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Maine State Innovation Model Self Evaluation

Year Three Final Report

Prepared for: **Maine Department of Health and Human Services**

Submitted by: **The Lewin Group, Inc.**

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Acknowledgements

Lewin prepared this Maine SIM Self-Evaluation report as required by the Center for Medicare and Medicaid Innovation and in collaboration with leaders from Maine's Department of Health and Human Services' Office of Continuous Quality Improvement and Office of MaineCare Services. The report is intended for use by all Maine stakeholders and other interested parties to inform future health care delivery system model refinement efforts.

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Report Roadmap

The Lewin Group (Lewin) has been engaged since July 2014 to provide independent support for Maine's Self-Evaluation of the implementation, cost effectiveness and impacts of its State Innovation Model (SIM) cooperative agreement. In this SIM year three report, the final of two annual evaluation reports, Lewin presents findings from quantitative and qualitative data analysis of SIM activities that occurred between October 2013 and September 2016. To provide an accessible narrative, the self-evaluation report is designed to provide the highest level of data first, followed by in-depth discussions. This "Roadmap" provides a brief description of each section of the report and a "Key Terms" Quick Reference Guide.

Executive Summary

The Executive Summary highlights key findings including qualitative and quantitative data and analysis for three top priority health care delivery system improvement efforts in Maine: MaineCare Health Homes (HHs), Behavioral Health Homes (BHHs), and Accountable Communities (ACs). Notable findings of member attributes that impact health outcomes and progress with interventions to impact diabetes care will be introduced. A SIM Governance structure/process overview is included to inform stakeholder engagement for future delivery system refinements. In conclusion, Lewin offers considerations for future health care delivery system improvement activities identified through this evaluation.

Introduction

The Introduction provides a brief background of the strategic framework and goals for Maine SIM, the organizations with lead roles to implement SIM efforts, the self-evaluation study design, and the focus for the third year of SIM activities.

Data Sources and Analysis

Within the report, findings are presented from various quantitative and qualitative data sources:

1. **Cost Effectiveness and Impact Findings from Claims Analysis** – Molina, the state's Medicaid Management Information Systems (MMIS) vendor, provided Lewin with Medicaid data for the evaluation. Commercial and Medicare activities are not evaluated as part of SIM[1]. The Medicaid data was supplemented with data from the Maine Department of Health and Human Services (DHHS) HH and BHH Portal, identifying members in MaineCare HHs and BHHs, along with data from MaineCare, identifying members in ACs.

[1] This evaluation focuses primarily on the Medicaid program since this is the population for which Lewin received the most comprehensive dataset.

a. **Overall Approach**: Lewin analyzed health claims data to evaluate care utilization, expenditures, and progress on meeting Core Metrics[2].

i. **Definitions:** The evaluation generally employed definitions of metrics developed by the SIM Core Metrics group. The Maine SIM Steering Committee selected ten measures to evaluate SIM initiatives. Each measure has its own rules for inclusion (e.g., readmissions only includes people who were admitted to the hospital), and therefore results are only reported for a subset of members in the evaluated initiatives. In some instances, Lewin suggested adjustments to provide clarification; any changes were reviewed and approved through the Maine SIM governance process.

ii. **Control groups:** To assure accurate comparison, Lewin selected individuals for the control groups who were similar to those in the intervention groups. Multiple matching scenarios were used that considered utilization patterns, risk, and propensity scores[3] to maximize the similarities between the two groups.

iii. **Cost Avoidance**: Cost avoidance was calculated as the difference between the expected and actual cost trends between intervention and matched control groups as measured by claims data. This approach allowed us to estimate what would have happened to the intervention group had they not received the intervention (i.e., MaineCare HHs, BHHs, and ACs), even if actual costs increased over time. While the analysis includes claims data and administrative payments made to HHs and BHHs outside of the claims systems, it does not include the costs of administering the programs, and therefore does not reflect savings or losses for the overall program. When compared to a control group, costs in the intervention group did not increase as quickly over time, thereby avoiding potential expenditures that would have happened had the intervention not happened. If costs in the study group increased more quickly than controls, then the intervention did not avoid cost. This is referred to as negative cost avoidance or loss.

iv. **Significance Testing:** Appropriate statistical tests were applied to the results to determine whether differences between the intervention and control groups for Core Metrics were statistically significant. In this report, results were identified where there was a statistically significant difference of at least p-value < 0.05 level; in other words there is a very low probability that the difference observed occurred by chance alone.

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[2] The SIM Core Metrics were selected by a workgroup of stakeholders in 2014 and include Emergency Department Utilization, Hospital Readmissions, Appropriate Use of Imaging Services, Fragmentation of Care, Pediatric/Adolescent Care, Mental Health, and Diabetes Care. See the Maine SIM Evaluation Measures section of Appendix One for further detail regarding the SIM Core Metrics.

[3] Propensity scoring is a statistical technique that uses logistic regression to compute the probability that potential controls are similar to members in the intervention group. This produces a control group that is comparable to the intervention group on all covariates included in the regression.

b. Intervention Groups and Analysis Periods

i. **MaineCare HHs:** HHs focus on strengthening primary care services provided to MaineCare (Medicaid) enrollees with multiple chronic conditions. There were approximately 35,200 individuals in the intervention group, and the pre-intervention period was calendar year 2012 while the intervention or post period was calendar year 2015. Data referenced as "**HH Only**" denotes MaineCare members with at least six months of HH enrollment who were not attributed to an AC.

ii. **MaineCare BHHs:** BHHs are designed to improve health outcomes for adults with severe and persistent mental illness (SPMI) and children with serious emotional disturbances (SED) through team based care coordination. There were approximately 1,100 individuals enrolled in the intervention group. The pre-intervention period was April 2013 through March 2014, and the intervention or post period was calendar year 2015. MaineCare members attributed to this group are those with at least six months of BHH enrollment.

iii. **MaineCare ACs:** MaineCare's version of Accountable Care Organizations (ACOs) are ACs wherein a population is attributed or assigned to a provider organization that can earn shared savings, depending on several outcome measures. The program allows for flexibility in practice organization, although many AC practices also participate in MaineCare's HH program. To isolate the effect of each program, the following analysis subsets results by members who are in HHs Only, in ACs Only, or in both HHs and ACs. Data referenced as "AC Only" denotes MaineCare members who were attributed to an AC but not a HH or BHH. In contrast, data referenced as HH and AC describes MaineCare members with at least six months of HH enrollment who were attributed to an AC. The AC program started in August of 2014 and ramped up participation over the next several months. In this analysis, the pre-intervention period was July 2013 to June 2014 and the post period was calendar year 2015 for both the AC Only population and the HH and AC population.

2. **Consumer Experience Findings**: Market Decisions Research (MDR) conducted interviews with over 1,500 MaineCare members to assess their experiences with the health care system. The sample was stratified to obtain representative numbers of people served in MaineCare HHs, BHHs, and ACs. Results were compared with similar populations surveyed in 2015.

3. **Provider Survey Findings**: A completed survey was received from each of the four MaineCare ACs, and 107 completed surveys were received from HHs and BHHs respondents.

4. "**Special Study One**": This analysis provides a closer look at the member characteristics that impact health outcomes using HHs, BHHs, and ACs provider claims data.

5. **"Special Study Two"**: This qualitative analysis identifies best practices of "high-performing" BHHs which may be associated with improvement in members' health outcomes, particularly related to diabetes.

6. **Focus Groups related to SIM Governance**: Two Focus Group sessions were conducted with a total of 15 members of the SIM Steering Committee and Subcommittees for a qualitative analysis of their experience and assessment of the SIM Governance structure and processes.

Findings

Subsequent sections of the report offer an in-depth description of the evaluation findings organized by key interventions or activities.

Future Considerations

This section offers considerations for future health care delivery system refinement activities in Maine stemming from the evaluation.

Appendices

Detailed descriptions of SIM objectives, hypotheses, evaluation methods, evaluation tools, detailed reports and data compendia are compiled in **Appendices I, II, and III**.

Key Terms Quick Reference Guide

The following are brief definitions for important terms used throughout this report. Please see the methodology section and **Appendix I** for a more complete discussion of how these items are defined.

1. **BHHO**: Behavioral Health Home Organization (BHHO) is a licensed mental health provider that partners with a HH to create the BHH partnership.
2. **Per Member Per Month (PMPM)**: PMPM is a measure of population health expenditures where, in this case, dollars paid by MaineCare for that population are divided by the number of months that population is enrolled.
3. **Non-Emergent Emergency Department (ED) Use:** ED claims with a Maine-specific list of diagnoses that do not need to be treated in the emergency room. Non-emergent diagnoses include sore throat; viral infection; anxiety; conjunctivitis; external and middle ear infections; upper respiratory infections; bronchitis; asthma; dermatitis and rash; joint pain; lower and unspecified back pain; muscle and soft tissue limb pain; fatigue; headache.
4. **Follow-Up after Hospitalization for a Mental Health Condition**: Follow-up is defined as a visit to a mental health practitioner within 28 days of a hospital discharge for a mental health condition.
5. **Professional vs. Facility or Institutional Claims**: In this analysis, professional claims are those submitted on a CMS 1500 form, and facility or institutional claims are those

submitted on a CMS UB-92 form. These are standard claim submission forms used by nearly all providers to request reimbursement for services and are accepted by nearly all payers, including MaineCare. They each have a standard set of data elements and are often submitted electronically.

6. **Category of Service**: Lewin's hierarchal logic for classifying professional and institutional claims into categories using procedure codes and revenue codes. Cost avoidance is reported by these categories. Please see **Appendix I** for complete details. Several key categories of service are described in more detail below.
7. **Facility Based Long Term Care Claims**: This category of service includes facility claims identified by bill types that start with 2 (skilled nursing facility) or 6 (intermediate care facility).
8. **Facility Outpatient Clinics**: Hospital-based outpatient clinics that provide services, such as urgent care, preventive medicine, dialysis, and cardiology.
9. **Facility Outpatient Therapy**: Therapies such as respiratory, physical, occupational, and speech.
10. **Behavioral Health Services**: In this report, behavioral health services are primarily defined using procedure and revenue codes that are part of the category of service logic. This category includes residential treatment, day treatment, alcohol and drug treatment, and community based wrap around services. Please see **Appendix I** for the complete list.

Executive Summary

This Maine SIM third year Self-Evaluation report reviews data collected by Lewin related to select Maine SIM activities occurring between October 2013 and September 2016. The report includes qualitative and quantitative findings from the evaluation of MaineCare HHs, BHHs, and ACs. Also included are a Special Study that identifies patient characteristics that impact health outcomes, a Special Study of "high-performing" BHHs, and a qualitative analysis of the SIM Governance structure and processes. Progress of SIM intervention impact on 30-day all-cause hospital readmissions and diabetic and pre-diabetic care will also be presented, as these topics were SIM third year priorities for the DHHS.

This report does not evaluate every intervention that was tested within Maine SIM. SIM partner organizations[4] provided final progress and outcome reports for those SIM interventions for which they were accountable during August and September 2016 SIM Steering Committee meetings. Partner organization reports may be found on the Maine SIM website[5].

The executive summary is organized to first provide a high level summary of key thematic findings, then adds supporting quality, cost, and patient experience and provider survey results for HHs, ACs, and BHHs in sequence. Because most practices that are aligned to an AC program are also HHs, the report presents results for members in a HH and AC, and HH Only. Results are then shown for members in an AC but who are not included in the HH program[6] and finally for members in a BHH. Only statistically significant findings are reported here, while nonsignificant results can be found in the body of the report. These are followed by results from Special Studies One and Two and a summary of future considerations.

A. Overall Key Findings Summary

The primary findings to emerge from the evaluation are:

- For consumers with multiple chronic conditions engaged in HHs and in both HHs and AC:
    - Quality metrics that relate to care coordination and/or stronger primary care (Non-Emergent ED Use, Fragmented Care Index (FCI), Follow-up after hospitalization for mental illness) improved relative to a control group
    - Large cost avoidance was observed in both interventions when compared to matched control groups
    - This cost avoidance was observed primarily in behavioral health, inpatient (especially related to infections and injuries), and outpatient facility expenditures

[4] Daniel Hanley Center for Health Leadership, HealthInfoNet, Maine Center for Disease Control, Maine Developmental Disabilities Council, Maine Health Management Corporation, Maine Quality Counts
[5] http://www.maine.gov/dhhs/sim/resources/steering-committee.shtml
[6] Most of these members do not meet the chronic condition requirements necessary for participation in HHs, but some of them do not qualify for participation in HHs because they are adults with severe and persistent mental illness (SPMI) or children with serious emotional disturbances (SED) and therefore qualify for BHH.

- Consumers engaged in HHs report that providers did a good job communicating and following up on test results
- Quality metrics and consumer survey data point to opportunities to improve child health

- For consumers engaged in ACs but not included in HHs or BHHs:
  - A consistent pattern of improvement in quality metrics relative to a matched control group was not shown
  - Expenditures were higher than the control group and were driven largely by behavioral health related services
  - Similar to the HH survey, consumers reported that providers did a good job communicating and following up on test results

- For consumers engaged in BHHs:
  - A substantial improvement in quality metrics relative to a matched control group was not demonstrated
  - Costs captured by claims did decrease relative to the control group but were offset by administrative payments to BHHOs for higher than expected net expenditures
  - Consumers reported high scores in cultural sensitivity, participation in treatment planning, and quality of care

B. MaineCare HHs and AC - Key Findings

B.1 – Quality

The Maine SIM project selected ten Core Metrics designed to track improvements in care that could be measured using administrative data. Within HHs, the following quality measures were significantly better than a matched control group.

- **Non-emergent ED use:** HH Only members and HH and AC members experienced a more rapid decrease in non-emergent ED use (↓24.7% and ↓15.8% respectively) compared to their respective control groups (↓14.2% and ↓0.5%)
- **FCI:** HH Only members decreased by 8.3% compared to a 3.4% decrease in the control group
- **Follow-up after hospitalization for a mental health condition:** HH and AC members experienced a 69.3% increase in this measure while the control group was essentially constant with only a 0.5% increase

Within HHs the following quality measures were significantly worse than a matched control group.

- **Access to primary care for children ages 7 – 11:** The HH Only and HH and AC members did not improve in this measure (↑2.0% and ↑0.5% respectively) as much as their respective control groups (↑6.4% and ↑9.2%)
- **Developmental screenings in the first three years of life:** HH Only and AC and HH members did not perform in this measure (↑252% and ↓32.6% respectively) as well as

their respective control groups (↑685 and ↑77.5%). The overall increase within this measure is likely impacted by billing education performed around CPT code 96110 to detail which developmental tests could be billed under this procedure code

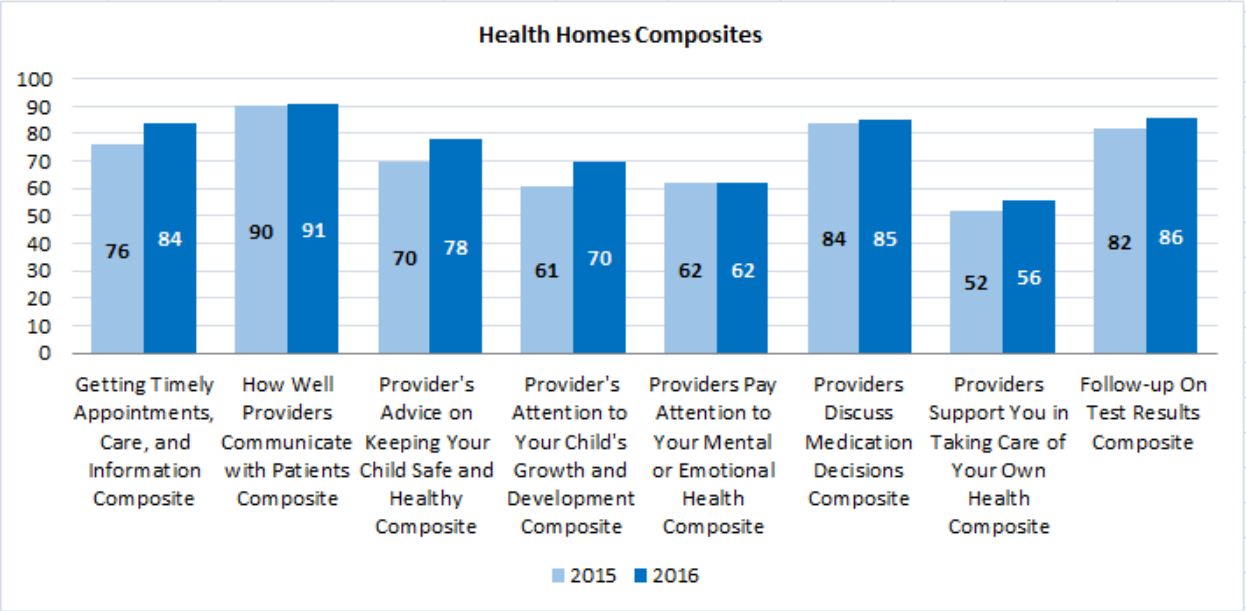
- **Well-child Visits for children ages 3 - 6:** HH and AC members experienced a 4.2% decrease in well-child visits while the members in the control group experienced an 8.4% increase

B.2—Consumer Experience – HH Only Respondents

Consumer experience survey responses were obtained from a total of 1,504 MaineCare members of which responses were attributed to 640 HH members.

In general, there has been a modest increase in most composite measures as well as a statistically significant increase in the "getting timely appointments and care" composite[7] from 2015, indicating a more positive patient experience reported in 2016. **Exhibit 1** provides a comparison of composite measures from 2015 to 2016.

Exhibit 1. MaineCare HH Consumer Experience 2015-2016



B.3—HH Provider Survey

MDR surveyed 75 HH providers using both quantitative close-ended response questions and qualitative open-ended response questions. Ninety-two percent of HH providers rated their HH interventions as very or somewhat effective at improving physical health. The most frequently mentioned changes noted to improve physical health were:

[7] Composite measures combine two or more related survey questions into one indicator of consumer experience. These composites provide a broad measure of the consumer experience with their provider.

- 33% Increased care coordination/care management
- 23% More preventive care (screenings/immunizations) or better follow-ups/referrals
- 18% Added new managers/staffs
- 13% Assessed individual barriers or gaps in patient care
- 12% Implemented new care management model

B.4—Service Utilization and Expenditures

Maine has been working to improve primary care, reduce unnecessary service utilization, and improve health outcomes for several years, starting with a Patient Centered Medical Home (PCMH) project in 2010, which evolved into MaineCare HHs beginning January 2013. ACs began in August of 2014, and allowed flexibility for the participating providers to meet various outcome measures, resulting in possible shared savings.

Exhibit 2 below shows total cost avoidance for the HHs Only and HH and AC groups respectively, as well as the key areas with most robust avoidance. Please refer to **Appendix I** for more information regarding the methodology of this analysis and further detail on cost avoidance.

Exhibit 2. MaineCare HH—PMPM Cost Avoidance by Category

Service Category	HH Only (2012 - 2015)	HH and AC (2013Q3 – 2014Q2 - 2015)
Total	$224	$145
Professional Behavioral Health Services	$74	$51
Inpatient Medical/Surgical	$35	$37
Pharmacy Expenditures	$25	$13
Outpatient Clinic Expenditures	$14	$15
Outpatient Therapy Expenditures	$14	$13

*Average PMPM in the post period was $490 for MaineCare HH Only and $564 for HH and AC group.
*Average PMPM in the post period was $745 the MaineCare HH Only control group and $751 for the HH and AC control group.

Professional behavioral health cost avoidance was driven by a decrease in the number of HH members needing behavioral health services in the engaged populations (↓11% HH and ↓4% HHA and AC) and a substantial increase in these members in the control groups (↑24% and ↑21% respectively). This trend was driven by changes in the number of members using substance abuse treatment (see **Exhibit 3** on the following page) and community support services. The study design follows the same cohort of members over time, so a reduction in the number of members needing these services reflects real improvements in health.

Exhibit 3. MaineCare HH Substance Abuse Treatment[8] Change in Distinct Users

	Pre (2012)	Post (2015)	Change
HH Member	2199	2002	-9%
Control Group	2689	3921	46%

	Pre (2013Q3-2014Q2)	Post (2015)	Change
HH & AC Member	1288	1247	-3%
Control Group	1069	1360	27%

The cost avoidance generated by lower inpatient medical/surgical costs point to HHs providing improved, more efficient care. Of the excess expenditure trend in the HH Only control group, 17.8% was related to septicemia, 8.4% was due to injuries, and 2.4% was for complications of medical care. In the HH and AC control group, 7.7% of the inpatient expenditure growth was for septicemia, 3.0% was from injuries, and 1.9% was due to complications from medical care.

Although some of the injury related inpatient admissions likely could not have been avoided with any amount of care coordination, the prevalence of infections is lower when conditions are detected and treated earlier. [9,10]

Although it is difficult to compare across populations and different Medicaid programs, cost avoidance from MaineCare HHs exceeds many other published estimates. Vermont's Blueprint for Health multi-payer initiative demonstrated an estimated savings of $40 PMPM between 2008 and 2013. North Carolina's PCMH payment reform showed a savings of about $26 PMPM between 2003 and 2012. Pennsylvania's Chronic Care Initiative showed that compared to a non-PCMH baseline in 2008, there was a PMPM savings of about $16 in 2009, $13 in 2010, and $13 in 2011.[11]

C. MaineCare AC Only—Key Findings

C.1—Quality

Non-HH members served by practices in MaineCare ACs differed significantly from the control group on two Core Metrics, providing a mixed picture of child health outcomes.

- **Access to primary care for children ages 7 – 11:** MaineCare AC Only members did better on this measure relative to a control group (↑ 2.9% vs ↑0.5%)

[8] Substance Abuse treatment is a subset of the professional behavioral health category of service and is defined by procedure codes H0005, H2036, H0015, H0020, H2010

[9] Loenen, Tessa et al (2014). Organizational aspects of primary care related to avoidable hospitalization: a systematic review. Family Practice, 30(5): 502-516. Accessed November 17, 2015 from: http://fampra.oxfordjournals.org/content/31/5/502.full.pdf+html.

[10] Gardner, R. et al (2014). Is implementation of the care transitions intervention associated with cost avoidance after hospital discharge? J Gen Intern Med. 29(6): 878-885. Accessed November 17, 2015 from: http://www.ncbi.nlm.nih.gov/pubmed/24590737.

[11] https://www.pcpcc.org/sites/default/files/resources/The%20Patient-Centered%20Medical%20Home%27s%20Impact%20on%20Cost%20and%20Quality%2C%20Annual%20Review%20of%20Evidence%2C%202014-2015.pdf

- **Developmental screenings in the first three years of life:** MaineCare AC members worsened (↓ 3.6%) compared to the control group (↑ 65.7%). The rate of developmental screening was almost double the control group during the beginning of the analysis, but it was still under 40%

C.2—Consumer Experience

Consumer experience survey responses were obtained from a total of 1,504 MaineCare members with 590 of them being members enrolled in an AC but not enrolled for the full evaluation period in a HH. In general, there has been a modest increase in these composite measures from 2015, indicating a more positive patient experience in 2016.

Within the ACs, the highest scoring composite measures in 2016 were:

- How Well Providers Communicate With Patients
- Do Providers Discuss Medication Decisions
- Follow-up on Test Results

The least positive scores were:

- Providers Support You in Taking Care of Your Own Health
- Providers Pay Attention to Your Mental or Emotional Health
- Provider's Attention to Your Child's Growth and Development

C.3—AC Participating Organization Survey

The 2016 SIM Evaluation provides the first opportunity to survey four MaineCare AC participating organizations[12] with respect to their overall AC model design.

Survey results indicate that each AC has unique processes to select and manage targeted interventions to impact successful health outcomes that further translate to possible shared savings. These preliminary findings offer a baseline of information for future analysis of each individual AC (outside the scope of this evaluation). Details are available in **Appendix II**.

C.4—Service Utilization and Expenditures

ACs began in August of 2014, and allowed flexibility for the participating providers to meet various outcome measures and achieve shared savings. Results indicate that:

- AC members who were not HH members had a $31 increase in PMPM costs over a matched control group, generating negative cost avoidance. By comparison AC members who were also HH members had savings of $145 PMPM compared to their control group

[12] Beacon Health, Kennebec Region Health Alliance, MaineHealth Accountable Care Organization, Community Care Partnership of Maine

Exhibit 4 shows total cost growth, as well as the key areas with the largest changes in cost. Please refer to **Appendix I** for more information regarding the methodology of this analysis and further detail on cost growth or avoidance.

Exhibit 4. MaineCare ACs – PMPM Cost Avoidance by Category

Service Category	PMPM Cost Avoidance
Total	-$31
Professional Behavioral Health Services[13]	-$8
Institutional Long Term Care (LTC)[14]	-$9
Pharmacy Expenditures	-$4

*Average PMPM in the MaineCare AC group was $942 in the post period.
*Average PMPM in the MaineCare AC control group was $850 in the post period.

Although the AC Only population was younger and lower acuity than the HH populations, they had higher expenditures. Analysis of these expenditures indicates that they were all driven to a degree by mental health conditions.

- Thirty nine percent of LTC expenditures had a primary diagnosis of mental health
- Twenty seven percent of pharmacy expenditures were for psychotherapeutic drugs
- Professional behavioral health expenditures increased by 5.3% for the AC Only population compared to an increase of 1.1% for controls and a decrease of 6.5% for members enrolled in both ACs and HHs

D. MaineCare BHHs – Key Findings

D.1 – Quality

Only fragmentation of care had a statistically significant difference in trend between the MaineCare BHH population and the control group. This is in part a reflection of the small size of the intervention and control groups, and the relatively shorter length of time this program has been in place as compared to HHs. Key findings include:

The FCI improved in the MaineCare BHH population by (↓6.7%) but at a rate that was slower than the control group (↓ 7.2%). Last year's report findings indicated a similar trend in the control group compared to the BHH population.

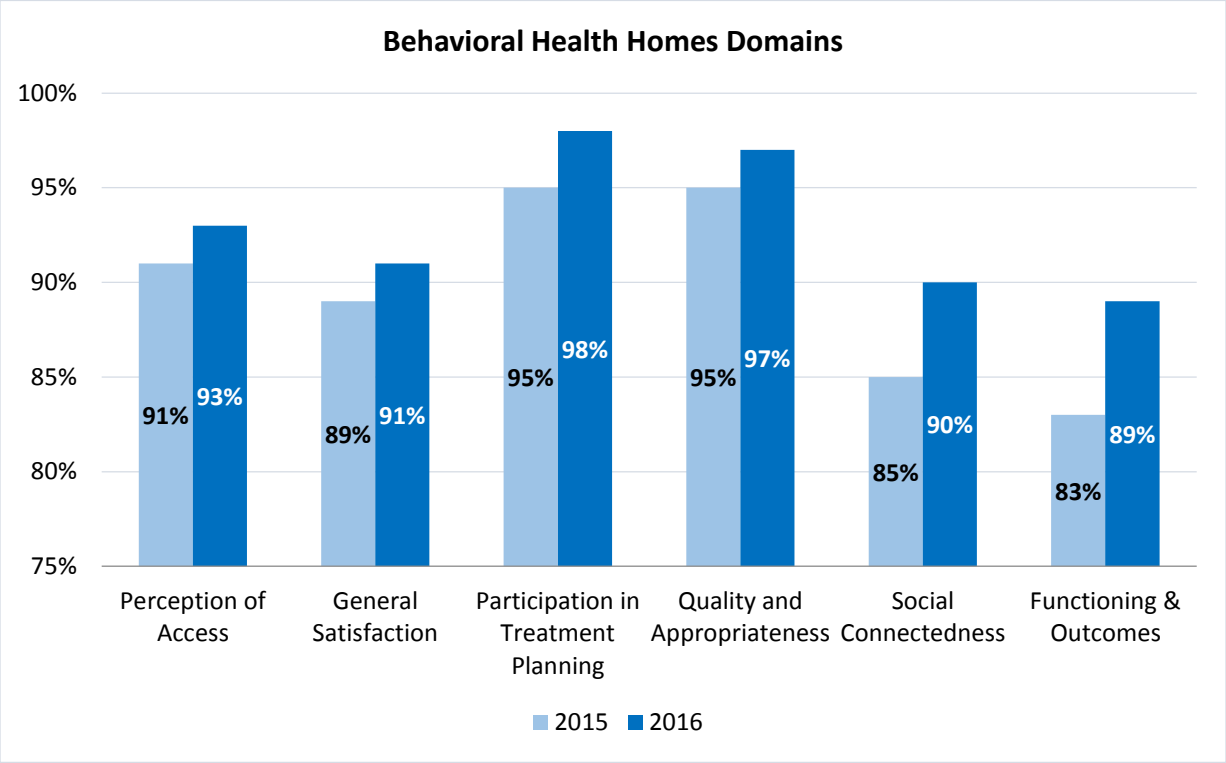
D.2 – Consumer Experience

Consumer experience survey responses were obtained from a total of 1,504 MaineCare members with 274 of those responses from members enrolled in a BHH. BHH survey respondents were attributed to a BHH for a continuous six months at the end of 2015 and still enrolled as of late

[13] Professional behavioral health includes diagnostic evaluation, psychotherapy, drug services, and prescription management in an office setting.
[14] Institutional long term care refers to long term stays in a residential hospital or nursing facility setting.

spring 2016. In general, there has been a modest increase in domain[15] measures from 2015 (although none statistically significant), indicating a more positive patient experience in 2016. **Exhibit 5** that follows provides a comparison of composite measures from 2015 to 2016.

Exhibit 5. MaineCare BHH Consumer Experience 2015-2016



D.3 – Provider Survey

BHH providers were surveyed with both quantitative close-ended response questions and qualitative open-ended response questions. Out of 107 completed surveys, 32 were from BHHs and are summarized below.

> *"I think we have become more in tune to the motivation of people. How to motivate them to care for themselves. – BHH Provider*

93% of BHHs rated their BHH interventions as very or somewhat effective at improving behavioral health.

Most frequently mentioned changes at BHHs to improve behavioral health include:

- 32% Developed wellness groups/peer supports

[15] Similar to composite measures, domains combine two or more related survey questions into one indicator of patient experience.

- 27% Use of HealthInfoNet' s (HIN's) Health Information Exchange (HIE) /MaineCare portal
- 27% Increased care coordination/Team-based approach
- 23% BHH integration at HHs
- 18% Implemented new care management model
- 18% Increased availability of BHH staff

Respondents overwhelmingly indicated that they perceived their efforts as successful. These positive assessments carried over into all the topics addressed in the survey. The largest number of respondents, 45%, cited changes in care including increased care coordination/team-based approach (27%) or implementation of a new care management model (18%). Development of peer supports and wellness groups was also commonly mentioned as a favorable change. BHH respondents also noted a greater participation of patients in their own care.

D.4—Service Utilization and Expenditures

Many health care delivery system improvement initiatives seek to better integrate primary care and behavioral health with the premise that overall and non-behavioral health expenditures will be reduced by better care coordination. Key findings include:

Since their April 2014 implementation, members in BHHs have seen slower growth in claims based expenditures compared with the control group. However this cost avoidance is more than offset by the administrative PMPM paid to both the BHH and the BHHO (~$271 PMPM) for net higher than expected expenditures.

The BHH population eligible for inclusion in this analysis is small (approximately 1,100 individuals), but their health care expenditures are roughly twice that of the average MaineCare member, and their behavioral health expenditures represent approximately 50% of total PMPM expenditures. Results are summarized in **Exhibits 6 and 7** below. Please refer to **Appendix I** for more information regarding the methodology of this analysis and further detail on cost avoidance.

Exhibit 6. MaineCare BHHs – PMPM Cost Avoidance Overall

Service Category	PMPM Cost Avoidance
Total	-$221
Medical[16]	$36
Net Behavioral Health (includes professional behavioral health, professional case management, facility outpatient therapy, and administrative payments to BHHs and BHHOs)	-$118

*Average PMPM in the MaineCare BHH group was $1,306 in the post period.
*Average PMPM in the MaineCare BHH control group was $1,185 in the post period.

[16] Medical cost avoidance are inclusive of behavioral health savings.

Exhibit 7. MaineCare BHHs – PMPM Cost Avoidance by Category

Service Category	Cost Avoidance
Professional Behavioral Health Services[17]	$97
Professional Case Management Expenditures	$21
Outpatient Therapy Expenditures[18]	$35
BHH Administrative Payment	-$271

E. Special Study One: Characteristics of Members That Impact Health Outcomes

Special Studies are qualitative and/or quantitative research projects intended to be designed, conducted, and analyzed in a short time frame.

Special Study One completed on October 2016 analyzed and described which MaineCare HHs, BHHs, and ACs member characteristics are associated with better or worse than expected health outcomes as represented by the SIM Core Metrics.

