, by introducing and supporting alternative payment structures that create and share savings throughout the system while holding providers accountable for quality care.

The following five initiatives are being implemented to advance the Waiver goals. Table 1 indicates how these initiatives align with each of the Waiver goals:

5. Monitoring of Population-Level Measures (PLM);
6. Express Lane Eligibility (ELE) program;
7. Delivery System Transformation Initiative (DSTI);
8. Intensive Early Intervention (IEI) Services for Children with Autism Spectrum Disorder;
9. Infrastructure and Capacity Building (ICB) grants to hospitals and health centers.

The Commonwealth's Executive Office of Health and Human Services (EOHHS) is responsible for evaluating the Waiver, as described in the Special Terms and Conditions

(STC) 90.[1] To accomplish this, EOHHS contracted with the University of Massachusetts Medical School (UMMS) to design and implement the overall evaluation of the Waiver.

Table 1. 1115 Waiver Initiatives and Goals

	Waiver Goals			
Initiatives	Near Universal Health Coverage	Redirection of Spending	Delivery System Reforms	Payment Reforms
Continued Monitoring of Population Level Measures	**X**	**X**	**X**	
Express Lane Eligibility	**X**			
Delivery System Transformation Initiatives			**X**	**X**
Intensive Early Intervention Services for Children with Autism Spectrum Disorder			**X**	
Infrastructure and Capacity Building Grants			**X**	**X**

1115 WAIVER INITIATIVES AND EVALUATION DESIGNS

In this section, we describe the proposed evaluation design for each of the four 1115 Waiver initiatives, including the specific evaluation questions being addressed, the overall methodological approach, data sources and measures, and analysis plan. We also include a brief description of the initiative itself.

Section 2: Continued Monitoring of Population Level Measures

Background/Overview

[1] STC 90 also references evaluating the financing and sustainability of the Safety Net Care Pool. These comprehensive analyses will be conducted by Navigant and will be provided to CMS through separate reports due on February 1 and June 1, 2016.

Examination of population-level measures (PLMs) provides trend data on the potential effect of Waiver initiatives over time. Used in conjunction with policy analysis, it provides information on secular trends. Below are the specific the PLMs we propose to examine to address these questions, the associated Waiver goals, and data sources. For many of these PLMs, we are proposing to adopt the methodology used in the prior Waiver period with respect to data sources. The seven measures detailed on Table 2 align with domains of focus identified within STC 90 as evaluation domains of focus. UMMS will coordinate and obtain necessary data source information for development of these seven measures and report on them annually to assess change over time.

Table 2: Population Level Measures by Waiver Goal and Data Sources

PLM	Waiver Goal	Data Source(s)
1. Number of uninsured in the Commonwealth [yearly]	Near universal health coverage	National Health Interview Survey (NHIS); plus, the MA Department of Public Health's Behavioral Risk Factor Surveillance Survey (BRFSS) and the MA Center for Health Information and Analysis (CHIA)'s MA Health Insurance Survey (MHIS)
2. Number of Waiver eligibles with employer sponsored coverage (ESI) [monthly]	Near universal health coverage	Premium Assistance and Enhanced Coordination of Benefits unit, UMMS Center for Healthcare Financing
3. Enrollment in Commonwealth Care Program (CommCare)* [monthly]	Near universal health coverage	Monthly Health Connector Summary Reports from Board Meetings
4. Uncompensated care and supplemental payments to hospitals – i.e., Health Safety Net (HSN) and safety net supplemental payments (SNCP) payments to hospitals [yearly]	Redirection of spending	EOHHS HSN and 1115 Waiver Special Terms and Conditions, Attachment E: Safety Net Care Pool Payments
5. Number of individuals accessing the Health Safety Net (HSN) Trust Fund [yearly]	Redirection of spending	EOHHS Health Safety Net
6. Availability of access to primary care providers [yearly]	Delivery system reforms	National Health Interview Survey (NHIS); plus, the MA Department of Public Health's Behavioral Risk Factor Surveillance Survey (BRFSS) and the MA Center for Health Information and Analysis (CHIA)'s MA Health Insurance Survey
7. Number of individuals with incomes between 133 and 300 percent of FPL that take up QHP coverage with assistance of the Health Connector subsidy program [yearly]	Near universal health coverage	Health Connector summary reports of Qualified Health Plan coverage

* Program ended February 2015

The objectives established for these measures include:

- Decreasing the number of uninsured;
- Increasing Waiver eligibles with ESI coverage;
- Tracking enrollment in the Commonwealth Care Program through February 2015;
- Reducing uncompensated care and supplemental payments to hospitals;
- Reducing the number of individuals accessing the HSN; and
- Increasing the availability of access to primary care providers.

Methods

We will use descriptive analysis of existing measures to examine changes in PLMs.

Data Sources

Activities in study year one will focus on the Center requesting and securing datasets or operational statistics from the Massachusetts Center for Health Information and Analysis (CHIA; formerly the Division of Health Care Finance and Policy/DHCFP), MassHealth (MH), the Commonwealth Health Insurance Connector Authority (Health Connector), the Massachusetts Department of Public Health (MDPH), and the CDC's National Center for Health Statistics. The datasets requested include the Massachusetts Health Insurance Survey (CHIA), Health Safety Net claims enrollment data (CHIA/DHCFP), Health Connector subsidy program datasets, the Behavioral Risk Factor Surveillance Survey (BRFSS), and the National Health Interview Survey (NHIS). Operational statistics will be requested for Employer-Sponsored Insurance Enrollment data (MH), Uncompensated Care claims data (CHIA/DHCFP), and Supplemental payments to hospitals (CHIA/DHCFP).

Study Population

Data sources for the PLMs are listed in Table 2. For PLMs 1 and 6, the study population consists of all MA residents. Demonstration eligible residents who had or have access to ESI are the population enumerated for PLMs 2 and 3. Safety net hospitals and community health centers are counted for PLM 4. Uninsured individuals receiving healthcare covered by the HSN are enumerated for PLM 5. Demonstration eligibles with incomes between 133 and 300 percent of poverty are enumerated for PLM 7. The overall study design approach is to develop the seven specific measures and assess their change over the Demonstration period. The Center will use a descriptive design and quantitative methods to assess change in the measures over time.

Comparison Group

There is no comparison group for this study as its purpose is to develop population level measures for EOHHS to continue monitoring its progress towards Demonstration Goals #1, 2 and 3.

Measures

- PLM 1: Number of uninsured in the Commonwealth [yearly]
  This will be derived from cross-checking three independent sources which sample Massachusetts residents in a number of ways and develop proportional estimates of those MA residents who are insured: CHIA's Massachusetts Health Insurance Survey (MHIS; conducted annually); the MDPH's Behavioral Risk Factor Surveillance Survey (BRFSS; conducted annually); and the National Health Interview Survey (NHIS; conducted continuously throughout each calendar year).

- PLM 2: Number of demonstration eligibles accessing ESI [monthly]
  The Premium Assistance and Enhanced Coordination of Benefits unit of the UMMS Center for Healthcare Financing will be the source of data to determine the number of demonstration eligibles accessing Employer Sponsored Insurance.

- PLM 3: Number enrolled in the Commonwealth Care Program [monthly]
  The Health Connector's monthly Board Meeting minutes will be used to determine the number of demonstration eligibles enrolled in the Commonwealth Care Program. While this program was set to sunset at the end of 2013, CMS approved MassHealth's continuation of enrollment in CommCare during the transition period of individuals moving to alternative health insurance plans. The program eventually closed out in February 2015. The Health Connector's data will be used to track this data for the period CommCare continued to cover individuals in MA (October 2014 thru February 2015).

- PLM 4: Uncompensated care and supplemental payments to hospitals [yearly]
  EOHHS's Health Safety Net provides annual figures for uncompensated care payments to community health centers and hospitals and for supplemental payments to hospitals.

- PLM 5: Number of individuals accessing the HSN [yearly]
  EOHHS's Health Safety Net also provides annual figures on the number of individuals accessing the Health Safety Net Trust Fund.

- PLM 6: The availability of access to primary care providers [yearly]
  This will be derived from the MHIS which develops proportional estimates of MA residents who access primary care. As noted above for PLM 1, two additional data sources will be used to supplement the MHIS to obtain the best estimate of primary care provider access (i.e., MDPH's BRFSS and the CDC's NHIS).

- PLM 7: Number of individuals with incomes between 133 and 300 percent of FPL that take up QHP coverage with Health Connector subsidy program assistance [yearly]

These numbers will be derived from the Health Connector which provides summary information on this specific population.

Data Analysis

For each evaluation period, the Center will provide EOHHS with summary statistics for each PLM. The analytic approach for developing each measure varies with the data sources available as described below. While the data will be reported on an annual basis, some data sources contain monthly capture of various activities (e.g., the number of demonstration eligible accessing Employer Sponsored Insurance), while other data is only available on an annual basis. The reporting of the data in tables and graphs will reflect the detail of time (monthly vs yearly) as data is available. Changes in these statistics over time may be assessed as reflected in the manner in which data is captured by the various sources.

- PLM 1: The number of uninsured in the Commonwealth
  The CHIA Massachusetts Health Insurance Survey (MHIS) provides weighted proportional estimates for the MA population. The MHIS provides the proportion of individuals not covered by health insurance. Using this proportion, the aggregate number of uninsured individuals to be reported for this measure will be calculated from MA population data accessed from the U.S. Census Bureau. The MA population estimates for children 0-18, and non-elderly adults aged 19-64 will be used as it reflects the population surveyed for the MHIS. Similar proportional estimates of uninsured MA residents are calculated based on the annual cross-sectional BRFSS and NHIS surveys as conducted by the MDPH and CDC, respectively. These latter 2 sources will be compared to the MHIS data to develop the best estimates of uninsured residents in the Commonwealth.

- PLM 2: The number of demonstration eligibles accessing ESI
  The aggregate number of beneficiaries for whom MassHealth purchases ESI will be determined from data routinely collected by the Premium Assistance and Enhanced Coordination of Benefits unit of the UMMS Center for Healthcare Financing.

- PLM 3: Enrollment in the Commonwealth Care Program
  The aggregate number of beneficiaries enrolled in the Commonwealth Care Program will be determined as a monthly summary statistic for the time period that the program was operational from the Health's Connector's monthly Board Meeting minutes at which time these data are reported on and reviewed.

- PLM 4: Uncompensated care and supplemental payments to hospitals
  The HSN will provide aggregate expenditures for uncompensated care payments and MassHealth will provide data on supplemental payments for all hospitals and

community health centers received either type of payment during each annual reporting period.

- PLM 5: The number of individuals accessing the HSN
  The EOHHS HSN Trust Fund will provide aggregate data on the number of individuals reimbursed by the trust fund during each annual reporting period.

- PLM 6: The availability of access to primary care providers
  CHIA's Massachusetts Health Insurance Survey (MHIS) provides weighted proportional estimates for the MA population. The MHIS provides the proportion of MA residents who have: (1) reported a usual source of care; (2) seen a doctor in the past 12 months; and (3) had a preventive care visit in the past twelve months. These population aggregated estimates are also provided by income level group (<150% federal poverty line (FPL); 151-299% FPL). This data will be supplemented with that from the MDPH's BRFSS and the CDC's NHIS to determine the best estimates of these access measures for Commonwealth residents.

- PLM 7: The number of individuals with incomes between 133 and 300 percent of FPL that take up QHP coverage with Health Connector subsidy program assistance
  The Health Connector will provide aggregate data identifying the number of individuals who meet the FPL inclusion criteria whose care was provided through one of the Qualified Health Plans.

Section 3: Express Lane Eligibility Program

Background

Express Lane Eligibility (ELE) is a streamlined Medicaid application and renewal process, authorized by the Children's Health Insurance Program Reauthorization Act of 2009 (CHIPRA), intended to increase eligible children's enrollment and retention in Medicaid and CHIP. The 1115 demonstration authorized MassHealth to create an Express Lane Eligibility renewal process for MassHealth children and their parents/caregivers who also receive Supplemental Nutrition Assistance Program (SNAP) benefits administered by the Division of Transitional Assistance (DTA). ELE advances Waiver Goal #1 by reducing barriers to continued Medicaid coverage.

Massachusetts' interest in implementing a streamlined eligibility renewal process resulted from its participation in the Robert Wood Johnson Foundation's (RWJF) "Maximizing Enrollment" grant program, which aimed to increase enrollment and retention of children in Medicaid and CHIP. UMMS was charged with administering the RWJF grant in partnership with MassHealth. With the intention of expanding the streamlined renewal process to other populations, UMMS and MassHealth agencies, including Member Services, Operations, and Enrollment Centers (MECs), initially

collaborated via the Eligibility Review Policy Change Workgroup to streamline eligibility renewal for a subset of MassHealth members for which income eligibility was determined by the Social Security Administration. Next, MassHealth sought to extend streamline eligibility renewal to parents and caregivers of children enrolled in SNAP because Massachusetts determines eligibility for subsidized insurance plans by looking at an entire family group. The Commonwealth requested authority from the Centers for Medicare and Medicaid Services (CMS) to expand ELE to parents and caregivers under the 1115 demonstration.

UMMS evaluated the ELE initiative during the first year after implementation, September 2012 to August 2013.The evaluation found that the ELE initiative promoted universal health coverage by streamlining the MassHealth renewal process for children and their parents/caregivers who also received SNAP benefits. From September 24, 2012 to August 27, 2013, a total of 40,627 households, containing 119,510 individuals, were selected to participate in the ELE program. Evaluation findings indicate that ELE households were less likely to lose MassHealth eligibility during the 90 days following the annual review date compared to the non-ELE comparison group (4.4% in ELE group vs. 36.3% in non-ELE group). This finding suggests that ELE may have increased retention in MassHealth and reduced churn for households and individuals participating in the program. However, it is important to interpret these results cautiously due to potential incompatibilities between the two groups, which may have biased the results.

