



January 2016

MassHealth Section 1115(a) Demonstration Waiver 2014-2017 Evaluation Design

Prepared by:

Deborah Gurewich, PhD

Wen-Chieh Lin, PhD

Karen Clements, ScD

Judy Savageau, MPH

Linda Cabral, MM

Table of Contents

| | |
|--|----|
| Section 1: Introduction..... | 3 |
| Section 2: Continued Monitoring of Population Level Measures | 4 |
| Section 3: Express Lane Eligibility Program | 9 |
| Section 4: Delivery System Transformation Initiative (DSTI)..... | 12 |
| Section 5: Intensive Early Intervention | 16 |
| Section 6: Infrastructure and Capacity Building Grants | 18 |

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 health care 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:

1. Monitoring of Population-Level Measures (PLM);
2. Express Lane Eligibility (ELE) program;
3. Delivery System Transformation Initiative (DSTI);
4. Intensive Early Intervention (IEI) Services for Children with Autism Spectrum Disorder;
5. 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) 90¹. To accomplish this, EOHHS contracted with the University of Massachusetts Medical School’s (UMMS) Center for Health Policy and Research (CHPR) to design and implement the overall evaluation of the Waiver.

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.

Table 1. 1115 Waiver Initiatives and Goals

| Initiatives | Waiver Goals | | | |
|--|--------------------------------|-------------------------|-------------------------|-----------------|
| | 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

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 health care 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 $\leq 133\%$ of FPL, children in families $>133\% - 150\%$ of FPL, and childless adults $\leq 133\%$ 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 health care; 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 health care environment, we will additionally 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

| Hospital | Projects | | |
|--|-------------------|--------------------|-------------------|
| | <i>Category 1</i> | <i>Category 2</i> | <i>Category 3</i> |
| 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 health 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 health care 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 Hlway 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 health care 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 health care 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.