The analysis showed that the exact same clusters of members underperformed in both FCI and non-emergent ED use, meaning their rates were worse than expected. These clusters had a combination of high cost, high numbers of chronic conditions (i.e. high acuity), and moderate to high substance abuse prevalence members. For these group of members, the care they receive is often not appropriate (high non-emergent ED use) and is spread among multiple providers (high FCI), which increases the potential for poor coordination and redundant care. Therefore, interventions designed to impact the utilization patterns of these members may present significant opportunity for improved outcomes and cost savings. Alternatively, clusters with a combination of low cost and low acuity members performed better than expected in both FCI and non-emergent ED use. These groups of members were generally in better health, and appeared to seek care outside the ED, often with the same provider each time (low FCI). Characteristics of these clusters can be assessed to see what is contributing to the ease of their care coordination.

[17] Professional behavioral health includes diagnostic evaluation, psychotherapy, drug services, and prescription management in an office setting.
[18] Outpatient therapy includes therapies such as respiratory, physical, occupational, and speech.

The analysis also found that diabetes HbA1c testing rates were worse than expected for healthier (i.e. low acuity), young to middle age members identified as diabetic, based on their claims in the previous 24 months. Because regular HbA1c testing is considered an important part of diabetes management, this information provides another opportunity for investigation and intervention. Attention to patient engagement efforts may be particularly important in order to encourage low-acuity diabetics to come in for testing, who have less need to visit their providers because of their relative good health. Higher acuity and higher cost members had better diabetic HbA1c testing rates than expected. These members likely see providers more often for other chronic conditions and receive HbA1c tests during their visit. However, it is not possible to determine the results of the HbA1c tests from claims data, so HbA1c improvement cannot be measured. Additionally, further investigation of detailed clinical data may prove informative to assess whether or not compliance with standard HbA1c testing intervals is in fact reflective of good diabetes management in all cases.

> *"Having our nurse care manager involved has been huge". – BHH Provider*

F. Special Study Two: Early Learnings from "High Performing" BHHs

To further understand the experience of BHHs, SIM/MaineCare leadership requested a deeper exploration of experiences of BHHs that were identified as early innovators or more successful in their initial implementation of the BHH Model. For this research, MDR conducted a series of in-depth interviews with leadership at selected BHHs. A fully detailed report can be found in **Appendix II**.

Respondents reported that the foundation for success of BHHs is not the result of one particular aspect or one activity, but rather a comprehensive set of services applied flexibly so that care is customized for the individual. Noted model attributes supporting this effort are the important roles of Care Coordinator and Peer Support, and connection to and use of the HIN's HIE. Respondents described the BHHs effort as a truly patient-centric approach, engaging patients while providing whatever supports they may need from a very full toolkit.

Their responses expressed how they are working through many aspects of BHH practice changes, including integrating new team members, working with new technology, and being more proactive with clients regarding their physical health. The survey participants expressed both the excitement and enthusiasm of those changes and also some of the growing pains that go along with them. Comments were offered regarding the "fundamental issues" that make caring for the BHH client population particularly challenging. These comments are important reminders to those that seek to change how care is delivered at BHHs.

G. SIM Governance Focus Groups

One of the aims of the Maine SIM was to actively involve stakeholders in developing, planning, and managing health care innovations. Towards that end, SIM established a Steering Committee

and four subcommittees[19] that generally met monthly beginning in October 2013 continuing through the fall of 2016. More than 150 state health care leaders from government, health care delivery, health care associations, consumer protection, and academia were invited to participate in these committees.

Formal focus groups were conducted to understand the effectiveness of the SIM governance structure and processes. A Steering Committee focus group (eight participants) and a separate subcommittee focus group (seven participants) each met in person with a professionally trained moderator to share their thoughts and experiences.

The overall perspective of both groups was an appreciation for the fact that many stakeholders, with different interests and affiliations, were successfully brought together to focus on health care reform. Although some expressed frustration that they operated without decision making authority, committee members thought that bringing together stakeholders was a success. Participants in the committees liked getting to know others interested in health care reform; they appreciated the discussion and debate of issues, and thought that their combined wisdom could be very helpful to Maine leaders as they sort out future options and alternatives. In the end, participants generally expressed a willingness to continue their committee participation.

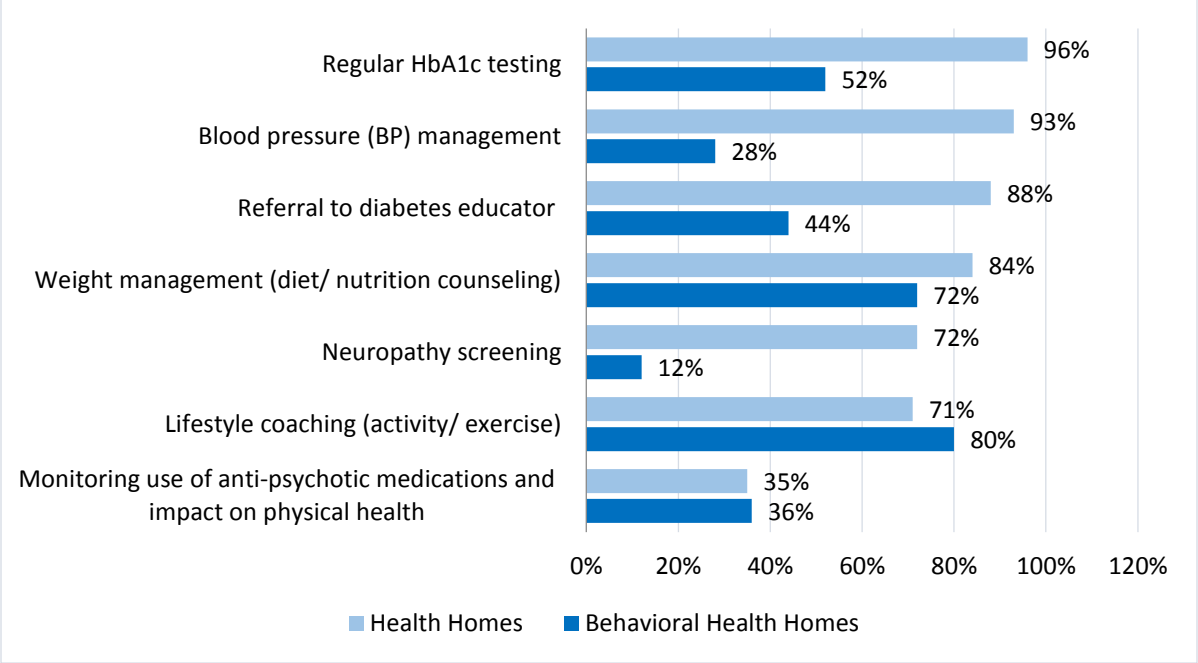
H. Brief Summation of Impact on Diabetes Care and Outcomes

One of the goals of the Maine SIM award is to improve the overall health of Maine's population with efforts targeting prevention and improved management of diabetes. Interventions toward that end included a SIM supported expansion of the National Diabetes Prevention Program (NDPP), Maine Quality Counts Learning Collaborative workshops on best practices for diabetes care and management, and a variety of practice changes in both HHs and BHHs including increased preventive screenings, life style coaching, and patient education.

When surveyed, 98% of HH and 58% of BHH providers indicated that they were somewhat or very effective in addressing diabetes care. BHH providers pointed to obstacles such as staff members' need for more training in diabetes care, lack of access to patient records, and more time needed to build cooperative relationships with primary care providers (PCPs). **Exhibit 8** details survey responses reflecting provider activities to impact diabetes.

[19] Payment Reform, Delivery System Reform, Data Infrastructure, and Evaluation

Exhibit 8. HH and BHH Strategies to Address Diabetes



Overall outcomes for diabetes care were mixed, and additional time is needed to further measure the impact of targeted diabetes interventions on care outcomes. Many providers have noted anecdotally that change is happening over time. Continued support of efforts toward diabetes prevention, improving physical/behavioral health integration, provider education on chronic care management best practices, and use of data to identify those at risk will further impact future diabetes care and outcomes.

I. Future Considerations

The findings presented by Lewin in this report offer an in-depth look at how Maine SIM activities are impacting the health care landscape in the state. Given what has been learned through this study, possible future considerations for Maine health care system refinements may include:

- Further analysis of utilization patterns for groups of members with higher than expected expenditures, especially those related to behavioral health
- A closer look at the underlying reasons for underperformance in child health related quality measures (well-child visits, developmental screenings, and access to primary care)
- Further research to fully understand the drivers that impact diabetes testing i.e. patient compliance / transportation issues or provider practice challenges
- Further focus on improving diabetes screening and prevention efforts
- Continued focus on reducing unnecessary ED use specifically targeting high risk members with multiple complex conditions
- Further focus on use of data to inform decision making to improve the quality of care

- The identification and dissemination of best practices and barriers that were surfaced in evaluation findings, particularly as it relates to behavioral health and physical health integration

Introduction to Maine SIM and the Year 3 Self-evaluation

Over the past decade, Maine has become an incubator for pilots and demonstrations to test health care transformation models including ACOs and MaineCare PCMHs. Maine is one of the six states that received a three-year, statewide health care transformation model test award in 2013 for the SIM Initiative administered by the Center for Medicare and Medicaid Innovation (CMMI). The SIM grant provided Maine with additional funding, resources, and the overarching framework to tie these efforts together in alignment with the goals of the Triple Aim.[20]

This Self-evaluation design explores key research questions that are aligned to the Triple Aim:

Improve Health/Quality

- Did the interventions improve the quality and effectiveness of the care provided?
- Did the interventions lead to improved health, well-being, and functioning of beneficiaries?

Improve Patient Experience of Care

- Did the interventions improve beneficiary experiences of care?

Reduce Costs of Care

- Did the interventions have an impact on service utilization and reduce per member per month costs?

To accomplish Triple Aim goals, the State of Maine contracted with partner organizations throughout the state[21] that had a proven track record for successfully engaging in payment reform, strengthening primary care, integrating physical and behavioral health, developing new workforce models, data analytics and reporting, and consumer engagement (the Maine SIM Pillars). Over the past three years these organizations have implemented a variety of interventions as part of the SIM effort. See **Appendix I** for details of the SIM interventions and the organizations accountable for each intervention.

In her remarks at a March 2015 state-wide meeting, Maine's DHHS Commissioner Mary Mayhew called for primary care payment reform acceleration driven by SIM activities toward "Bold, Decisive Change", noting that primary care receives significantly less than 10% of all health care spend, but influences more than 80% of total spend.[22]

In the third year of the SIM Model implementation (October 2015-September 2016), Commissioner Mayhew directed Maine SIM partner organizations, providers, and other stakeholders to further target improvements to primary care, reduce 30-day all-cause hospital re-

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[20] The Triple Aim is a framework developed by the Institute for Healthcare Improvement (IHI) that describes an approach to optimizing health system performance by 1) Improving the patient experience of care (including quality and satisfaction); 2) Improving the health of populations; and 3) Reducing the per capita cost of health care. Adapted from the IHI website: http://www.ihi.org/Engage/Initiatives/TripleAim/Pages/default.aspx.

[21] Daniel Hanley Center for Health Leadership, HealthInfoNet, Maine Center for Disease Control, Maine Developmental Disabilities Council, Maine Health Management Corporation, Maine Quality Counts

[22] http://www.maine.gov/dhhs/sim/documents/SIM%20docs/meeting%20materials/2015%20Annual%20Meeting/SIM%20Annual%20Meeting%20Commissioner%20Mayhew%20Slide%20Deck.pptx

admissions, and intensify the focus on population health activities to prevent diabetes or improve the health outcomes for individuals with diabetes.

CMMI required all SIM round one state model test recipients to perform SIM data collection, reporting, and Self-evaluation functions related to their SIM initiatives. Lewin has been engaged by DHHS since July 2014 to conduct a mixed methods evaluation of the Implementation, Cost Effectiveness, and overall Impact of SIM interventions.

This report following the completion of the third year of the SIM model implementation reviews data collected by Lewin related to select SIM activities occurring between October 2013 and September 2016. The evaluation includes qualitative and quantitative findings from the analysis for three top priority health care delivery system improvement efforts in Maine: HHs, BHHs, and ACs. This report also includes a Special Study that identifies patient characteristics that impact health outcomes, a Special Study of "high-performing" BHHs, and a qualitative analysis of the SIM governance structure and processes. Progress of SIM intervention impact on diabetes care will also be presented since this is a priority area for the Maine DHHS.

This report does not evaluate every intervention that was tested within Maine SIM. SIM partner organizations provided final progress and outcome reports for those SIM interventions for which they were accountable during August and September 2016 SIM Steering Committee meetings. Partner organization reports may be found on the Maine SIM website[23].

[23] http://www.maine.gov/dhhs/sim/resources/steering-committee.shtml

Methodology

To reach the conclusions presented in this report, Lewin applied a Difference-in-Difference method, which is a robust quasi-experimental design that uses a matched control group of members[24] with similar characteristics to assess what would have happened in the absence of the intervention. This approach controls for many confounding factors like member characteristics, changes in MaineCare policy, and other external factors, as these factors occur in both the intervention and control groups. The analysis also only includes members identified as being in the intervention for at least six months in 2015, which ensures adequate exposure to the intervention and is common practice in many health related analyses. The length of time a member was enrolled in an AC was not available, so the AC intervention group included members identified as belonging to an AC and enrolled in MaineCare for at least six months in 2015. Please see page 15 of the Claims Data Analysis Methodology section of **Appendix I** for more information regarding the Difference-in-Difference method.

The methodology has several advantages that allow the evaluator to definitively test whether the model implementation has led to changes in utilization patterns. The case matching process selected a comparison group of MaineCare members that were largely similar except for AC, HH, or BHH participation. The control group was selected based on propensity score matching. Lewin ran multiple iterations of the case matching process using different combinations of factors in the propensity scores, and evaluated the similarity of the groups in the baseline period in each iteration. See page 16 of the Claims Data Analysis Methodology section in **Appendix I** for more detail about the case matching methodology.

Expenditures across Lewin's 46 categories of service[25] were also evaluated in the baseline period for both groups (see page 17 of the Claims Data Analysis Methodology section of **Appendix I** for detail). Baseline expenditures were mostly similar, whether compared on a PMPM basis or on a percentage basis. Similar baseline expenditures indicate that the case matching process selected a clinically similar control group and not just one that was similar in total cost, which helps to avoid many common pitfalls in quasi-experimental design. For example, it reduces the likelihood that changes in cost over time are simply due to other factors (e.g., inflation), since both groups would experience the same influences. In addition, because both groups experience the same set of external factors, there is no need to explicitly estimate parameters like changes in benefit design, fee schedules, or other concurrent events.

[24] The terms "member", "consumer", and "patient" are used interchangeably throughout this document to denote recipients of MaineCare services.

[25] Lewin has developed customized category of service logic as a way to classify cost and utilization data through our work with clients around the country and in consultation with internal experts.

Findings

I. MaineCare HHs and ACs

HHs play an integral role in the overarching SIM goals and objectives, as HHs serve individuals with multiple chronic conditions. This initiative does not fall under the strategic pillars, but factors into overarching SIM goals and objectives. In order to describe the anticipated impact of this intervention, MaineCare has developed the following hypothesis:

"If MaineCare members with multiple chronic conditions have access to enhanced primary care and care management services when needed, then they will have improved outcomes, a better service experience, and reductions in cost."

The HHs were first implemented in January 2013. The pre- intervention period for this analysis is calendar year 2012 Quarter 1 (Q1) to 2012 Quarter 4 (Q4), and the post intervention period is calendar year 2015 Q1 to 2015 Q4. Last year's report measured the changes in utilization and quality of care immediately following the implementation of the intervention in January 2013. This year's report looks to see if these changes were sustainable over time.

MaineCare's AC program, which began in August 2014 and offers a shared savings opportunity, was built off of the HH program. Specifically, nearly all of the primary care practices that participate in ACs are HHs; however roughly half of the AC members at those practices are not HH members (i.e., they are not attributed to the HH program, but they are still patients at HH practices). This section analyzes members who were attributed to HHs and ACs along with HHs only. These two populations had similar cost and quality findings, leading them to be presented side by side, although the length of time between the pre-intervention and intervention periods differed. The members who were in ACs but not attributed to HHs experienced different cost and quality findings, and are in the next section of the report.

To best isolate the impact of each SIM intervention, this section provides separate results for members who were in HHs Only and for those in HHs and ACs. The pre-intervention period for those in HHs and ACs for this analysis is calendar year 2013 Quarter 3 (Q3) to 2014 Quarter 2 (Q2) prior to the implementation of ACs, with a post intervention period of calendar year 2015 Q1 to 2015 Q4. For this report, Lewin has used claims data and consumer, provider, and stakeholder interviews to assess the initiative's impact to date. It is important to note that we only included members for HHs **not** served by Community Care Teams (CCTs)[26].

To assist in understanding the population enrolled in MaineCare HHs, **Exhibits 9** and **10** on the following page depict select demographic, risk, and diagnostic information. The retrospective risk scores, comorbid conditions, and diagnostic categories are derived from the Episode Risk Grouper (ERG) software in the Optum Symmetry Suite[27]. The similarity in the intervention and

[26] Community Care Teams provide care coordination activities for individuals determined to be in the top 5% at risk for increased service utilization.

[27] More information about Optum Symmetry Suite is available here: https://www.optum.com/providers/analytics/health-plan-analytics/symmetry/symmetry-episode-risk-groups.html

control characteristics in the pre period is a reflection of efforts to match the two groups. In the post period, the number of comorbid conditions, prevalence of mental health or substance abuse (MH/SA), and prevalence of Post-Traumatic Stress Disorder (PTSD) increased at a significantly faster rate in the control group than in the study group (p-value < 0.001).

Exhibit 9. MaineCare HH Only – Group Characteristics

	Members		Average Risk		Average Age		Percent Male		Average Comorbid Conditions		Percent Diabetic		Percent with MH/SA		Percent with PTSD	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post
HH Only Member	35,199	35,199	2.4	2.5	34.4	37.4	38.6%	38.6%	2.9	3.0	11.9%	13.7%	34.7%	36.7%	6.3%	6.1%
Control Group	35,199	35,199	2.4	3.1	34.2	37.2	38.1%	38.1%	2.9	3.5	11.9%	13.1%	34.7%	42.6%	7.6%	11.2%

Exhibit 10. MaineCare HH & AC – Group Characteristics

	Members		Average Risk		Average Age		Percent Male		Average Comorbid Conditions		Percent Diabetic		Percent with MH/ SA		Percent with PTSD	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post
HH & AC Member	12,973	12,973	2.5	2.5	32.6	34.1	40.7%	40.7%	2.8	2.8	10.8%	11.6%	36.6%	37.2%	9.3%	8.8%
Control Group	12,973	12,973	2.6	3.1	32.3	33.8	40.9%	40.9%	2.9	3.4	11.2%	11.5%	37.4%	42.3%	8.8%	10.6%

I.I – Cost Effectiveness Findings

MaineCare members participating for at least six months in HHs Only exhibited a 23.6% increase in costs after engagement in HHs compared to the pre-engagement period. By comparison, expenditures for a control group of similar but not engaged members increased 80.0% during the same period of time. If expenditures for HH Only members increased at the same rate as the control group, expected costs for this population would have been approximately $715 PMPM, or $224 PMPM higher than they actually were ($490 PMPM). The table below (**Exhibit 11**) summarizes the change in total cost avoidance for members enrolled in HHs.

Exhibit 11. MaineCare HH Only- Total PMPM Cost Avoidance Estimate

	Pre (2012)	Post (2015)	Change	Expected PMPM	Cost Avoidance
HH Only Member	$397	$490	23.6%	$715	$224
Control Group	$414	$745	80.0%	N/A*	N/A

*N/A = Not applicable

MaineCare members participating in both HHs and ACs also experienced slower cost growth (up 8.9%) than similar controls (up 36.8%) as noted in **Exhibit 12** on the following page. If expenditures in the intervention group increased at the same rate as the controls, expected cost for this population would have been $708 PMPM. Instead, the observed PMPM in 2015 was

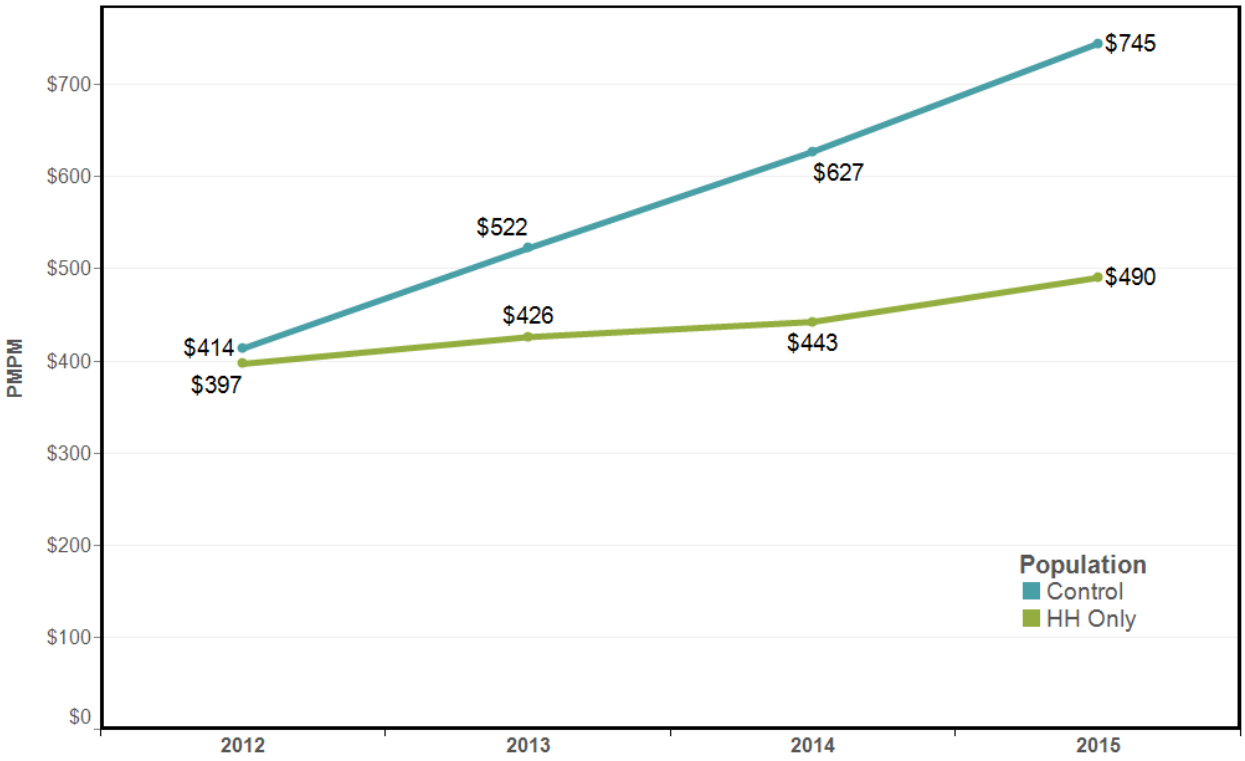
$564, which avoided $145 PMPM of cost. Baseline expenditures for this population were notably higher than those in HHs Only.

Exhibit 12. MaineCare HH & AC - Total PMPM Cost Avoidance Estimate

	Pre (2013Q3 – 2014Q2)	Post (2015)	Change	Expected PMPM	Cost Avoidance
HH & AC Member	$518	$564	8.9%	$708	$145
Control Group	$549	$751	36.8%	N/A	N/A

Due to the length of time that the HHs have been serving MaineCare members, we can track the PMPM spending year over year from the pre period of 2012 through the most recent calendar year of 2015. **Exhibit 13** shows how the spending trend for the control group has steadily increased over time at a much faster rate than in the intervention group. These PMPM costs reflect payments made on claims in addition to administrative payments made to HHs outside of the claims system. The total PMPM expenditures during the pre or baseline period were similar for both HH members and the control group (HHs Only: $397 vs $414, or only 4% higher in the control group; HHs and ACs: $518 vs $549, or only 6% higher in the controls). While this matching process can yield similar intervention and controls, a "perfect" match is not possible as HH members by definition tend to have more chronic conditions than most MaineCare enrollees.

Exhibit 13. MaineCare HH – Total Cost Trend



The change in total expenditures were driven by medical expenditures that did not increase as quickly as the control group, as shown in **Exhibit 14** and **Exhibit 15** below for both study groups. Pharmacy expenditures increased for both HH Only and control members; however, expenditures for MaineCare HH members increased less rapidly than for the control group (up 37.5% vs 69.1%). A similar trend can be seen among the HH and AC members, where pharmacy expenditures for HH and AC members increased less rapidly than for its control group (up 35.3% vs 50.5%). While medical expenditures rose in the HH Only group, the control group experienced a much more rapid increase in expenditures. Baseline medical expenditures were 5% higher in the control group ($333 vs $319 PMPM), rose much more rapidly over time, and three years later were 63% higher than members participating in MaineCare HHs Only ($609 vs $375 PMPM). Similarly, baseline medical expenditures were 6% higher in the control group ($457 vs $432), and rose to 39% higher than members participating in HHs and ACs ($613 vs $440).

Exhibit 14. MaineCare HH Only - Medical PMPM Cost Avoidance Estimate

	Pre (2012)	Post (2015)	Change	Expected PMPM	Cost Avoidance
HH Only Member	$319	$375	17.6%	$582	$207
Control Group	$333	$609	82.7%	N/A	N/A

Exhibit 15. MaineCare HH & AC - Medical PMPM Cost Avoidance Estimate

	Pre (2013Q3 – 2014Q2)	Post (2015)	Change	Expected PMPM	Cost Avoidance
HH & AC Member	$432	$440	1.9%	$579	$139
Control Group	$457	$613	34.0%	N/A	N/A

Within medical spending, **Exhibits 16** and **17** on the following pages show the top categories that explain most of the cost avoidance for both study groups. HH Only and HH and AC groups experienced cost avoidance in the same key areas of inpatient medical/surgical, outpatient therapy expenditures, and outpatient clinic expenditures.

Exhibit 16. MaineCare HH Only – Cost Avoidance by Category

Service	Cost Avoidance
Professional Behavioral Health Services[28]	$74
Inpatient Medical/Surgical	$35
Professional Case Management	$17
Outpatient Therapy Expenditures[29]	$14
Outpatient Clinic Expenditures[30]	$14

Exhibit 17. MaineCare HH & AC – Cost Avoidance by Category

Service	Cost Avoidance
Professional Behavioral Health Services[28]	$51
Inpatient Medical/Surgical	$37
Outpatient Clinic Expenditures[30]	$15
Outpatient Therapy Expenditures[29]	$13

Exhibits 18 and **19** on subsequent pages show the percent of total cost avoidance these top categories represent. In both groups, professional behavioral health was the largest area of cost avoidance, followed by inpatient expenditures. The "Other" groups below include all other categories of service not specified in the chart, such as case management and home and community based services. A full breakdown of cost avoidance by all categories of service is included in the Claims Data Analysis Methodology section of **Appendix I** beginning on page 29.

[28] Professional behavioral health includes diagnostic evaluation, psychotherapy, drug services, and prescription management in an office setting.
[29] Outpatient therapy includes therapies such as respiratory, physical, occupational, and speech.
[30] Facility outpatient clinics refer to hospital-based outpatient clinics that provide services, such as urgent care, preventive medicine, dialysis, and cardiology.

Exhibit 18. MaineCare HH Only – Cost Avoidance by Category Representation

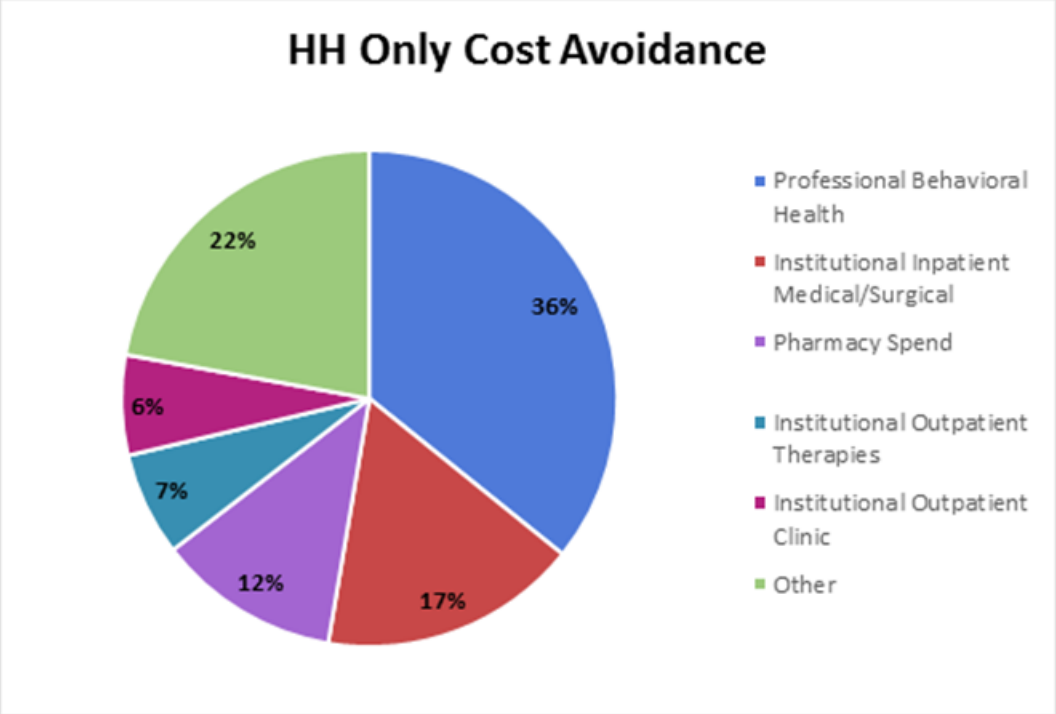
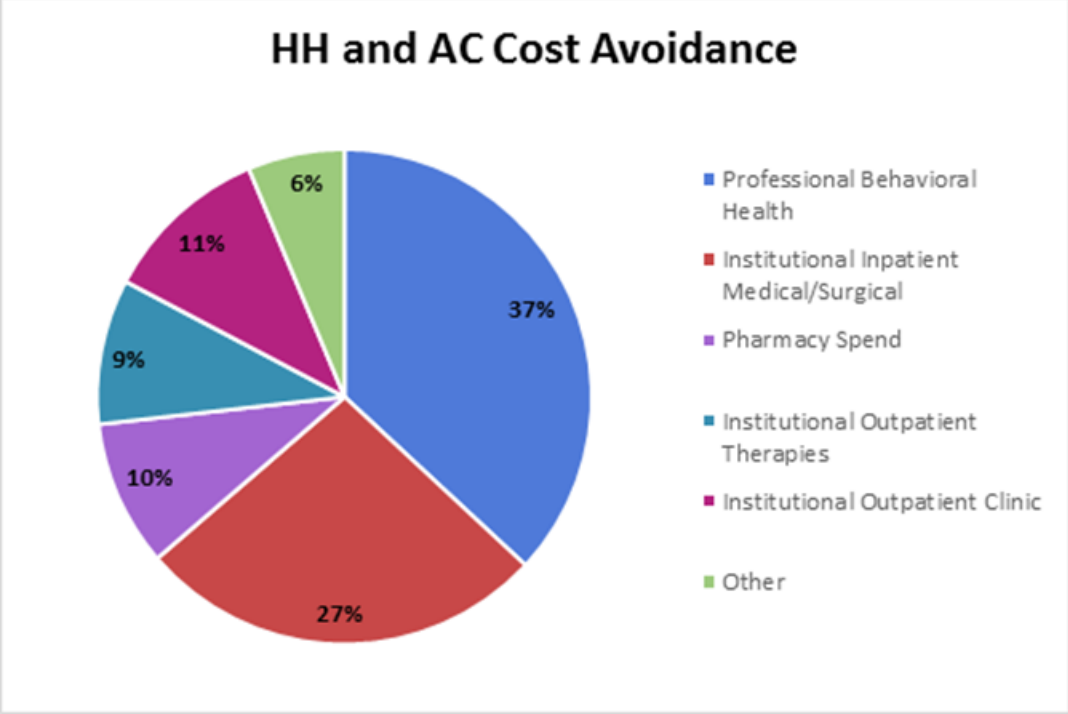


Exhibit 19. MaineCare HH & AC – Cost Avoidance by Category Representation



The largest driver of cost avoidance in HHs was lower behavioral health expenditures. In both HH study groups, costs decreased over time. By comparison, costs in the control groups nearly doubled (see **Exhibits 20** and **21** below).

Exhibit 20. MaineCare HH Only – Professional Behavioral Health PMPM Cost Avoidance Estimate

	Pre (2012)	Post (2015)	Change	Expected PMPM	Cost Avoidance
HH Only Member	$50	$44	-12.0%	$118	$74
Control Group	$58	$138	137.0%	N/A	N/A

Exhibit 21. MaineCare HH & AC – Professional Behavioral Health PMPM Cost Avoidance Estimate

	Pre (2013Q3 – 2014Q2)	Post (2015)	Change	Expected PMPM	Cost Avoidance
HH & AC Member	$50	$47	-6.5%	$98	$51
Control Group	$54	$105	94.1%	N/A	N/A

Higher behavioral health expenditures in the control groups were driven by more use of community support services, behavioral health therapy, and alcohol/drug therapy. Please see **Appendix I** for more details.