Despite these promising early findings it is important to evaluate the program's sustainability by continuing to monitor the effectiveness of ELE in facilitating re-enrollment among MassHealth members. Moreover, changes to the eligibility requirements for the ELE program may affect the future success of the program. Since the initial evaluation period, key changes included:

1) During the first evaluation period, parents in families earning 133% and 150% of the FPL were eligible for Commonwealth Care and could re-enroll through ELE. In 2014, under the Affordable Care Act, these individuals were no longer eligible for Commonwealth Care but rather received subsidies for private insurance, and these families were no longer eligible to re-enroll in MassHealth through ELE.
2) During the initial evaluation period only qualified families with children were eligible for ELE. The program was expanded in October 2014 to include childless adults who receive SNAP.

The objective of this evaluation is to continue to assess the ELE program's impact on member re-determination and re-enrollment during the period October 2014 through June 2017 taking into account changes to the program over the evaluation period. The study's Specific Aims are:

1) Describe the adult and child populations who used Express Lane Eligibility procedures for MassHealth renewal during each evaluation year, including

demographic characteristics such as gender, age and the adults' status as parents or caretakers.

2) Determine progress in completing eligibility re-determination for families. During each evaluation year, compare MassHealth re-enrollment among ELE members relative to a comparison group.

3) Determine the progress of the program over time in redetermination for member subgroups, both those who were and were not affected by changes in ELE eligibility requirements.

Methods

We will use a retrospective, quasi-experimental design to examine changes in MassHealth enrollment among households who received the streamlined MassHealth renewal (ELE) compared with those who underwent traditional MassHealth annual renewal (non-ELE). We also will examine changes on the individual level as a secondary inquiry. The key outcome measure will be loss of MassHealth eligibility during the 90 days following the annual review date. The analysis will be repeated annually for two evaluation periods: October 2014 to June 2016 (21 months); July 2016 to June 2017 (12 months).

Data sources

We will obtain data for the analysis from the MassHealth eligibility determination system (MA-21) maintained by the Massachusetts Executive Office of Health and Human Services. Data from October 2012 (start of ELE) through August 2016 will be used for the analysis. If available, data from one year prior to ELE implementation (September 2011-August 2012) will also be obtained. Medicaid ID Number, Household ID Number, and Person ID Number will be used to identify individuals who comprised a household and Annual Review Code will be utilized to identify inclusion in ELE. Other variables will include demographic characteristics, household size, MA-21 aid categories, and date and reason for loss of MassHealth eligibility.

Study population

ELE households will be identified based on:
1) Annual Review Codes consisting of SNH or SNT;
2) Receipt of active SNAP benefits;
3) Receipt of active Medicaid benefits concurrently; and
4) Having children under the age of 19 years

Non-ELE households will be identified using the following criteria:
1) Receipt of active Medicaid benefits;
2) Gross income at or below 150% federal poverty level;
3) Having children under the age of 19 (4) No active benefits from SNAP; and

5) No Annual Review Codes consisting of SNH or SNT.

Individuals will be excluded from the study population if there is an 'XX' code in the Aid Category field and 'no coverage' in the Type of Coverage field, or if there is a 'blank' in the Aid Category field and 'no coverage' for Type of Coverage10 field in the MA-21 database. In addition, for households in the ELE group and households in the non-ELE group that have multiple review dates, we will use the first review date only.

Comparison group

We will address differences in observed characteristics between ELE and non-ELE households by examining the feasibility of using propensity scores (Rosenbaum and Rubin, 1983, 1984; Rubin, 1997). For each annual evaluation period, we will draw a comparison group for each year evaluation period to match each ELE household to one comparison household with similar characteristics. Characteristics used for matching will include age, gender, race, ethnicity, primary language spoken, disability, and household size. We will use the same approach to match on the individual level. In the prior analysis, 18% of the ELE households and 15% of the ELE individuals were discarded because their propensity scores could not be matched. Discarding such a large proportion of ELE households and individuals potentially introduced significant bias into the analysis. Because of this, the final analysis was conducted with all ELE and non-ELE households and individuals. In order to obtain the most appropriate comparison group possible, we will explore alternative methods of propensity score matching using nearest neighbor or interval matching strategies.

Study variables

If we encounter the same problem with propensity scores and matched pairs as in the prior analysis, we will adjust for several demographic characteristics including age, gender, race, ethnicity, primary language spoken, disability, and household size. These variables will be included because they are considered potential confounders that might influence the likelihood of loss of MassHealth eligibility.

The reference group for gender will be male. Race will be measured using three categories: white, non-white (reference group), and unknown. Ethnicity will be measured using three categories as well: Hispanic, non-Hispanic (reference group), and unknown. We anticipate needing to use the "Unknown" category because in the prior analysis a significant number of ELE and non-ELE members did not classify their race or ethnicity. Two categories will capture primary language spoken: English and non-English (reference group). Disability will be constructed as a binary variable with 'no disability' used as the reference group. In the household-level analysis, a dichotomous variable will be constructed for household size: ≤ 3 and ≥ 4 (reference group). In the individual-level analysis, household size will be a continuous variable.

The outcome measure will be loss of MassHealth eligibility during the 90 days following the annual review date. We hypothesize that the ELE renewal group will be associated with a lower risk of loss of MassHealth eligibility, even after controlling for demographic characteristics, disability, and household size.

Statistical analyses

For each annual evaluation period we will compare demographic characteristics, disability, and household size between the two groups using t-tests for continuous variables and chi-square tests for categorical variables. Although the primary analysis will focus on the household-level, we will conduct a second analysis at the individual level. In household comparisons, demographic characteristics will be based on the head of the household or the oldest member in the household when head of household cannot be determined. In the household comparisons, disability will refer to anyone in the household with a disability.

Kaplan-Meier estimates will be calculated for loss of MassHealth eligibility during the 90 days following the annual review date. This analysis will identify the unadjusted effect of ELE renewal on loss of MassHealth eligibility.

Realizing member and household characteristics can affect loss of MassHealth eligibility and confound results, we will use multivariable models to control for demographic characteristics, disability, and household size. In both the univariate and multivariate analyses, separate models will be estimated for households and individuals. These analyses will test whether households (or individuals depending on the analysis) who were in the ELE group had different risks associated with loss of MassHealth eligibility compared to those in the non-ELE group.

Multivariable models will also be used to evaluate trends in enrollment over time in member subgroups, both those who were and were not affected by ELE eligibility changes, relative to comparison group members. We will compare the percentage, on a quarterly basis, who lost enrollment, from the one year prior to the first evaluation period through August 2016 controlling for demographic characteristics. Member subgroups will include families with children ≤ 133% of FPL, children in families >133% - 150% of FPL, and childless adults ≤ 133% FPL. Re-enrollment trends in additional subgroups may also be evaluated. All statistical analysis will be performed using SAS.

Section 4: Delivery System Transformation Initiative (DSTI)

Background

The DSTI program offers performance-based incentive payments to seven participating safety-net hospital organizations. The incentive payments encourage and reward these hospital systems for making investments in healthcare delivery initiatives and demonstrating achievement on various metrics. The seven safety net hospital systems are: Boston Medical Center; Cambridge Health Alliance; Holyoke Medical Center;

Lawrence General Hospital; Mercy Medical Center; Signature Healthcare Brockton Hospital; Steward Carney Hospital. Individual hospital DSTI plans must include at least two projects from two of the categories listed below and one project from the remaining category, selected from a menu of prescribed options within the three categories established in the DSTI Master Plan. These include:

- **Category 1: Development of a Fully Integrated Delivery System**
  Category 1 projects employ the concepts of the patient-centered medical home (PCMH) model to increase delivery system efficiency and capacity. Example projects include: investments in communication systems to improve data exchange with medical home sites; integration of physical and behavioral healthcare; development of integrated care networks across the care continuum, and; investment in patient care redesign such as patient navigators.

- **Category 2: Health Outcomes and Quality**
  Category 2 projects include the development, implementation, and expansions of innovative care models that have potential to make significant and demonstrated improvements in patient experience, cost, and care management. Examples projects include: implementation of enterprise wide care management initiatives; improvement of care transitions and coordination across care settings; adoption of process improvement methodologies to improve safety, quality, and efficiency, and; alternative care settings for non-emergency room care.

- **Category 3: Ability to Respond to Statewide Transformation to Value-Based Purchasing and to Accept Alternatives to Fee-For-Service Payments that Promote System Sustainability**
  Category 3 projects enhance safety net hospital capacity and core building blocks deemed essential to preparations for payment reform and alternative payment models. Example projects include: enhancement of performance improvement and reporting capabilities; development of risk stratification functionalities, and; development of systems to support integrated care networks.

DSTI also includes a fourth category (**Category 4**), which consists of population-focused improvement measures related to Category 1 through 3 projects. These include clinical care delivery improvement measures (e.g., health screening); clinical outcome measures (e.g., diabetes management), and system transformation measures (e.g., avoidable ED use). DSTI hospitals are required to select a sub-set of Category 4 measures that align with their specific improvement projects; they are additionally required to report on nine Common Improvement Measures (e.g. hospital readmissions, care transitions, percent of contracts in global payment arrangements). Collectively, the purpose of Category 4 measures is to evaluate the degree to which the system changes and investments adopted under Categories 1-3 affect care delivery performance. DSTI hospitals are required to report their hospital-specific measures and the core set of common measures twice per year.

Incentive payments are distributed contingent on whether a hospital meets the metrics it defined for each project specified in its approved DSTI plan. Hospital DSTI Semi-Annual Reports for Payment and Summary Reports for Payment to MassHealth describe and document progress made toward each project milestone and metric, along with requests for incentive payments. These reports serve as the basis for authorizing payment.

Whereas in the previous Waiver demonstration period, the DSTI program focused primarily on project implementation activities, this next phase of the DSTI shifts the focus increasingly toward measuring and linking payments to improvements in health outcomes and quality. Accordingly, the overarching evaluation question for DSTI is to what extent do incentive payments to support investments in participating hospitals impact delivery system reform as demonstrated by changes in care delivery practices and improvement in health outcomes. The evaluations specific aims are:

1. To assess whether participating hospitals are able to show improvements on measures within Category 4 related to the goals of the three-part aim as discussed in STC 49(e)(4) and pursuant to STC 52;
2. To determine whether some participating hospitals performed better than others in terms of improving measures within Category 4 overall and with respect to specific measures;
3. To understand what factors and conditions explain the success of especially high performing participating hospital systems.

Methods

We propose to use a two-phase mixed methods approach. In Phase One, we will use quantitative methods to assess performance variation within and across the DSTI hospitals (and in comparison to State-wide trends). Key population-based outcome measures for this analysis will be derived from MassHealth claims and include 30-day readmissions. We will complement the claims analysis with a descriptive and comparative review of the remaining core Category 4b population-based improvement measures that each hospital is required to report (as with the 30-day readmission measure, these remaining core measures focus on inpatient and care transition measures but are based on hospital data, not claims data). In Phase Two, we will use qualitative methods to understand the organizational conditions associated with relatively greater improvement in key outcome measures. Using case study methodology in particular, our inquiry and analysis will focus on the organizational conditions (including DSTI project features, accomplishments, and implementation strategies) that appear to influence a hospital's overall performance and performance improvement.

Data Sources

For the quantitative phase, we will use MassHealth enrollment, eligibility, and claims/encounter data. We will derive population characteristics and disease profiles from these data files. Inpatient claims and encounter data will be used to construct outcome measures (detailed below). For the qualitative phase, data sources will include the DSTI Semi-Annual Reports for Payment that each hospital is required to submit detailing key accomplishments in the reporting period towards the associated metrics, and outcome and improvement measures. We will also rely on key informant interviews with representative staff at select DSTI hospitals.

Study Population and Comparison Group

For the quantitative analysis, the study population will include MassHealth members who are discharged from the seven DSTI hospitals. To mitigate the potential bias that any observed changes in outcome measures are resulting from particular characteristics of patients in DSTI hospitals or from concurrent changes in healthcare environment, we will additional identify a comparison group for the claims data-based analysis. This will be challenging though, since the seven DSTI hospitals have a disproportionately high share of Medicaid and uninsured patients, which poses a significant challenge to identify similar hospital systems for the comparison. To the extent available and comparable, we will include MassHealth members discharged from non-DSTI hospitals in the same geographic areas of the seven DSTI hospitals as the comparison group. Patient characteristics, organizational factors of hospitals, and community characteristics will be considered to achieve the comparability between DSTI patients and the comparison group.

For the qualitative phase, the study population will include the seven DSTI hospitals and a purposeful sample of key informants at select sites. All DSTI hospitals will be included in our analysis of the projects adopted, reported accomplishments and metrics (based on their semi-annual reports), and payments received. Additionally, we will conduct site visits at up to four of the seven hospitals for a more in-depth analysis. These four will represent a mix of “performance” - ideally, two hospitals that performed especially well as measured by improvements in key outcome measures, and one or two that performed less well. At each site, we propose to interview up to ten staff who were closely involved with their hospital’s implementation of DSTI programs, ideally representing a cross-section of clinical, administrative, and support staff. By studying hospitals identified as performing especially well, in-depth case studies will be used to understand the factors that lead to effective delivery system transformation and the operational practices associated with improved outcomes. At the same time, by additionally studying lower performing hospitals (“controls”), we will be able to better isolate the factors that appear to most influence performance and to identify some of the ongoing barriers to health system transformation and potential remedies to minimize these barriers.

Study Variables

The outcome measures of focus will be the 9 Common Improvement Measures (4B Measures), though we will especially emphasize 30-day hospital readmissions (one of the nine core measures) since it is a claims-based measure, which allows for case mix adjustment as well as a consistent approach to measure specification and analysis. The remaining measures are reported by each hospital and are largely based on hospital-generated data. Readmissions include three measures: all-cause 30-day readmissions and 30-day disease specific measures. Index hospitalizations will be identified for each year to derive 30-day readmissions. All-cause 30-day readmissions will include any diagnoses in subsequent hospitalizations. Each DSTI hospital specifies disease conditions to target for its interventions. When the number of index hospitalizations for these disease conditions is large enough, we will include them in the derivation of condition-specific readmissions for the evaluation.

The “explanatory” measures are organizational in nature. Each hospital has its own distinct interventions and goals (see Table 3). While some projects are common to multiple hospitals (such as Projects 1.1 or 2.2), other projects are specific to a single hospital (such as 2.4 at Boston Medical Center). Further, within specific project categories, hospitals have latitude about the specific elements they elect to adopt; each hospital is also defined by its unique organizational and technical capacity and, to a certain extent, operating environment. Collectively, this variation in DSTI hospital projects necessitates our examination of each hospital’s organizational transformation on an individual basis. At the same time, the evaluation can leverage this variation to provide insight about observed variations in performance (outcome measures) across DSTI hospitals. Accordingly, measures in this group will be specific for each hospital and will follow into three main groups: 1) characteristics of the DSTI projects (these measures will characterize the specific projects and project elements planned within each hospital and the degree to which they were implemented as planned); characteristics of the organization (these measures will describe the hospital units and staff involved, and additional organizational resources brought to bear in implementing the DSTI projects), and; 3) characteristics of the environment (these measures will describe factors external to the hospital such as characteristics of the community being served, partnering provider organizations, and DSTI incentive payments received).

Table 3: DSTI Hospital Projects

	Projects		
Hospital	*Category 1*	*Category 2*	*Category 3*
Steward Carney Hospital	1.1; 1.3	2.1; 2.2	3.1; 3.2
Cambridge Health Alliance	1.1	2.1; 2.2	3.1; 3.2; 3.3
Lawrence General Hospital	1.1; 1.2	2.1; 2.2	3.1; 3.2; 3.3
Boston Medical Center	1.1	2.1; 2.2; 2.3; 2.4	3.1;3.2
Holyoke Medical Center	1.1; 1.2	2.1; 2.2; 2.3	3.1;3.3
Mercy Medical Center	1.2	2.1; 2.2; 2.3	3.1; 3.2; 3.3
Signature Healthcare Brockton Hospital	1.1	2.1; 2.2; 2.3	3.1; 3.2; 3.3

Data Analysis

The quantitative analysis focuses on changes in preventable hospitalization and readmission measures. Descriptive analysis will be used to describe the trend for the rates of 30-day readmissions for each DSTI hospital. To evaluate changes in these measures, we will use a difference-in-differences analytical framework to compare patients discharged from DSTI hospitals to those discharged from non-DSTI hospitals. We will consider the hierarchical structure in the study population, i.e., patients nested in a hospital, and apply the mixed model in the analysis. Characteristics of patients and hospitals will be controlled for in the modeling. In addition, we will descriptively analyze the hospital reported common measures, assessing the degree to which they align or deviate from the claims-based measures.

The qualitative analysis will initially focus on developing a typology of projects and examining whether particular projects, projects elements, and incentive payment amounts are associated with particular kinds of outcome improvements (or lack thereof). Using findings from the quantitative analysis, we will then select up to four hospitals for more in-depth analysis. Site visits and key informant interviews will be used to gather information about project implementation, the organizational and environmental context, and stakeholder perspectives on the factors that facilitate and impede delivery system transformation and the relationship between organizational change and outcome effects. Lessons learned from this analysis will be used to generate propositions about how intervention features influence outcomes (e.g., milestone achievement and reduced 30-day readmissions) under DSTI.

Section 5: Intensive Early Intervention

Background

In the 2014 extension of the 1115 Waiver demonstration, the Commonwealth continued its commitment to the same goals articulated in the 2011-2014 extension period. In accordance with these goals, CMS and the Commonwealth agreed to continue to offer intensive early intervention (IEI) services for children with autism who are not otherwise

eligible through the Commonwealth's currently approved section 1915(c) home and community-based services waiver because the child has not been determined to meet institutional level of care requirements. The 1115 Waiver authorizes the coverage of Applied Behavioral Analysis (ABA) services by Medicaid. Under the 1115 waiver MassHealth covers enhanced early intervention program services including medically necessary ABA based treatments that address the core symptoms of Autism Spectrum Disorders (ASD). Children must be MassHealth and EI eligible (age 0-3). No waiting list is allowed and there is no maximum benefit. ABA providers will be offered through EI and paid on a fee-for-service basis.

This evaluation will examine the benefits and costs savings impact of the part of the 1115 waiver that covers Applied Behavioral Analysis (ABA) through Medicaid. The Massachusetts General Hospital (MGH) team will provide an evaluation of the costs and utilization of services, examining the amount, level, and types of service as well as their associated costs. The MGH evaluation team previously completed an evaluation of the period of FY11 through FY14. This work provided an overview of how costs and service use changed overall for the eligible group (from a time prior to the waiver to the time inclusive of two years after the waiver), compared to a group that would be eligible based on diagnosis but not covered by MassHealth. The evaluation proposed here will extend the work to include an additional two years, FY 15 and FY16.

The focus of the evaluation will be benefits and costs of the part of the 1115 waiver that covers ABA services through Medicaid. This evaluation is being done in the context of the UMass/Commonwealth Medicine evaluation of the entire 1115 Waiver.

Methods

For cost and utilization outcomes, the analysis will determine whether there is a change in the time period from before to after the Waiver in 1) the number of children who use ABA services; 2) the extent or count of ABA services, including the number of children who crossed specific numbers of hours of services (e.g., received at least 10, 15 or 20 hours a week, 3), the age at which ABA was initiated, including the gap between ASD diagnosis time and the start of ABA; 4) length of time in ABA, including the number of children dropping out of EI/ABA services before three years of age; 5) total costs for waiver covered ABA services; and total costs for all other EI services. We will compute descriptive data for these variables over time and by sub- population group strata/covariates for the Waiver eligible population and for comparison groups described below.

Study and comparison groups

The core analytic study design involves examining the cost and utilization amongst those eligible for waiver services through MassHealth Payment (Groups 1,3 and 5 in the Table 4). In order to control for secular changes, the group of children who would be eligible for

waiver services except for the fact that they are not on MassHealth (groups 2, 4, and 6 below) serve as the control group and allow for a difference in differences analysis (described below).

In Phase 1 the principal or focus was on the differences between FY 11/12 and FY13/14 which describe the time period immediately before and after the implementation of the waiver. The focus of Phase 2 is the group of children (labeled group 5) on MassHealth during FY 15/16 along with the group of children not on MassHealth during FY15/16. Phase 2 will focus our analyses on the contrast between the FY15/16 cohort and 1) the FY11/12 cohort and 2) the FY13/14 cohort.

Table 4: Study and comparison groups for IEI Evaluation

	ASD Eligible Prior to waiver FY 11/12	ASD Eligible During the waiver FY 13/14	ASD Eligible During the waiver FY 15/16
On MassHealth	Group 1	Group 3	Group 5 (Primary group of interest)
Not on MassHealth	Group 2	Group 4	Group 6

Statistical analyses

Our analysis plan will focus on two sets of the four groups shown above. The first is the contrast of the FY 15/16 group (groups 5 and 6) to the pre waiver (groups 1 and 2). The second is the contrast of the two post waiver groups (groups 5 and 6 vs. 3 and 4). We are essentially proposing difference in differences analytic approach. We are assessing whether the difference between cell 1 and cell 3 is the same or different than the difference between cell 5 and cell 6 (and then repeating the process the post waiver cohorts).

We will additionally explore whether the extension of this work into Phase 2 with the associated addition of two years of data will allow for more sophisticated analyses. If we have sufficient data, we will conduct an interrupted time series analysis, with a contemporaneous comparison population. While the principal proposed analytic approach explores the cost and service data as cross-sectional data points, we recognize the potential further complexity/richness of the study data. If the study data is robust enough and the initial analyses suggest the need for further analytic exploration, possible longitudinal and multivariate analyses will be explored.

Analytically, we will first examine the overall effect of the 1115 Waiver across all study children (among the six study groups) using the previously described unadjusted difference in difference approach. Second, we will examine the effect/impact of the Waiver across a series of important subpopulations (study covariates), by stratifying the

database to assess. Finally, if needed, we will implement any multivariate and longitudinal analyses.

The ability to implement the above proposed evaluation of the impact of the ABA Waiver on cost and services ultimately depends on the availability to the evaluators of the EI records for all ABA served children. This project team currently has access to the first four years of data and we will work with DPH staff to acquire the subsequent years data as they become available.

Section 6: Infrastructure and Capacity Building Grants

Background

The Infrastructure and Capacity Building (ICB) grant program provides funding to eligible MassHealth participating Hospitals and Community Health Centers (CHCs) to support the development and implementation of heath care infrastructure and capacity-building projects. Through these projects, the Executive Office of Health and Human Services (EOHHS) aims to invest in provider readiness for alternate payment methodologies. The program also supports EOHHS' efforts to improve overall healthcare delivery performance. In December 2015, EOHHS awarded $20 million in ICB funding to 48 hospitals and CHCs. The initial award contract is for approximately six months (beginning at Contract execution on or about December 20, 2015 and ending on or about June 20, 2016) and may be extended at the discretion of EOHHS in an increment through December 31, 2016. The overall goals for the FY15 ICB grants are as follows:

1. Encouraging delivery system integration through forming Teams of providers across the care continuum, including but not limited to, Hospitals, CHCs, primary care providers, specialty providers, behavioral health providers, and long term services and supports providers, social services providers, School-Based Health Centers;
2. Improving cross-continuum information exchange and clinical integration;
3. Improving provider readiness and capabilities for population management;
4. Improving provider readiness for operating under Alternative Payment Methodologies (APMs) for the MassHealth population; and
5. Advancing the specific objectives of each of the Projects a given awardee proposes to implement.

With respect to Goal 5 (advancing the objectives of specific project), in order to qualify for ICB funding, applicants choose to implement one or more projects selected from five project areas. These projects areas are further defined by one or more specific Projects and in some cases, select Projects are further defined by Sub-projects. Awardees can tailor Projects to meet their specific needs by choosing multiple Sub-projects that, in combination reach one overall Project goal. In FY15, awardees were also strongly encouraged to propose to lead a collaborative team of two or more providers to perform projects under the ICB grant. The five project areas and examples of related Projects and Sub-projects are as follows:

A. Enhanced Data Integration, Clinical Informatics, and Population-Based Analytics: This area is comprised of three Projects: 1) Data integration and analysis across the care continuum; 2) Data warehousing and reporting, and; 3) Mass HIway connection and utilization. Each Project has anywhere from three to five specific Sub-project (e.g., develop and implement an electronic disease management registry for one or more patient populations diagnosed with a selected chronic disease).

B. Shared Governance and Enhanced Organizational Integration: The goal of Project B is to develop, expand, or enhance shared governance structures and organizational integration strategies linking providers across the care continuum. Awardees can design the Project to fit their particular needs, but projects should be geared towards facilitating awardee participation in ACOs and Alternative Payment Methodology (APM) contracts.

C. Enhanced Clinical Integration: This area is comprised of six Projects: 1) Implement primary care based system of complex care management for high-risk Populations; 2) Redirect non-emergent emergency department visits; 3) Reduce variations in inpatient care for patients with high risk conditions; 4) Implement improvements in care transitions, and; 5) Develop clinical integrated acute and post-acute network across the care continuum. Each project may have anywhere from three to seven Sub-projects (e.g., conduct an analysis of the key drivers of 30-day hospital readmissions using a chart review tool or patient interviews)

D. Outreach and Enrollment: The goal of this project is to design, implement and document enrollment, outreach and healthcare access Projects for individuals eligible for public subsidized and non-subsidized health insurance programs. Awardees who select this Project are also required to provide post-enrollment assistance related to health education and health navigation assistance including ensuring that enrollees have selected and enrolled with a primary care doctor.

E. Catalyst grants for integration**:** The goal of this project is to facilitate planning for providers who wish to engage other providers and to prepare APMs through eventual completion of projects like those described under project areas A, B and C.

The objective of this evaluation is to assess the impact of the ICB grants that allow participating providers to advance the Commonwealth's goals related to delivery system integration, provider readiness and capabilities for population management and, provider readiness and capabilities for operating under alternate payment methodologies. The study's specific aims are to:

1. Describe the portfolio of Projects funded in FY15 in terms of awardee type, funding amount, Project and Sub-project type(s), and other key characteristics;
2. Assess variation among awardees in terms of performance under the grant initiative and specifically in terms of meeting the goals and deliverables of their respective Projects;
3. Determine the organizational and system-level factors that facilitate effective Project implementation and by extension advance the Commonwealth's goals under the ICB grant program.

Methods

Our ICB evaluation will use a descriptive research design; specifically, we will use case study design and qualitative methods to characterize ICB Grant Projects, assess ICB Grant awardees' performance, and determine the factors associated with especially effective awardee initiatives.