The small decreases in the number of substance abuse treatment users between the pre and post periods compared to the large increase in the control groups suggests that HHs have helped to avoid the development of these conditions in the engaged populations.

The decline in the number of members requiring community support services in the engaged populations compared to the rapid growth in the control groups suggests that HHs were able to prevent the decline of skills needed to function independently in the community.

The second largest driver of cost avoidance in HHs was lower inpatient medical/surgical expenditures, as shown in **Exhibits 22** and **23**. The baseline expenditures are only 3% lower in the control group, but rise sharply in the post period. The HH Only group experienced a smaller increase in expenditures (10.1%), while the control group rose by 89.5%, leading to a sizable reduction over the expected PMPM. The HH and AC group experienced a small decrease in expenditures (-2.0%), while the control group rose by 54.6%.

Exhibit 22. MaineCare HH Only – Inpatient Medical/Surgical PMPM Cost Avoidance Estimate

	Pre (2012)	Post (2015)	Change	Expected PMPM	Cost Avoidance
HH Only Member	$44	$49	10.1%	$84	$35
Control Group	$43	$ 81	89.5%	N/A	N/A

Exhibit 23. MaineCare HH & AC – Inpatient Medical/Surgical PMPM Cost Avoidance Estimate

	Pre (2013Q3 – 2014Q2)	Post (2015)	Change	Expected PMPM	Cost Avoidance
HH & AC Member	$65	$63	-2.0%	$100	$37
Control Group	$64	$100	54.6%	N/A	N/A

Inpatient expenditures in the HH control group were higher in nearly all diagnosis categories, but approximately half of the increase was driven by the seven diagnosis categories shown in **Exhibit 24**.

Exhibit 24. MaineCare HH Control Group – Percentage of Inpatient Medical/Surgical Cost Growth

Agency for Healthcare Research and Quality (AHRQ) CCS Diagnosis Category[31]	Percent of Inpatient Cost Growth Control	PMPM Pre (2012) Control	PMPM Post (2015) Control	PMPM Pre (2012) HH	PMPM Post (2015) HH
Septicemia	17.8%	$0.93	$7.02	$1.52	$3.54
Peri- endo- and myocarditis	8.8%	$0.32	$3.32	$0.20	$0.24
Fracture of lower limb	3.8%	$0.51	$1.82	$0.55	$0.93
Crushing injury or internal injury	2.6%	$0.41	$1.28	$0.16	$0.27
Complication of device implant	2.4%	$1.09	$1.91	$2.41	$2.07
Intracranial injury	2.0%	$0.94	$1.61	$0.27	$0.50
Biliary tract disease	1.9%	$0.62	$1.28	$0.88	$0.88

Examination of the septicemia claims showed that some of these admissions were caused by Methicillin Resistant Staphylococcus Aureus (MRSA) and other staph infections which are often acquired in a hospital-setting. E-codes on injury related claims showed that some were caused by accidents, which are typically unpredictable events. To ensure that cost avoidance relative to the control group was not driven by a small number of outliers or random events, two additional analyses were performed. First, total cost avoidance relative to controls using the same cohorts was essentially the same in this year's findings as in last year's, indicating that the avoidance of costs were not explained by infrequent or random events. Infections and injuries were also the drivers in the cost increase among the control population in last year's report findings. Second, examination of expenditure percentiles showed that the entire control group cost distribution increased and higher total costs were not driven by a small number of outliers.

Looking at the HH and AC group in **Exhibit 25** on the next page, we see similar drivers of cost.

[31] Please see https://www.hcup-us.ahrq.gov/toolssoftware/ccs/ccs.jsp for more information about how these diagnosis categories are determined. Link above also includes an extensive list of other publications that have used this taxonomy.

Exhibit 25. MaineCare HH & AC Control Group – Percentage of Inpatient Medical/Surgical Cost Growth

AHRQ CCS Diagnosis Category	Percent of Inpatient Cost Growth Control	PMPM Pre (2013Q3-2014Q2) Control	PMPM Post (2015) Control	PMPM Pre (2013Q3-2014Q2)	PMPM Post (2015)
Septicemia	7.7%	$2.17	$9.32	$3.12	$6.27
Cardiac and circulatory anomaly, congenital	4.1%	$2.80	$6.57	$0.50	$1.72
Respiratory failure from insufficiency	2.4%	$0.37	$2.61	$0.46	$0.29
Heart valve disorders	2.3%	$0.31	$2.43	$0.02	$0.53
Intracranial injury	2.1%	$0.37	$2.27	$2.74	$0.38
Fracture of lower limb	0.9%	$0.64	$1.50	$0.35	$0.39
Complications of surgical procedure	1.9%	$0.62	$1.28	$0.88	$0.88

Similar to the control group for HHs Only, septicemia was a major driver of costs in the control group for HHs and ACs. Additionally, injury claims such as intracranial injury, lower limb fracture, and surgical complications were drivers of cost in the HH and AC group.

Thirty-day Hospital Readmissions increased by 74% in the HH Only population, while the rate for the control group increased at a higher rate by 87.9%, as shown in **Exhibit 26**, although the difference in trends was not statistically significant (p-value > 0.05). The expected post readmission rate would be 14.8%, indicating the readmissions were 1.1% lower than expected. Higher readmissions can lead to higher inpatient costs, so the cost avoided by the inpatient medical/surgical expenditures is in line with the lower than expected readmission rate. Alternatively, the HH and AC group remained fairly constant over time, while the readmission rate for the respective control group rose by 40.2% in **Exhibit 27**.

Exhibit 26. MaineCare HH Only – Readmission Change

	Pre (2012)	Post (2015)	Change
HH Only Member	7.9%	13.7%	74.0%
Control Group	7.1%	13.3%	87.9%

Exhibit 27. MaineCare HH & AC – Readmission Change

	Pre (2013Q3 – 2014Q2)	Post (2015)	Change
HH & AC Member	11.5%	11.5%	-0.2%
Control Group	10.8%	15.1%	40.2%

To assist in understanding the HH members who were readmitted to a hospital, **Exhibits 28** and **29** on the next page show some demographic, risk, and diagnostic information, similar to

Exhibits 9 and **10** above. It is important to note that the members who were readmitted are a subset of the populations of interest. The average age increased over ten years (54.7 vs 65.1) between the pre and post time periods, indicating that readmissions are not increasing as quickly among younger HH members.

Exhibit 28. MaineCare HH Only – Readmission Group Characteristics

	Members		Average Risk		Average Age		Percent Male		Average Comorbid Conditions		Percent Diabetic		Percent with MH/SA		Percent with PTSD	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post
HH Only Member	111	252	13.0	15.0	54.7	65.1	32.4%	37.7%	7.8	8.1	36.0%	40.9%	59.5%	52.4%	6.3%	7.1%
Control Group	89	296	12.3	14.7	56.0	58.5	42.7%	38.9%	7.1	7.9	27.0%	43.6%	62.9%	57.1%	15.7%	17.9%

Exhibit 29. MaineCare HH & AC – Readmission Group Characteristics

	Members		Average Risk		Average Age		Percent Male		Average Comorbid Conditions		Percent Diabetic		Percent with MH/SA		Percent with PTSD	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post
HH & AC Member	66	75	15.3	15.9	59.3	59.8	45.5%	37.3%	8.3	8.7	28.8%	33.3%	59.1%	65.3%	16.7%	17.3%
Control Group	66	118	15.5	15.9	53.2	54.6	45.5%	44.1%	8.1	8.1	37.9%	47.5%	66.7%	61.0%	15.2%	20.3%

Additional avoidances of cost were also explained by lower than expected growth in outpatient facility clinic expenditures (see **Exhibits 30** and **31**). Outpatient facility clinic expenditures for HH Only members increased by 34.9% over time, but expenditures in the comparison group increased by over 80% during the same time period. Outpatient facility expenditures for members in both HHs and ACs increased by only 1.4% between the pre and post time periods. By comparison, costs for the control group rose 25% during the same time. Outpatient facility clinics refer to hospital-based outpatient clinics that provide services such as urgent care, preventive medicine, dialysis, and cardiology.

Exhibit 30. MaineCare HH Only– Facility Outpatient Clinic PMPM Cost Avoidance Estimate

	Pre (2012)	Post (2015)	Change	Expected PMPM	Cost Avoidance
HH Only Member	$30	$40	34.9%	$54	$14
Control Group	$25	$45	80.6%	N/A	N/A

Exhibit 31. MaineCare HH & AC – Facility Outpatient Clinic PMPM Cost Avoidance Estimate

	Pre (2013Q3 – 2014Q2)	Post (2015)	Change	Expected PMPM	Cost Avoidance
HH & AC Member	$63	$64	1.4%	$79	$15
Control Group	$38	$47	25.3%	N/A	N/A

Non-Emergent ED Use decreased in both the HH Only population and the control group, but the HH members significantly decreased at a faster rate of 24.7% (p-value = 0.002). See **Exhibit 32**. **Exhibit 33** shows a 15.8% decrease in the HH and AC population, while the control group stayed fairly constant (p-value=0.008).

Exhibit 32. MaineCare HH Only – Non-Emergent ED Use

	Pre (2012)	Post (2015)	Change
HH Only Member	173.9	131.0	-24.7%
Control Group	196.0	168.2	-14.2%

Exhibit 33. MaineCare HH & AC – Non-Emergent ED Use

	Pre (2013Q3 – 2014Q2)	Post (2015)	Change
HH & AC Member	126.2	106.3	-15.8%
Control Group	180.1	179.1	-0.5%

To assist in understanding the HH members who experienced non-emergent ED use, **Exhibits 34** and **35** show some demographic, risk, and diagnostic information, similar to **Exhibits 9** and **10** above. The comparison between these sets of exhibits indicates that members who experienced non-emergent ED use tended to have higher risk scores, number of comorbid conditions, MH/SA prevalence, and PTSD prevalence than all members within each intervention, respectively.

Exhibit 34. MaineCare HH Only – Non-Emergent ED Use Group Characteristics

	Members		Average Risk		Average Age		Percent Male		Average Comorbid Conditions		Percent Diabetic		Percent with MH/SA		Percent with PTSD	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post
HH Only Member	4,489	3,535	3.1	3.5	30.4	35.7	35.4%	32.8%	3.3	3.7	11.3%	13.7%	41.3%	43.8%	7.9%	8.6%
Control Group	4,807	4,327	3.0	3.7	29.1	33.3	35.2%	35.1%	3.2	4.0	10.2%	11.5%	41.3%	49.6%	10.6%	14.0%

Exhibit 35. MaineCare HH & AC – Non-Emergent ED Use Group Characteristics

	Members		Average Risk		Average Age		Percent Male		Average Comorbid Conditions		Percent Diabetic		Percent with MH/SA		Percent with PTSD	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post
HH & AC Member	1,223	1,071	3.7	3.8	32.8	33.3	37.5%	33.5%	3.7	3.7	12.7%	13.7%	47.6%	45.9%	12.8%	13.5%
Control Group	1,614	1,663	3.8	3.7	29.8	30.0	37.3%	39.5%	3.7	3.9	11.8%	11.1%	46.8%	47.0%	13.3%	12.3%

I.II – Impact Findings from Claims Analysis

The pre-intervention period for the HH Only analysis spanned January 2012 through December 2012, prior to HH implementation. The pre-intervention period for the HH and AC analysis spanned July 2013 through June 2014, prior to the start of ACs. The post-engagement period spans January 2015 through December 2015 for both analyses. These are the same pre and post periods used in the cost effectiveness evaluation described above. For each measure, we tested if the change from the pre period to the post period was significantly different at a $p < 0.05$ level between the intervention and control groups.

To assess if the model leads to improvements in care coordination and less fragmentation of care, we evaluated changes in non-emergent ED use, FCI, and readmission rates relative to the control group.

Measurement of the FCI provides insight into the number of providers engaged in a member's care. The FCI ranges from zero to one for each member, where lower scores represent less fragmented care. When members see multiple providers for their care, these providers may not consistently communicate and coordinate with each other regarding the overall management approach for a member's health. Limited care coordination may result in an increase in cost when more visits occur; it may also lead to a decrease in the quality of care if one provider is not aware of the decisions other providers have made regarding a member's needs. The goal is to see a decrease in fragmentation of care.

The median FCI decreased for HH Only members after engagement in HHs. By comparison, the median FCI also decreased over time for the control group, but at a slower rate, indicating greater improvement among the HH Only members. Both HH Only members and the control group decreased at a faster rate than overall MaineCare, which also saw a reduction over time. This difference in trends between HH Only members and control group was statistically significant (p-value < 0.001). The 2015 Maine SIM Self Evaluation Annual Report saw a similar statistically significant difference in trends for the HH population, where last year's HH Only group stayed constant while the control group became more fragmented. HH and AC members and the respective control group experienced a slight decrease in FCI (-1.4% vs -1.2%), which was not statistically significant (p-value > 0.05). See **Exhibits 36** and **37**.

Exhibit 36. MaineCare HH Only - Median FCI

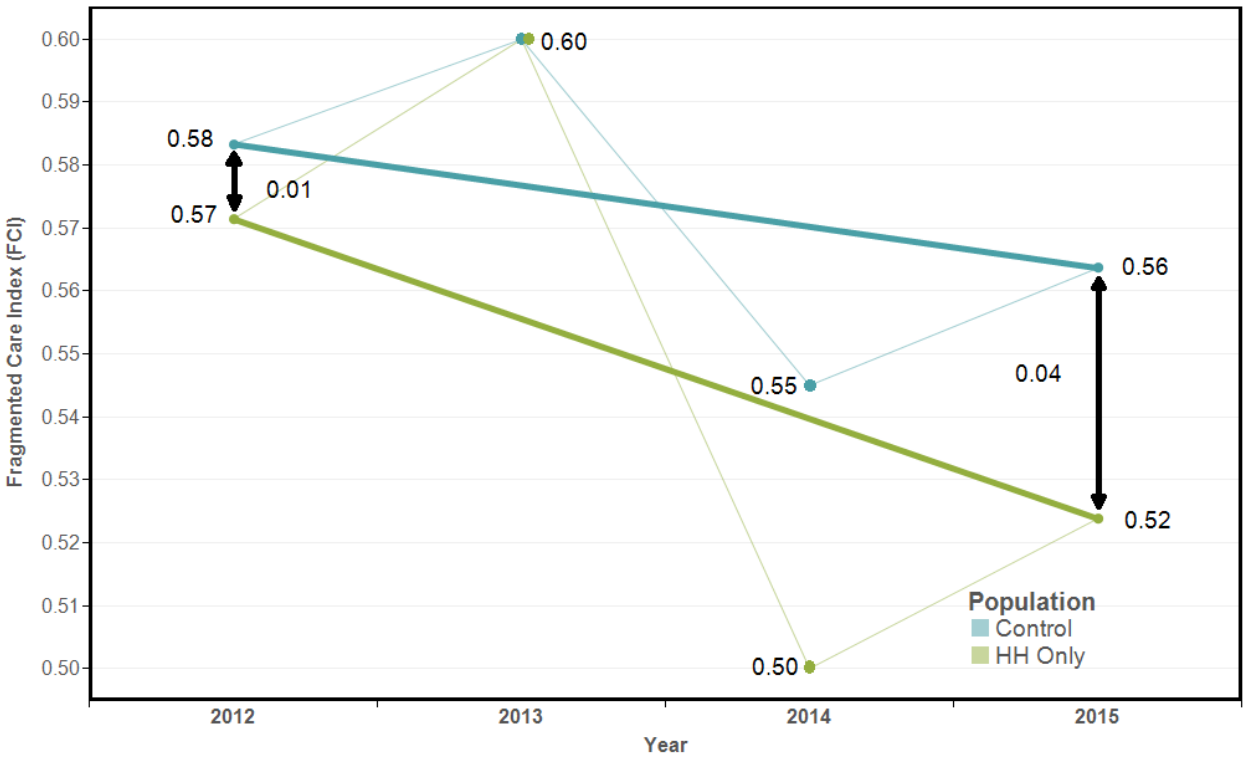
Group	Pre (2012)	Pre Denominator	Post (2015)	Post Denominator	Change
HH Only Member	0.57	25,496	0.52	22,666	-8.3%
Control Group	0.58	23,424	0.56	24,130	-3.4%
Overall MaineCare	0.61	191,755	0.60	149,295	-1.2%

Exhibit 37. MaineCare HH & AC - Median FCI

Group	Pre (2013Q3 – 2014Q2)	Pre Denominator	Post (2015)	Post Denominator	Change
HH & AC Member	0.67	9,385	0.66	8,547	-1.4%
Control Group	0.61	8,473	0.60	8,940	-1.2%
Overall MaineCare	0.61	169,530	0.60	149,295	-1.2%

Exhibit 38 below shows the trend of the HH Only group and its respective control group. The large decrease from 2013 to 2014 helps offset the small increases in 2013 and 2015.

Exhibit 38. MaineCare HH Only – Median FCI Trend



Non-emergent ED use is also a marker of poor care coordination because it measures ED visits that are better handled in primary care settings. The rate of non-emergent ED visits among HH

Only members significantly decreased over time at a rate far exceeding the control group (p-value < 0.001), which was the goal of this metric. MaineCare HH Only members had lower rates of non-emergent ED use than the control group both before and after engagement. The overall MaineCare rate has decreased over this time period at a similar rate to the control group, but not as quickly as the HH Only members. This is the same result we saw in the 2015 Maine SIM Self-Evaluation Annual Report, where the HH Only group decreased at a significantly faster rate than the control group. **Exhibit 41** below shows that there was a consistent downward trend in both the HH Only and control group over the years between the pre and post periods. There is a similar pattern in the HH and AC members, where the decrease in non-emergent ED use was significantly higher than in the control group (p-value=0.0077). The overall MaineCare rate decreased over this time period as well, but not as quickly as in the intervention. Note that in the tables below (**Exhibits 39** and **40**), the denominators show member months because the rate is calculated on a per thousand member month basis.

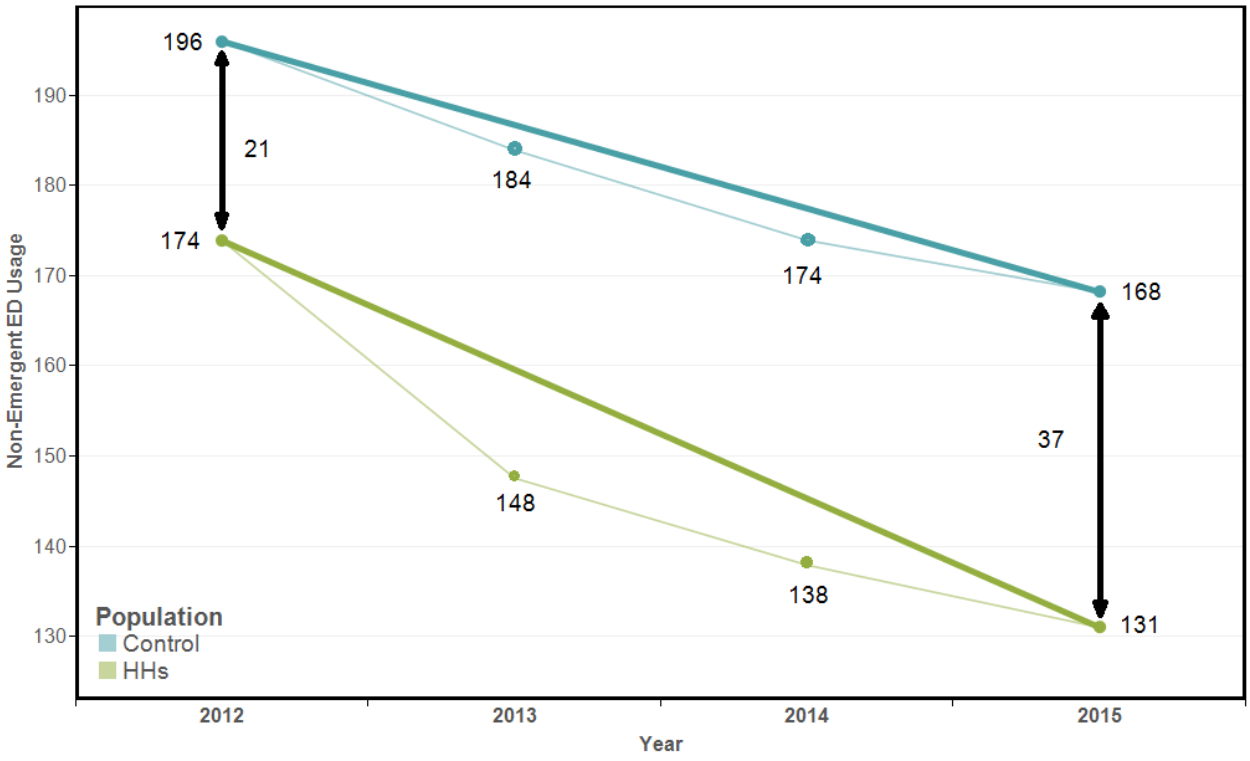
Exhibit 39. MaineCare HH Only - Non-Emergent ED Use Per Thousand

Group	Pre (2012)	Pre Denominator	Post (2015)	Post Denominator	Change
HH Only Member	173.9	404,453	131.0	405,127	-24.7%
Control Group	196.0	393,471	168.2	394,670	-14.2%
Overall MaineCare	142.5	4,100,325	120.8	3,357,889	-15.3%

Exhibit 40. MaineCare HH & AC - Non-Emergent ED Use Per Thousand

Group	Pre (2013Q3 – 2014Q2)	Pre Denominator	Post (2015)	Post Denominator	Change
HH & AC Member	126.2	149,822	106.3	148,962	-15.8%
Control Group	180.1	142,764	179.1	145,521	-0.5%
Overall MaineCare	127.0	3,750,965	120.8	3,357,889	-4.9%

Exhibit 41: MaineCare HH Only – Non-Emergent ED Use Per Thousand Trends



Thirty-day hospital readmissions can be driven by a wide variety of reasons including poor medication management, lack of community supports, or infections or complications from care. Some of these reasons can reflect poor care coordination during transitions from hospital to home. The rate of hospital readmissions increased for both HH Only members and controls (see **Exhibit 42**), where the goal was to see a decrease in readmissions. Readmissions also increased in MaineCare overall, but not as quickly as HH members or controls. There was no statistically significant difference between the intervention and control rates (p-value > 0.05). The rate of hospital readmissions remained constant among the HH and AC members, while there was an increase in the control population as seen in **Exhibit 43**, but the difference in rates was not statistically significant (p-value > 0.05).

Exhibit 42. MaineCare HH Only - Readmission Rate

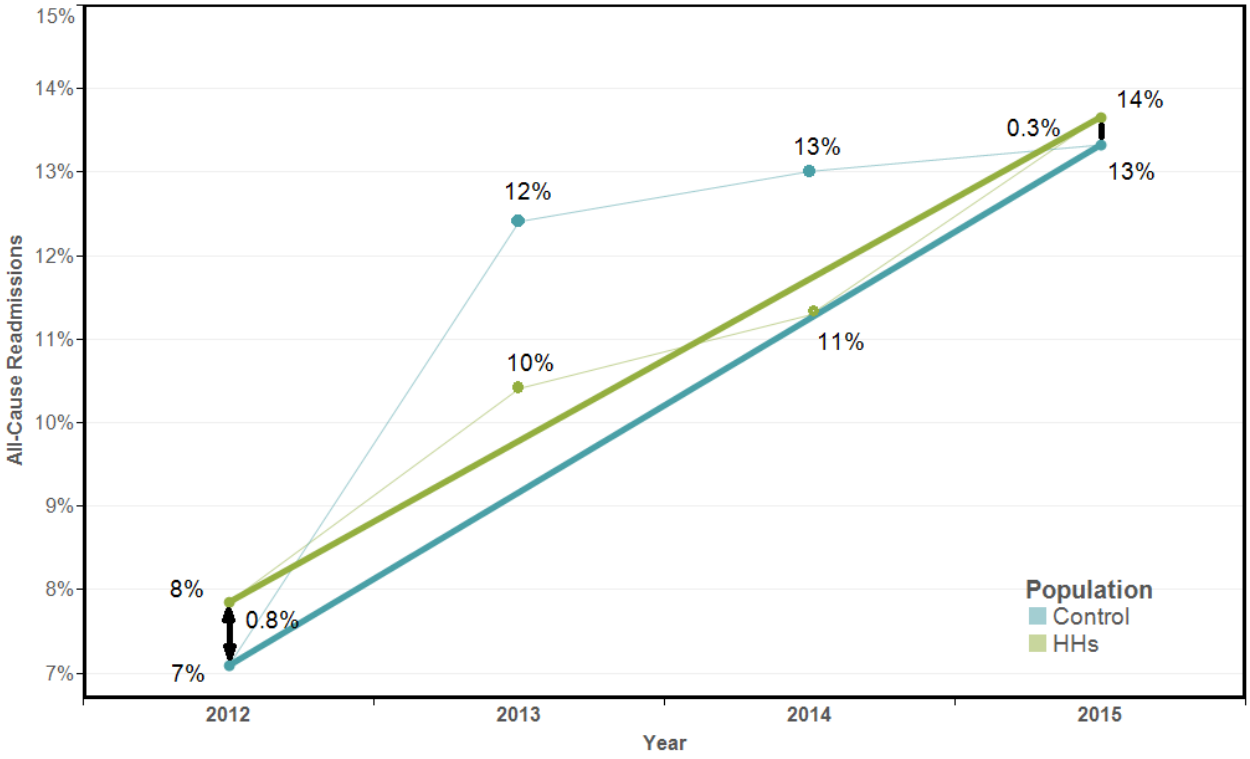
Group	Pre (2012)	Pre Denominator	Post (2015)	Post Denominator	Change
HH Only Member	7.9%	1,414	13.7%	1,845	74.0%
Control Group	7.1%	1,269	13.3%	2,221	87.9%
Overall MaineCare	11.0%	14,833	15.0%	13,463	37.1%

Exhibit 43. MaineCare HH & AC - Readmission Rate

Group	Pre (2013Q3 – 2014Q2)	Pre Denominator	Post (2015)	Post Denominator	Change
HH & AC Member	11.5%	572	11.5%	651	-0.2%
Control Group	10.8%	611	15.1%	779	40.2%
Overall MaineCare	14.9%	14,510	15.0%	13,463	1.2%

Exhibit 44 below shows that the control group had a steep rise in readmissions in 2013 and then remained constant, while the HH Only group steadily increased over time.

Exhibit 44. MaineCare HH Only – Readmission Rate Trend



Improvements in quality and processes of care can be measured by the following core metrics relating to quality:

- Use of Imaging Studies for Low Back Pain
- Well-child Visits
- Children's and Adolescent Access to Primary Care (ages 7-11)
- Developmental Screenings in the First 3 Years of Life
- Diabetic Care HbA1c (ages 18-75)

Exhibits 45 and **46** show the percent of members with a primary diagnosis of low back pain that did not have an imaging study within 28 days of the diagnosis. In this metric, the goal is to see a

decrease in imaging studies, which equates to an increase in members who did not have an imaging study. This differs from other metrics where a higher screening rate is better. The rate decreased at a similar rate in both the HH Only and control population, with no significant difference between the trends in these groups (p-value > 0.05). The rate decreased slightly in the HH and AC group, while it stayed constant in the control population. There was similarly no significant difference between these trends (p-value > 0.05).

Exhibit 45. MaineCare HH Only - Imaging Studies for Low Back Pain

Group	Pre (2012)	Pre Denominator	Post (2015)	Post Denominator	Change
HH Only Member	91.2%	4,676	83.3%	4,073	-8.7%
Control Group	90.8%	4,543	83.3%	4,911	-8.3%
Overall MaineCare	90.3%	32,586	83.4%	23,678	-7.7%

Exhibit 46. MaineCare HH & AC - Imaging Studies for Low Back Pain

Group	Pre (2013Q3 – 2014Q2)	Pre Denominator	Post (2015)	Post Denominator	Change
HH & AC Member	86.1%	1,701	83.6%	1,395	-2.9%
Control Group	83.2%	1,638	83.1%	1,732	-0.1%
Overall MaineCare	84.2%	27,936	83.4%	23,678	-0.9%

Exhibit 47 on the following page shows that both the control and HH Only group decreased sharply in 2013 and continued to slightly decrease through 2015.

Exhibit 47. MaineCare HH Only – Imaging Studies for Low Back Pain Trend

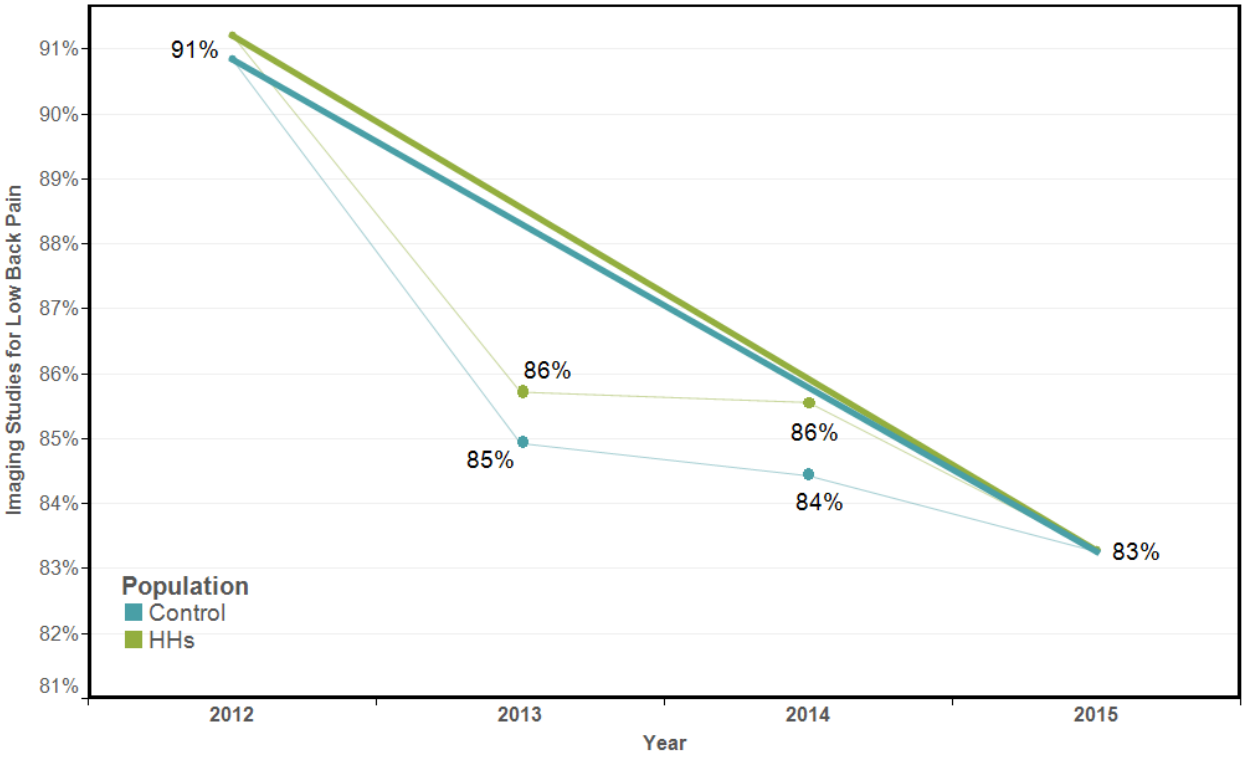


Exhibit 48 shows that the rate of Well-child Visits for children ages 3 to 6 increased at a higher rate for child control group members than HH Only members, but there was no significant difference between the two groups (p-value > 0.05). **Exhibit 49** on the following page shows that the rate of Well-child Visits decreased among the HH and AC members, while the control group increased. This difference in trends was statistically significant (p-value < 0.01). The goal was to see an increase in Well-child Visits.