Data sources and study population

Data sources will include ICB awardees initial proposals for funding, final work plans, budgets, and final reports, which will include the status of completed deliverables by the end of the contract. In addition to these secondary data sources, the evaluation will also rely on key informant interviews with representatives of the ICB grant program and select hospital and CHC awardees. With respect to study population, the FY15 ICB grant program includes 48 providers (a combination of hospitals and CHCs operating across the Commonwealth). The study population for the ICB program is these providers and the MassHealth populations they serve.

Comparison group

We will view the ICB success from the perspective of improvements and accomplishments over the contract period for each participating provider. We will also compare and contrast participating providers within the ICB program in order to pinpoint factors that promote effective implementation of funded improvements and transformations under the ICB grant initiative. Given that the ICB awardees represent large numbers of eligible CHCs and hospitals in the State, it is difficult to identify an appropriate comparison group of non-ICB providers; it is also difficult to identify an appropriate common outcome measure given the diversity of ICB Projects and Sub-projects and given that "outcome measures" in this instance are organizational in nature. However, by comparing awardees *within* the ICB grant, we can learn a great deal about the conditions that facilitate provider adoption of integrated healthcare delivery systems and related structures to support readiness for APMs.

Study variables

Our approach for evaluating the ICB grant program will be guided by implementation frameworks. These frameworks generally understand organizational adoption of innovations as driven by characteristics of the innovation being adopted, characteristics of the organization adopting the innovation, and characteristics of the environment in which the organization operates. If we consider the ICB Projects as a form of innovation, this implementation framework provides a useful lens for gathering data and understanding program performance. Accordingly, evaluation measures will include the following:

a. Performance measures: Performance measures will include both process and outcome measures. Process measures will include an awardee's documentation of Project activities (qualitative and quantitative) as measured against expected Project activities; outcome measures will include an awardee's completed deliverables as measured against expected deliverables and reported measures of success.
b. Innovation characteristics: Innovation characteristics refer to the characteristics of the specific Project(s) a given awardee proposed to implement including the funding amount associated with the Project(s), the specific goals of the Project(s), and proposed work plan for implementing and completing the project.
c. Organizational characteristics: These factors include characteristics of the individual providers participating in the ICB grant program including patient population; structure (e.g., stand-alone, part of network); readiness to implement proposed Project(s); staffing resources devoted to implementing Project(s), and; capacity for sustainability. Organizational factors also include features of the delivery system in which a provider operates, which can also influence Project implementation and success.

Study approach and analysis plan

To address Evaluation Aims One and Two, we will describe and array the 48 providers participating in the FY15 ICB funding along key study variables related to performance, innovation being adopted (i.e., specific Projects and Sub-projects), and key awardee organizational characteristics. We will rely on secondary data sources for this work including awardee's proposals for funding and final reports. We will use this analysis to characterize the program overall in terms of the type of projects being adopted and by what kinds of providers and with what kinds success.

In addition to characterizing the program, we propose to use this initial analysis to begin to address Evaluation Aim Three; specifically, we will assess whether themes emerge with respect to the conditions associated with performance variation (i.e., are some type of Projects more likely to succeed than others; are certain provider characteristics associated with more successful completion of proposed Projects, etc.). We propose to complement this initial analysis with more in-depth case studies of select provider sites. In collaboration with ICB grants staff, we propose to select an estimated six especially

high performing provider sites (defined as provider that performed especially in terms of meeting their Project goals and related deliverables) and conduct site visits and key informant interviews with representative staff at these sites. To the extent the sample permits, we would seek provider sites that represent a range of Projects across the five core ICB project areas. Case studies would be designed to understand why providers adopted the specific Projects they did, how they implemented these Projects, and lessons learned about the factors that facilitated and impeded their work in this area. Our aim would be to generate useful lessons that could guide replication efforts and future ICB funding awards.

Appendix B. ELE Analyses

Table 1: Characteristics of ELE and non-ELE Households, non-weighted

	EP1 (October 2014-September 2015)			*EP2 (October 2015-September 2016)*		
Characteristics	**ELE Households (N = 106,895)**	**Non-ELE Households (N = 52,401)**	**p-value**	**ELE Households (N = 55,967)**	**Non-ELE Households (N =49,184)**	***p*-value**
Age, mean (SD)[1]	40.92 (13.2)	59.59 (18.8)	<0.0001	44.21 (13.0)	65.04 (15.7)	<0.0001
Gender-Female, n(%)	55,985 (51.4)	30,682 (58.6)	<0.0001	30,410 (55.4)	29,619 (53.5)	<0.0001
Race, n (%)			<0.0001			<0.0001
White	36,817 (34.4)	14,998 (28.6)		20,059 (35.8)	13,676 (27.8)	
Non-White	13,949 (13.1)	8,142 (15.5)		7,088 (12.7)	7,267 (14.8)	
Unknown	56,129 (52.5)	29,261 (55.8)		28,820 (51.5)	28,244 (57.4)	
Ethnicity, n (%)			<0.0001			<0.0001
Hispanic	14,648 (13.7)	5,148 (9.8)		7,560 (13.5)	4,949 (10.1)	
Non-Hispanic	16,162 (15.1)	8,573 (16.4)		7,370 (13.2)	7,353 (15.0)	
Unknown	76,085 (71.2)	38,680 (73.8)		41,037 (73.3)	36,882 (75.0)	
Primary language, English n (%)	95,396 (89.2)	40,836 (77.9)	<0.0001	50,032 (89.4)	37,265 (75.8)	<0.0001
Disability[2], n (%)	16,858 (15.8)	5,948 (11.4)	<0.0001	19,044 (34.0)	6,530 (13.3)	<0.0001
Household size,			<0.0001			<0.0001
≤ 3 persons	91,918 (86.0)	48,562 (92.7)		48,504 (86.7)	46,769 (95.1)	
≥ 4 persons	14,977 (14.0)	3,839 (7.3)		7,463 (13.3)	2,415 (4.9)	
FPL Bands, n (%)			<0.0001			<0.0001
<86%	82,648 (77.3)	23,804 (45.4)		37,252 (66.6)	25,119 (51.1)	
86-111%	14,101 (13.2)	12,638 (24.1)		12,402 (22.2)	10,908 (22.2)	
112%	475 (0.4)	552 (1.1)		377 (0.7)	484 (1.0)	
113%	541 (0.5)	657 (1.3)		355 (0.6)	569 (1.2)	
114-132%	7,869 (7.4)	10,922 (20.8)		5,190 (9.3)	8,391 (17.1)	
133-149%	1,261 (1.2)	3,828 (7.3)		391 (0.7)	3,713 (7.2)	

Table 2: Loss of MassHealth Eligibility during the 90 Days Following Annual Review Date for ELE and non-ELE Households, unweighted

	ELE Households (N=40,627)	**Non-ELE Households (N=78,291)**	**p-value**	**Adjusted hazard ratio comparing ELE vs non-ELE Households,**	**95% CI**
EP1 (Oct 2014 – Sep 2015)	45,13 (4.22)	14,430 (27.54)	<.0001	0.19	0.18-0.19
EP2 (Oct 2015 – Sep 2016)	973 (1.74)	16,521 (33.59)	<.0001	0.06	0.06-0.07
EP3 (Oct 2016 – Mar 2017)	35 (1.45)	10,912 (43.3)	<.0001	0.03	0.02-0.05

Table 3. Year 1 (October 2014 - September 2015) Survival analysis for loss of MassHealth eligibility during the 90 days following annual review date for ELE and non-ELE households

Characteristics	Adjusted Hazard Ratio	95% CI
ELE group	0.171	0.167, 0.176
Non-ELE group	1	
Age	1.016	1.015, 1.016
Gender		
Female	0.906	0.89, 0.921
Male	1	
Race		
White	1	
Non-White	1.075	1.040, 1.113
Unknown	1.085	1.063, 1.106
Ethnicity		
Hispanic	1.032	0.989, 1.078
Non-Hispanic	1	
Unknown	1.143	1.106, 1.181
Primary language		
English	0.814	0.79, 0.838
Non-English	1	
Disability		
Yes	3.426	3.365, 3.489
No	1	
Household size		
≤ 3 persons	1.486	1.435, 1.539
≥ 4 persons	1	
FPL Band		
<86%	1	
86-111.99%	0.534	0.519, 0.55
112%	0.549	0.479, 0.63
113%	0.449	0.387, 0.521
114-132.99%	0.551	0.532, 0.57
133-150%	0.975	0.823, 1.029

Table 4. Year 2 (October 2015 - October 2016) - Survival analysis for loss of MassHealth eligibility during the 90 days following annual review date for ELE and non-ELE households

Characteristics	Adjusted Hazard Ratio	95% CI
ELE group	0.053	0.050, 0.056
Non-ELE group	1	
Age	1.007	1.007, 1.007
Gender		
Female	0.897	0.882, 0.913
Male	1	
Race		
White	1	
Non-White	1.237	1.197, 1.278
Unknown	1.012	0.993, 1.031
Ethnicity		
Hispanic	0.999	0.955, 1.044
Non-Hispanic	1	
Unknown	1.141	1.077, 1.153
Primary language		
English	0.751	0.729, 0.774
Non-English	1	
Disability		
Yes	2.255	2.211, 2.300
No	1	
Household size		
≤ 3 persons	3.731	3.506 3.970
≥ 4 persons	1	
FPL Band		
<86%	1	
86-111.99%	0.661	0.644, 0.678
112%	0.829	0.740, 0.929
113%	0.473	0.409, 0.546
114-132.99%	0.601	0.581, 0.622
133-150%	0.791	0.748, 0.835

Table 5. Survival analysis for trends in loss of MassHealth eligibility during the 90 days following annual review date for ELE and non-ELE households

Parameter	Parameter Estimate	Standard Error	Chi-Square	Pr > ChiSq	Hazard Ratio
ELE household	-43.49647	18.99830	5.2418	0.0221	.
year	-0.07229	0.00931	60.2495	<.0001	.
year*ELE household	0.02290	0.00943	5.8923	0.0152	.
age	-0.00154	0.0000942	268.5152	<.0001	0.998
female	0.11856	0.00298	1580.0355	<.0001	1.126
English	-0.15110	0.00381	1574.5094	<.0001	0.860
Disability	-0.20491	0.00583	1234.8335	<.0001	0.815
HH size < 3	0.30240	0.00490	3803.0458	<.0001	1.353
112-113%	-0.35195	0.02477	201.9142	<.0001	0.703
113-114%	-0.40099	0.02543	248.6567	<.0001	0.670
114-133%	-0.32945	0.00611	2908.8285	<.0001	0.719
133-150%	-0.13477	0.00637	447.5536	<.0001	0.874
150-185%	-0.08040	0.00546	216.7252	<.0001	0.923
185-200%	-0.11702	0.00859	185.4102	<.0001	0.890
200-300%	-0.02121	0.00521	16.5825	<.0001	0.979
300%	0.32671	0.00896	1330.2146	<.0001	1.386
86-112%	-0.32306	0.00542	3553.1040	<.0001	0.724

Appendix C. DSTI Measures Risk Adjustment Methodology and Results

Memorandum

To: MA EOHHS

From: Lewin Group

Re: DSTI Measures: Risk Adjustment Methodology

For the Delivery System Transformation Initiative (DSTI), the seven participating hospitals will receive their readmission rates for the measures below. These measures will be calculated against all claims and encounter data for a 3-year base period from April 2012-March 2015.

- NQF 1789:Hospital 30-Day, All-Cause, Risk-Standardized Readmission Rate (RSRR)
- NQF 1891: Hospital 30-Day, All-Cause, Risk-Standardized Readmission Rate (RSRR) following Chronic Obstructive Pulmonary Disease (COPD) Hospitalization
- NQF 0330: Hospital 30-day, All-Cause, Risk-Standardized Readmission Rate (RSRR) following Heart Failure (HF) Hospitalization
- NQF 0506: Hospital 30-day All-Cause, Risk-Standardized Readmission Rate (RSRR) following Pneumonia Hospitalization
- Hospital 30-Day, All-Cause, Risk-Standardized Readmission Rate (RSRR) following Asthma Hospitalization

Member Eligibility

Members must have at least 12 months continuous eligibility to be included in the measure and the measure specs drop members with one gap larger than 45-days. In addition, Lewin excluded the following populations from the analysis:

- Member with dual membership in Medicare and Medicaid
- Members with third party liability (TPL)
- Members with MassHealth temporary eligibility
- Members with MassHealth limited benefits
- Emergency Assistance to Elderly, Disabled and Children (EAEDC)

Measure Methodology

Lewin coded these readmission measures using specifications from the National Quality Forum (NQF) for the first four measures above and the National Quality Measures Clearinghouse (NQMC) for the asthma measure. Appendix A summarizes the readmission inclusion and exclusions. See the accompanying PDF documents for the specific measure specifications and even more detail around the readmission inclusion and exclusion criteria:

- Version4.0_HWR_Measure_Updates_Report_3.25.15_With_Measure_Results.pdf
- 2015 Condition Measures Specs Hospital 30 day RSSR.pdf
- Asthma 2015 Measures Specs Hospital 30 day RSSR.pdf

The standardized readmission rates (RSRR) will be calculated for the seven participating hospitals to compare their performance to the entire Massachusetts Medicaid population. The current CMS Methodology is not accurate for a Medicaid population and no standard alternative exists. Below is the alternative method that Lewin developed.

Alternative Methodology: Risk adjustment by age, sex and acuity (DxCGs) using stratification

The alternative methodology uses the member's DxCG risk score to assign a member to an acuity group to stratify readmission rates. Note if a member is missing a risk score, we drop his/her admission from the denominator. For the baseline targets, about 3% of the discharges in the base period were missing risk information.

Methodology:

We use the risk scores and counts of conditions from the DxCGs in the MassHealth risk score file to assign an individual to an acuity group for risk adjustment. The number of conditions, severity of those conditions, as well as age and sex are then used to calculate the individuals relative risk compared to the average. To create the acuity categories used in our risk adjustment model we compared the individual's personal risk score or count of comorbidities to the overall population. If the individual was in the top 5^{th}, 10^{th}, 25^{th}, 50^{th}, percentile or below they were assigned to the Very High, High, medium, moderate, and low acuity groups respectively.

Expected readmissions rates are calculated on a statewide basis for all Medicaid members by Acuity level. We then compute the observed readmission rate for each of the DSTI hospitals for the same Acuity groups. An expected probability of readmission is calculated by multiplying the probability of readmission for the specific acuity group across all age sex groups by the percentage of admissions in the Age, Sex, and Acuity group for each of the DSTI hospitals. The observed readmission rate is then divided by the expected readmission rate to compute the performance of each of the DSTI hospitals.

This method is particularly useful in identifying the impact of acuity on readmission rates. This approach would also use the DxCG model that has been recalibrated based upon the Massachusetts Medicaid population. This approach will also allow the state to focus on the populations that are at highest risk of readmission in their population.

Readmission Rate Target Calculations

Hospital must meet the statewide MassHealth 80th percentile. If hospital baseline is below the 80th percentile then the hospital must achieve a 10% gap to goal (80th percentile) improvement over baseline. If the hospital is above the 80th percentile then the hospital must achieve a 10% gap to goal (90th percentile) improvement over baseline. Percentiles are calculated using the measure specific Observed to Expected ratio for all hospitals with qualifying index admissions. Hospitals with fewer than 30 qualifying admissions or incomplete provider data are grouped into a single category to reduce the effects of outliers. The following describes the methodology for setting the targets:

Below 80th Percentile:
Hospital OE Ratio - (Hospital OE Ratio - 80th percentile OE Ratio)*0.1= Target OE Ratio

Above 80th Percentile:
Hospital OE Ratio - (Hospital OE Ratio - 90th percentile OE Ratio)*0.1= Target OE Ratio

After the readmission rates and targets are calculated, claims based reports are produced. In the claims based reports claim level information related to or indicating a discharge for substance abuse have been removed from the claim level 'Base Period Case Report' pursuant to MassHealth's data reporting criteria. The substance abuse exclusions can be found in Appendix B. Reports with results and base case reports will be shared with the DSTI hospitals by MassHealth.

DSTI Readmission Rates		
Hospital 30-Day, All-Cause, Risk-Standardized Readmission Rate (NQF 1789), Ages 18+		
Hospital	**Observed/ Expected Ratio (Apr 2016 - Mar 2017)**	**Target Observed/ Expected Ratio**
Boston Medical Center	0.9870	1.02
Cambridge Health Alliance	1.0285	1.19
Holyoke Medical Center	0.6983	0.89
Lawrence General Hospital	0.8269	0.91
Mercy Medical Center	0.7993	0.84
Signature Healthcare Brockton Hospital	0.9734	1.06
Steward Carney Hospital	1.1100	1.03
Hospital 30-Day, All Cause, Risk-Standardized Readmission Rate following Heart Failure (HF) Hospitalization (NQF 0330), Ages 18+		
Lawrence General Hospital	1.170	1.519

- Hospital Achieved Target
- Hospital Did Not Achieve Target

Appendix D. Project Selection by DSTI Hospital, DY 18-20

Project Number/Name	BMC	Carney	CHA	Holyoke	Lawrence	Mercy	Signature
1.1 - Patient Centered Medical Home			x				
Physical/Behavioral Health Integration							
1.2 - Integrate Physical/Behavioral Health	x	x		x		x	x
Technology Infrastructure							
1.3 - Establish Health Data Exchange Capability					x		
***Care Management for High Risk Patients**							
2.1 - Implement Care Management Interventions for Patients with Chronic Diseases	x		x	x			x
2.4 - Implement Primary Care Based System of Complex Care Mgt for High Risk Pops	x						x
2.5 - Implement Process Improvements to Improve Safety Quality and Efficiency		x				x	
2.7 - Reduce Variations in Care for High Risk Patients	x			x			
3.2 - Design a 360 Degree Pt Care Pgm							x
3.5 - Develop Administrative, Organizational, and Clinical Capacities to Manage Care for Patients			x			x	
***Discharge Planning**							
1.4 - Practice Support Center				x			
2.2 - Implement Improvements in Care Transitions		x	x	x	x	x	
2.3 - Develop or Expand Projects to Re-Engineer Discharge Processes	x						
***Diversion of Patients from ED**							
1.5 - Implement Pt Navigation Services		x					
1.6 - Develop Integrated Acute/Post-Acute Network					x		
2.6 - Provide an Alternative Care Setting for Pts who Seek Non-Emergency Care						x	
Medication Safety							
2.8 - Clinical Pharmacy Program to Transform Medication Safety and Quality					x		
2.9 - Medication Safety at Care Transitions							x
ACO/ICO Structure Development							
3.1 - Develop Risk Stratification Capabilities for Pt Populations and APMs							x
3.3 - Develop Governance, Administrative, and Operational Capacities to Accept Global/Alt Pmts	x				x		
3.4 - Develop an Integrated Care Organization to Enhance Capacity/Respond to Alternative Pmts					x	x	
3.7 - Implement Global /Risk-Based Pmts		x					
Data Management for Population Health							
3.6 - Establish a Strategy for Information Management and Business Intelligence				x			
3.9 - Population Health Mmt Capabilities			x				
Learning Collaborative							
3.8 - Participate in a Learning Collaborative	x	x	x	x	x	x	x
TOTAL	7	6	6	7	7	7	7

*Area of focus for analysis.

Appendix E. DSTI Category 4A Measures Achievement

Site	Category 4A Measure	Benchmark & Improvement Method	Year 1 DY18 (SFY2015)	DY19 Target	Year 2 DY19 (SFY2016)	DY20 Target	Year 3 DY20 (SFY2017)	Achievement
BMC	Comprehensive Diabetes Care: Hemoglobin A1c Poor Control (> 9.0%)	MA Medicaid (HEDIS) 2014 90th percentile = 18.57%; Gap to Goal (10%) or attainment at Target	31.00%	29.70%	26.50%	25.70%	25.4%	Met both years
BMC	Decrease in Utilization Over Baseline for Emergency Department and Inpatient based on Longitudinal Tracking of the Super-Utilizer Population	No external benchmark; 1% decrease compared to baseline	N/A	N/A	3231.71 ED and inpatient visits/1000 members	1% decrease	15.49%	Met both years
BMC	Documentation of percentage newly referred patients who had a successful contact with an integrated Behavioral Health provider within 14 days of referral	No external benchmark Hospital target = 70%; Gap to Goal (10%) or attainment at Target	36.30%	39.70%	50.70%	52.60%	53.7%	Met both years
BMC	Influenza vaccination	Medicare MSSP/ACO 2015 90th percentile = 90%; Gap to Goal (10%) or attainment at Target	73.00%	74.70%	86.30%	86.70%	93.5%	Met both years
BMC	Weight Assessment and Counseling for Nutrition and Physical Activity for Children/Adolescents (WCC) - Counseling for Activity	National Medicaid (HEDIS) 2014 90th percentile = 70%; Gap to Goal (10%) or attainment at Target	17.20%	22.50%	52.70%	54.40%	60.7%	Met both years
BMC	Weight Assessment and Counseling for Nutrition and Physical Activity for Children/Adolescents (WCC) – Counseling for Nutrition	National Medicaid (HEDIS) 2014 90th percentile = 78%; Gap to Goal (10%) or attainment at Target	35.90%	40.10%	70.50%	71.30%	75.2%	Met both years
BMC	Pneumococcal Vaccination (Baseline Performance-	Medicare MSSP/ACO 2015 90th percentile=90%;	N/A	N/A	78.00%	79.20%	87.5%	Met both years

Site	Category 4A Measure	Benchmark & Improvement Method	Year 1 DY18 (SFY2015)	DY19 Target	Year 2 DY19 (SFY2016)	DY20 Target	Year 3 DY20 (SFY2017)	Achievement
	P4R in DY 19)	Gap to Goal (10%) or attainment at Target						
Carney	Decreasing Emergency Department Utilization for High Utilizers	No external benchmark; Hospital specific benchmark is 50% decrease compared to baseline; Gap to Goal (10%) or attainment at Target	916 visits	870	517 visits	482	195 visits	Met both years
Carney	Increase Primary Care Utilization in hospital-define target population	No external benchmark; hospital-shared target is defined percentage improvement over baseline improvement compared to SFY 2015 baseline; In SFY 2016 1% above baseline; In SFY 2017: 2% points above baseline	49.10%	50.10%	79.20%	51.10%	63.10%	Met both years
Carney	Screening for Clinical Depression and Follow-Up Plan	Medicare MSSP/ACO 2015 90th percentile= 51.81%; Gap to Goal (10%) or attainment at Target	30.20%	32.36%	71.60%	51.81%	79.00%	Met both years
Carney	Depression: Utilization of the PHQ-9 Tool	No external benchmark; Hospital shared target=65%; Gap to Goal (10%) or attainment at Target	38.50%	41.15%	53.00%	54.20%	25.00%	Met Year 1 only
Carney	Comprehensive Diabetes Care: Hemoglobin A1c Testing	MA Medicaid (HEDIS) 2014 90th percentile= 91.86%; Gap to Goal (10%) or attainment at Target	27.40%	33.84%	55.50%	59.13%	75.76%	Met both years
Carney	Comprehensive Diabetes care: Hemoglobin A1c poor conrol (>9%)	MA Medicaid (HEDIS) 2014 90th percentile=18.57; Gap to Goal (10%) or attainment at Target	73.80%	68.28%	48.00%	45.42%	35.50%	Met both years
Carney	Diabetes: LDL Screening	MA Medicaid (HEDIS) 2014 90th percentile 88.59%; 10%) or attainment at Target	42.50%	47.10%	48.40%	52.41%	57.30%	Met both years
Carney	HCAHPS: Discharge Information	Hospital Specific benchmark is 89% based on the highest threshold of Hospitals most recent P4P contracts; Gap to Goal (10%) or attainment at Target	84.70%	85.13%	85.10%	85.49%	86.20%	Met Year 2 only
Carney	Targeted Fall Rate in Geriatric Behavioral Health	No external benchmark; Hospital-Specific benchmark is 25%	10.95%	8.20%	7.11%	8.21%	6.59%	Met both years

Site	Category 4A Measure	Benchmark & Improvement Method	Year 1 DY18 (SFY2015)	DY19 Target	Year 2 DY19 (SFY2016)	DY20 Target	Year 3 DY20 (SFY2017)	Achievement
	Population	decrease over baseline; Gap to Goal (10%) or attainment at Target						
Carney	% of MCO members who select PCP in a DSTI hospital network who are covered under at-risk contracts	No external benchmark; Hospital specific benchmark = 100%; Gap to Goal (10%) or attainment at Target	24.70%	32.23%	79.70%	81.73%	100%	Met both years
CHA	Care Plans for High-Risk Patients (for Complex Care Management Patients)	No external benchmark; Hospital Shared Target = 85%; Gap to Goal (10%) or attainment at Target	84.38%	84.44%	86.20%	85%	86.20%	Met both years
CHA	Comprehensive Diabetes Care: Blood Pressure Control (< 140/90) (across all core primary care sites)	MA Medicaid (HEDIS) 2014 90th percentile = 82.74%; Gap to Goal (10%) or attainment at Target	72.73% (CY 2014 data)	73.73%	77.52%	78.04%	81.22%	Met both years
CHA	Controlling High Blood Pressure measure (2015 HEDIS Definition) (across all core primary care sites)	MA Medicaid (HEDIS) 2014 90th percentile = 85.67%; Gap to Goal (10%) or attainment at Target	68.59% (CY 2014 data)	70.30%	71.57%	72.98%	76.82%	Met both years
CHA	Decreasing Emergency Department Utilization for High Utilizers (for defined cohort followed longitudinally)	No external benchmark; 1% Decrease Compared to baseline period; % Decrease Compared to Baseline Period	N/A	N/A	Baseline: 1) Average Number of ED Visits per pt: 14.67 2) Total number of ED Visits for Cohort: 4342 3) ED Utilization/1000: 14,669 4) Number of patients	1% decrease	1) Average Number of ED Visits per pt: 6.55 2) Total number of ED Visits for Cohort: 1,939 3) ED Utilization/1000: 6,551 4) Number of patients in cohort: 283	Met both years

Site	Category 4A Measure	Benchmark & Improvement Method	Year 1 DY18 (SFY2015)	DY19 Target	Year 2 DY19 (SFY2016)	DY20 Target	Year 3 DY20 (SFY2017)	Achievement
					in cohort			
CHA	Depression: Utilization of the PHQ-9 Tool (for Elder Service Plan population)	No external benchmark; Hospital shared Target= 65%; Gap to Goal (10%) or attainment at Target	11.20%	16.58%	21.54%	25.88%	61.36%	Met both years
CHA	Falls: Screening for Future Fall Risk (Outpatient) (for Elder Service Plan and Older Adults target population consisting of House Calls programs and 2 primary care sites with significant older adult patients)	Medicare MSSP/ACO 2015 90th percentile= 73.36%; Gap to Goal (10%) or attainment at Target	N/A	N/A	50.28%	52.59%	66.47%	Met both years
CHA	Follow-up Post Emergency Department Utilization for High Risk Patients (for Complex Care Management Patients)	No external benchmark; Hospital Shared Target=70%; Gap to Goal (10%) or attainment at Target	46.96%	49.26%	59.20%	60.28%	63.55%	Met both years
CHA	Increase Primary Care Utilization in hospital-defined target population (Increasing proportion of new or inactive patients within the Medicaid Primary Care Payment Reform cohort (or other payer if no longer in PCPR) with primary care utilization) (Across all core primary care sites)	No external benchmark; In SFY 2016 Improvement by at least 1% above SFY 2015 baseline In SFY 2017: Improvement by at least 2% above SFY 2015 baseline	18.51%	19.51%	28.00%	20.51%	28.60%	Met both years
CHA	Weight Assessment and Counseling for Nutrition and Physical Activity for Children/Adolescents (WCC)- Counseling for Nutrition (across all core primary care sites)	National Medicaid (HEDIS) 2014 90th percentile= 78%; Gap to Goal (10%) or attainment at Target	29.38%	78%	80.76%	78%	80.05%	Met both years