Exhibit 48. MaineCare HH Only - Well-child Visits (ages 3-6)

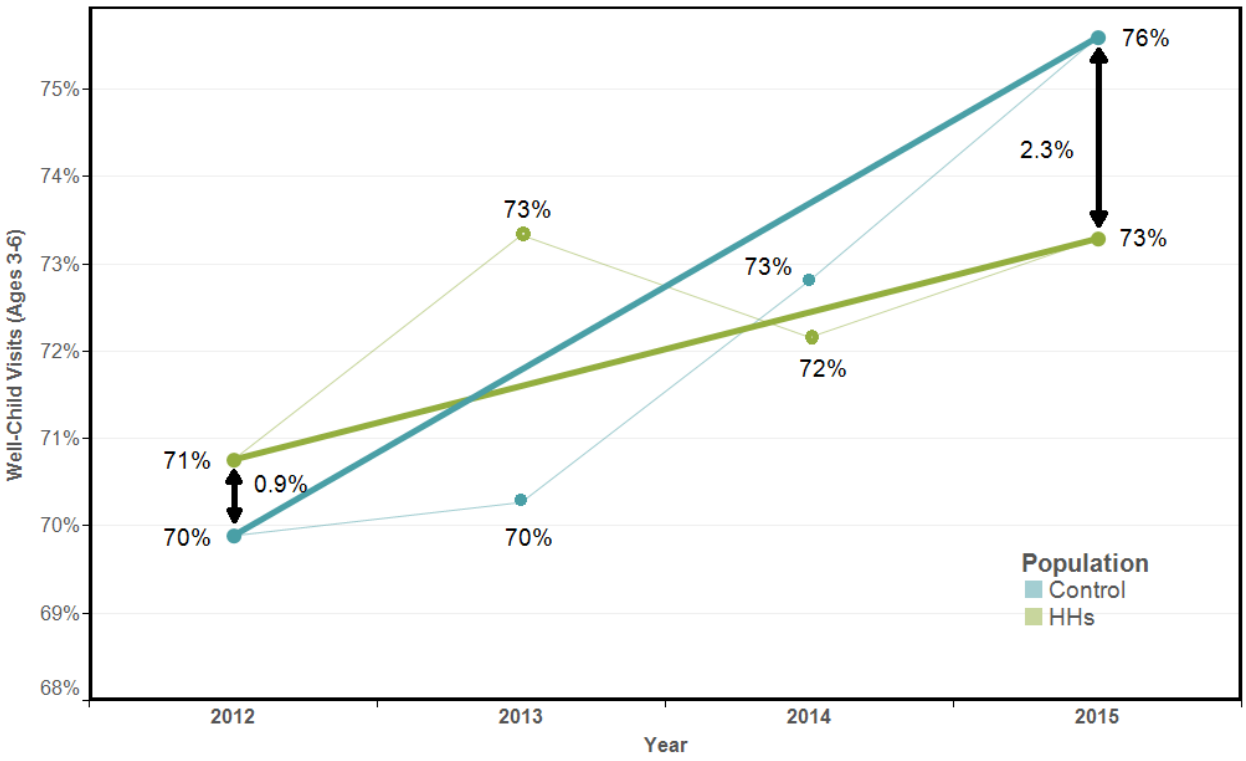
Group	Pre (2012)	Pre Denominator	Post (2015)	Post Denominator	Change
HH Only Member	70.8%	2,069	73.3%	1,243	3.6%
Control Group	69.9%	1,873	75.6%	1,635	8.2%
Overall MaineCare	64.0%	25,963	67.4%	21,350	5.3%

Exhibit 49. MaineCare HH & AC - Well-child Visits (ages 3-6)

Group	Pre (2013Q3 – 2014Q2)	Pre Denominator	Post (2015)	Post Denominator	Change
HH & AC Member	75.6%	655	72.4%	540	-4.2%
Control Group	70.2%	704	76.1%	685	8.4%
Overall MaineCare	65.0%	24,482	67.4%	21,350	3.7%

HH Only members remained fairly constant with some fluctuations over time, while the control group increased steadily over time, as seen in **Exhibit 50**.

Exhibit 50. MaineCare HH Only – Well-child Visits (ages 3-6) Trend



The access to primary care rate among children and adolescents (ages 7-11) increased after the intervention, but not as much as for the control group, leading to a statistically significant difference in trends between the HH Only members and control members (p-value < 0.001) as seen in **Exhibit 51**. The rate among the overall MaineCare population decreased slightly. The 2015 Maine SIM Self Evaluation Annual Report had a similar statistically significant outcome, but the HH Only group rate decreased while the control group remained constant. The pattern among HH and AC members in **Exhibit 52** reflects the pattern that was seen among the HH Only members in **Exhibit 51**, where their rate remained constant while the control group experienced an increase, leading to a statistically significant difference in trends (p-value < 0.001). The goal was to see an increase in access to primary care.

Exhibit 51. MaineCare HH Only - Children's and Adolescent Access to Primary Care (ages 7-11)

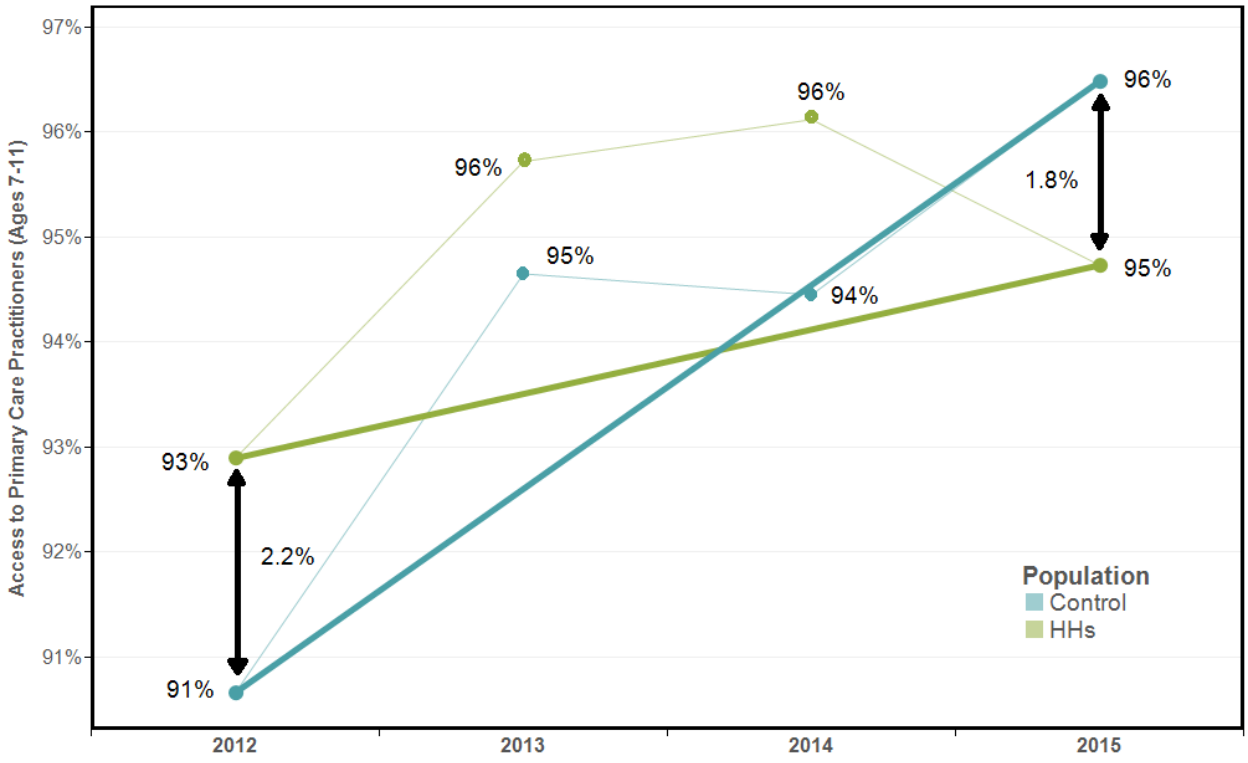
Group	Pre (2012)	Pre Denominator	Post (2015)	Post Denominator	Change
HH Only Member	92.9%	3,489	94.7%	3,113	2.0%
Control Group	90.7%	2,901	96.5%	2,589	6.4%
Overall MaineCare	81.1%	36,292	79.7%	35,653	-1.7%

Exhibit 52. MaineCare HH & AC - Children's & Adolescent Access to Primary Care (ages 7-11)

Group	Pre (2013Q3 – 2014Q2)	Pre Denominator	Post (2015)	Post Denominator	Change
HH & AC Member	94.3%	1,376	94.8%	1,289	0.5%
Control Group	87.8%	1,102	95.8%	1,059	9.2%
Overall MaineCare	80.6%	36,535	79.7%	35,653	-1.1%

Exhibit 53 shows that the HH Only group increased and then decreased over time, while the control group had a fairly steady increase.

Exhibit 53. MaineCare HH Only – Children's & Adolescent Access to Primary Care (ages 7-11) Trend



The rate of developmental screenings in the first three years of life increased rapidly for both members engaged in HH Only and for non-engaged controls as shown in **Exhibit 54**, but the

control group increase was statistically higher (p-value = 0.0008). This metric in last year's report was not statistically significant, although it reflected the same pattern of a higher increase in the control group than the HH Only population. The goal was to see an increase in the rate of developmental screenings. It is important to note that the denominators in the post time period were much lower than in the pre, making this result difficult to interpret. The increase in the overall MaineCare population mirrors the trend seen in the HH Only members. The HH and AC population experienced a decrease while the control group rate increased in **Exhibit 55**, making this difference in trends statistically significant (p-value < 0.001). The overall increase within this measure is likely impacted by billing education performed around CPT code 96110 to detail which developmental tests could be billed under this procedure code.

Exhibit 54. MaineCare HH Only - Development Screenings in the First 3 Years of Life

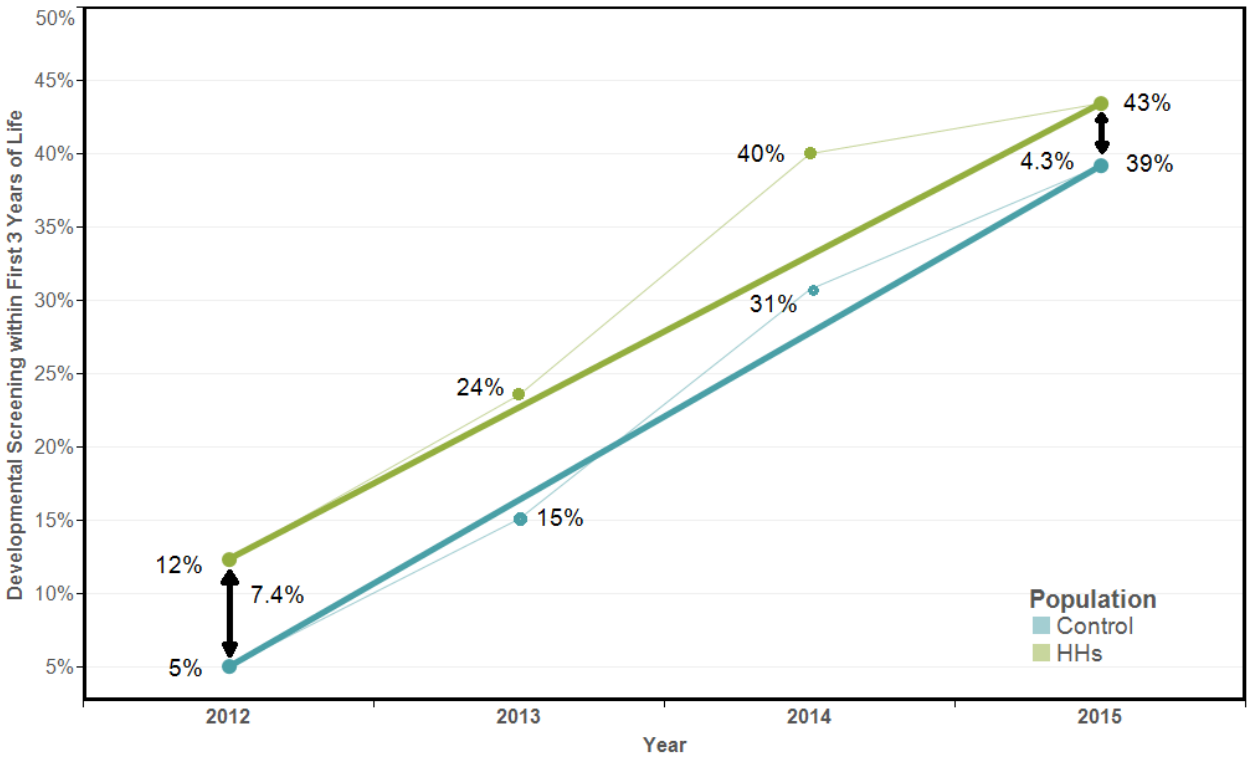
Group	Pre (2012)	Pre Denominator	Post (2015)	Post Denominator	Change
HH Only Member	12.3%	1,005	43.4%	221	252%
Control Group	5.0%	1,202	39.2%	314	684.7%
Overall MaineCare	10.5%	17,793	33.0%	14,051	215.2%

Exhibit 55. MaineCare HH & AC - Development Screenings in the First 3 Years of Life

Group	Pre (2013Q3 – 2014Q2)	Pre Denominator	Post (2015)	Post Denominator	Change
HH & AC Member	42.3%	369	28.4%	302	-32.6%
Control Group	22.5%	467	39.9%	451	77.5%
Overall MaineCare	23.0%	16,147	33.0%	14,051	43.0%

Exhibit 56 below shows the HH Only and control groups increased steadily over time.

Exhibit 56. MaineCare HH Only – Developmental Screenings the First 3 Years of Life Trend



The rates of HbA1c testing for diabetics engaged in HHs Only and in the control group decreased at a similar rate over time, with no significant difference (p-value > 0.05) between them (See **Exhibit 57** on the following page**)**. The goal was to see an increase in the rate of HbA1c testing. The rate of HbA1c testing among the HH and AC group decreased at a faster rate than the control group as seen in **Exhibit 58**, but there was no statistically significant difference between the two rates (p-value > 0.05).

Exhibit 57. MaineCare HH Only - Diabetic Care HbA1c (ages 18-75)

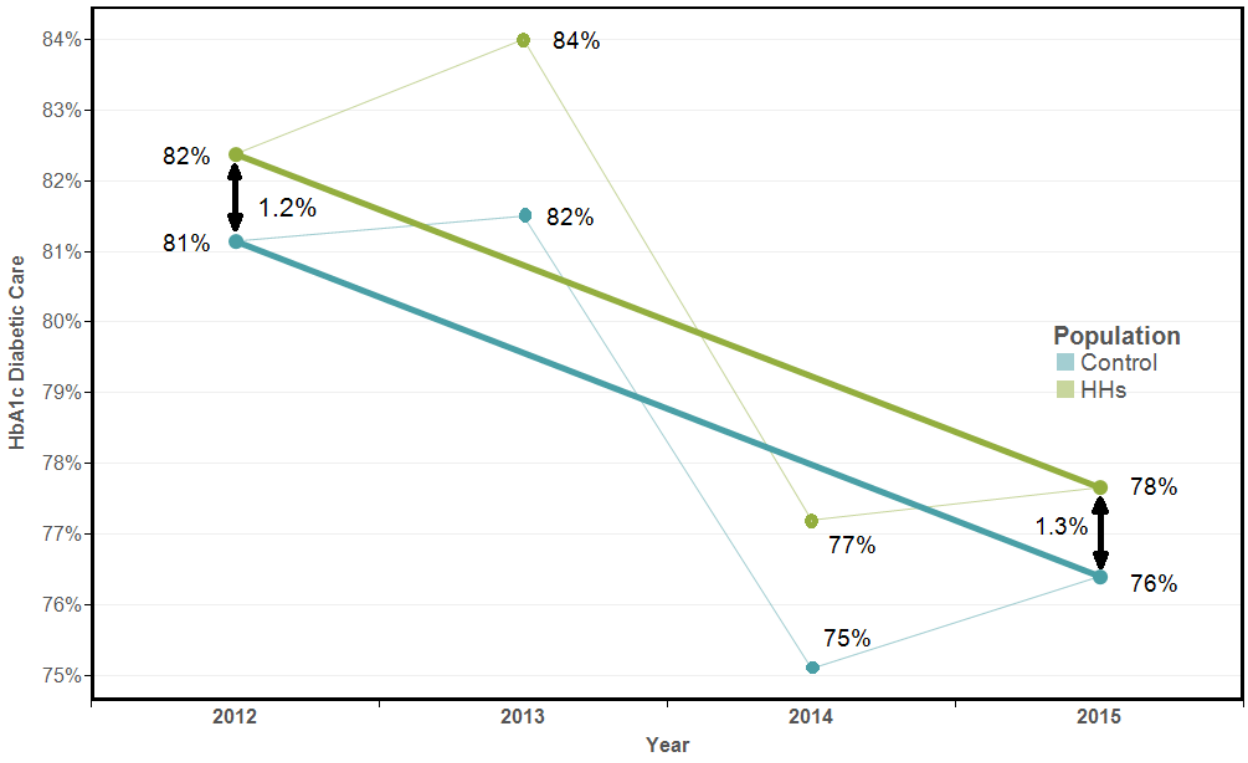
Group	Pre (2012)	Pre Denominator	Post (2015)	Post Denominator	Change
HH Only Member	82.4%	3,033	77.7%	3,308	-5.7%
Control Group	81.1%	2,917	76.4%	3,153	-5.8%
Overall MaineCare	77.4%	21,004	74.4%	18,106	-3.9%

Exhibit 58. MaineCare HH & AC Diabetic Care HbA1c (ages 18-75)

Group	Pre (2013Q3-2014Q2)	Pre Denominator	Post (2015)	Post Denominator	Change
HH & AC Member	82.4%	1,080	74.1%	1,081	-10.1%
Control Group	79.1%	1,055	75.1%	1,075	-5.2%
Overall MaineCare	78.2%	19,310	74.4%	18,106	-4.9%

Exhibit 59 below shows both the HH Only and control groups decreased in 2014 but remained steady the rest of the time.

Exhibit 59. MaineCare HH Only – Diabetic Care HbA1c (ages 18-75) Trend



The HbA1c testing rates in 2015 were stratified by acuity and urban or rural area address. The acuity stratification was performed to investigate the result found in Special Study One later in this report where higher acuity members had better than expected rates of HbA1c testing, while

lower acuity members had worse than expected rates. The urban and rural stratification was performed to determine if access to care and inadequate transportation could play a role in testing rates. The intervention and control group members who qualified for this metric were divided into four equal categories based on their ERG risk scores (low = 0 to 25th percentile, medium = 26th to 50th percentile, high = 51st to 75th percentile, very high = 76th – 100th percentile). In general, rural HH Only members had significantly higher HbA1c testing rates than urban members (p-value < 0.05), indicating that adequate access to transportation was not associated with higher rates as seen in **Exhibit 61**. The testing rates did not differ much on acuity level as seen in **Exhibit 60**. In comparison, rural HH and AC members had significantly lower HbA1c testing rates (p-value < 0.001), and the rates were lower in the low acuity group as seen in **Exhibits 62** and **63 on the following page**. The rural HH and AC control group experienced significantly higher HbA1c testing rates than the control group in urban areas (p-value < 0.05).

Exhibit 60. MaineCare HH Only – Post Diabetic Care HbA1c (ages 18-75) by Location and Acuity

Acuity	Location	HH Only		Control	
		Members	Testing Rate	Members	Testing Rate
Very High	Rural	454	77.8%	381	75.9%
	Urban	350	72.9%	419	74.9%
High	Rural	457	79.0%	380	76.8%
	Urban	373	79.1%	402	77.6%
Medium	Rural	475	81.3%	393	75.1%
	Urban	321	76.0%	422	78.4%
Low	Rural	468	78.0%	357	79.3%
	Urban	399	76.2%	385	73.5%

Exhibit 61. MaineCare HH Only – Post Diabetic Care HbA1c (ages 18-75) by Location

Location	HH Only		Control	
	Members	Testing Rate	Members	Testing Rate
Rural	1,854	79.0%	1,511	76.7%
Urban	1,443	76.1%	1,628	76.2%

Exhibit 62. MaineCare HH & AC – Post Diabetic Care HbA1c (ages 18-75) by Location and Acuity

Acuity	Location	HH & AC		Control	
		Members	Testing Rate	Members	Testing Rate
Very High	Rural	148	64.9%	93	76.3%
	Urban	121	86.8%	173	69.9%
High	Rural	115	60.0%	118	83.1%
	Urban	140	84.3%	165	75.8%
Medium	Rural	110	68.2%	93	77.4%
	Urban	155	87.7%	180	75.0%
Low	Rural	154	62.3%	103	76.7%
	Urban	133	78.2%	149	70.5%

Exhibit 63. MaineCare HH & AC – Post Diabetic Care HbA1c (ages 18-75) by Location

Location	HH & AC		Control	
	Members	Testing Rate	Members	Testing Rate
Rural	527	63.8%	407	78.6%
Urban	549	84.3%	667	72.9%

To assess if the model improves the level of integration of physical and behavioral health, the Follow-Up After Hospitalization for Mental Illness metric was used to compare members engaged in HHs Only and non-engaged controls, although the MaineCare data used to compute this measure does not include complete data on adult admissions to Institutes of Mental Disease (IMD)[32]. Not all hospitalizations for MaineCare members were captured due to this data exclusion. However, both the comparison and control group lack this data, so the comparison between the two groups is still valid, but should be interpreted with caution. A follow-up visit is recommended to ensure a smooth transition to a member's daily life, and this visit can help detect post-hospitalization reactions[33].

[32] Reflects hospitalization only to Acadia and Spring Harbor facilities.

[33] National Quality Measures Clearinghouse (2015). Follow-up after hospitalization for mental illness: percentage of discharges for members 6 years of age and older who were hospitalized for treatment of selected mental illness diagnoses and who had an outpatient visit, an intensive outpatient encounter, or partial hospitalization with a mental health practitioner within 7 days of discharge. Accessed December 1, 2015 from: https://www.qualitymeasures.ahrq.gov/summaries/summary/49734.

The rate of follow-up increased over time at a higher rate among the control group than the HH Only members, as shown in **Exhibit 64**. Due to a low number of hospitalizations for mental illness in these groups, the difference in trends was not significantly different (p-value > 0.05). **Exhibit 65** shows a large increase among the HH and AC members while the control group stayed constant, which led to a statistically significant difference between the two rates (p-value=0.01), even with a low number of hospitalizations reported. The rate of follow up in the pre period for the intervention was extremely low at 39.7%, and was still lower than the control group in the post period (67.2% vs 74.6%). The goal was to see an increase in follow-up visits.

Exhibit 64. MaineCare HH Only - Follow-Up After Hospitalization for Mental Illness

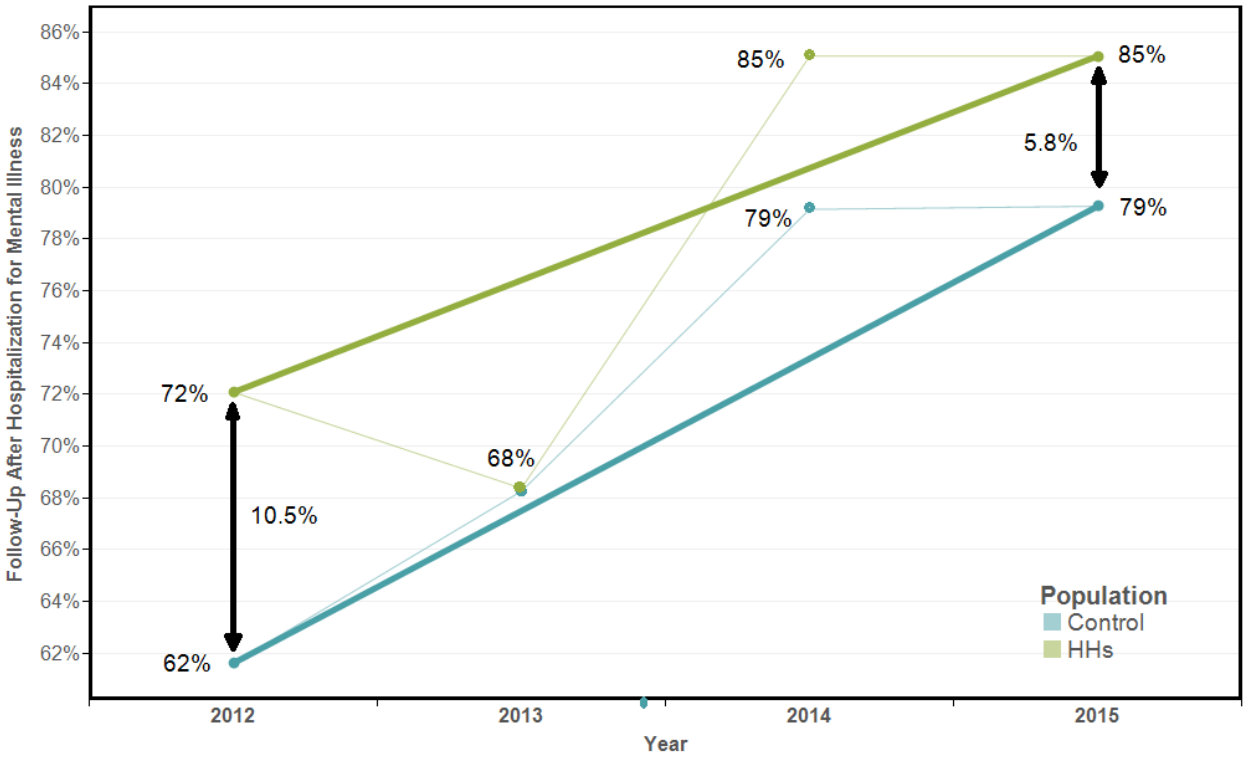
Group	Pre (2012)	Pre Denominator	Post (2015)	Post Denominator	Change
HH Only Member	72.1%	197	85.1%	134	18.0%
Control Group	61.6%	310	79.2%	439	28.7%
Overall MaineCare	69.2%	3,395	74.8%	2,442	8.0%

Exhibit 65. MaineCare HH & AC - Follow-Up After Hospitalization for Mental Illness

Group	Pre (2013Q3 – 2014Q2)	Pre Denominator	Post (2015)	Post Denominator	Change
HH & AC Member	39.7%	68	67.2%	61	69.3%
Control Group	74.2%	159	74.6%	177	0.5%
Overall MaineCare	71.2%	3,388	74.8%	2,442	5.0%

Exhibit 66 on the following page shows the HH Only group was fairly steady with a large increase in 2014, and the control group had a more stable increase over time.

Exhibit 66. MaineCare HH Only – Follow-Up After Hospitalization for Mental Illness Trend



No claims based metrics assess if HHs led to improvements in beneficiary health, well-being, function, and reduced health risk behaviors. This is best addressed via clinical measures, which have yet to be collected.

I.III – Comparison to Findings in 2015 Annual Report

Comparison of the findings above to those in the 2015 Annual Report shows that outcomes of the model have been durable over time. Cost avoidance in this report is slightly lower but directionally similar. The table on the following page (**Exhibit 67**) summarizes the methodology used in both reports and the resulting findings.

Exhibit 67. MaineCare HHs Prior Report Comparison

	2015 Evaluation	2016 Evaluation
Study Design	Difference-in-Difference	Difference-in-Difference
Case Matching	Propensity score matching using age, gender, risk score, pre time period PMPM, the presence of selected chronic conditions, geography (urban/rural), and MaineCare eligibility	Propensity score matching using age, gender, risk score, pre time period PMPM, the presence of selected chronic conditions, geography (urban/rural), and MaineCare eligibility
Inclusion Criteria	Six months of HH enrollment, No CCT, Two or more chronic conditions	Six months of HH enrollment, No AC Enrollment, No CCT, Two or more chronic conditions
Pre-Intervention Time Period	CY 2012	CY2012
Post-Intervention Time Period	CY 2013	CY 2015
Includes PMPM Paid to HH	No	Yes
Baseline PMPM	$586	$397
Cost Avoidance Per Year	$110	$74
Primary Categories of Cost Avoidance	Inpatient Medical/Surgical, Outpatient Clinic Expenditures, Professional Behavioral Health Services	Professional Behavioral Health Services, Inpatient Medical/Surgical, Case Management

The primary methodological differences are that this report was able to include two additional years of experience in the program and the costs of payments to HHs. The additional duration shows that cost avoidance is durable over time and that if unengaged, members similar to those in HHs would experience significant cost growth. The downside to using this additional experience is that members must be enrolled in both 2012 and 2015, which is obviously a subset of all participants.

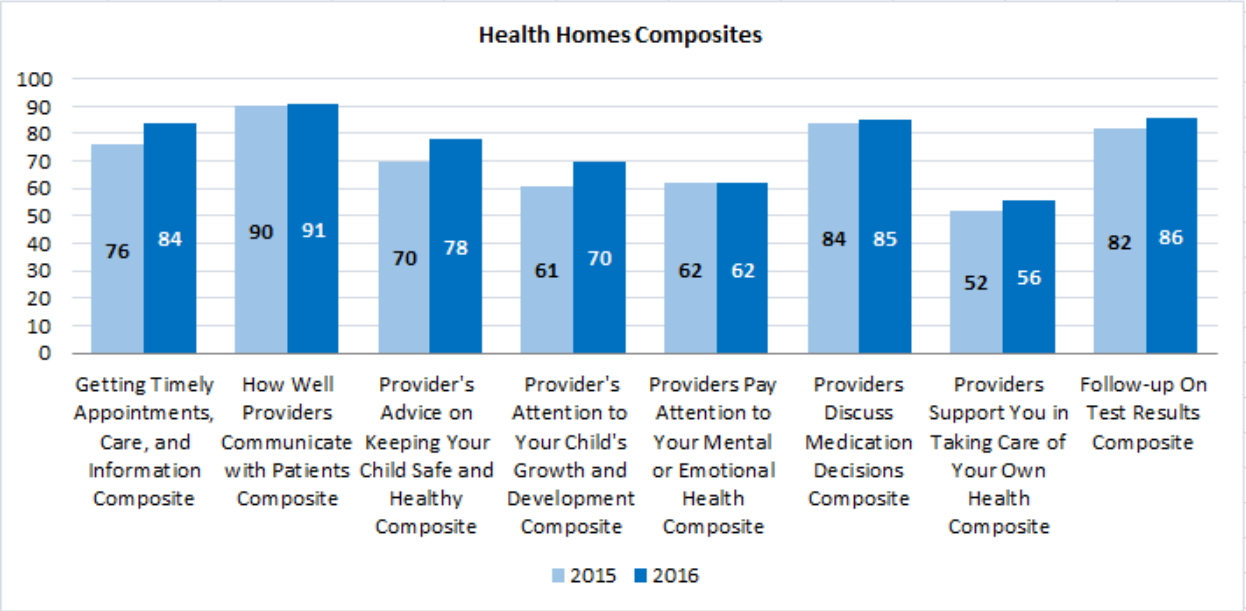
In the prior report, ACs had not been in operation long enough to analyze, so those members who participated in both HHs and ACs were not analyzed separately. In this analysis, we analyzed three different combinations of participation (HHs Only, ACs Only, HHs and ACs) to better show the degree of cost avoidance in each program. The baseline PMPM for HH members in this analysis is considerably lower than in the prior analysis in part because many more expensive HH members also were in ACs.

I.IV – Consumer Experience- HHs and BHHS and ACs

A random sample of MaineCare members was identified and stratified by their current involvement in key interventions (HHs, BHHs, and ACs). Consumers were sent an initial survey invitation letter and then contacted by phone. Those who could not be reached by phone were mailed a paper copy of the survey to complete. 1,504 surveys were completed, with 590 from members enrolled in an AC but not enrolled for the full evaluation period in a HH, and 640 enrolled in a HH for the full evaluation period. Some of the findings of these measures for HHs and ACs are presented together in this section because they rely on the same survey instrument and survey measures to calculate. This allows notable differences to be more readily highlighted.

Composite Measures: Exhibit 68 demonstrates the 2015 survey findings compared to 2016. Overall, there were improvements in the consumers' experiences and opinions with their HH providers.

Exhibit 68. HH Only Composite Measure Findings - Comparison 2015-2016



Within the HHs, the highest scoring **composite measures** in 2016 were:

- How Well Providers Communicate With Patients
- Follow-up on Test Results
- Do Providers Discuss Medication Decisions

The least positive scores were:

- Providers Support You in Taking Care of Your Own Health
- Providers Pay Attention to Your Mental or Emotional Health
- Provider's Attention to Your Child's Growth and Development

Individual Survey Questions: This analysis seeks to identify areas where patients indicate a highly positive experience and areas where they had a less positive experience, and in so doing it identifies areas of possible focus for improving the patient experience. This analysis combines HH and AC groups because their responses were very similar as is reflected in the narrative below. Instances where that is not the case are noted. A detailed breakdown of separate HH and AC response rates to each of the questions is provided in the full report in **Appendix II**. The Individual survey question findings below are grouped into common themes.

> *"He always listens. If I have suggestions he will tell me that the side effects or the changes in what I'm taking may have different effects. He gives me a list of side effects that I've asked for. He gives me the answers to make up my own mind as if I should try it. My case manager is always very good."*- HH Consumer

Providers Giving Information to Patients: The survey included 11 questions that asked patients about providers giving information. The "Providers giving information to patients" topic area focused on whether a provider gave patients the information they needed about their health and health care. This included talking to their patients not only about their physical health but also about behavioral health, activities that influence help, and learning ability. Most of the questions (nine) asked specifically about information regarding a child's health care with two questions asking about all patients.

- HH and AC practices performed most strongly in areas that can be broadly termed 'traditional' primary care. Information on follow-ups, managing health conditions, instructions after visits, and the growth of children all scored above 80% in positive ratings overall
- Patients reported less frequent attention paid to things that may be considered outside of traditional medical care, but which are essential to the SIM objective of integrating behavioral and physical health care. Behaviors, moods and emotions, and learning ability among children were all less likely to be part of the areas providers focus on with their patients. Additionally, patients reported being less likely to have their providers give them information about follow-ups to the care they received and setting goals for the future

Does the Provider Explain Clearly?: Separate from simply providing information, it is important that a patient understand the information that they are provided. This topic area includes two questions that ask patients if their provider gave information that was easy to understand and explained any information provided during visits.

- Overall, this was the strongest area of performance for HH and AC members. With both associated scores over 90%, this is an area which patients felt confident their providers are succeeding at regularly

Does the Provider Listen and Seek Input?: This topic area included 16 questions focusing on providers listening to their patients and seeking their patient's input into managing their own care. This includes asking whether the provider listened carefully, whether the patient felt they were involved in managing their own care, as well as what mattered to patients. The

questions were not just focused on physical health but also on mental health care and family and social situations that impact health.

- Providers scored highly in areas that could be seen as part of the traditional health care sphere and the traditional relationship between providers and patients. Patients felt their providers listen to them and, importantly, seek input and involve patients as much as they want to be involved in managing their own health care
- Where patients saw their providers as less frequently successful is in communicating with them on issues of mental and behavioral health. A minority of patients report their providers asking about personal or family problems in the last 12 months, or asking about issues that make it difficult for them to take care of their own health. This is important as non-compliance with medical orders was a recurring theme in the provider aspect of this research. While these emotional/behavioral aspects of health are notably lower than other items, they are generally trending in a positive direction
- One consistent finding from the 2015 and 2016 surveys is that while patients were very positive about patient provider communications from the perspective of their provider giving them information, they were less positive about providers seeking their input into their own care. While it is important for providers to give patients the information they need to manage their own care, it is also important that patients are engaged and feel they have a role in their own care

Need for Coordination of Care & Help Coordinating Care: One of the key objectives for Maine SIM was the integration of physical and behavioral health. The 2016 survey looked at the broader perspective that includes the integration of primary physical care with other physical health care as well as the coordination of care PCPs and behavioral health providers. This includes the need for any additional care, whether help was needed in coordinating care, and whether the patient received the help they needed in coordinating care. In addition, the topic area examines whether PCPs are giving their patients the information needed about behavioral health services that are available.

- Patients were overall positive about the help they received coordinating their care, though only about a half to a third reported a need for help coordinating care between PCPs, specialists, and mental health providers. There was a larger percentage of HH patients whose providers ordered a blood test, x-ray, or another test than patients attributed to ACs. This is potentially due to differences in the populations served by these two interventions
- The only area in which patients were not overwhelmingly positive was in getting information on the kinds of counseling or treatment for mental and emotional health issues available. Though even here, more than three-quarters of patients reported the information had been provided

Is the Provider Up-to-Date on Care Received from Other Providers?: One of the key aspects to care integration is access to patient information, particularly access to information across all providers that are caring for a patient. This topic area focuses on whether patients perceive that their PCP is up to date on care they received from other physical and behavioral health providers.

- Patients encountering structural barriers[34] to care reported statistically significant lower scores across many measures in this topic. This suggests that patients may be having difficulty not only finding providers, but moving important medical information between providers when needed
- The results in this area show again that while PCPs stay up to date and informed about areas of physical medical history and seem to have no problems staying up-to-date on care provided by specialists, patients reported feeling their providers were less informed about their behavioral health treatment

I.V – Provider Survey- HH Only

For this 2016 Maine SIM Self-Evaluation, MDR surveyed HH providers. Data was collected online with invitations sent by e-mail. The survey contained both quantitative close-ended response questions and qualitative open-ended response questions. The questionnaire was developed by MDR, in collaboration with Lewin and members of the SIM Evaluation Committee. The survey included a number of questions on perceptions of effectiveness, collaboration, and tools associated with the Maine SIM HH interventions.

This research focused on answering questions regarding the sustainability of SIM:

- What worked well and needs to be maintained?
- What did not work well and needs to be improved?
- What additional actions would be helpful to the sustainability of SIM?

Out of the 150 completed and partially completed surveys, 75 completed surveys from HH respondents, were retained for subsequent statistical analysis.

Completion of the survey required a significant commitment from respondents, likely thirty minutes or more. Respondents provided over 1,500 open-ended comments to these in-depth probing questions in the survey. The MDR team reviewed, coded, and cleaned all open-ended comments for similar and recurrent themes. It is important to note that not all respondents shared comments for the open-ended questions, and common themes did not emerge for all probing questions. Survey participants represented a very broad cross-section of staff, largely in administrative roles at HHs. The findings below are grouped into key themes, and a fully-detailed report is in **Appendix II**.

Findings

Overall Effectiveness of HH Efforts: 92% of HHs rated their HH interventions as very or somewhat effective at improving physical health.

Most frequently mentioned changes at HHs to improve physical health:

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[34] A structural barrier to care is an issue which makes it difficult for a patient to access the care they feel the need due to an issue related to the structure of the system through which they receive care (i.e. lack of providers in a particular geographic area or providers who do not accept MaineCare reimbursement).

- 33% Increased care coordination/care management
- 23% More preventive care (screenings/immunizations) or better follow-ups/referrals
- 18% Added new managers/staffs
- 13% Assessed individual barriers or gaps in patient care
- 12% Implemented new care management model

Improving Patient Engagement: Exhibit 69 below denotes that 78% of HHs indicated their patient engagement efforts were very or somewhat effective. **Exhibit 70** on the following page describes most frequently mentioned provider actions to enhance patient engagement.

Exhibit 69. Perceived Effectiveness of Efforts in Improving Patient Engagement

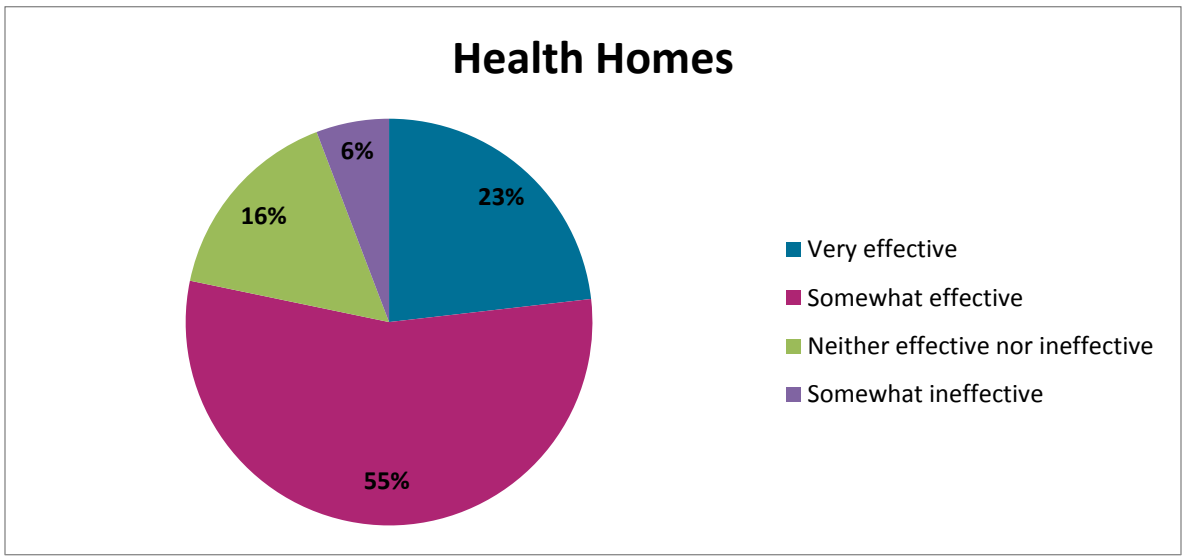
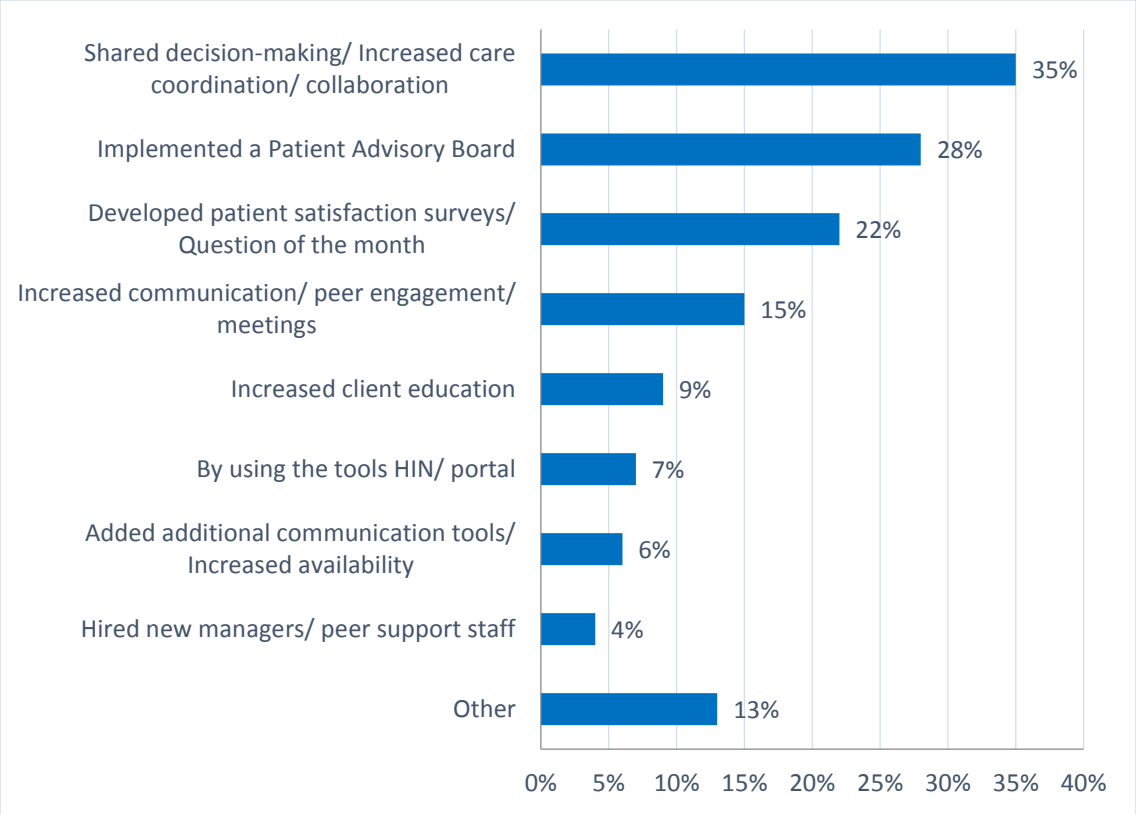


Exhibit 70. Most Frequently Mentioned Patient Engagement Actions at HHs



Care Coordination:

- 92% of HHs indicated that coordination of physical health was somewhat or very effective
- 87% indicated that coordination of behavioral health was somewhat or very effective

Most frequently mentioned efforts to improve behavioral health coordination at HHs:

- 42% Use behavioral health clinician or Licensed Clinical Social Worker (LCSW)
- 27% Implemented behavioral health integration/Co-location
- 23% Increased care coordination
- 13% Increased

"Care Coordinators have been able to link patients to additional resources in the community to provide … services that are outside of (those) offered by primary care … The extra support that care coordinators are able to provide patients have helped patients reach their health goals by reaching out to identify barriers to meeting their goals and identifying gaps in care. The role is helping to shift primary care from being primarily focused on treatment, to being more focused on prevention and wellness.."- HH Provider

communication/collaboration with community providers

Most frequently mentioned efforts to improve physical health coordination at HHs:

- 52% Increased care and quality management
- 29% Using or added care coordinator
- 17% Increased communication/collaboration with community providers

In summary, improved care coordination was identified as a key success in this project. The new role of HH Coordinators was core to this success. HHs were enthusiastic about the addition of staffing for this new role.

Diabetes Efforts:

- 98% of HHs indicated that they were somewhat or very effective in addressing diabetes care (see **Exhibit 71** below). Additionally, **Exhibit 72** on the following page describes the most frequently mentioned HH provider efforts to improve diabetes care

Exhibit 71. HH Perceived Effectiveness of Efforts in Addressing Diabetes

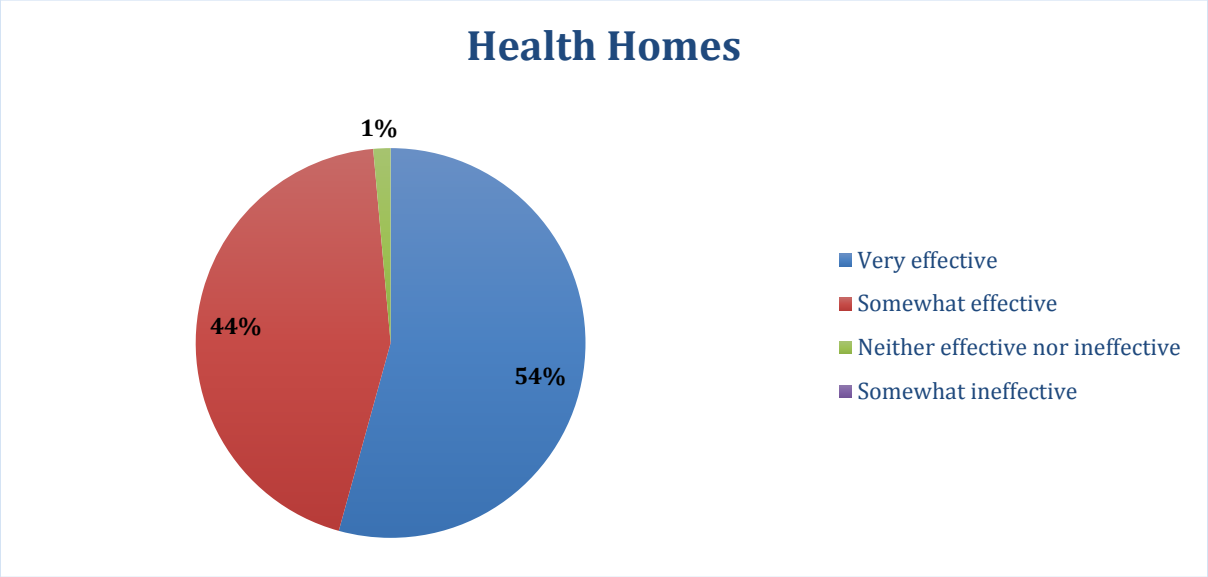
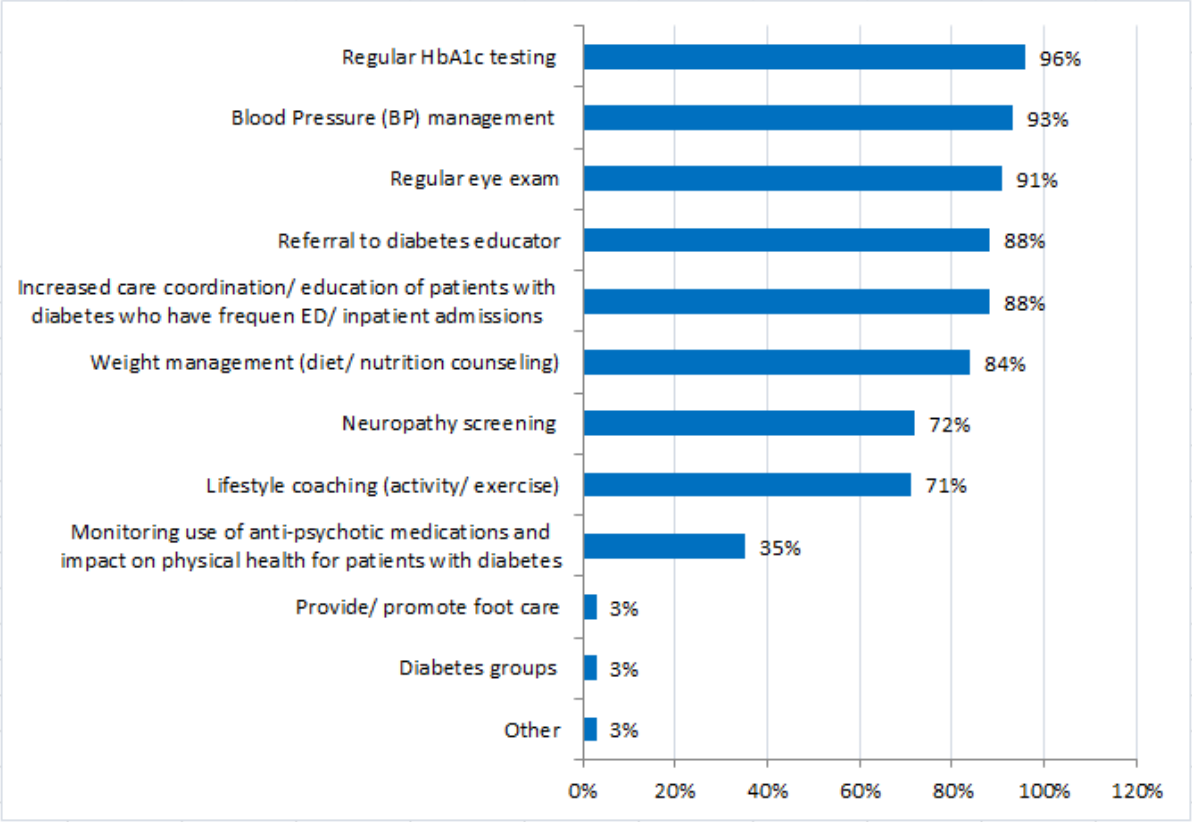


Exhibit 72. Most Frequently Mentioned Efforts to Improve Diabetes Care at HHs



Most effective/ineffective efforts to impact diabetes care according to HHs:

- 25% Effective: Increased care coordination/engagement
- 20% Not effective: Lack of engagement/compliance from patients
- 16% Effective: Increased education/ On-site Certified Diabetes Educator
- 16% Not effective: Issues with eye exams/ Hard to get patient in for eye exams

In summary, HH providers believed they had the health care resources necessary to focus on improving diabetes care, including a complete set of tests and screenings.

HH Coordinators including CCTs:

More than two thirds of HHs (67%) indicated that they worked with a Care Coordinator. Ninety seven percent of HHs indicated that the HH Coordinator was somewhat or very effective. Most frequently mentioned outcomes achieved by HH Coordinators at HHs:

- 56% Improved care coordination/ More preventive care
- 30% Better care/health and satisfaction/understanding for patient
- 22% Improved follow-ups/referrals/warm hand-offs

- 15% Lower ED/hospitalization rates
- 11% Better access to community resources11% Improved integration of care/medication reconciliation

Eighty-seven percent of HH respondents reported working with CCTs. Most frequently mentioned outcomes achieved by CCT at HHs:

- 30% Better outcomes for patients
- 22% Increased access and support
- 14% Increased care coordination
- 14% Better compliance from patients
- 11% Decreased in ED utilization
- 8% Increased collaboration/communication

In summary, the role of HH Coordinator at HHs was identified as being very effective, and in verbatim comments, many respondents were very enthusiastic about this role. Many respondents believed that the role has very important benefits that will lead to improved care, more preventative care, and reduced ED use.

Anti-Psychotic Medication Management by HHs: Providers reported the following common activities:

- 32% focused on medication reconciliation and case review
- 29% focused on mental health integration/embedded mental health specialists or LCSW
- 26% focused on increased coordination/collaboration with prescribers/providers

Most frequently mentioned effective and ineffective attributes impacting anti-psychotic medication management according to HHs:

- 27% Effective: Integration/co-location of care
- 27% Not effective: Lack of staff/resources
- 18% Effective: Increased care coordination/accessibility
- 18% Not effective: Lack of patient compliance and no-shows
- 14% Effective: Increased collaboration between prescribers/providers
- 14% Not effective: Lack of access to mental health providers

MaineCare AC Participation:

- Slightly more than half (54%) of HHs stated that they participated in an AC

- 85% of HHs "scored" their AC affiliation as very or somewhat effective

Integrating Behavioral Health into HHs: 91% of HHs indicated that they were effective at integrating behavioral health care into their practices.

Most frequently mentioned efforts to integrate behavioral health at HHs:

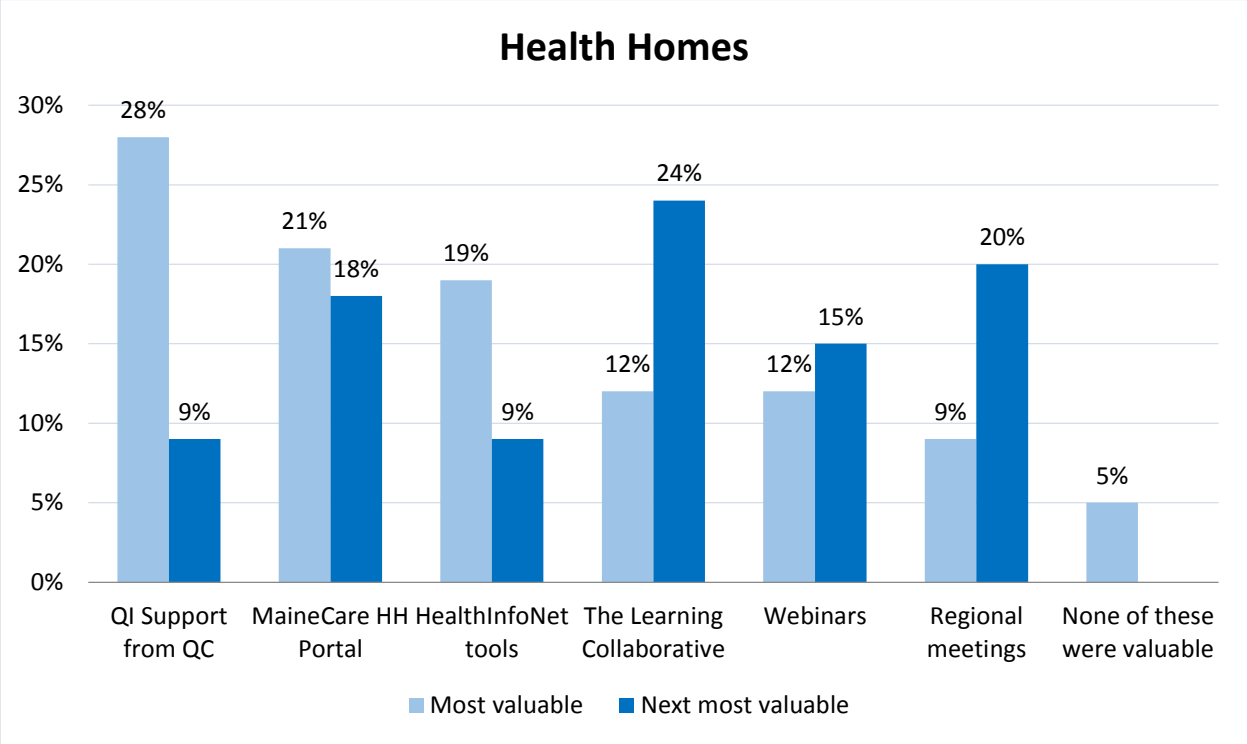
- 82% Implemented processes to routinely conduct a standard assessment for depression with patients with chronic illness
- 78% Co-located behavioral health services within in the practice
- 51% Hired a behavioralist into the practice to assist with chronic condition management

Most frequently mentioned barriers to integration of behavioral health at HHs:

- 30% Mentioned lack of behavioral health providers/services
- 24% Mentioned lack of support, resources or funding/reimbursement
- 22% Mentioned lack of staff (LCSW, social workers, etc.)/availability
- 15% Mentioned lack of compliance or cooperation from patients
- 13% Mentioned lack of coordination/understanding from medical providers

Tools and Supports to Impact Practice Change: Exhibit 73 below depicts "tools" or other supports described by HHs as influential to impact their practice changes.

Exhibit 73. Tools and Supports to Impact HH Practice Change



Technical assistance from Maine Quality Counts and access to HIN HIE and MaineCare HH portal data are the top three most valuable activities. The value of access to HIN HIE and MaineCare portal data is a consistent theme in all HH and BHH provider related surveys conducted as part of this study (see subsequent sections on BHH provider survey results and Study Two findings) .

The next section of this report provides an overall summation of HH qualitative and quantitative key findings.

I.VI – Overall Summary of Key Findings- HHs and ACs

Cost Effectiveness Overall Summary

- Results from members in HHs Only and HHs and ACs show cost avoidance in Professional Behavioral Health services[35], Inpatient Medical/Surgical, Outpatient Therapy[36], and Outpatient Clinic[37] expenditures
- There was more cost avoidance among the HH Only population, which had a longer period of time between the pre and post time periods of analysis

HHs were designed to reduce costs by strengthening primary care and improving care coordination. Members engaged in HHs showed significant professional behavioral health cost avoidance. Stronger primary care coordination includes all aspects of a member's health, including their behavioral and mental health. Members may be experiencing better coordination between their PCPs and behavioral health professionals, leading to lower professional behavioral health costs for HHs. In addition, members did not experience the increase in the prevalence of MH/SA conditions that was observed in the control groups, implying a potential protective effect from HH participation.

Members engaged in HHs also showed less inpatient medical/surgical cost growth than the control group, which suggests that additional care coordination avoided some hospital utilization compared to controls. Further examination of the top diagnostic category drivers of the control group inpatient expenditure trend provides a mixed picture of how HHs could avoid inpatient utilization. Some of the injury related inpatient claims likely could not have been avoided with any amount of care coordination. Conversely, some of the septicemia and complications of medical care related admissions observed in the control group could possibly be impacted by care coordination efforts. For example, some septicemia admissions begin as less significant infections that, if detected early, can be treated without hospitalization.

Although inpatient medical/surgical costs trended lower than the control group, the readmission rate for HH members increased at a faster rate than the control group. The control group

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[35] Professional behavioral health includes diagnostic evaluation, psychotherapy, drug services, and prescription management in an office setting.
[36] Outpatient therapy includes therapies such as respiratory, physical, occupational, and speech.
[37] Facility outpatient clinics refer to hospital-based outpatient clinics that provide services, such as urgent care, preventive medicine, dialysis, and cardiology.

readmission increase was similar to the trend in overall MaineCare. Increasing focus on reducing readmission rates will continue to lead to cost reductions, particularly in inpatient expenditures.

Facility outpatient clinic costs and non-emergent ED use decreased quicker in the HH group relative to controls. The downward trend of non-emergent ED use in the control group mirrors the overall MaineCare trend. This indicates that members are not just being redirected from inpatient facilities to other service locations, but costs overall are decreasing. A decrease in facility outpatient clinic costs may mean that the members are getting the services they need at their primary care office instead of another location. Additionally, the decrease in non-emergent ED use show that members are not going to the emergency room for conditions that require a physician visit instead. These results suggest that the enhanced primary care provided through the HH model is keeping members out of higher cost service areas.

In the years following implementation, HHs have led to reduced PMPM expenditures within the engaged population. MaineCare HHs have engaged a large population, so the avoidance of $145 to $224 (HHs Only & ACs and HHs respectively) PMPM over the control group provides great progress toward SIM goals of cost reduction.

Although it is difficult to compare across populations and different Medicaid programs, cost avoidance from HHs exceed many other published estimates. Vermont's Blueprint for Health multi-payer initiative estimated savings of $40 PMPM between 2008 and 2013. North Carolina's PCMH payment reform saved around $26 PMPM between 2003 and 2012. Pennsylvania's Chronic Care Initiative demonstrated that compared to a non-PCMH baseline in 2008, there was a PMPM savings of about $16 in 2009, $13 in 2010, and $13 in 2011.[38]

Metrics related to care coordination and child health showed significant change over time for HH Only members and MaineCare HH and AC members relative to their respective controls as seen in **Exhibit 74** on the following page. Non-emergent ED use and fragmentation of care decreased faster among the HH population than their controls, which could reflect improved care coordination. Non-emergent ED use decreased faster among the HH and AC population than their controls as well. The HH and AC population experienced a large jump in follow up after hospitalization for mental health over time, although the intervention rate in the post period was still lower than the control group.

Children's and adolescent access to primary care and developmental screenings increased faster among the controls than the HH population, indicating slower growth related to child health. The overall increase within developmental screenings is likely impacted by billing education performed around CPT code 96110 to detail which developmental tests could be billed under this procedure code. The HH and AC population decreased for well-child visits for age's three to six and developmental screenings for the first three years of life while the control group increased for both of these metrics. Similarly, children's and adolescent access to primary care stayed constant for the HH and AC group while the control group experienced an increase. These

[38] https://www.pcpcc.org/sites/default/files/resources/The%20Patient-Centered%20Medical%20Home%27s%20Impact%20on%20Cost%20and%20Quality%2C%20Annual%20Review%20of%20Evidence%2C%202014-2015.pdf

outcomes are pointing to slower or even backwards momentum in child health. Consumer survey findings show similar data in that respondents reported less provider attention regarding their child's growth and development. **Exhibit 74** below aligns each metric and performance relative to the control group.

Exhibit 74. Summary of MaineCare HH and AC Quality Metric Performance

Metrics	HH Only Performance	HH and AC Performance
Non-emergent ED use	HH Only members performed better than control members*	HH and AC members performed better than control members*
All-cause readmissions	HH Only and control members performed similarly	HH and AC members performed better than control members
Median FCI	HH Only members performed better than control members*	HH and AC and control members performed similarly
Use of Imaging Studies for Low Back Pain	HH Only and control members performed similarly	HH and AC members did not perform as well as control members
Well-child Visits (ages 3-6)	HH Only members did not perform as well as control members	HH and AC members did not perform as well as control members*
Children's and Adolescent Access to Primary Care (ages 7-11)	HH Only members did not perform as well as control members*	HH and AC members did not perform as well as control members*
Developmental Screenings in the First 3 Years of Life	HH Only members did not perform as well as control members*	HH and AC members did not perform as well as control members*
Diabetic Care HbA1c (ages 18-75)	HH Only and control members performed similarly	HH and AC members did not perform as well as control members
Follow-Up After Hospitalization for Mental Illness	HH Only members performed better than control members	HH and AC members performed better than control members*

*Statistically significant results are indicated with an asterisk

Consumer Survey Findings Overall Summary

The Patient Experience: HH and AC patients reported increases in measures related to strengthening primary care. Primarily, these improvements were related to providers giving information to their patients, providers listening and seeking input, and providers clearly communicating with their patients. They reported more positive experiences on measures relating to physical-behavioral health integration. More than 90% of these patients rate the coordination of their medical and mental health services positively. Patients were also more positive about the help they receive from their primary care provider's office to coordinate their care with specialists and behavioral/mental health providers and how up-to-date their PCP seems on care they receive from other providers.

Use of Care and Access Barriers: Most routine care was reported as being provided through a PCP though about one in three patients saw more than one provider during the past 12 months for routine care. Among those with visits to multiple providers, more than half of HH and AC patients visited these providers at the same location. Most indicated a positive experience as more than 80% indicated that their provider's office worked to coordinate their care and more than 80% indicated that the providers were up-to-date about the care they received.

Overall, 37% of patients reported receiving care in an ED within the last 12 months and 25% in an urgent or walk-in care.

Patients reported barriers to receiving needed care. More than one-quarter of patients reported they did not get or deferred care due to its cost. Among all patients, this was most likely to be dental care (21%) or prescription medications (8%).

There was a similar trend when measuring structural barriers to care, with 7% of all patients overall reporting they could not find a provider when they needed. In addition, 11% of all patients reported difficulty finding a doctor who accepts MaineCare. Consumers indicated that mental health care or counseling, dental care, or prescription medicines were the most difficult to access. These structural barriers to care also have a negative impact on a patient's experience, with those experiencing structural barriers tending to report a less positive experience with their provider. Further, this group was also more likely to report higher rates of health care service use across a variety of areas.

Future Considerations: While the results overall are positive, they do identify potential actions to further improve the patient experience.

- Address behavioral and mental health care in conversations with patients at every visit
- Engage in conversations about what makes it difficult for patients to manage their health, and the barriers they experience to complying with medical advice
- Involve patients in managing their own care more often, including preventive care. Help to build the habits that enable patients to maintain good health, as well as resolve existing health issues

Provider Survey Findings Overall Summary- HH Only

HH providers surveyed overwhelmingly indicated that they perceived their practice change efforts as successful. These positive assessments carried over into all the topics addressed in the full survey. Improvements to "care management or coordination" models, enhanced focus on preventive care, and the addition of new staff were commonly noted practice changes.. Access to data from the MaineCare Portal and HIN's HIE were cited as two of the three most valuable tools to impact practice change.