Site	Category 4A Measure	Benchmark & Improvement Method	Year 1 DY18 (SFY2015)	DY19 Target	Year 2 DY19 (SFY2016)	DY20 Target	Year 3 DY20 (SFY2017)	Achievement
CHA	Weight Assessment and Counseling for Nutrition and Physical Activity for Children/Adolescents (WCC) - Counseling for Activity (across all core primary care sites)	National Medicaid (HEDIS) 2014 90th percentile = 70%; Gap to Goal (10%) or attainment at Target	27.62%	70.00%	80.75%	70.00%	80.07%	Met both years
Holyoke	Breast Cancer Screening	Medicare National 90th percentile=82%; Gap to Goal (10%) or attainment at Target	66.99%	68.49%	74.41%	75.16%	78.48%	Met both years
Holyoke	Care Plans for High-Risk Patients	No external benchmark; Hospital Shared Target = 85%; Gap to Goal (10%) or attainment at Target	18.05%	24.75%	87.94%	85.00%	91.26%	Met both years
Holyoke	Comprehensive Diabetes Care: Blood Pressure Control (< 140/90)	MA Medicaid (HEDIS) 2014 90th percentile of 82.74%; Gap to Goal (10%) or attainment at Target	69.89%	71.18%	76.78%	77.38%	81.05%	Met both years
Holyoke	Comprehensive Diabetes Care: Eye Exam (retinal) performed	MA Medicaid (HEDIS) 2014 90th percentile of 74.47%; Gap to Goal (10%) or attainment at Target	50.72%	53.10%	53.32%	55.44%	58.43%	Met both years
Holyoke	Comprehensive Diabetes Care: Hemoglobin A1c Poor Control (>9.0%)	MA Medicaid (HEDIS) 2014 90th percentile of 82.74%; Gap to Goal (10%) or attainment at Target	32.38%	31.00%	22.56%	22.16%	19.26%	Met both years
Holyoke	Diabetes: LDL Screening	MA Medicaid (HEDIS) 2014 90th percentile= 88.59%; Gap to Goal (10%) or attainment at Target	70.66%	72.45	82.57%	83.17%	83.59%	Met both years
Holyoke	Reconciled Medication List Received by Discharged Patients (Discharges from an Inpatient Facility to Home/Self Care or Any Other Site of Care)	No external benchmark; Hospital shared Target= 90%; Gap to Goal (10%) or attainment at Target	0%	9.00%	88.10%	88.29%	99.00%	Met both years
Holyoke	Depression: Utilization of PHQ-9 Tool	No external benchmark; Hospital shared target= 65%; Gap to Goal (10%) or attainment at Target	0%	6.50%	36.30%	39.17%	94.80%	Met both years

Site	Category 4A Measure	Benchmark & Improvement Method	Year 1 DY18 (SFY2015)	DY19 Target	Year 2 DY19 (SFY2016)	DY20 Target	Year 3 DY20 (SFY2017)	Achievement
Holyoke	Screening for Clinical Depression	Medicare MSSP/ACO 2015 90th percentile= 51.81%; Gap to Goal (10%) or attainment at Target	12.16%	16.31%	37.51%	38.94%	61.69%	Met both years
Lawrence	Breast Cancer Screening	82%; Gap to Goal (10%) or attainment at Target	68.40%	69.76%	74.71%	75.44%	76.42%	Met both years
Lawrence	CMS Skilled Nursing Facility Days for Target Population	2636; Gap to Goal (10%) or attainment at Target	3389	3351	3073	3051	2,349	Met both years
Lawrence	Comprehensive Diabetes Care: Blood Pressure Control (<140/90)	82.74%; Gap to Goal (10%) or attainment at Target	69.89%	71.18%	74.93%	75.71%	78.11%	Met both years
Lawrence	Controlling High Blood Pressure measure (2015 HEDIS Definition)	85.67%; Gap to Goal (10%) or attainment at Target	61.83%	64.21%	65.45%	67.47%	69.81%	Met both years
Lawrence	Decreasing Emergency Department Utilization for high utilizers	No external benchmark; Hospital Target=1079; Gap to Goal (10%) or attainment at Target	1199	1187	727	1079	595	Met both years
Lawrence	Depression: Utilization of the PHQ-9 Tool	65%; Gap to Goal (10%) or attainment at Target	14.89%	19.90%	38.01%	40.71%	53.91%	Met both years
Lawrence	Palliative care patients with MOLST documented for target population	50%; Gap to Goal (10%) or attainment at Target	24.02%	26.62%	58.69%	50.00%	61.28%	Met both years
Lawrence	Reconciled medication list received by discharged patients	90%; Gap to Goal (10%) or attainment at Target	84.38%	84.94%	95.43%	90.00%	92.69%	Met both years
Lawrence	Targeted Fall Rate in Geriatric Population (65+)	No external benchmark; Hospital Target=4.21; Gap to Goal (10%) or attainment at Target	4.43%	4.21%	2.84%	4.21%	3.02%	Met both years
Mercy	Comprehensive Diabetes Care: Blood Pressure Control (<140/90)	MA Medicaid (HEDIS) 2014 90th percentile=82.74; Gap to Goal (10%) or attainment at Target	63.21%	65.16%	72.50%	73.02%	75.30%	Met both years
Mercy	Decreasing Emergency Department Utilization for High Utilizers	No external benchmark: Hospital-specific benchmark is 10% decrease compared to baseline; Gap to Goal (10%) or attainment at target	16.40 visits per year	14.76	6.42 visits per year	14.76	4.26 Visits per Year	Met both years

Site	Category 4A Measure	Benchmark & Improvement Method	Year 1 DY18 (SFY2015)	DY19 Target	Year 2 DY19 (SFY2016)	DY20 Target	Year 3 DY20 (SFY2017)	Achievement
Mercy	Documentation in Medical Record of Continuing Care Plan which Includes Next Level of Care Recommendations	CMS Reported National Average 69.92% (4/1/2013-12/31/2013); Gap to Goal (10%) or attainment at Target	3.83%	10.43%	88.98%	69.92%	59%	Met Year 2 only
Mercy	Follow-Up Post Emergency Department Utilization for High Risk Patients	No external benchmark; Hospital Shared Target=70%; Gap to Goal (10%) or attainment at Target	96.20%	70.00%	96%	70.00%	100%	Met both years
Mercy	Influenza Vaccination	Medicare MSSP/ACO 2015 90th percentile=90%; Gap to Goal (10%) or attainment at Target	94.50%	90.00%	97.70%	90.00%	94.40%	Met both years
Mercy	Reconciled Medication List Received by Discharged Patients (Discharges from an inpatient facility to home/self-care or any other site of care	No external benchmark; hospital shared target=90%; Gap to Goal (10%) or attainment at Target	18.32%	25.49%	19.21%	26.29%	81.10%	Met Year 2 only
Mercy	Screening for Clinical Depression and Follow-Up Plan	Medicare MSSP/ACO 2015 90th Percentile=51.81%; Gap to Goal (10%) or attainment at Target	40%	41.18%	50%	50.18%	62.50%	Met both years
Mercy	Targeted Fall Rate in Geriatric Behavioral Health Population	No external benchmark: Hospital-specific benchmark is 6.54% decrease over baseline. Gap to Goal (10%) or attainment at Target	8.56%	8.53%	8.39%	8.37%	7.88%	Met both years
Signature	Adherence to CMS-defined Transitional Care Management protocols	No external benchmark; Hospital Targets = 25% in SFY 2016, 50% in SFY 2017	37.54%	25.00%	85.51%	50.00%	75.31%	Met both years
Signature	Care Plans for High-Risk Patients	No external benchmark; Hospital Shared Target = 85%; Gap to Goal (10%) or attainment at Target	17.92%	24.63%	79.20%	79.78%	97.50%	Met both years
Signature	Comprehensive Diabetes Care: Blood Pressure Control (< 140/90)	MA Medicaid (HEDIS) 2014 90th percentile = 82.74%; Gap to Goal (10%) or attainment at Target	87.50%	82.74%	90.09%	82.74%	90.16%	Met both years
Signature	Controlling High Blood Pressure measure (2015	MA Medicaid (HEDIS) 2014 90th percentile = 85.67%; Gap to Goal	89.18%	85.67%	91.55%	85.67%	91.31%	Met both years

Site	Category 4A Measure	Benchmark & Improvement Method	Year 1 DY18 (SFY2015)	DY19 Target	Year 2 DY19 (SFY2016)	DY20 Target	Year 3 DY20 (SFY2017)	Achievement
	HEDIS Definition)	(10%) or attainment at Target						
Signature	Falls: Screening for Future Fall Risk (Outpatient)	Medicare MSSP/ACO 2015 90th percentile = 73.38%; Gap to Goal (10%) or attainment at Target	53.10%	55.13%	78.11%	73.38%	94.90%	Met both years
Signature	Palliative care, percent of adult patients who have a serious illness who have a completed MOLST form documented in the medical record for the target population	No external benchmark; Hospital Shared Target = 50%; Gap to Goal (10%) or attainment at Target	22.45%	25.21%	58.37%	50.00%	86.50%	Met both years
Signature	Screening for Clinical Depression and Follow-Up Plan	Medicare MSSP/ACO 2015 90th percentile = 51.81%; Gap to Goal (10%) or attainment at Target	64.73%	51.81%	89.90%	51.81%	84.30%	Met both years

Appendix F. DSTI Category 4B Common Measures Achievement

Category 4B: Common Measures*	Benchmark and DY20 (SFY 2017) Improvement Method	Reporting Date	BMC	Carney	CHA	Holyoke	Lawrence	Mercy	Signature
4B (2): Care Transitions Measure Set	Target = 55.9% Score Gap to Goal (5%) or attainment at target	7/31/2015	53.8%	45.5%	49.6%	54%	50.9%	49.65%	52%
		7/31/2016	54.7%	48.0%	48.9%	54.3%	48.4%	50.8%	52.7%
		7/31/2017	54.90%	44.8%	49.70%	54.2%	52.20%	49.80%	53.10%
4B (3): Transition record with data received by patient at inpatient discharge	Hospital shared improvement target =81.5% Gap to Goal (10%) or attainment at target	7/31/2015	43.29%	32.00%	5.20%	0%	71.43%	96.99%	71.90%
		7/31/2016	67.10%	91.70%	22.67%	63.37%	86.34%	95.28%	82.89%
		7/31/2017	83.00%	93.90%	35.54%	89.8%	82.87%	87.41%	67.32%
4B (4): Timely Transmission of Transition Record	Hospital shared improvement target = 88.7% Gap to Goal (10%) or attainment at target	7/31/2015	50.50%	25.20%	42.40%	12%	90%	88.51%	92.70%
		7/31/2016	91.30%	41.00%	56.68%	18.66%	93.08%	95.87%	92.21%
		7/31/2017	91.10%	52.80%	68.14%	62.0%	94.44%	93.59%	95.12%
4B (5): Tobacco Use Treatment Provided or Offered	Joint Commission 75th percentile = 78.0% Gap to Goal (10%) or attainment at target	7/31/2015	0%	23.30%	6.67%	0%	15.38%	7.69%	25%
		7/31/2016	19.70%	76.80%	20.37%	36%	32.56%	54.55%	51.25%
		7/31/2017	49.10%	87.10%	48.15%	89.68%	75.81%	95.39%	74.75%
4B (6): Tobacco Use Treatment Provided or Offered at Discharge	Joint Commission 75th percentile = 53.1% Gap to Goal (10%) or attainment at target	7/31/2015	0%	16.70%	0%	7.70%	0%	0%	0%
		7/31/2016	0%	17.90%	2.13%	17%	20.69%	50%	28.57%
		7/31/2017	18.80%	67.20%	38.30%	89.47%	44.19%	87.93%	55.41%
4B (7): Early Management Bundle, Severe Sepsis/Septic Shock	Improvement over hospital-specific baseline reported in SFY 2016	7/31/2015 (N/A)							

Category 4B: Common Measures*	Benchmark and DY20 (SFY 2017) Improvement Method	Reporting Date	BMC	Carney	CHA	Holyoke	Lawrence	Mercy	Signature
		7/31/2016	24.20%	32.00%	42.31%	33.06%	36.56%	33.02%	54.76%
		7/31/2017	31.20%	39.00%	49.02%	68.25%	41.43%	34.82%	44.44%
4B (8): National Health care Safety Network Facility-Wide Inpatient Hospital-Onset Clostridium Difficile Infection Outcome Measure	Standardized Infection Ratio of 1. Gap to Goal (5%) or attainment at target of 1 or less	7/31/2015	1.286	0.667	1.378	0.223	1.912	1.02	0.746
		7/31/2016	1.033	1.13	0.825	0.495	1.743	0.092	1.038
		7/31/2017	0.82	0.28	0.4630	0.107	1.13	1.03	0.777
4B (9): Alcohol Use Screening**	Joint Commission 75th percentile = 94.2% Gap to Goal (10%) or attainment at target	7/31/2015	N/A	53.60%	7.14%	91%	N/A	22.81%	84.40%
		7/31/2016	N/A	98.90%	27.90%	96.29%	N/A	50.69%	99.26%
		7/31/2017	N/A	100.00%	63.10%	98.27%	N/A	96.43%	94.64%
4B (10): % of Contracts in Global Payment Arrangements (weighted) and % and/or number of attributed primary care panel patients	Pay for Reporting Only	7/31/2015	14.55%; 52,757	45%; 21,305	35%; 47,067	2.38%; 14,444	25%; 14.09%	12%; 9,266	23.3%; 81,506
		7/31/2016	14.55%	43%; 79%	33%; 47,237	17,659	30.4%; 13.69%	12%; 11,130	20.9%; 41.2%
		7/31/2017	24.20%	43%; 79%	53%; 36%				20.9%; 41.2%

*Red font indicates a measure that was not achieved.
**Not applicable for this hospital

Appendix G. ICB Project Category Summaries

Summary of Category A1 Projects: Data Integration and Analytics across the Continuum of Care

The goal of A1 projects was "to develop concrete analytic and data-sharing capabilities and resources that enable and support integrated and patient-centered care across providers". Sites must select one or more of the following subprojects:

A. Population-level analytics: Identify populations of patients that could benefit from care management interventions by analyzing clinical administrative data.