II. MaineCare ACs

MaineCare ACs are provider led organizations that agree to share accountability for an attributed population's cost and quality outcomes. The ACs were first implemented in August 2014 and

have grown rapidly over time. The pre-intervention period for this analysis is July 2013 through June 2014, and the post-intervention period is calendar year 2015. This post period was used to measure the changes in utilization and quality of care following the implementation of the intervention using an approach similar to that used to evaluate HHs. As noted above, nearly all of the practices that participate in ACs are HHs; however roughly half of the AC members at those practices are not HH members (i.e., they are not attributed to the HH program, but they are still patients at HH practices). This section of the report summarizes results for these members, whose findings differ from the HH and AC members. Please see the HH section of the report for information about members who participated in both HHs and ACs. To assess the impact of the AC program, both groups of members need to be considered.

Also note that the AC program has a different methodology[39] for attribution and for computing shared savings that will likely differ from those presented here. At a high level, the AC shared savings calculation projects a cost trend for a set of services where the AC assumes some risk, then computes savings as the difference between actual and projected expenditures. The trend projection includes adjustments for policy changes and risk. The methodology used here includes all services and includes a control group to compute trend which avoids having to try to estimate the impact of policy changes or other factors since they would affect both the study population and the control group equally.

To assist in understanding the population enrolled in ACs, **Exhibit 75** depicts select demographic, risk, and diagnostic information. The retrospective risk scores, comorbid conditions, and diagnostic categories are derived from the ERG software in the Optum Symmetry Suite[40]. The similarity in the intervention and control characteristics in the pre period is a reflection of efforts to match the two groups. The better the match in the pre period, the more likely it is that if members had not participated in ACs, their outcomes would resemble those of the control group. The AC Only members had lower risk scores, average age, female representation, number of comorbid conditions, diabetes prevalence, and MH/SA prevalence than the HH Only or HH and AC groups.

Exhibit 75. MaineCare AC Only – Group Characteristics

	Members		Average Risk		Average Age		Percent Male		Average Comorbid Conditions		Percent Diabetic		Percent with MH/SA		Percent with PTSD	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post
AC Only Member	23,424	23,424	2.0	1.9	21.5	23.0	46.8%	46.8%	2.1	2.2	6.6%	7.0%	26.5%	28.0%	10.2%	10.2%
Control Group	23,424	23,424	2.0	1.7	21.0	22.5	46.9%	46.9%	2.1	2.1	6.8%	7.2%	26.5%	27.3%	7.6%	7.3%

[39] Please see http://www.maine.gov/dhhs/oms/pdfs_doc/vbp/AC/2015%20AC%20Pres%20for%20VBP%20Site.pdf for more information on the AC shared savings calculation.

[40] More information about Optum Symmetry Suite is available here: https://www.optum.com/providers/analytics/health-plan-analytics/symmetry/symmetry-episode-risk-groups.html

II.I – Cost Effectiveness Findings

MaineCare members participating for at least six months in ACs exhibited an 8.2% increase in cost after engagement compared to the pre-engagement period. By comparison, expenditures for a control group of similar but not engaged members increased by only 4.6% during the same period of time. If expenditures for AC members increased at the same rate as the control group, expected costs for this population would have been approximately $912 PMPM, or $31 PMPM lower than they actually were ($942 PMPM). The table below (**Exhibit 76**) summarizes the change in total cost avoidance for members enrolled in ACs Only. The total PMPM expenditures during the pre or baseline period were roughly similar for both AC Only members and the control group ($871 vs $812, or only 7% higher in the AC Only group). The PMPM expenditures in the intervention period were much higher for the AC Only members ($942) than for the HH Only or HH and AC members ($375 and $440 respectively).

Exhibit 76. MaineCare AC Only - Total PMPM Cost Avoidance Estimate

	Pre (2013Q3-2014Q2)	Post (2015)	Change	Expected PMPM	Cost Avoidance
AC Only Member	$871	$942	8.2%	$912	-$31
Control Group	$812	$850	4.6%	N/A	N/A

The change in total expenditures was driven by medical expenditures that increased faster than the control group, as shown in **Exhibit 77** below. Pharmacy expenditures also increased for both groups, however, expenditures for AC Only members increased more rapidly than for the control group (up 43.2% vs 35.7%). Baseline medical expenditures were 7% lower in the control group, but rose less rapidly over time and more than a year later were 10% lower than members participating in ACs Only.

Exhibit 77. MaineCare AC Only - Medical PMPM Cost Avoidance Estimate

	Pre (2013Q3-2014Q2)	Post (2015)	Change	Expected PMPM	Cost Avoidance
AC Only Member	$815	$861	5.7%	$833	-$29
Control Group	$754	$771	2.2%	N/A	N/A

Exhibit 78 on the following page shows the top four categories that explain about two thirds (67%) of the negative cost avoidance. A full breakdown of cost avoidance by all categories of service is included in the Claims Data Analysis Methodology section of **Appendix I** beginning on page 29.

The largest driver of negative cost avoidance in the MaineCare AC Only was higher LTC expenditures, as shown in **Exhibit 78**. LTC is identified by the bill type of Skilled Nursing Facility (SNF) or Intermediate Care Facility (ICF).

Exhibit 78. MaineCare AC Only – Cost Avoidance by Category

Service	Cost Avoidance
LTC[41]	-$9
Home and Community Based Services[42]	$3
Professional Behavioral Health Services[43]	-$8
Pharmacy Expenditures	-$4

Although more than 70% of expenditures submitted on these claims are submitted by nursing homes, boarding homes and group homes also use these bill types. Baseline LTC expenditures of $96 PMPM are only 4% higher in the control group compared to those in the AC Only group. The AC Only group experienced an increase in expenditures of 22.5%, while the control group rose less rapidly at 13.4% over the same period of time (see **Exhibit 79** below).

Exhibit 79. MaineCare AC Only – LTC PMPM Cost Avoidance Estimate

	Pre (2013Q3-2014Q2)	Post (2015)	Change	Expected PMPM	Cost Avoidance
AC Only Member	$96	$117	22.5%	$108	-$9
Control Group	$100	$113	13.4%	N/A	N/A

The AC Only group had roughly similar levels of LTC expenditures as the HH and AC group in both the pre and post time period (see **Exhibit 80** below). In both analyses, LTC expenditures grew more rapidly in the AC engaged population than compared to the controls.

Exhibit 80. MaineCare HH and HH & AC Member – LTC PMPM by Study Group

	Pre	Post (2015)	Change
HH Only Member	$57 (2012)	$93	63.4%
HH & AC Member	$101 (2013 Q3-2014 Q2)	$120	18.6%

Higher LTC PMPMs in the AC Only population were driven by an increase in the number of distinct users of facility-based LTC that was four times greater than the control group (see **Exhibit 81** on the following page).

[41] Institutional long term care refers to long term stays in a residential hospital or nursing facility setting.
[42] Home and Community Based Services include habilitation waiver services submitted on a professional claim form
[43] Professional behavioral health includes diagnostic evaluation, psychotherapy, drug services, and prescription management in an office setting.

Exhibit 81. MaineCare AC Only – Distinct LTC Users

	Pre (2013Q3-2014Q2)	Post (2015)	Change	Distinct Users in Both Pre and Post (Percent)
AC Only Member	720	820	14%	598 (73%)
Control Group	625	641	3%	525 (82%)

Behavioral health related conditions were the primary diagnoses for 39% of all LTC expenditures for the AC Only population during the post period. The top five conditions are shown in **Exhibit 82** below.

Exhibit 82. MaineCare AC Only – LTC Expenditures by Primary Diagnosis

Primary Diagnosis	Total Paid	Percent of LTC Expenditures
Delirium dementia and amnestic and other cognitive disorders	$6,162,499	21%
Developmental disorders	$3,209,596	11%
Diseases of the heart	$1,790,851	6%
Cerebrovascular disease	$1,770,907	6%
Schizophrenia and other psychotic disorders	$1,699,648	6%

In the AC Only population, expenditures at SNFs increased more rapidly than controls, and ICF expenditures decreased less rapidly compared to controls (**Exhibit 83**).

Exhibit 83. MaineCare AC Only – LTC PMPM by Facility Type

Service	Pre (2013Q3-2014Q2)	Post (2015)	Change
AC Only Member - SNF	$67	$92	36%
Control Group - SNF	$69	$89	13%
AC Only Member - ICF	$28	$26	-3%
Control Group - ICF	$31	$24	-13%

In the AC only population, professional Home and Community Based Service (HCBS) expenditures, which include habilitation waiver services and foster care, grew less rapidly than the control group (**Exhibit 84** on the next page).

Exhibit 84. MaineCare AC Only – HCBS PMPM Cost Avoidance Estimate

	Pre (2013Q3-2014Q2)	Post (2015)	Change	Expected PMPM	Cost Avoidance
AC Only Member	$199	$227	14.0%	$230	$3
Control Group	$184	$212	15.6%	N/A	N/A

Exhibit 85 shows that behavioral health expenditures in the AC Only population increased by 5.3%, which exceeded the increase observed in the control group of 1.1%. The level of professional behavioral health expenditures in the AC Only population during the pre-time period is approximately three times higher than the HH and AC study group ($186 PMPM vs $50 PMPM).

Exhibit 85. MaineCare AC Only – Professional Behavioral Health PMPM Cost Avoidance Estimate

	Pre (2013Q3-2014Q2)	Post (2015)	Change	Expected PMPM	Cost Avoidance
AC Only Member	$186	$196	5.3%	$188	-$8
Control Group	$173	$175	1.1%	N/A	N/A

Growth in pharmacy expenditures in the AC Only population was driven by higher expenditures in antivirals (up $5.99 PMPM) and psychotherapeutic drugs (up $5.86 PMPM). Expenditures in these drug classes also increased in the control group (see **Exhibit 86** below).

Exhibit 86. MaineCare AC Only – Pharmacy PMPM Cost Avoidance Estimate

	Pre (2013Q3-2014Q2)	Post (2015)	Change	Expected PMPM	Cost Avoidance
AC Only Member	$57	$81	43.2%	$77	-$4
Control Group	$58	$79	35.7%	N/A	N/A

II.II – Impact Findings from Claims Analysis

The pre-intervention period for this analysis spanned July 2013 through June 2014, prior to AC implementation. The post-engagement period spans calendar year 2015. These are the same pre and post periods used in the cost effectiveness evaluation described above. For each measure, we tested if the change from the pre period to the post period was significantly different at a $p < 0.05$ level between the intervention and control groups.

To assess if the model leads to improvements in care coordination and less fragmentation of care, we evaluated changes in non-emergent ED use, FCI, and readmission rates relative to the control group.

Measurement of the FCI provides insight to the number of providers engaged in a member's care. When members see multiple providers for their care, these providers may not consistently communicate and coordinate with each other regarding the overall management approach for a

member's health. Limited care coordination may result in an increase in cost when more visits occur; it may also lead to a decrease in the quality of care if one provider is not aware of the decisions other providers have made regarding a member's needs. The goal is to see a decrease in fragmentation of care. The median FCI decreased for AC Only members after engagement in the program; however, the median FCI decreased at a faster rate in the control group, indicating less fragmentation of care over time for those not engaged in ACs. This difference in trends was not statistically significant (p-value > 0.05). See **Exhibit 87**.

Exhibit 87. MaineCare AC Only - Median FCI

Group	Pre (2013Q3-2014Q2)	Pre Denominator	Post (2015)	Post Denominator	Change
AC Only Member	0.69	14,249	0.67	13,418	-3.6%
Control Group	0.65	13,259	0.60	11,866	-7.8%
Overall MaineCare	0.61	169,530	0.60	149,295	-1.2%

Non-emergent ED use is also a marker of poor care coordination because it measures ED visits that are better handled in primary care settings. The rate of non-emergent ED use decreased over time at a rate exceeding the control group; however, the difference was not statistically significant (p-value > 0.05). AC Only members had lower rates of non-emergent ED use both before and after engagement. The overall MaineCare rate has decreased over this time period, but not as quickly as the AC Only group. Note that in the table below (**Exhibit 88**), the denominators show member months because the rate is calculated on a per thousand member month basis.

Exhibit 88. MaineCare AC Only - Non-Emergent ED Use Per Thousand

Group	Pre (2013Q3-2014Q2)	Pre Denominator	Post (2015)	Post Denominator	Change
AC Only Member	149.6	264,934	115.0	259,978	-23.1%
Control Group	154.4	261,724	133.2	254,731	-13.7%
Overall MaineCare	127.0	3,750,965	120.8	3,357,889	-4.9%

30-day hospital readmissions can be driven by a wide variety of reasons including poor medication management, lack of community supports, or infections or complications from care. Some of these reasons can reflect poor care coordination during transitions from hospital to home. The rate of hospital readmissions increased for AC Only members and decreased for the controls (see **Exhibit 89**); however, the change was not statistically significant. The overall MaineCare trend stayed fairly constant over time.

Exhibit 89. MaineCare AC Only - Readmission Rate

Group	Pre (2013Q3-2014Q2)	Pre Denominator	Post (2015)	Post Denominator	Change
AC Only Member	14.7%	1,101	17.9%	1,006	21.6%
Control Group	15.5%	838	14.5%	812	-6.3%
Overall MaineCare	14.9%	14,510	15.0%	13,463	1.2%

Improvements in quality and processes of care can be measured by the following core metrics relating to quality:

- Use of Imaging Studies for Low Back Pain
- Well-child Visits
- Children's and Adolescent Access to Primary Care (ages 7-11)
- Developmental Screenings in the First 3 Years of Life
- Diabetic Care HbA1c (ages 18-75)

Exhibit 90 shows the percent of members with a primary diagnosis of low back pain who did not have an imaging study within 28 days of the diagnosis. In this metric, the goal is to see a decrease in imaging studies, which equates to an increase in members who did not have an imaging study. This differs from other metrics where a higher screening rate is better. The rate increased at a similar rate in both the AC Only and control population, with no significant difference between the trends in these groups (p-value > 0.05).

Exhibit 90. MaineCare AC Only - Imaging Studies for Low Back Pain

Group	Pre (2013Q3-2014Q2)	Pre Denominator	Post (2015)	Post Denominator	Change
AC Only Member	81.8%	1,590	83.5%	1,451	2.0%
Control Group	81.7%	1,442	83.2%	1,384	1.8%
Overall MaineCare	84.2%	27,936	83.4%	23,678	-0.9%

Exhibit 91 on the following page shows that the rate of Well-child Visits for children ages 3 to 6 was largely unchanged for child AC members and control group members, with no significant difference between the two groups (p-value > 0.05). The goal was to see an increase in well-child visits.

Exhibit 91. MaineCare AC Only - Well-child Visits (ages 3-6)

Group	Pre (2013Q3-2014Q2)	Pre Denominator	Post (2015)	Post Denominator	Change
AC Only Member	68.3%	3,458	68.8%	3,367	0.8%
Control Group	65.5%	3,200	66.7%	3,071	1.9%
Overall MaineCare	65.0%	24,482	67.4%	21,350	3.7%

Access to Primary Care for children ages 7 to 11 (see **Exhibit 92**) increased significantly faster for AC Only members than controls (p-value < 0.001). The goal was to see an increase in access to primary care. The rate among the overall MaineCare population decreased slightly.

Exhibit 92. MaineCare AC Only - Children's and Adolescent Access to Primary Care (ages 7-11)

Group	Pre (2013Q3-2014Q2)	Pre Denominator	Post (2015)	Post Denominator	Change
AC Only Member	88.5%	3,546	91.0%	3,985	2.9%
Control Group	81.7%	3,707	82.1%	4,024	0.5%
Overall MaineCare	80.6%	36,535	79.7%	35,653	-1.1%

The rate of developmental screenings in the first 3 years of life decreased slightly for AC only members as shown in **Exhibit 93**, but increased significantly in the control group (p-value < 0.001), although to a level still below AC Only members. The goal was to see an increase in the rate of developmental screenings. The increase in the overall MaineCare population is somewhat lower than the trend seen in the control group. The overall increase within this metric is likely impacted by billing education performed around CPT code 96110 to detail which developmental tests could be billed under this procedure code.

Exhibit 93. MaineCare AC Only - Development Screenings in the First 3 Years of Life

Group	Pre (2013Q3-2014Q2)	Pre Denominator	Post (2015)	Post Denominator	Change
AC Only Member	36.0%	2,543	34.7%	1,935	-3.6%
Control Group	20.0%	2,343	33.1%	1,843	65.7%
Overall MaineCare	23.0%	16,147	33.0%	14,051	43.0%

The rates of HbA1c testing for diabetics decreased for both controls and for those engaged in ACs Only (See **Exhibit 94** on the next page). The difference was not statistically significant (p-value > 0.05). The goal was to see an increase in the rate of HbA1c testing.

Exhibit 94. MaineCare AC Only - Diabetic Care HbA1c (ages 18-75)

Group	Pre (2013Q3-2014Q2)	Pre Denominator	Post (2015)	Post Denominator	Change
AC Only Member	78.7%	1,059	72.9%	1,032	-7.4%
Control Group	80.9%	1,070	73.7%	1,036	-8.9%
Overall MaineCare	78.2%	19,310	74.4%	18,106	-4.9%

HbA1c testing rates in 2015 were stratified by acuity and if the member lived in an urban or rural area. The acuity stratification was performed to investigate the result found in Special Study One later in this report where higher acuity members had better than expected rates of HbA1c testing, while lower acuity members had worse than expected rates. The urban and rural stratification was performed to determine if access to care and inadequate transportation could play a role in testing rates. The intervention and control group members who qualified for this metric were divided into four equal categories based on their ERG risk scores (low = 0 to 25th percentile, medium = 26th to 50th percentile, high = 51st to 75th percentile, very high = 76th – 100th percentile). Similar to the HH and AC group, the AC Only group had significantly lower HbA1c testing rates among members in rural areas than members in urban areas as seen in **Exhibits 95** and **96** (p-value < 0.001). The control group did not differ much between rural and urban members (p-value > 0.05), but did have lower testing rates among the low acuity members.

Exhibit 95. MaineCare AC Only – Post Diabetic Care HbA1c (ages 18-75) by Location and Acuity

Acuity	Location	AC Only		Control	
		Members	Testing Rate	Members	Testing Rate
Very High	Rural	140	70.0%	103	71.8%
	Urban	127	75.6%	139	74.8%
High	Rural	111	72.1%	122	78.7%
	Urban	117	83.8%	160	75.0%
Medium	Rural	125	62.4%	91	78.0%
	Urban	138	79.0%	154	75.3%
Low	Rural	125	66.4%	98	67.4%
	Urban	133	72.9%	156	69.2%

Exhibit 96. MaineCare AC Only – Post Diabetic Care HbA1c (ages 18-75) by Location

Location	AC Only		Control	
	Members	Testing Rate	Members	Testing Rate
Rural	501	67.7%	414	74.2%
Urban	515	77.7%	609	73.6%

To assess if the model improves the level of integration of physical and behavioral health, the Follow-Up After Hospitalization for Mental Illness metric was used to compare members engaged in ACs Only and non-engaged controls, although the MaineCare data used to compute this measure does not include complete data on adult admissions to IMD[44]. Not all hospitalizations for MaineCare members were captured due to this data exclusion. However, both the comparison and control group lack this data, so the comparison between the two groups is still valid, but should be interpreted with caution. A follow-up visit is recommended to ensure a smooth transition to a member's daily life, and this visit can help detect post-hospitalization reactions[45]. The specifications for this and all other metrics can be found in the Maine SIM Evaluation Measures section of **Appendix I**. The rate of follow-up increased over time for those engaged in ACs Only, while follow-up in the control group decreased during the same time period, as shown in **Exhibit 97**. Due to a low number of hospitalizations for mental illness in these groups, the difference in trends was not significantly different (p-value > 0.05). The goal was to see an increase in follow-up visits.

Exhibit 97. MaineCare AC Only - Follow-Up After Hospitalization for Mental Illness

Group	Pre (2013Q3-2014Q2)	Pre Denominator	Post (2015)	Post Denominator	Change
AC Only Member	72.3%	408	77.2%	298	6.7%
Control Group	78.1%	430	76.4%	254	-2.3%
Overall MaineCare	71.2%	3,388	74.8%	2,442	5.0%

No claims based metrics assess if ACs led to improvements in beneficiary health, well-being, function, and reduced health risk behaviors. This is best addressed via clinical measures, which have yet to be collected.

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[44] Reflects hospitalization only to Acadia and Spring Harbor facilities.

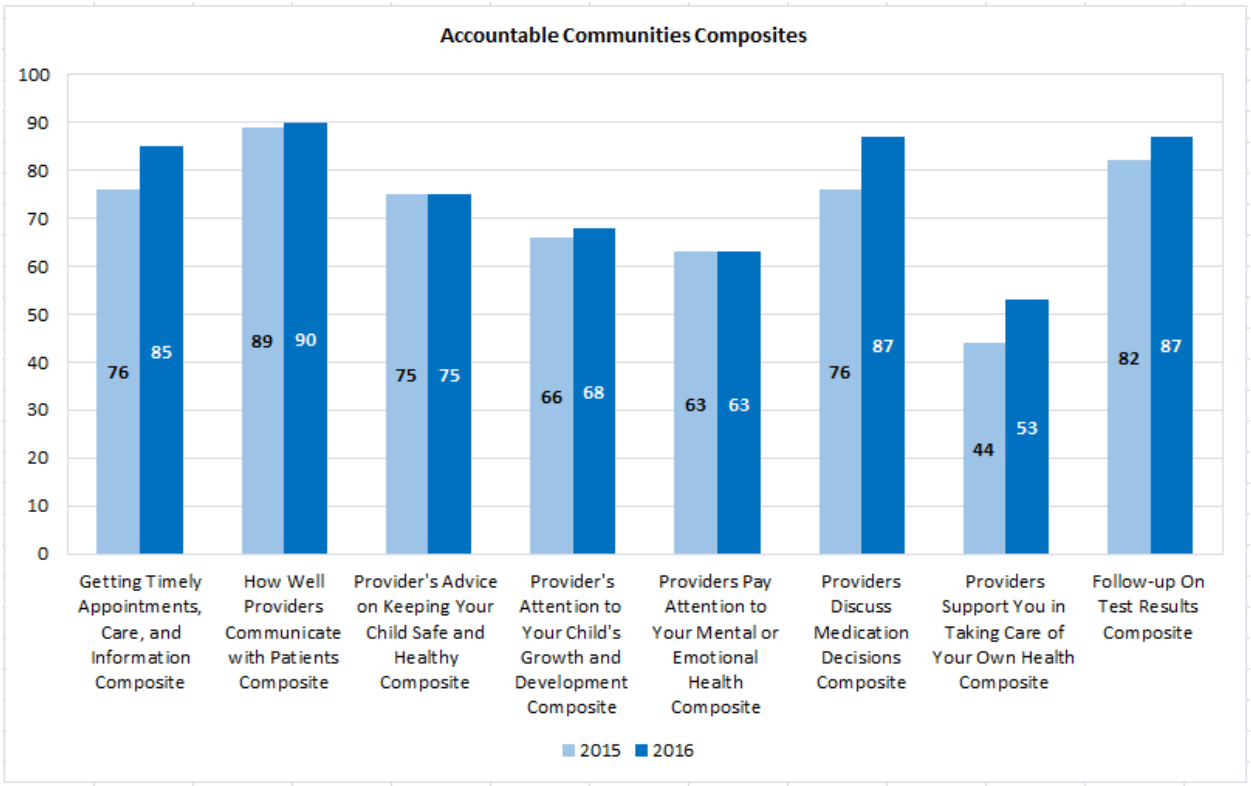
[45] National Quality Measures Clearinghouse (2015). Follow-up after hospitalization for mental illness: percentage of discharges for members 6 years of age and older who were hospitalized for treatment of selected mental illness diagnoses and who had an outpatient visit, an intensive outpatient encounter, or partial hospitalization with a mental health practitioner within 7 days of discharge. Accessed December 1, 2015 from: https://www.qualitymeasures.ahrq.gov/summaries/summary/49734

II.III – Consumer Experience- AC Only

Consumer Experience survey responses were obtained from a total of 1,504 MaineCare members with 590 of them being members enrolled in an AC but not enrolled for the full evaluation period in a HH. In general, there has been a modest increase in these composite measures from 2015, indicating a more positive patient experience.

Composite Measures: Exhibit 98 on the next page compares the 2015 consumer experience survey findings to the 2016 findings. As demonstrated, the consumers' experiences and opinions improved overall from 2015 to 2016.

Exhibit 98. AC Only Composite Measure Findings



Within the ACs, the highest scoring composite measures in 2016 were:

- How Well Providers Communicate With Patients
- Do Providers Discuss Medication Decisions
- Follow-up on Test Results

The least positive scores were:

- Providers Support You in Taking Care of Your Own Health
- Providers Pay Attention to Your Mental or Emotional Health

- Provider's Attention to Your Child's Growth and Development

Individual survey questions of all the AC and HH members were combined for the AC and HH groups because their responses were very similar as is reflected in the narrative below. Instances where that is not the case are noted previously in the HH section of this report beginning on page 51. A detailed breakdown of separate AC and HH response rates to each of the questions is provided in the full report in **Appendix II**.

II.IV – AC Organizations Survey

The 2016 SIM Evaluation provides the first opportunity to survey four MaineCare AC participating organizations[46] with respect to details of their overall AC model design. A survey tool was developed by MDR and members of the SIM Evaluation Committee including representatives from MaineCare. Further details are available in **Appendix II**.

For this research, the lead staff at the four AC organizations were surveyed using a paper survey. Requests to participate were sent on July 28, 2016, and all questionnaires were complete by August 23, 2016. Findings below are organized into key themes.

Findings

Interventions: Many different interventions were selected by participating organizations. Some representative focuses include: reducing ED visits, reducing/avoiding hospitalizations, impacting pharmacy costs, closing gaps in care, and improving communication.

Populations Targeted: A wide variety of targeting approaches was used. Two ACs targeted populations with specific chronic conditions (i.e. diabetes, asthma.), one AC targeted populations by demographic characteristics (i.e. children, disabled), and two targeted high utilization or users of high cost services.

Intervention Components: These differed with the intervention and the targets. Common elements include care teams, revising care protocols, and improved proactivity to manage care.

Decision Making on Interventions and Population: Each of the ACs used broad constituencies to select interventions and target populations. Both behavioral and physical health staff appear to be part of all decision making at all four ACs.

Rationale for Intervention Selection: Two of the ACs mentioned that their choice was data driven, one was consistent with ongoing HH Initiatives, and another was driven by the personal interest of one champion.

Recruiting Practices: ACs used existing structures to recruit and inform participants; this included connecting with providers and practices participating in PCMH monthly meetings, practice leadership teams, and oversight committees.

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[46] Beacon Health, Kennebec Region Health Alliance, MaineHealth Accountable Care Organization, Community Care Partnership of Maine

Central versus Practice Level Responsibilities: The emphasis at ACs was on practice-level implementation with central leadership and data support.

Training: Two ACs relied on training that had been conducted previously and was not specific to their initiatives. One AC, recognizing the need for training, added a specific "performance improvement coach." Another AC noted the need for more training but had not yet taken action.

Importance of HH Program to AC Interventions: Two ACs indicated that HHs were very important to the AC Intervention, and two indicated that it was somewhat important. All ACs agreed that the implementation of the interventions would not be successful without HHs. HHs provided a base of experience, cross disciplinary teamwork, and familiarity with data on at-risk patients.

Lessons Learned: One AC mentioned the importance of communication and education at the practice level. One AC thought that experience would help to address the gap between what was intended and what occurred. In other words, learnings could be used to improve success. One AC noted that interventions should match health system strategic priorities and noted that it is difficult for care teams to focus on delivering interventions to just one payer type; they want to provide it to all patients.

The next section of this report provides an overall summation of AC qualitative and quantitative key findings.

II.V – Overall Summary of AC Findings

Cost Effectiveness

- While there was cost avoidance for members in HHs and ACs, AC members who were not HH eligible did not experience cost avoidance. There was negative cost avoidance for LTC[47], professional behavioral health[48], and pharmacy expenditures

As shown in **Exhibit 99** on the next page, the AC Only population was younger, had fewer chronic conditions and lower MH/SA prevalence than the HH and AC population, but had a substantially higher PMPM. Analysis of these expenditures indicates that they are all driven to a degree by mental health conditions.

[47] Institutional long term care refers to long term stays in a residential hospital or nursing facility setting.

[48] Professional behavioral health includes diagnostic evaluation, psychotherapy, drug services, and prescription management in an office setting.

Exhibit 99. Post Period Acuity and PMPM by Intervention

	ACs Only	ACs and HHs	HHs only	BHHs
Average Age	23.0	34.1	37.4	40.1
Percent Male	46.8%	40.7%	38.6%	40.3%
Average Number of Comorbid Conditions	2.2	2.8	3.0	4.2
Percent with MH/SA	28.0%	37.2%	36.7%	100%
PMPM	$942	$564	$490	$1,306

The areas of negative cost avoidance highlight potential areas of opportunity for ACs. The rate of LTC expenditure growth in the AC Only population is potentially an opportunity to use more home and community based services. Institutional LTC is frequently used post-inpatient discharge, and reducing time in LTC by using more HCBS often requires coordination between community resources, family resources, and a broad mix of other providers. Adding additional care coordination staff could potentially help coordinate LTC/HCBS utilization and behavioral health services. However, the frequency of mental health diagnoses may make staying in the community more challenging for this population.

Increased professional behavioral health expenditures was the second largest area of negative cost avoidance in the AC Only population. This is a different result than in the HH analyses, where we observed lower professional behavioral health cost growth than the control groups and lower growth in the prevalence of MH/SA conditions. Psychotherapeutic drugs were also one of the largest categories of pharmacy expenditures in the AC Only population. Although ACs can incorporate a wide variety of providers, they have less specific requirements for care coordination staff and other resources to manage members when compared to HHs.

Most quality metrics that could be assessed via claims data showed little difference over time for AC Only members relative to the control group. The population served by ACs are younger than the other interventions and MaineCare overall. Only developmental screenings and children's and adolescent access to primary care had a statistically significant difference in trend between the MaineCare AC Only population and the control group. Developmental screenings decreased slightly among the AC Only group while they increased by over 50% in the control group. However, it is important to note that the control group started with a very low screening rate, leaving more room for improvement. The overall increase within this screening is likely impacted by billing education performed around CPT code 96110 to detail which developmental tests could be billed under this procedure code. Children's and adolescent access to primary care was higher in the AC Only group than in the control group, but still grew at significantly faster rate than the controls. **Exhibit 100** on the next page aligns each metric and performance relative to the control group.

Exhibit 100. MaineCare ACs Only - Summary of Quality Metric Performance

Metrics	Performance
Non-emergent ED use	AC members performed better than control members
All-cause readmissions	AC members did not perform as well as control members
Median FCI	AC members performed better than control members
Use of Imaging Studies for Low Back Pain	AC and control members performed similarly
Well-child Visits (ages 3-6)	AC and control members performed similarly
Children's and Adolescent Access to Primary Care (ages 7-11)	AC members performed better than control members*
Developmental Screenings in the First 3 Years of Life	AC members did not perform as well as control members*
Diabetic Care HbA1c (ages 18-75)	AC and control members performed similarly
Follow-Up After Hospitalization for Mental Illness	AC members performed better than control members

*Statistically significant results are indicated with an asterisk

AC Only Consumer and AC Organization Overall Survey Findings

AC Only consumer survey findings indicate in general, there has been a modest increase in composite measures from 2015, indicating a more positive patient experience in 2016.

AC organization surveys indicate that each of the processes to select and manage interventions by the AC Initiative was different as were the interventions themselves. These preliminary findings offer a baseline of information for future analysis of each individual AC organization (outside the scope of this evaluation).

III. MaineCare Behavioral Health Homes

The MaineCare BHHs began serving MaineCare members in April 2014. This intervention seeks to build on the existing patient-centered models by targeting care coordination and other activities for adults with Serious Mental Illness and children with SED [49], who also have a significant impairment or limitation.

For this report, we reviewed data from claims, consumer interviews, and provider surveys to assess the implementation of the intervention and related outcomes to date. The pre period for

[49] Maine Quality Counts. "2014 Practice Requirements: Core Expectations."

this analysis is calendar year 2013 Q2 to 2014 Q1 as BHHs began in April 2014, and the post period is calendar year 2015 Q1 to 2015 Q4.

To assist in understanding the population enrolled in BHHs, **Exhibit 101** shows some demographic, risk, and diagnostic information. The retrospective risk scores, comorbid conditions, and diagnostic categories are derived from the ERG software in the Optum Symmetry Suite.[50] These members have higher risk scores, comorbid conditions, average age, diabetes prevalence, and PTSD prevalence. Members enrolled in BHH tend to be older with more chronic conditions, including serious mental illnesses.