B. Population Disease Registry: Implement an electronic disease management registry for one or more chronic disease patient populations.

C. Provider Dashboards: Implement a provider dashboard that displays patient-specific and care plan information.

Sixteen sites implemented A1 projects, of which 10 were CHCs and six were hospitals. Eight sites selected a single subproject (of these subproject A was the most frequently adopted); five sites adopted two subprojects; and three sites adopted all three subprojects. Project funding ranged from $57,267 to $1,137,800; the average funding was $323,225.

Fourteen sites purchased new software and analytic tools to support population-level analytics (subproject A). In some cases, the new software supplemented exiting EMRs; in other cases, sites purchased new EMR systems that included analytic functionality. Two sites hired consultants to conduct gap analyses of the sites' current operational and reporting environment. The consultants trained staff on how to better utilize existing software/tools for data analytics.

Four sites implemented an electronic population disease registry for one or more chronic disease patient populations (subproject B) such as patients with substance use disorders, pediatric asthma, and hypertension. Sites varied in the specific registry software they purchased, including packages such as DRVS and Real Time System. These software packages enabled sites to identify high-risk patients not engaged in care; provided prompts to providers indicating that a patient is due for screenings or labs; and generally increased reporting capabilities.

Eight sites implemented a provider dashboard that displayed patient-specific care plans (subproject C). The dashboards allowed sites the ability to track the progress of their chronic disease patients in real time and across health care settings. One site integrated their ED dashboards with the Prescription Monitoring Program (PMP) database; this allowed for tracking patients' prescription filling patterns to identify frequent opiate prescriptions. Dashboards at another site allowed clinicians to monitor the progress of their pediatric asthma patients.

Summary of Category A2 Projects: Data Warehousing and Reporting

The goal of A2 projects was "to enhance data warehouse and reporting capabilities that directly enable and support Alternative Payment Methodologies (APMs)." Sites had to select one or more of the following three subprojects:

A. Purchase, design, or implement data warehouse functionality.

B. Invest in analytic capabilities that support financial management and APMs.

C. Invest in infrastructure for reporting capabilities compatible with APMs.

Six sites implemented A2 projects. Of these, four were CHCs and two were hospitals. Three sites selected one subproject, two sites chose three subprojects and one site selected two subprojects. Project funding ranged from $53,484 to $717,083; the average funding per project was $315,672.

Four sites adopted projects related to data warehouse functionality (subproject A). All of these sites consulted external vendors for insight on products and services offered in the data aggregation market. One site purchased a program that will allow it to aggregate patient claims data from multiple sources, including physician practices, EMRs, and hospitals. The other three sites established data warehouses after purchasing the necessary hardware, data management software, and architecture.

Four sites invested in analytic capabilities (subproject B) and each of them purchased EMR add-ons to support financial management and APMs. One site hired an analytical staff person to receive, monitor, and assess reports from insurance carriers. Another site noted that staff who utilized EMRs were trained on the analytic capabilities of the new add-ons.

Two sites adopted projects related to improving reporting infrastructure (subproject C) for internal and payer-facing compatibilities for APMs. Data analysts from one site worked with consultants to learn how to add and extract data from the warehouse. The other site improved their ability to analyze data more effectively by extracting EMR data from three contracted health plans into a health population tool.

Summary of Category A3 Projects: Mass HIway and Utilization

The goal of A3 projects was "to improve provider capacity to enroll in, connect to, and use" the state's Health Information Exchange (referred to as the "Mass HIway"), a technological platform to enable providers to securely exchange patient clinical information. Sites had to implement subproject F, and could implement any of the five additional subprojects:

A. Purchase hardware or software required to connect to the Mass HIway.

B. Contract with a systems vendor to develop interface and to manage or configure technology required to connect to the Mass HIway.

C. Implement consent model (patient consent for the sharing and accessing of patient health information) for Direct Messaging and Data Querying.

D. Develop patient/staff Mass HIway education materials.

E. Train staff to use the Mass HIway.

F. Transmit clinical data to one or more organizations.

Two sites, both CHCs, selected an A3 project, with one project funded at $64,000 and the other funded at $94,818.

The first site implemented all six subprojects. Equipment and software was successfully purchased and installed (subproject A), a system vendor was identified, and MassHIway connectivity achieved (subproject B). A process was underway, at the time of their report, for gathering patient consent for data use in the Mass HIway, and once in place, all patients will register with the MassHIway (subproject C). Mass HIway patient/staff educational materials were developed and all staff members will receive training on how to use the Mass HIway (subprojects D and E). Finally, the CHC successfully transmitted clinical data to one other organization.

The second site chose subproject F. Progress was made but not completed on subproject F at the time of the report and the site indicated it will continue work on the project after submission of its report. Project meetings were held regularly regarding progress and provided updates and progress on consultants' work. They developed and executed a plan for effective data sharing between their site and another site. The site received guidance from their EMR vendor, who advised them of the best approach for data integration between sites. This site has begun to develop workflow documents and staff training materials.

Summary of Category B Projects: Shared Governance and Enhanced Organizational Integration

The goal of category B projects was to "develop, expand or enhance shared governance structures and organizational integration strategies linking providers across the continuum of care." Awardees were expected to "pursue shared governance structures and organizational integration strategies necessary for the formation of Accountable Care Organizations (ACOs)." There were no specified subcategories under this project. One CHC and one hospital each implemented a Category B project; the budgets were $315,957 and $1,668,229, respectively.

At one site, centralized leadership and project management from the hospital led a diverse group of stakeholders from the hospital network and the community (e.g., behavioral health providers, long-term support services, housing and legal services, community health centers, medical transport). Working with an external organizational transformation consultant, they developed frameworks for contracts between the hospital and community partners, including development of key business contract elements: partner capabilities, measures of success, and payment methodology. They selected three ACO service needs based on the community stakeholder capabilities (community-based behavioral health, long-term support services, and social determinants of health) and developed performance

metrics specific to each service need. They developed a 3-year ACO implementation plan and identified immediate next steps.

At the second site, the CHC operationalized relationships with 10 project partners, representing primary care, behavioral health, housing, and social services that serve the homeless population, with whom they have worked previously. They developed an integrated service delivery model that details the formalization of necessary legal relationships, payment models for partners, and how patients are identified, enrolled, and engaged in care. They conducted a needs assessment of the technology and data sharing tools needed to facilitate cross-sector information exchange and developed an evaluation plan for their delivery model. They drafted legal documents to formalize partnerships and a patient consent form. They are seeking funding elsewhere to implement their plan.

Summary of Category C1 Projects: Implement Primary Care Based System of Complex Care Management for High-Risk Population(s)

The goal of C1 projects was "to develop and implement a Primary Care-based system of complex Care Management" (CCM) for high-risk patients. Sites had to choose two or more of the following subprojects:

A. Develop a multi-disciplinary team-based framework for a Primary Care-based CCM model.

B. Implement reports to designate High-Risk Members.

C. Implement Integrated Care Plans for use with high-risk patients enrolled in CCM.

D. Enroll high-risk patients in a CCM model in one or more Primary Care sites.

E. Implement reports to track CCM utilization and effectiveness.

F. Implement Patient Navigation Services.

G. Deliver linguistically and culturally appropriate care.

There was a total of 11 sites that implemented C1 projects, of which six were CHCs and five were hospitals. Twelve projects were funded under this category: one hospital was funded for two projects; the other 10 sites were funded for one project each. Across the 12 projects, seven addressed one or two subprojects, four addressed four to six subprojects, and one addressed all seven subprojects. Project funding ranged from $41,469 to $723,671; the average funding per project was $253,339. Targeted populations or diagnoses included diabetes, comorbid behavioral health conditions, chronic pain and substance abuse issues, opioid dependency, emergency department patients with behavioral health issues, and housing project residents.

Nine sites implemented or expanded a primary care-based multidisciplinary care model (subproject A), primarily by increasing their capacity to address behavioral health needs or substance use disorders under various models. These included one site that developed a floating team of three social workers to offer scheduled and ad hoc behavioral health visits

at 12 PCP sites and another that created a team of navigators, nursing, and behavioral health staff that had experience with substance use disorders to serve the needs of a local housing project's residents. A third site collaborated with two local behavioral health service agencies to connect Emergency Department patients with behavioral health needs to a primary care provider (PCP) office. A fourth site created a process for linking PCPs telephonically to a psychiatrist within the hospital system to discuss care. Finally, one site increased access to substance use disorder treatment and recovery support by embedding this expertise within primary care practices and increasing the range of care services (e.g., mindfulness groups, physician consultation, cognitive behavioral groups, yoga, acupuncture, nutrition) offered to patients.

One site implemented subproject B but provided no detail about how it planned to implement reports to designate high-risk members.

Complex care management (subprojects C (n=7), D (n=6)) was primarily achieved as part of the implementation of the multidisciplinary framework and identifying target populations of complex patients. Three sites hired staff such as CHWs, RN care coordinators, medical assistants, and social workers to implement integrated care plans and provide individualized care planning for its medically complex patients.

Five sites collected and tracked utilization data (subproject E). At one site, a new Integrated Care Nurse Care Manager was responsible for developing and implementing a reporting system. Two sites analyzed medical claims data to assess utilization patterns. A fourth site collected and reviewed patient satisfaction data though multilingual surveys. A final site started the process of developing baseline reports of data from their high-risk patient registry.

Eight sites implemented patient navigation services (subproject F). Three sites utilized CHWs to provide services or care to patients. Of these, one site promoted primary care and behavioral health integration by having CHWs work as navigators who can develop treatment plans and coordinate care for patients with substance use disorders. Another site's CHWs were integrated into the PCMH team to work alongside an RN care manager to provide social service assistance and care coordination.

Seven sites addressed subproject G, though only four acknowledged specific activities addressing this subproject. Two sites used CHWs in patient care with the goal of providing culturally appropriate care and navigation. Two other sites hired bilingual staff to facilitate communication with non-English speaking patients and provide culturally appropriate care.

Summary of Category C2 Projects: Redirect Non-Emergent Emergency Department Visits

The goal of C2 projects was to design, conduct, and evaluate initiatives aimed at redirecting individuals who visit a hospital ED with non-emergent conditions to community-based primary care. Sites had to choose two or more of the following five subprojects:

A. Identify the patient population that utilizes the ED for non-emergent complaints.

B. Produce analyses that track progress.

C. Define and design interventions to reduce non-emergent ED use.

D. Document process and methods to encourage and educate patients about available non-emergent services.

E. Implement a methodology to measure financial impact and cost savings associated with ED efficiencies.

Five hospitals were funded for C2 projects. Two sites selected all five subprojects; the other three sites chose two subprojects. Project funding ranged from $39,356 to $320,548; the average funding was $221,842 per project.

All five sites selected subprojects A and C. For subproject A, sites identified populations that utilize the ED for non-emergent complaints: those seeking non-emergent dental care, patients with five or more non-emergent care visits, and patients with diagnoses more appropriate for urgent care settings. Sites developed a variety of interventions to reduce use for the ED for non-emergency care (subproject C). Four sites utilized collaborations, such as partnering with a CHC, local dental school, and local urgent care center, to reduce avoidable ED visits. One site implemented a program that connected ED patients with behavioral health needs to relevant community services to reduce their ED use. Another site integrated social workers into the workflow for patients' initial ED visit. For patients who came to the ED with dental needs, one hospital hired an emergency dental navigator to schedule appointments with a local dental school within 48 hours of the patients' ED visit. Three sites invested in technology improvements, such as creating a secure software system to communicate between the hospital and a dental school, developing technology to identify characteristics and patterns of the target patient population, and building a database for analytics and reporting.

Four sites selected subproject B and tracked project implementation progress by producing weekly, quarterly and/or cumulative reports detailing ED use trends among the target populations. One of these sites utilized Humedica, a reporting and analysis software, and developed "ED Counter," a tool to track ED visits of active patients. Another site developed a mechanism to flag and track ED super utilizers.

Three sites selected subproject D and sought to educate patients and hospital/community providers about alternative resources for non-emergent care, such as urgent care centers, PCPs, and outpatient services. One site developed video, advertising, and print material to educate patients about lower-cost care settings. Another site created a process for clinical staff to educate patients about available community resources.

Three sites also selected subproject E and measured the financial impact of reduced ED use in different ways. One site created a retrospective analytic model to measure cost savings of their ED efficiencies. Another site developed a framework to analyze medical expenses and assess the collective impact, with an emphasis on their target population of

super utilizers. It also collected qualitative data from former ED super utilizers to see how receiving care in a CHC improved their quality of life.

Summary of C3 Projects: Reduce Variations in Inpatient Care for Patients with High-Risk Conditions

The goal of C3 projects was "to develop and implement evidence-based clinical care pathways to reduce variations in inpatient care, improve health outcomes, and engage patients in disease management." Sites had to choose three or more of the following seven subprojects:

A. Identify one or more diagnoses at high risk for readmission, complications, co-morbidities, and/or variations in inpatient care.

B. Review and select evidence-based "best practices," which will be developed into clinical care pathways targeting selected high-risk conditions.

C. Define standards for expected duration of stay and use of tests and treatments.

D. Define care team roles to ensure most efficient and appropriate allocation of responsibility.

E. Implement clinical care pathways in at least one hospital unit/floor.

F. Measure performance at implementation site against standards defined in subproject C.

G. Identify "lessons learned," adopt refinements to clinical pathway, including special considerations for MassHealth members.

Two hospitals were funded for C3 projects. One project was funded for $175,252 and the other for $616,196.

One hospital addressed three subprojects (A, B, E) via initiatives related to diabetes care management. They formed a multidisciplinary Diabetes Planning Committee for ICB grant-related activities, which focused on building clinical staff competency. Within their Diabetes Center of Excellence, they adopted both the American Diabetes Association (ADA) and Joint Commission standards of care for diabetes management. Towards this, they created an intranet page to educate staff about ADA clinical guidelines and prepared for a Joint Commission certification site visit. They developed an online skills training tool for clinical staff, consisting of case studies and competency assessment questions. In addition, competency requirements for newly-hired hospitalists were updated to include completion of a Diabetes Management In-Service during orientation and an annual competency test. Finally, multidisciplinary huddles (e.g., hospitalist, nurse, nutrition leadership) were implemented to improve communication among providers about diabetic patient care across shifts. To educate patients, they developed an educational booklet about managing diabetes.

The second hospital addressed all seven subprojects with initiatives directed at reducing readmissions of and addressing social determinants of health for patients with COPD. They examined in-house data to determine the following three measures related to readmissions for each hospital site in their system: 1) diagnoses at highest risk for readmission; 2) clinical causes of preventable readmissions; and 3) non-clinical reasons for readmission (e.g., transportation, housing). To identify best practices for improving care and reducing cost among high-risk populations, they reviewed published literature about organizational transformation strategies and visited a Bronx-based medical center to learn about their community partnership approaches. With this knowledge, they created and implemented cross-continuum pathways between the hospital system sites and post-discharge sites (e.g., homecare, hospice, and community partner services). They also developed a non-clinical discharge planning checklist to identify and, if possible, address a patient's socioeconomic barriers to success. Finally, they measured their performance on three metrics: percent of patients with whom clinical/nonclinical checklists have been used; percent of patients for whom the care team could address nonclinical risk factors; and percent of patients referred to community organizations for support.

Summary of C4 Projects: Implement Improvements in Care Transitions

The goal of C4 projects was to implement improvements in care transitions and care coordination across the care continuum to prevent cost increases and hospital readmissions. Sites chose from the following three subprojects:

A. Develop multidisciplinary cross-continuum teams.

B. Analyze 30-day readmission drivers.

C. Identify a baseline of top readmission diagnoses.

Four hospitals implemented C4 projects. Three hospitals selected all three subprojects and one hospital selected subproject A for implementation. Project funding ranged from $183,170 to $339,828; the average funding per project was $223,990.

All four sites adopted projects related to subproject A but varied in the types of care teams they developed. Two sites drew staff exclusively from departments within the hospital including administrative, clinical, performance improvement, research, and EMR departments to develop teams that implemented care transition improvements. The third site also addressed care transition processes and developed a cross-continuum care transition team that included patients, families and representatives from NEQCA (New England Quality of Care Alliance Physician Network and ACO), as well as post-acute care providers. At the fourth and final site, substance abuse recovery coaches were hired to work with clinical social workers, nurses, physicians, and community programs to provide coordinated medication-assisted treatment for patients with substance use disorders.

Three sites adopted projects related to subproject B and again varied in their approach, in this case to assessing the determinants of 30-day readmissions. Two sites collected qualitative data from patients via surveys and interviews to understand reasons for

readmissions. One of these sites also examined the correlation between readmission and several behavioral health factors.

In addition to determining the causes of 30-day readmissions, all three sites included in their subproject B work the development and implementation of interventions to reduce 30-day readmissions. Two sites worked directly with patients at risk for readmission; one provided medication education; and the other created a substance abuse recovery coaching program. The third site implemented "TouchCare," a phone/tablet based application that allows patients the option for a post-discharge telephonic visit.

Three sites adopted projects related to subproject C. One site analyzed readmission data drawn from an internal electronic all-payer database to determine factors that led to readmissions. Another site analyzed internal hospital readmissions data to determine the characteristics of patients admitted for acute care within 90 days after initial discharge and the readmission risk of patients with comorbid autism spectrum disorders or comorbid substance use disorders.

Summary of C5 Projects: Develop Clinical Integrated Acute and Post-Acute Network Across the Continuum of Care

The goal of C5 projects was to integrate care between acute and post-acute settings to enhance care quality and transitions and to reduce readmissions. Sites had to choose two or more of the following four subprojects:

A. Improve care transition between acute and post-acute care settings.

B. Implement integrative protocols for regular communications between acute and post-acute settings and deploy personnel to provide oversight of these transitions.

C. Implement EMR technology to connect acute and post-acute records.

D. Develop capabilities to track and improve key performance indicators such as readmissions rates, use of appropriate protocols, and use of electronic communications between acute and post-acute providers.

One CHC and one hospital were funded for C5 projects. Both sites selected subprojects A and B. Projects were funded for $237,609 and $348,342.

To address subprojects A and B, the hospital made several improvements to its information-sharing technology to facilitate communication and care coordination both within the hospital and between the hospital and its two subacute services vendors, a home health agency and a skilled nursing facility (SNF). Several technology improvements were noted, including: installing secure messaging technology, which allowed hospital and SNF staff to communicate directly about patients who were discharged from the hospital to the facility; upgrading their wireless system, which allowed outside service vendors to access it while providing patient care at the hospital; and integrating the EMR used by the hospital's birth

center with the hospital's EMR system to make the birth center's patient information available to staff hospital-wide.

The CHC addressed subprojects A and B by partnering with its hospital network and a local addiction treatment center to create an integrated network of acute and post-acute behavioral health services and improve care transitions within the network. A subcommittee of CHC and treatment center members developed a flowchart of the steps in the care transition process (hospitalization/detox through outpatient and follow-up care) to identify and address service gaps and redundancies. They then created protocols for care transitions between the CHC and the treatment center. To facilitate information sharing with the treatment center, the CHC upgraded its network and purchased secure information technology; they also implemented tele-health capabilities, including video conferencing, remote patient monitoring, and psychiatric tele-health consulting.

Summary of Category C6 Projects: Design and Implement a Practice Support Center

The goal of C6 projects was to design and implement a dedicated practice support call center to improve primary care patient experience and satisfaction, reduce no-shows, and provide support to clinicians. Sites had to select at least one of the following five subprojects:

A. Develop a patient/practice call center that enhances patient access and provides clinical staff support.

B. Provide real time patient demand matching with scheduling capacity.

C. Identify scheduling issues/barriers and develop a plan to improve patient continuity.

D. Identify issues/barriers associated with no-shows and develop plan to decrease no-show rates.

E. Develop a plan to improve communication with patients that have different linguistic needs through language appropriate call systems or phone interpreters.

Thirteen sites implemented C6 projects, of which 11 were CHCs and two were hospitals. Eight sites selected one or two subprojects, four selected three or four subprojects, and one selected all five subprojects. Funding ranged from $5,690 to $419,900; the average project's funding was $157,755.

Eight sites developed new call centers or improved existing ones (subproject A). Call center capabilities included routing calls to appropriate departments, scheduling patient appointments, and outreaching to patients. It also included addressing patients' clinical needs, such as providing medical advice and prescription refills. To develop the call centers, two sites hired new staff, one to expand its center and one to add bilingual interpreter capabilities. One site retrained bilingual medical records staff to work in the call center, while another trained its staff on Dentrix electronic dental health record software so that it could handle dental calls in addition to medical and behavioral calls. Three sites established triage

nurse roles, housed in the call center or co-located in a clinical department, to provide clinical support for patients and providers. Three sites reassigned administrative or outreach tasks to the call center, which allowed clinical and front desk staff to focus on patient care. Finally, three sites centralized their appointment scheduling functions into one call center department, with one site consolidating four existing support centers into one new location.

Five sites adopted strategies to match appointment demand with their available scheduling capacity (subproject B). Sites adopted several strategies to achieve this, including: reserving some appointments for same day access and short-term follow-up; utilizing a broader range of clinical staff (e.g., nurses, pharmacists) for patient visits; implementing group visits; offering or extending evening hours; and purchasing/using online patient appointment scheduling technology. Two sites implemented real-time analytics to monitor and respond to appointment supply/patient demand.

Six sites chose to identify scheduling barriers and improve patient continuity (subproject C). Some sites achieved this through process improvements developed while implementing a call center. In addition, patient access to clinical staff was enhanced by the use of after-hours live phone nurse triage, patient education about the use of the patient portal, and improvements to walk-in care systems.

Eight sites focused on identifying barriers that resulted in patients missing appointments and reducing these occurrences (subproject D). At three sites, reduction of the no show rate was addressed through the use of automated patient reminders sent via the EMR. Other strategies included sending reminder text messages, increasing the number of available same or next day appointments, and not scheduling future follow up appointments too far in advance. One site collected data regarding reasons for missed appointments and researched best practices for no show reduction.

Three sites developed a plan to improve communication with patients that have different linguistic needs (subproject E). Two of the three sites hired additional staff to provide onsite and telephonic interpreter services to better serve the linguistic needs of patients. The other site educated staff about its existing telephonic interpreter services with the aim of increasing its usage.

Summary of Category D Projects: Outreach and Enrollment

The goal of Category D projects was to “design, implement, and document enrollment, outreach and health care access projects for individuals who may be eligible for public subsidized and non-subsidized health insurance programs and who may require individualized support due to geography, ethnicity, race, culture, immigration, disability, or disease status.” There were no specified subprojects under this project. Thirteen sites, all CHCs, were funded for category D projects. Project funding ranged from $20,983 to $285,369; the average funded amount was $119,743.

While outreach and enrollment activities were designed to reach all eligible people within and outside of the CHCs, some sites focused their efforts on specific populations such as

the elderly, the homeless, public housing residents, migrant/seasonal workers, those using the Emergency Department for non-emergent care, and Brazilian, African, and Arabic populations.

Sites employed a variety of strategies to: outreach individuals who might benefit from health insurance enrollment services; provide enrollment assistance; and educate and assist consumers about how to use health insurance and access health care services. Sites adopted different outreach activities but their efforts generally fell into three broad categories: print materials designed to build awareness about health insurance; media campaigns (online, radio, and television) similarly designed to reach and educate target populations; and phone calls to patients about upcoming enrollment events. To build awareness among consumers about available health insurance services, five sites created fliers, brochures, and other written materials, available in multiple languages. These materials were disseminated to local businesses and community organizations and during community events. Community radio and cable outlets were utilized by two sites to create awareness about insurance enrollment while another site made automated robo-calls to alert their patients about MassHealth enrollment events. Three sites collaborated with a government agency (i.e., MassHealth, MA EOHHS, Social Security) to reach consumers in need of services.

While all sites provided onsite enrollment services, many also provided these services at offsite locations. Several sites participated in a range of local community events, including a Senior Health and Safety Expo, an Annual Baby Shower event hosted by WIC, school enrollment fairs, and an environmental festival. Five sites maintained a regular presence at community locations such as school-based health centers, inmate reentry centers, a career center, and a YMCA, where they were able to provide education and enrollment services.

Four sites noted that they hired staff in such roles as patient navigator, customer service representative, insurance outreach coordinator, and certified application counselor to provide enrollment services. To guide individuals to complete the enrollment process in their own, some sites also developed written or web-based educational tools to guide consumers through the enrollment process. One site placed a Certified Application Counselor (CAC) at their greeter desk to answer questions and guide consumers on next steps towards completing enrollment on their own or with someone in the CAC Department.

Six sites provided post-enrollment services to patients to help them find and engage with a primary care provider or educate patients on how to use health insurance or access health care services. One site educated patients about health insurance terminology and renewal requirements.

Finally, three sites indicated how data collection methodologies would be used to evaluate the success of their outreach and enrollment activities. Of these, two sites utilized their EMRs to collect relevant data to evaluate the reach and effectiveness of their activities. Another site noted that it adjusted its outreach strategy in response to feedback.

Summary of Category E Projects: Catalyst Grants for Integration

The goal of category E projects was to facilitate planning and preparation for Alternative Payment Models (APM). There are no specified subcategories under this project. One CHC was funded for this category with a budget of $35,545.

The CHC hired an information technology consultant to conduct a technical, financial, and clinical evaluation of their current EMR. The goal of the evaluation was to identify recommendations for moving forward with their EMR system to position the site to implement a new care delivery model. From this, they developed a strategic plan for their IT infrastructure.

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