Exhibit 101. MaineCare BHH – Group Characteristics

Population	Members		Average Risk		Average Age		Percent Male		Average Comorbid Conditions		Percent Diabetic		Percent with PTSD	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post
BHH Member	1,093	1,093	3.6	4.1	38.4	40.1	40.3%	40.3%	3.9	4.2	15.5%	17.2%	35.4%	40.2%
Control Group	1,093	1,093	4.0	4.5	38.1	39.9	37.2%	37.2%	4.4	4.6	16.8%	16.4%	27.1%	28.7%

III.I – Cost Effectiveness Findings

MaineCare members participating for at least six months in BHHs exhibited a 41% increase in cost after engagement in the initiative compared to the pre-engagement period. By comparison, expenditures for a control group of similar but not engaged members increased 17% during the same period of time. If expenditures for BHH members increased at the same rate as the control group, expected costs for this population would have been approximately $1,085 PMPM, or $221 PMPM lower than they actually were ($1,306 PMPM). **Exhibit 102** below summarizes the change in total expenditures for members enrolled in BHHs.

Total PMPM expenditures during the pre or baseline period were similar for both BHH members and the control group ($926 vs $1,011, or only 9% higher in the control group). Ideally the baseline variance would be zero, however this is often not possible in practice because BHH members are a relatively difficult population to match and are very different than most MaineCare members.

Exhibit 102. MaineCare BHH - Total PMPM Cost Avoidance Estimate

	Pre (2013 Q2-2014 Q1)	Post (2015)	Change	Expected PMPM	Cost Avoidance
BHH Member	$926	$1,306	41.0%	$1,085	-$221
Control Group	$1,012	$1,185	17.2%	N/A	N/A

[50] https://www.optum.com/providers/analytics/health-plan-analytics/symmetry/symmetry-episode-risk-groups.html

The BHH members this year are less expensive in the pre period than the BHH study group was in last year's analysis ($926 vs $1,012 PMPM). When starting from a lower pre period cost, it is more difficult to attain high cost avoidance. Reference **Exhibit 103** to see some main differences between the BHH members analyzed from the Maine SIM Self Evaluation 2015 Annual Report and this year. Please see **Appendix I** for a complete list of changes in estimated cost avoidance.

The members in the case and control groups this year appear to be slightly younger and lower acuity than those in the 2015 Maine Sim Self-Evaluation Annual Report. When looking into this further, we found that less than half of the members this year were also in last year's analysis. The new members were those who did not have enough BHH eligibility in 2014 to be included last year, but had at least six months of BHH enrollment in 2015. The new members appear to be younger, less expensive, and lower acuity. Conversely, the members who were in last year's analysis but not this year did not have enough BHH eligibility in 2015 to be included. These members were older, more expensive, and higher acuity. The change in case mix affects the groups this year to make them appear slightly different than last year (see **Exhibit 103**).

Exhibit 103. MaineCare BHHs - Comparison of Pre Period Demographics between 2015 and 2016 Annual Reports

	PMPM (Pre)	Member Months (Pre)	Average Risk Score (Pre)	Average Comorbid Conditions (Pre)	Average Age (Pre)
BHH Member in Both 2015 and 2016	$910	5,411	3.7	4.1	40.7
BHH Member in 2015 only	$1,234	9,904	4.6	4.5	39.2
BHH Member in 2016 only	$932	7,114	3.5	3.5	36.8

In BHHs, lower medical expenditures were offset by administrative payments made to BHHs and to BHHOs as shown in **Exhibit 104** on the next page. Pharmacy expenditures were higher for both groups; however, expenditures for BHH members increased slightly less rapidly then for the control group (up 50% vs 57%). Baseline medical expenditures were 7% higher in the control group. In the Maine SIM Self-Evaluation 2015 Annual Report, we found a cost avoidance of $150 PMPM, which did not include the administrative payments. This year we found a cost avoidance of approximately $50 PMPM from claims data, but the administrative payments of $271 PMPM on average negated the claims-based cost avoidance. Additionally, the BHH group this year had a pre period medical PMPM that was $169 lower than the pre period medical PMPM last year ($819 vs $988 PMPM). This is due to the lower acuity case mix of members we found who were not BHH eligible long enough in 2014, but had enough BHH eligibility in 2015 to be included in this year's evaluation.

Exhibit 104. MaineCare BHH - Medical PMPM Cost Avoidance Estimate

	Pre (2013 Q2 – 2014 Q1)	Post (2015)	Change
BHH Medical PMPM	$819	$873	6.7%
BHH Administrative Payment	$0	$271	N/A
BHH Total (without Pharmacy)	$819	$1,145	40%
Control Group Medical PMPM	$876	$973	11.1%

Within medical spending, **Exhibit 105** below shows the top categories that explain the cost avoidance for BHH members. A full breakdown of cost avoidance by all categories of service is included in the Claims Data Analysis Methodology section of **Appendix I** on page 29.

Exhibit 105. MaineCare BHH – Cost Avoidance by Category

Service Category	Cost Avoidance
Professional Behavioral Health Services[51]	$97
Professional Case Management Expenditures	$21
Outpatient Therapy Expenditures[52]	$35
BHH Administrative Payment	-$271

Lower medical expenditures were driven by lower professional behavioral health and case management expenditures for BHH as shown in **Exhibits 106 and 107** below. Professional behavioral health includes diagnostic evaluations, psychotherapy, drug services, and prescription management in an office setting, while professional case management includes case management and coordination of care in an office setting. Baseline professional behavioral health and case management expenditures were 14% higher for both categories in the control group than the intervention group. **Exhibit 105** above shows that these groups are similarly matched among many demographic and diagnostic categories. Although the baseline variance between the intervention and comparison groups is not ideal, the magnitude of the decrease is so large that it is difficult to conclude the change in expenditures is due to chance or some factor other than BHH participation

Exhibits 106 and **107** on the next page also show PMPM cost avoidance estimates for professional behavioral health and professional case management respectively. Further analysis is needed to fully understand the cost changes that are occurring in the data.

[51] Professional behavioral health includes diagnostic evaluation, psychotherapy, drug services, and prescription management in an office setting.
[52] Outpatient therapy includes therapies such as respiratory, physical, occupational, and speech.

Exhibit 106. MaineCare BHH - Professional Behavioral Health PMPM Cost Avoidance Estimate

	Pre (2013 Q2 – 2014 Q1)	Post (2015)	Change	Expected PMPM	Cost Avoidance
BHH Member	$482	$362	-25.0%	$458	$97
Control Group	$551	$524	-5.0%	N/A	N/A

Exhibit 107. MaineCare BHH - Professional Case Management PMPM Cost Avoidance Estimate

	Pre (2013 Q2 – 2014 Q1)	Post (2015)	Change	Expected PMPM	Cost Avoidance
BHH Member	$40	$13	-67.4%	$34	$21
Control Group	$45	$39	-13.2%	N/A	N/A

There were lower than expected facility outpatient therapy expenditures in **Exhibit 108**. Facility outpatient therapy includes occupational therapy, physical therapy, and alcohol and drug therapy in an outpatient setting.

Exhibit 108: MaineCare BHH – Facility Outpatient Therapy PMPM Cost Avoidance Estimate

	Pre (2013 Q2-2014 Q1)	Post (2015)	Change	Expected PMPM	Cost Avoidance
BHH Member	$22	$129	490%	$164	$35
Control Group	$10	$76	649%	N/A	N/A

Facility outpatient therapy cost avoidance changed substantially between this version of the report and the prior version (-$74 before vs +$35 now). As shown above, expenditures in this category increased rapidly for both cases and controls, with expenditures in the control group growing more rapidly. In the 2015 Maine SIM Self-Evaluation Annual Report facility outpatient therapy expenditures in the BHH group increased by 173% compared to 45% in the control group.

In Lewin's Category of Service logic, claims submitted on UB-92 forms are classified using revenue codes and as described in **Appendix I**. In some cases, behavioral health services are submitted on facility claim forms and can be further identified using procedure codes that are also found on these claims.

For both the MaineCare BHH and control group, more than 90% of the expenditure growth was driven by two procedure codes:

- H0019 - BHVAL HEALTH; LONG-TERM RES W/O ROOM&BOARD-DIEM
- T1020 - PERSONAL CARE SERVICES PER DIEM

Although the expenditure increase in **Exhibit 108** was at a rate lower than the control group resulting in cost avoidance for this category of service, the rapid increase in residential treatment is somewhat unexpected given the focus of remaining in the community.

III.II – Impact Findings from Claims Analysis

The pre-intervention or baseline period for this analysis spans April 2013 through March 2014, prior to the implementation of BHHs. The post-intervention period spans January 2015 through December 2015. Last year's report measured the changes in utilization and quality of care immediately following the implementation of the intervention in April 2014. This year's report looks to see if these changes were sustainable over time. For each measure, we tested if the change from the pre to the post period differed significantly at a $P < 0.05$ level between the BHH and comparison populations.

To assess if the model leads to improvements in care coordination and less fragmentation of care, we evaluated changes in non-emergent ED use, FCI, and all-cause readmission rates relative to the control group.

The median FCI decreased at a faster rate for the control group than for BHH members before and after engagement in BHHs as shown in **Exhibit 109**, while the goal was to see a decrease in fragmentation of care. The median FCI decreased at a slower rate among MaineCare overall than the intervention or control group. These FCI changes between the groups were statistically significant (p-value < 0.05). The findings in the Maine SIM Self-Evaluation 2015 Annual Report reflect the same pattern where the control group decreased at a faster rate than the BHH members.

Exhibit 109. MaineCare BHH - Median FCI

Group	Pre (2013 Q2 – 2014 Q1)	Pre Denominator	Post (2015)	Post Denominator	Change
BHH Member	0.64	864	0.60	899	-6.7%
Control Group	0.65	882	0.60	858	-7.2%
Overall MaineCare	0.64	172,880	0.60	149,295	-5.8%

Non-emergent ED use is also a marker of poor care coordination because it measures ED visits that are better handled in primary care settings. The rate of non-emergent ED visits for the control group decreased over time more quickly than among the BHH members, and the goal was to see a decrease in non-emergent ED use. However, this was not a statistically significant difference (p-value > 0.05). Non-emergent ED use decreased at a slower rate over time for MaineCare overall. While case matching was done to ensure similar members in the intervention and control groups, the case matching cannot control for everything. As such, the control group has a higher non-emergent ED use rate in the pre period. The members who experienced non-emergent ED use are subsets of the populations of interest, and do not necessarily reflect the

characteristics of the entire intervention or control group. Note that in **Exhibit 110** below, the denominators show member months because the rate is calculated on a per thousand member month basis.

Exhibit 110. MaineCare BHH - Non-Emergent ED Use Per Thousand

Group	Pre (2013 Q2 – 2014 Q1)	Pre Denominator	Post (2015)	Post Denominator	Change
BHH Member	184.8	12,536	157.91	12,919	-14.5%
Control Group	210.4	12,490	172.44	12,596	-18.0%
Overall MaineCare	127.1	3,805,809	120.8	3,357,889	-5.0%

30-day hospital readmissions are driven by a wide variety of reasons including poor medication management, lack of community supports, infections or complications from care. Some of these reasons can reflect poor care coordination during transitions from hospital to home. The rate of readmissions declined for BHH members, which was the goal, but more than doubled in the control group, as seen in **Exhibit 111**. Due to the small number of index admissions, there was no statistically significant difference between these groups (p-value > 0.05). The overall MaineCare population experienced a small increase in readmissions compared to the large increase in the control group.

Exhibit 111. MaineCare BHH Readmission Rate

Group	Pre (2013 Q2 – 2014 Q1)	Pre Denominator	Post (2015)	Post Denominator	Change
BHH Member	11.6%	69	10.3%	87	-10.8%
Control Group	7.5%	67	19.8%	106	165.5%
Overall MaineCare	14.6%	14,681	15.0%	13,463	2.7%

Improvements in quality and processes of care can be measured by the following quality metrics:

- Use of Imaging Studies for Low Back Pain
- Well-child Visits (ages 3-6)
- Children's and Adolescent Access to Primary Care (ages 7-11)
- Developmental Screenings in the First 3 Years of Life
- Diabetic Care HbA1c (ages 18-75)

Relatively few children are engaged in BHHs which results in a very small number of members included in the Developmental Screenings in the First 3 Years of Life, Access to Primary care (ages 7-11), and Well-child Visits (ages 3-6) measures. Consequently these measures are not reported.

Exhibit 112 shows the percent of members with a primary diagnosis of low back pain who did not have an imaging study within 28 days of the diagnosis. In this metric, the goal is to see a decrease in imaging studies, which would be an increase in members who did not have an imaging study. This differs from other metrics where a higher screening rate is better. The rate decreased at a faster rate among the BHH members than the control group, and MaineCare overall had a slight decrease. This difference in rate changes was not statistically significant (p-value > 0.05).

Exhibit 112. MaineCare BHH - Imaging Studies for Low Back Pain

Group	Pre (2013 Q2 – 2014 Q1)	Pre Denominator	Post (2015)	Post Denominator	Change
BHH Member	85.8%	183	76.8%	190	-10.4%
Control Group	84.9%	219	79.0%	210	-6.9%
Overall MaineCare	84.7%	28,709	83.4%	23,678	-1.5%

The rate of HbA1c testing for diabetics decreased for both BHH members and the control group. HbA1c testing rates decreased at a faster rate among the BHH members than for members in the control group. The goal was to see an increase in the rate of HbA1c testing. The difference between these rate changes was not statistically significant (p-value > 0.05) as shown in **Exhibit 113**. MaineCare overall also saw a decrease in HbA1c testing, but not as high as BHH members.

Exhibit 113. MaineCare BHH - Diabetic Care HbA1c (ages 18-75)

Group	Pre (2013 Q2 – 2014 Q1)	Pre Denominator	Post (2015)	Post Denominator	Change
BHH Member	78.1%	155	70.8%	161	-9.3%
Control Group	83.8%	148	82.6%	155	-1.4%
Overall MaineCare	78.7%	19,333	74.4%	18,106	-5.5%

HbA1c testing rates in 2015 were stratified by acuity and if the member lived in an urban or rural area. The acuity stratification was performed to investigate the result found in Special Study One later in this report where higher acuity members had better than expected rates of HbA1c testing, while lower acuity members had worse than expected rates. The urban and rural stratification was performed to determine if access to care and inadequate transportation could play a role in testing rates. The intervention and control group members who qualified for this metric were divided into four equal categories based on their ERG risk scores (low = 0 to 25th percentile, medium = 26th to 50th percentile, high = 51st to 75th percentile, very high = 76th – 100th percentile). Due to the smaller size of the BHH intervention and control groups, it is difficult to draw many conclusions from these stratified results. The rural members tended to have higher testing rates than urban members among both the intervention and control groups as seen in **Exhibits 114** and **115** on the following page, with the exception of the very high acuity BHH members. These results do not indicate that adequate transportation to care is associated with higher testing rates, although the findings were not statistically significant (p-value > 0.05).

Exhibit 114. MaineCare BHH – Post Diabetic Care HbA1c (ages 18-75) by Location and Acuity

Acuity	Location	BHH		Control	
		Members	Testing Rate	Members	Testing Rate
Very High	Rural	19	63.2%	13	84.6%
	Urban	21	71.4%	26	84.6%
High	Rural	10	90.0%	25	84.0%
	Urban	25	64.0%	19	68.4%
Medium	Rural	10	90.0%	21	85.7%
	Urban	33	81.8%	15	86.7%
Low	Rural	14	64.3%	22	95.5%
	Urban	29	58.6%	14	64.3%

Exhibit 115. MaineCare BHH – Post Diabetic Care HbA1c (ages 18-75) by Location

Location	BHH		Control	
	Members	Testing Rate	Members	Testing Rate
Rural	53	73.6%	81	87.7%
Urban	108	69.4%	74	77.0%

To assess if the model improves the level of integration of physical and behavioral health, we evaluated the Follow-Up After Hospitalization for Mental Illness metric for members engaged in BHHs compared to non-engaged controls. A follow-up visit is recommended to ensure a smooth transition to a member's daily life, and this visit can help detect post-hospitalization reactions.[53] Although the MaineCare data used to compute this measure does not include IMD [54] for inpatient mental health treatment, both the intervention and control group lack this data, so the comparison between the two groups is still valid. Not all hospitalizations for MaineCare members were captured due to this data exclusion. The rate of follow-up increased at a faster rate for the members engaged in MaineCare BHHs compared to the control group. The goal was to see an increase in follow-up visits. Due to the small number of index hospitalizations and incomplete

[53] National Quality Measures Clearinghouse (2015). Follow-up after hospitalization for mental illness: percentage of discharges for members 6 years of age and older who were hospitalized for treatment of selected mental illness diagnoses and who had an outpatient visit, an intensive outpatient encounter, or partial hospitalization with a mental health practitioner within 7 days of discharge. Accessed December 1, 2015 from: https://www.qualitymeasures.ahrq.gov/summaries/summary/49734.

[54] Reflects hospitalization only to Acadia and Spring Harbor facilities.

data, these rates should be interpreted with caution. The difference between these rate changes was not statistically significant (p-value > 0.05), as seen in **Exhibit 116**.

Exhibit 116. MaineCare BHH - Follow-Up After Hospitalization for Mental Illness

Group	Pre (2013 Q2 – 2014 Q1)	Pre Denominator	Post (2015)	Post Denominator	Change
BHH Member	70.0%	40	76.2%	42	8.8%
Control Group	86.1%	36	88.1%	42	2.3%
Overall MaineCare	69.0%	3,470	74.8%	2,442	8.4%

No claims based metrics assess if BHHs lead to improvements in beneficiary health, well-being, function, and reduced health risk behaviors. This is best addressed via clinical measures, which have yet to be collected.

III.III – Comparison To Findings in 2015 Annual Report

Comparison of the findings above to those in the 2015 Annual Report shows that outcomes of the model have been durable over time. Cost avoidance in this report is lower, but the previous report did not include administrative payments. The table on the following page (**Exhibit 117)** summarizes the methodology used in both reports and the resulting findings.

Exhibit 117. MaineCare BHH - Prior Report Comparison

	2015 Evaluation	2016 Evaluation
Study Design	Difference-in-Difference	Difference-in-Difference
Case Matching	Propensity score matching using age, gender, risk score, pre time period PMPM, the presence of selected chronic conditions, geography (urban/rural), and MaineCare eligibility	Propensity score matching using age, gender, risk score, pre time period PMPM, the presence of selected chronic conditions, geography (urban/rural), and MaineCare eligibility
Inclusion Criteria	Six months of BHH enrollment, diagnosis of mental health, BH, substance abuse, or SPMI conditions.	Six months of BHH enrollment, diagnosis of mental health, BH, substance abuse, or SPMI conditions.
Pre-Intervention Time Period	CY 2013Q2-2014Q1[55]	CY 2013Q2-2014Q1
Post-Intervention Time Period	CY 2014Q2-2015Q1	CY 2015
Includes PMPM Paid to BHH	No	Yes
Baseline PMPM	$1,098	$926
Cost Avoidance Per Year	$150	-$221
Primary Categories of Cost Avoidance	Professional BH, Professional Case Management, Facility Outpatient Therapy	Professional BH, Professional Case Management, Facility Outpatient Therapy

The primary difference between the results reported in the prior evaluation and those in this report was that the cost of payments made to BHHOs are included in the cost avoidance calculation. Excluding those costs, BHH members avoided $51 PMPM of claims-based expenditures.

III.IV – Consumer Experience- BHH

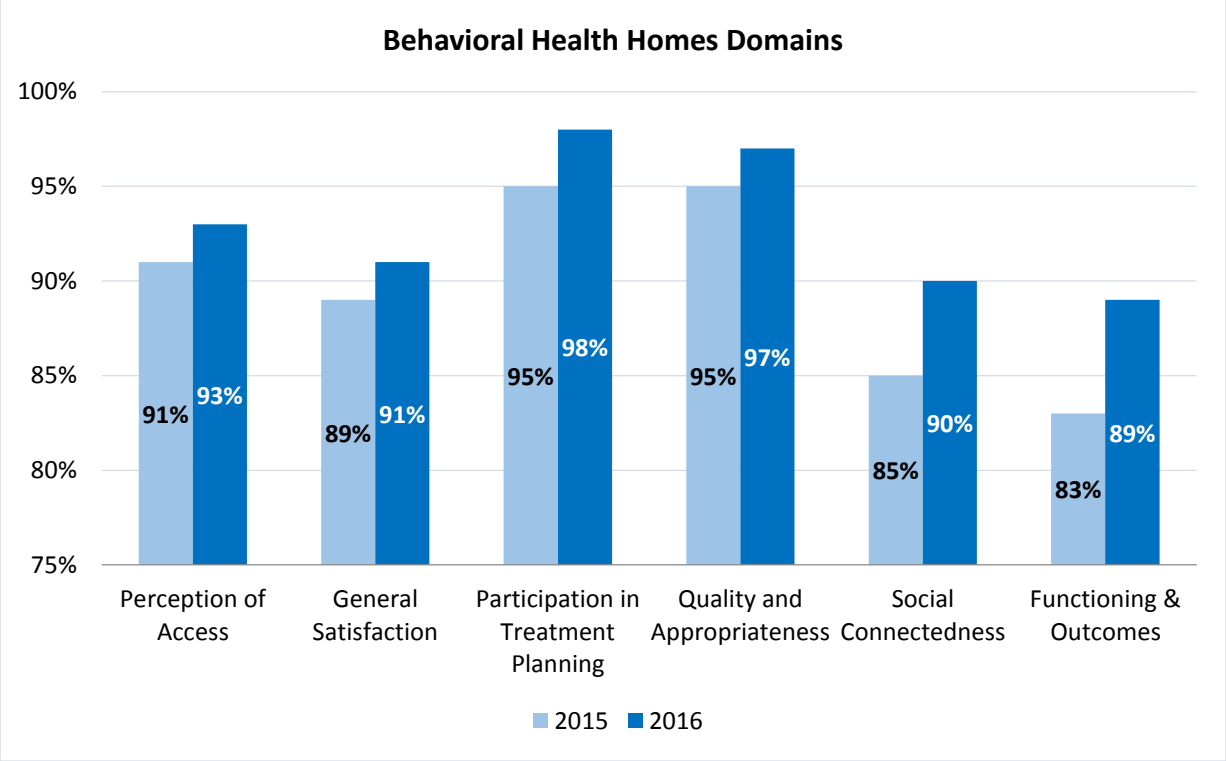
Consumer Experience survey responses were obtained from a total of 1,504 MaineCare members with 274 responses from members enrolled in a BHH. Consumers were sent an initial survey

[55] While the impact findings were analyzed on a full twelve months of claims in the last report, the cost findings were analyzed on nine months, CY2013Q2-CY2013Q4

invitation letter and then contacted by phone. Those who could not be reached by phone were mailed a paper copy of the survey to complete.

Domain Measures: Exhibit 118 compares the 2015 BHH consumer experience survey findings to the 2016 findings. As demonstrated, the BHH consumers' experiences and opinions improved overall from 2015.

Exhibit 118. BHH Domain Measure Findings - Comparison 2015-2016



The BHH intervention group scores were highest in the areas of:

- Cultural Sensitivity (2015 results: 100 %/2016 results: 100%)
- Participation in Treatment Planning (2015 results: 95%/2016 results: 95%)
- Quality and Appropriateness (2015 results: 94%/2016 results: 95%)

The BHH intervention group was rated less highly in the areas of:

- Social Connectedness (2015 results: 96%/2016 results: 85%)
- Functioning & Outcomes (2015 results: 86%/2016 results: 84%)

Individual Survey Questions: The analysis that follows intends to identify areas where patients indicated a highly positive experience and areas where they had a less positive experience, and in so doing it identifies areas of possible focus for improving the patient experience.

Providers Giving Information to Patients: Almost all patients reported being given information about their rights, and being given the information they need to manage their illness.

- Patients were less likely to report that they have received a summary of care or instructions for their care from their provider. This concept is the second lowest measure in the entire consumer research study. BHH patients are also reporting this at a statistically significant lower rate (59% yes) versus patients in ACs (88% yes) or HHs (81% yes)

Does the Provider Explain Clearly?: Separate from simply providing information, it is important that a patient understand the information that they are provided. This topic area includes two questions that ask patients if their provider gave them information that was easy for the patient and their family to understand.

- This area was one of the highest performing in the BHH study. Both associated measures are 90% or above

Does the Provider Listen and Seek Input?: This area of focus is the most closely related to an existing domain, patient participation in treatment planning, but provides a more comprehensive look at how well providers engage with their patients. While it is important for providers to give patients the information they need to manage their own care, it is just as important that patients are also engaged and feel they have a role in their own care. This topic area included 13 questions that focused on providers listening to their patients and seeking their patients' input into managing their own care. This includes asking whether the provider listens and encourages patients to ask questions and get involved in their treatment planning and care. The questions also ask whether the patients felt they were involved in managing their own care and treatment.

- Individuals facing cost or structural barriers to their care reported statistically significant lower scores than patients generally on several of these measures. In particular, they are less frequently consulted about managing their own or their child's health. Patients who feel they are getting the care they need are more likely to say they are not a participant in their own care
- Overall, patients rated this area highly. Among the 13 items, none received less than an 80% positive response. While some of these areas were lower than what was measured in 2015, none were lower by large amounts, and all maintain a very high level of performance. In particular, patients reported that their wishes and decisions are respected and that they understand and are involved in their own health care

Help Coordinating Care: BHH patients were asked two questions that focused on coordination of their care not only whether their providers worked to coordinate their care, but also whether the family's role in care was discussed.

- The measure, "In the last 12 months, did anyone talk to you about whether to include your family or friends in your/your child's counseling or treatment?" was the lowest rated measure in the consumer research, and saw a decline from 2015. This might highlight a

training opportunity, in order to be certain that providers are discussing this aspect of treatment with families

Is Provider Up-to-Date on Care Received From Other Providers: One of the key aspects to care integration is access to patient information, particularly access to information across all providers that are caring for a patient. This topic area focuses on whether patients perceive that their provider is up to date on care they received from not only other physical and behavioral health providers, but also from other service agencies.

- This topic included only one measure asked of BHH patients, "The people I went to for counseling or treatment are aware of the services I/my child receive(s) from other doctors, home care, and/or community agencies," to which patients were very positive

Outcomes and Functioning: This topic area looks at the impacts that services are having on the lives of patients. These 11 questions ask patients to rate how their care improved their lives not only in terms of symptom relief, but also how the care has improved their family and social condition.

- While most items here are trending positively from 2015, this topic features some of the most consistently troublesome scores in both iterations of this research. While most scores for BHH patients were rated upwards of 85% and frequently into the mid-90s, Outcomes and Functioning saw seven measures with scores less than 80%. This represents the majority of scores in the area
- Patients felt that the services they receive put them in better control of their life generally. They reported dealing better with crisis situations, being more in control, and more able to do the things they want. Patients were, however, less positive that their services are helping them in social situations, whether those situations are with friends or family or at work and school. Likewise, many patients reported that their symptoms continued to bother them

These findings suggest that there is room for improvement in how services impact how patients are functioning in social situations. Large groups of patients felt they are still struggling to form social networks that would provide support outside of their provider's office. This supports findings in other areas of this research, and suggests the need for ways to help patients establish strong support networks outside of their medical offices.

Social Support: This topic area includes questions that ask patients about support from the current behavioral health providers. In addition, it asks patients whether there is a broader network to which they can turn to for support if needed.

- This area shows consistency with findings in the Outcomes and Functioning theme. Generally, scores were highly positive and trend upward between 2015 and 2016 in almost all areas. The lowest rated items were those which ask about broader social support; the ability to seek care and support from a social network rather than from a medical provider. Though these scores were highly positive, they do not rise to the very high levels seen in most other measures throughout this survey, suggesting an area for improvement

Support Getting Needed Services: The topic area includes questions that determine whether patients have a need for services, whether help was needed in getting any needed services, and whether the patient received the help they needed.

- Patients are very positive about the helpfulness of the people they go to for counseling or treatment when the need help with housing, jobs, or a crisis. These numbers are down from a near-universal approval level in 2015, and likely represents a very small number of individuals. Those who receive the services they need tend to find it helpful
- Of those seeking help with any of the situations presented, about a quarter were not receiving the help. This is consistent across survey administrations, and suggests a need for more effective services in these areas

III.V – BHH Provider Survey

For this 2016 Maine SIM Self-Evaluation, MDR surveyed BHH providers as previously described in the HH provider survey discussion. MDR obtained 32 completed surveys from BHH respondents. Survey participants represented a very broad cross-section of staff, largely in administrative roles at BHHs. The findings below are grouped into key themes, and a fully-detailed report is in **Appendix II**.

Findings

Overall Effectiveness of BHH Efforts: 93% of BHHs rated their BHH interventions as very or somewhat effective at improving behavioral health.

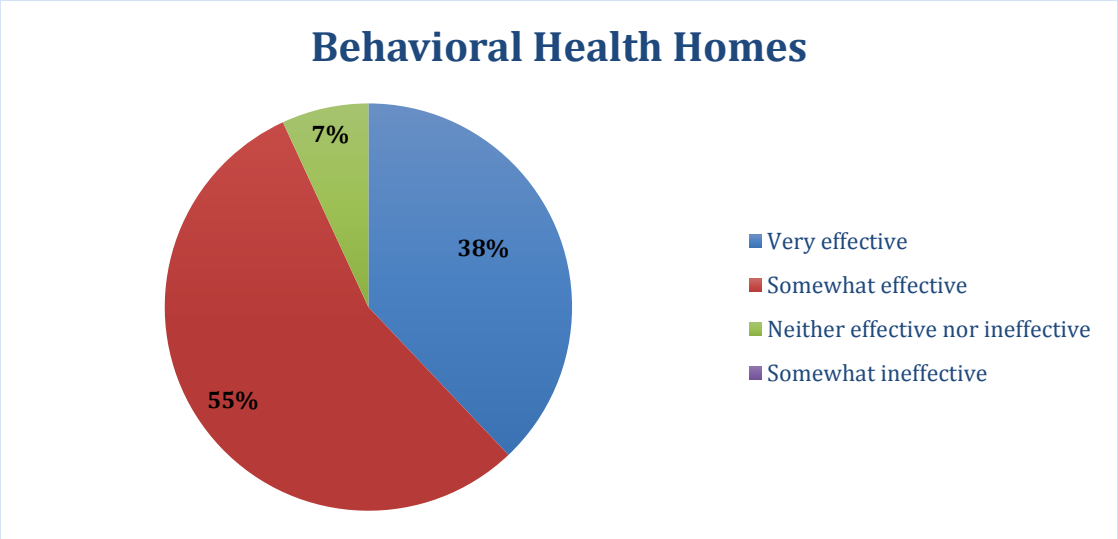
Most frequently mentioned changes at BHHs to improve behavioral health:

- 32% Developed wellness groups/peer supports
- 27% Use of HIN's HIE/MaineCare portal
- 27% Increased care coordination/Team-based approach
- 23% BHH integration with physical health providers
- 18% Implemented a new care management model
- 18% Increased availability of BHH staff

In summary, respondents overwhelmingly indicated that they perceived their efforts as successful. These positive assessments carried over into all the topics addressed in the survey. The largest number of respondents, (45%), cited changes in care including Increased care coordination/team-based approach (27%) or implementation of a new care management model (18%). Development of peer supports and wellness groups was also commonly mentioned as a favorable change. BHH respondents also noted a greater participation of patients in their own care.

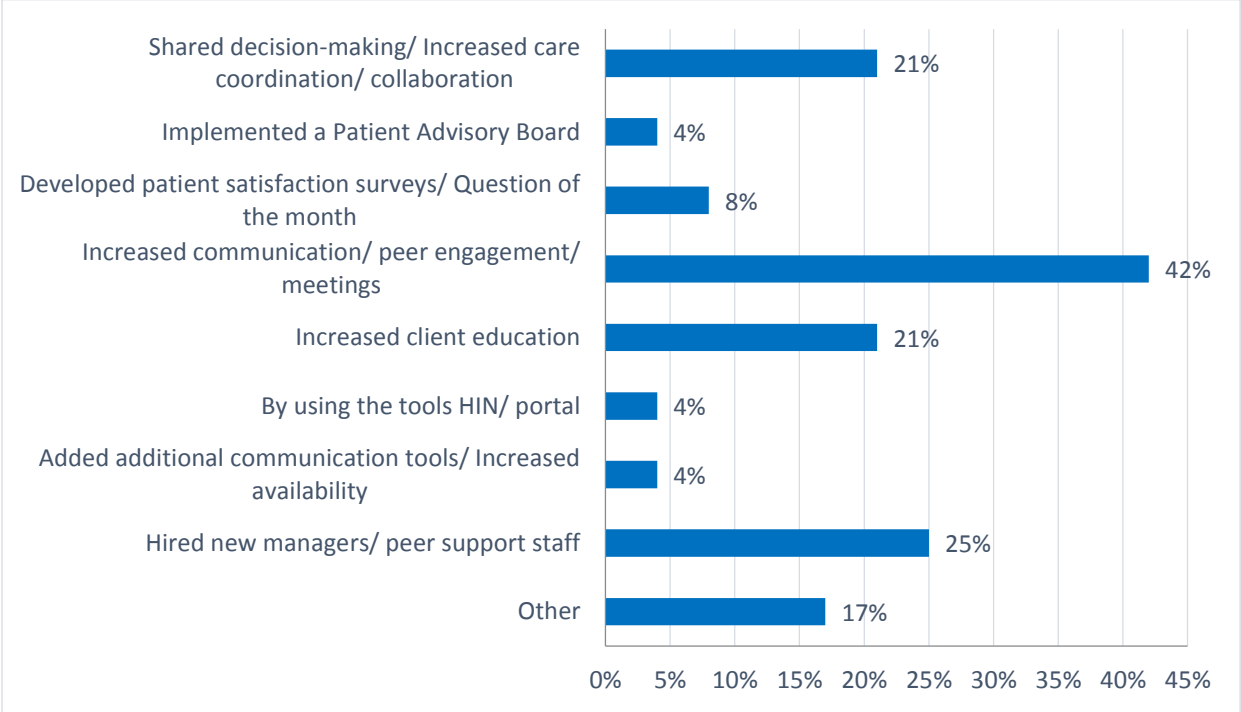
Improving Patient Engagement- 93% indicated their efforts to improve patient engagement were very or somewhat effective as shown in **Exhibit 119** below.

Exhibit 119. Effectiveness of Efforts to Improve Patient Engagement



Most frequently mentioned patient engagement actions at BHHs are further described in **Exhibit 120**:

Exhibit 120. Most Frequently Mentioned Patient Engagement Actions at BHHs



In summary, BHHs indicated they were very effective at patient engagements. They relied on the use of a new staff role at BHHs, a peer support person, and the use of peer support groups or wellness groups focused on specific conditions.

Care Coordination:

- 90% of BHHs indicated that coordination of behavioral health was somewhat or very effective
- 93% indicated that coordination of physical health was somewhat or very effective

Most frequently mentioned efforts to improve physical health coordination at BHHs:

- 40% Increased communication/collaboration between practices
- 24% Increased care coordination
- 20% Using or added care coordinator
- 16% Use of HIN's HIE and /or their own EHR
- 12% Integrated health care

Most frequently mentioned efforts to improve behavioral health coordination at BHHs:

- 53% Increased collaboration/Team based approach
- 26% Increased care coordination
- 16% Use of HIN's HIE
- 11% Using or added care coordinator/RN

In summary, improved care coordination was identified as a key success in this project. The new role of Care Coordinators at BHHs were cited as core to this success. Respondents were enthusiastic about the addition of staffing for this new role. Aside from adding Care Coordinators, BHHs addressed physical health by improving coordination and collaboration with other providers. A key tool for identifying physical health issues and tracking care was the HIN's HIE.

Diabetes Efforts: 82% of BHHs indicated that they were somewhat or very effective at addressing diabetes related needs of their patients (see **Exhibit 121** on the next page). Specific efforts to impact diabetes care are detailed further in **Exhibit 122** on the next page.

Exhibit 121. BHH Perceived Effectiveness of Efforts in Addressing Diabetes

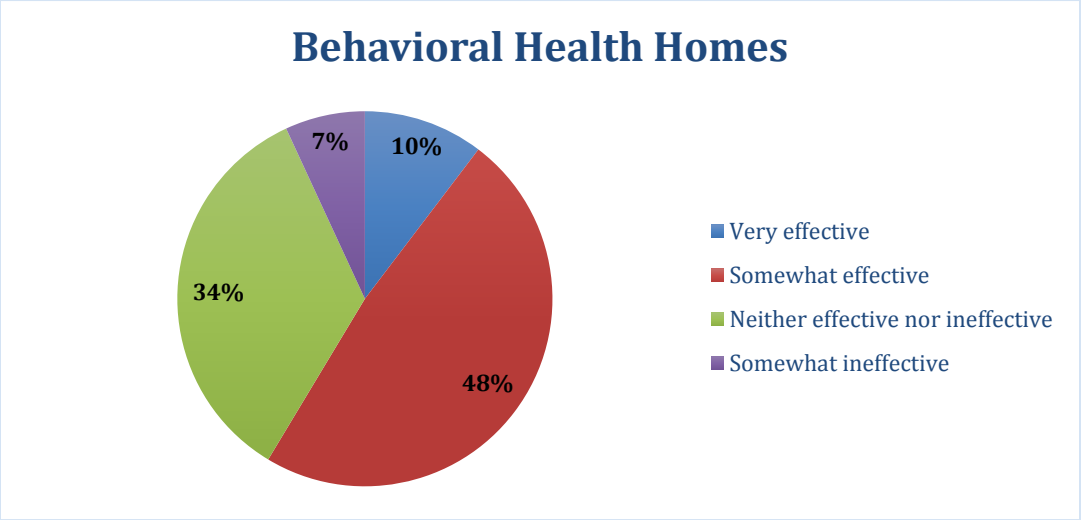
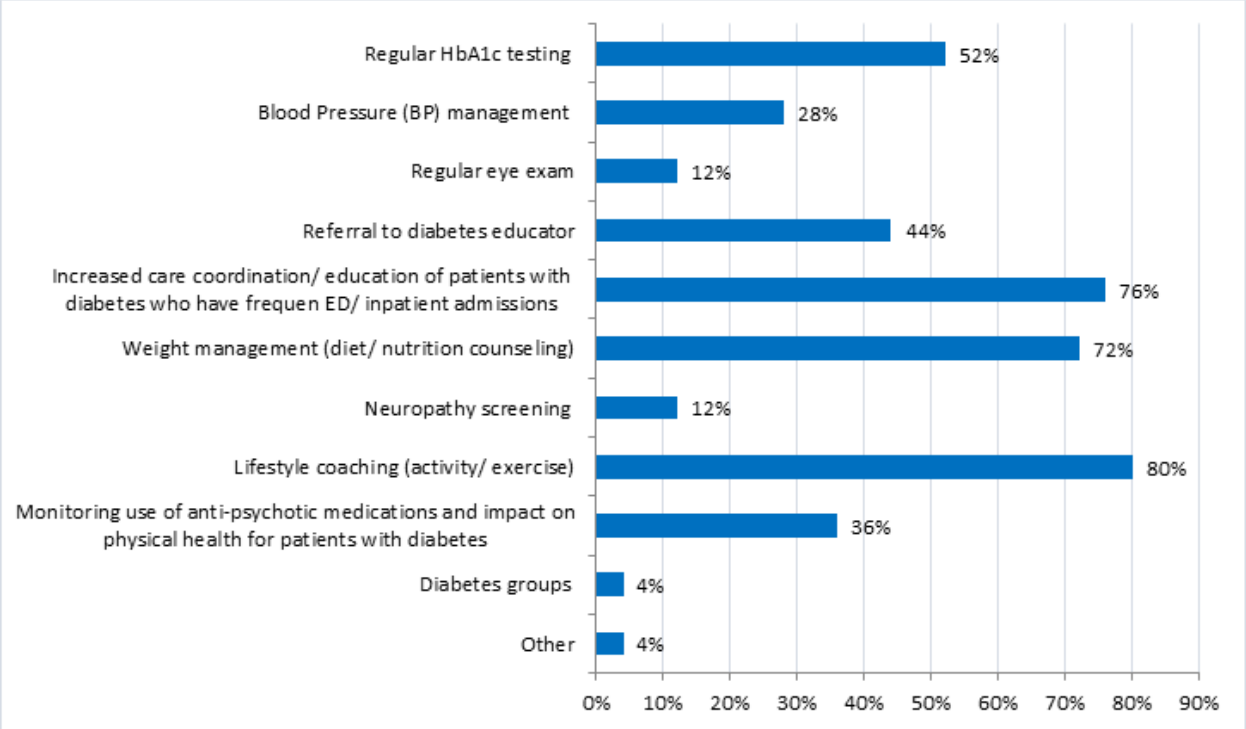


Exhibit 122. Most Frequently Mentioned Efforts to Improve Diabetes Care at BHHs



Most effective/ineffective actions to impact diabetes care according to BHHs:

- 41% Effective: Increased care coordination/engagement
- 24% Effective: Increased education/ On-site Certified Diabetes Educator
- 12% Effective: diabetes education groups
- 12% Not effective: Lack of engagement/compliance from patients

In summary, BHHs expressed having obstacles to overcome, including staff members' lack of familiarity with or training in diabetes care, as well as limited access to patient records. Further, BHHs indicated that they rely on referrals and cooperation with PCPs for testing and treatment. This required building new relationships, which is a process that takes time. In contrast, Health Home providers believed they had the health care resources necessary to focus on improving diabetes care, including a complete set of tests and screenings. They used these resources and indicated that they were effective

HH and Care Coordinators:

- More than two thirds of BHHs (70%) indicated that they worked with a Care Coordinator
- The majority of BHHs (95%) of indicated that the Care Coordinator was somewhat or very effective

Most frequently mentioned outcomes achieved by Care Coordinators at BHHs:

- 38% Improved care coordination/ More preventive care
- 19% Increased collaboration between providers
- 13% Improved follow-ups/referrals/warm hand-offs
- 13% Lower ED/hospitalization rates
- 13% Better care/health and satisfaction/understanding for patient
- 13% Improved integration of care/medication reconciliation

In summary, the role of Care Coordinator at BHHs was identified as being very effective and in verbatim comments many respondents were very enthusiastic about this role. Many respondents believed that the role has very important benefits that will lead to improved care, more preventative care, and reduced ED use.

Community Care Teams (CCTs) : 29% of BHH respondents indicated that they worked with CCTs.

Most frequently mentioned outcomes achieved by CCTs at BHHs:

- 40% Increased collaboration/communication
- 20% Increased care coordination

Anti-Psychotic Medication Management: BHH Providers reported the following common activities:

- 48% focused on medication reconciliation and case review
- 38% focused on increased coordination/collaboration with prescribers/providers

Most frequently mentioned effective and ineffective actions according to BHHs:

- 41% Effective: Increased care coordination/accessibility

- 24% Not effective: Lack of coordination/collaboration
- 24% Effective: Increased collaboration between prescribers/providers

MaineCare AC Participation: Of almost half (43%) of BHHs who indicated that they participated in an AC, all found it somewhat effective.

Integrating Physical Health into BHHs: All BHHs indicated that they were effective at integrating physical health care into their practices.

Most frequently mentioned efforts to integrate physical health at BHHs:

- 48% Mentioned increased coordination of care
- 26% Mentioned increased collaboration and communication
- 22% Mentioned providing education
- 13% Mentioned fully integrated health services

Most frequently mentioned barriers to integration of physical health at BHHs:

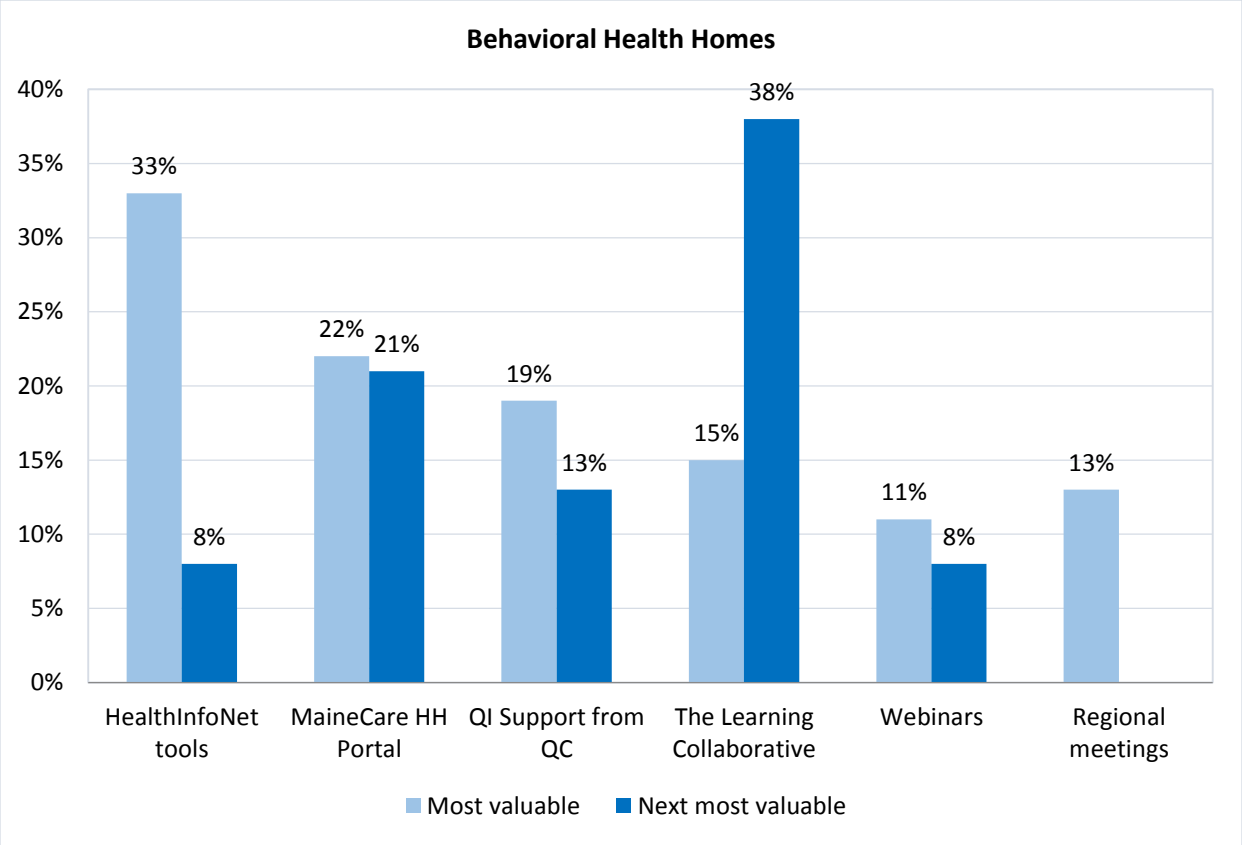
- 42% Mentioned lack of communication/collaboration between providers
- 33% Mentioned lack of understanding/education/knowledge
- 29% Mentioned lack of staff/resources/availability

In summary, BHHs most often addressed integration of physical health through increased coordination of care and collaboration with physical health providers. Respondents also addressed physical health through wellness groups and peer support groups. The most often mentioned obstacle to better integration of physical health included communication and collaboration between providers. BHH respondents reported that developing peer to peer relationships with physical health care providers has not been easy. Respondents also often mentioned a lack of understanding or expertise in physical health conditions by BHH staff- they are often not trained in chronic diseases and are therefore unfamiliar with their signs and symptoms.

"With the BHH initiative comes more information that we have never had regarding our clients. Both (the MaineCare Portal) and HIN allow us to receive information regarding the health care our clients are receiving. We have incorporated this information into our day to day oversight of service delivery."-BHH Provider

Tools and Supports to Impact Practice Change: **Exhibit 123** below depicts "tools" or other supports described by BHHs as influential to impact their practice changes. The most important tool cited by BHH's that impacted their practice changes was the access to and use of the HIN HIE; the second most important support was from the BHH Learning Collaborative.

Exhibit 123. Tools and Supports to Impact BHH Practice Change



The next section of this report provides an overall summation of BHH qualitative and quantitative key findings.

III.VI – Overall Summary of BHH Findings

Cost Effectiveness

BHH members had cost avoidance for Professional BH, Professional Case Management, and Outpatient Therapy Expenditures.

- This cost avoidance was offset by a high PMPM amount paid to BHHOs

For the population engaged in BHHs, behavioral health expenditures represent approximately 52% of total baseline PMPM. Many current health reform initiatives seek to better integrate primary care and behavioral health with the premise that overall and non-behavioral health expenditures will be reduced by better care coordination. In this evaluation, we primarily see total changes in cost driven by higher behavioral health expenditures. Claims based behavioral health expenditures decreased but were more than offset by payments made to BHHOs.

The purpose of BHHs is to integrate physical and behavioral health and better coordinate care for members with behavioral health illnesses. Further analysis is needed to fully understand the cost changes that are occurring in the data.

BHHs have led to higher PMPM expenditures within the engaged population due to administrative payments made to BHHOs. **Exhibit 124** below shows the payments made outside of the claims system to the BHHOs and BHH Practices during the time period included in our analysis. Payments to the BHHOs are made during months when the member receives a required set of services. For the post-intervention time period the payments averaged $271 PMPM.

Exhibit 124: MaineCare BHHOs and BHHs – Administrative Payments

Organization	Enrollment Type	Rate	Effective Dates
BHHO	Child	$325	4/1/2014 – 6/30/2014
BHHO	Adult	$365	4/1/2014- 6/30/2014
BHHO	Child	$314	7/1/2014- 12/31/2014
BHHO	Adult	$357	7/1/2014 – 12/31/2014
BHHO	Child	$322	1/1/2015- 12/31/2015
BHHO	Adult	$365	1/1/2015 – 12/31/2015
BHH Practice	Child/Adult	$15	4/1/14- 12/31/2015

This population is small but approximately twice as expensive as the average MaineCare member. There is little published cost savings analysis that is comparable to the BHH population. Please see the HH discussion section for articles that provide context for HH.

Non-emergent ED use decreased but at a slower rate than the control group. Increasing focus on keeping these non-emergent visits low can help continue to reduce medical costs. In MaineCare overall, the rate of non-emergent ED use decreased. Inpatient readmissions decreased among BHH members while the control group had a dramatic increase, and the BHH group had a lower rate than the general MaineCare population. The overall MaineCare population experienced a small increase in readmissions compared to the increase in the control group. Although this population has low inpatient costs compared to the rest of their utilization, a decrease in readmissions helps ensure adequate care and follow up were given during the initial hospitalization, in addition to reducing inpatient costs.

Most quality metrics that could be assessed via claims data showed little significant difference over time for MaineCare BHH members relative to the control group. Fragmentation of care decreased in the BHH population, which is an indicator of higher care coordination. However, the control group decreased at a slightly higher rate. Due to the small sizes of the BHH population and its associated control group, only fragmentation of care had a statistically significant difference in trend between the BHH population and the control group. **Exhibit 125** below aligns each metric and performance relative to the control group.

Exhibit 125. MaineCare BHH – Summary of Quality Metric Performance

Metrics	Performance relative to control group
Non-emergent ED use	BHH members did not perform as well as control members
All-cause readmissions	BHH members performed better than control members
Median FCI	BHH members did not perform as well as control members*
Use of Imaging Studies for Low Back Pain	BHH members did not perform as well as control members
Well-child Visits (ages 3-6)	Metric not applicable to MaineCare BHH population
Children's and Adolescent Access to Primary Care (ages 7-11)	Metric not applicable to MaineCare BHH population
Developmental Screenings in the First 3 Years of Life	Metric not applicable to MaineCare BHH population
Diabetic Care HbA1c (ages 18-75)	BHH members did not perform as well as than control members
Follow-Up After Hospitalization for Mental Illness	BHH members performed better than control members

*Statistically significant results are indicated with an asterisk

Consumer Survey Findings Overall Summary- BHH

The Patient Experience: In general, patients in all three interventions reported a more positive experience in 2016 as compared to 2015. While the changes were small, a large majority of measures saw an increase in positive response between 2015 and 2016. This suggests that the patient experience has improved slightly overall, as well as improved in key areas such as patient-provider communications and coordination of care. However, the results do suggests some areas where a focus can further improve the patient experience.

Patients saw increases in measures related to strengthening primary care. Primarily, these improvements were related to providers giving information to their patients, and providers listening and seeking input. BHHs did see a slight decrease in providers clearly communicating with their patients, though more than 90% are still positive with this aspect of their experience.

When getting help with services, BHH patients did report a slight decline in their PCP's office giving them needed help getting housing or help in a crisis but did report an increase in help getting a job. It is still the case as compared to 2015 findings that some patients needing these services report they did not receive help from their PCP's office (28% of those needed help with housing, 29% needing help finding a job, and 19% needing help in a crisis). However, when the help is provided, 90% reported a positive experience.

BHH patients were more positive on many key measures when compared to 2015. BHH patients were more positive about the outcomes of their care, daily functioning, and the support they receive from their social networks beyond the people they go to for care.

Use of Care and Access Barriers: Most routine care was reported as being provided through a PCP though nearly six in ten BHH patients saw more than one provider for routine care with 33% seeing four or more providers. Among those with visits to multiple providers, 93% of BHH patients had to seek care at multiple locations. Most did indicate a positive experience as more than 80% indicate that their provider's office worked to coordinate their care and more than 80% indicate that the providers were up-to-date about the care they received.

Overall, 47% of BHH patients reported receiving care in an ED within the last 12 months and 30% in an urgent or walk-in care.

Respondents reported barriers to receiving needed care. More than one-quarter of patients report they did not get or deferred care due to its cost. BHH patients were more likely to face challenges due to the cost of care including 37% of BHH patients that could not afford dental care and 17% needed prescription medications.

There is a similar trend when measuring structural barriers to care, with 27% of BHH patients reporting they could not find a provider when they needed care. In addition, 21% of BHH patients had difficulty finding a doctor who accepts MaineCare. Patients pointed to challenges accessing mental health care or counseling, dental care, and prescription medicines. These structural barriers to care also had a negative impact on a patient's experience, with those experiencing structural barriers tending to report a less positive experience with their provider. Further, this group was also more likely to report higher rates of health care service use across a variety of areas.

Future considerations: While the results overall are positive, they do identify potential actions to further improve the patient experience.

- Investigate policy solutions to address high cost and structural barriers reported by BHH patients
- Provide direct or indirect help with housing or employment services for individuals experiencing a crisis in those areas
- Develop interventions which enable patients to strengthen their social ties and bring others into their care. BHH patients reported difficulty in creating social support networks outside of their providers which could help them deal with life challenges

Provider Survey Findings Overall Summary- BHH

Of BHH providers surveyed, 93% rated their BHH interventions as very or somewhat effective at improving BH.

Most frequently mentioned changes at BHHs to improve behavioral health:

- 32% Developed wellness groups/peer supports

- 27% Use of HIN/MaineCare portal
- 27% increased care coordination/Team-based approach
- 23% BHH integration at HHs
- 18% Implemented new care management model
- 18% Increased availability

In summary, respondents overwhelmingly indicated that they perceived their efforts as successful. These positive assessments carried over into all the topics addressed in the survey. The largest number of respondents, 45%, cited changes in care including increased care coordination/team-based approach (27%) or implementation of a new care management model (18%). Development of peer supports and wellness groups was also commonly mentioned as a favorable change. BHH respondents also noted a greater participation of patients in their own care. Access to data was reported as the most valuable "tools or supports" to impact BHH practice change for over half (55%) of BHH survey respondents. The next most valuable support reported by 38% of respondents was the BHH Learning Collaborative.

Special Study One: Member Characteristics that impact outcomes

IV. Background

2015 Maine SIM initial evaluation findings identified several preliminary areas of progress related to SIM interventions, including:

- Significant cost avoidance results for HHs, and promise of cost avoidance for BHHs
- Improved results in key SIM Core Metrics such as non-emergent ED use and fragmented care

In March 2016, Commissioner Mayhew and the Maine Leadership Team informed SIM stakeholders that SIM efforts are to now transition from broad tests of a variety of activities to a focus on practice level interventions that will impact key outcomes and the overall coordination of a member's care.

In the summer of 2016, final methods and deliverables for Special Study One were defined. Special Studies are qualitative and/or quantitative research projects intended to be designed, conducted, and analyzed in a short time frame to further support Rapid Cycle Improvement (RCI) activities within innovation testing periods. Special Studies provide an opportunity to make course corrections on targeted activities in a more timely fashion than longer comprehensive annual evaluations. Accordingly, this targeted Special Study was developed to further analyze the outcomes of focused 2016 Maine SIM interventions.

This analysis describes the number of MaineCare members in HHs, BHHs, and ACs, their conditions and demographic information, and which characteristics are associated with better or worse than expected health outcomes. In addition, this study develops methods to evaluate SIM Core Metrics in a way that accounts for differences in member characteristics not described by member risk.

V. Research Questions

- What are the characteristics/demographics of those enrolled in HHs, BHHs, and ACs?
- Are there member groups/attributes that correlate with better than expected outcomes in HHs, BHHs, and ACs?

VI. 2016 Data Sources and Findings

Special Study One analyzed the characteristics of members receiving care from HHs, BHHs, and ACs. Specifically, this analysis describes the number of MaineCare members in HHs, HHs, and ACs, their conditions and demographic information, and which characteristics are associated with better or worse than expected health outcomes as represented by the SIM Core Metrics.

MaineCare leaders have expressed interest in identifying high performing HHs in order to share best practices and/or test if high performance is related to fidelity to the HH model. Determining high performing HHs and ACs using only the SIM Core Metrics is problematic because observed performance differences may simply reflect variation in the mix of patients served. Special Study

One addresses this by identifying which characteristics are related to high and low performance on SIM Core Metrics, independent of patient mix.

The goals of Special Study One were to better understand the members who are served by HHs and ACs, find what particular attributes may be related to performance, provide timely data for RCI concurrent with Maine SIM Phase 3 activities, and to develop research methods for future use.

Four intervention groups were identified using 2015 HH and AC enrollment data: HHs Only, ACs Only, HHs and ACs, and BHHs. All members had at least six months of enrollment in the measurement year to ensure members were well-established in the intervention. Since there was a sizable overlap between the HH and AC groups, members in both groups were considered as a separate intervention group, similar to the findings in the cost effectiveness and impact sections throughout this report. The reason is that if findings differed by intervention, it would be important to consider members in both HH and AC interventions separately.

To better understand the members served by each intervention, descriptive statistics were produced using available member demographics and attributes. Brief group descriptions are shown in **Exhibit 126** on the following page.

Exhibit 126: Special Study One Group Characteristics

Intervention Group	Number of Members	Characteristics Description
HH Only	40,142	• Median age is in the upper-30s • High overall spending per member in general, but lowest compared to the other interventions • Three in ten are dual eligible, and four in ten are in the Aged, Blind, or Disabled (ABD) Traditional Medicaid eligibility group • One-third have 3+ chronic conditions
AC Only	25,371	• Youngest intervention group, with a median age of 15 • Due to their young age, they have the lowest rate of dual eligibility (17%), and only 28% of members are in the ABD Traditional Medicaid eligibility group • Half live in urban areas • One out of every six dollars spent on this group go towards Residential Habilitation Waivers • 20% have 3+ chronic conditions
HH & AC	13,153	• Median age is in the mid-30s • High spending per member in general, but low compared to BHH or AC Only groups • One quarter are dual eligible, and 40% are ABD Traditional Medicaid • Three in ten have 3+ chronic conditions • 56% live in urban areas
BHH	2,140	• Oldest intervention group, with a median age of 45 • Due to age, they have the highest rates of dual eligibility, and over three quarters are in the ABD Traditional Medicaid eligibility group • 72% live in urban areas • Very high spending in particular on Pharmacy, ED and Inpatient use • Two-thirds have 3+ chronic conditions

With the intervention groups established, subgroups of similar members within each intervention were created. The goal was to subdivide the intervention so that each subgroup contained members that were alike in ways that are meaningful – such as the amount of care consumed, the types of care consumed, and the number of and type of health conditions. These subgroups, or clusters, were created using statistical clustering, k-means clustering specifically. In this technique, cluster centers are the variable means of the members assigned to each cluster. Variables considered for clustering were as follows: mental/behavioral health or substance abuse condition flag, diabetes condition flag, count of chronic conditions, pharmacy spending, ED spending, clinic spending, and office visits or home services spending. Members are divided into clusters and each member is in, at most, one cluster. At most, three or four clusters were found within each intervention to facilitate meaningful analysis. Clusters were analyzed by age, gender, major condition categories, and category of service spending to understand their composition. Cluster profiles are further described in **Exhibits 127, 128, and 129**:

Exhibit 127: Cluster Demographic Profiles

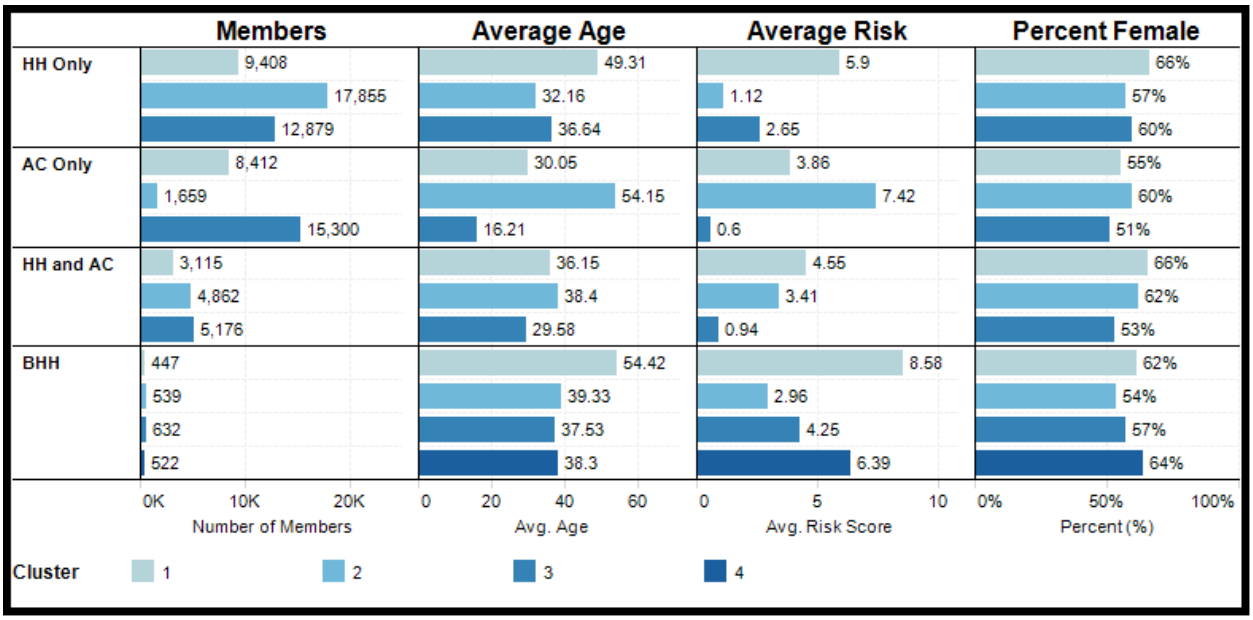


Exhibit 128: Cluster Disease Prevalence Profiles

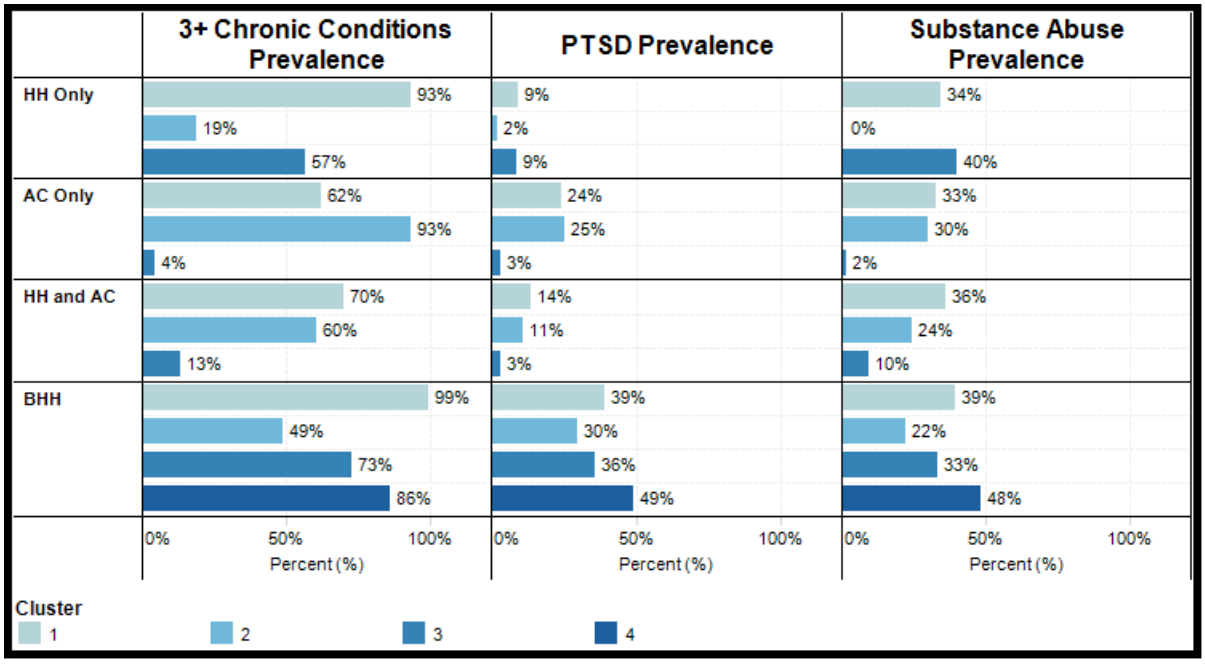
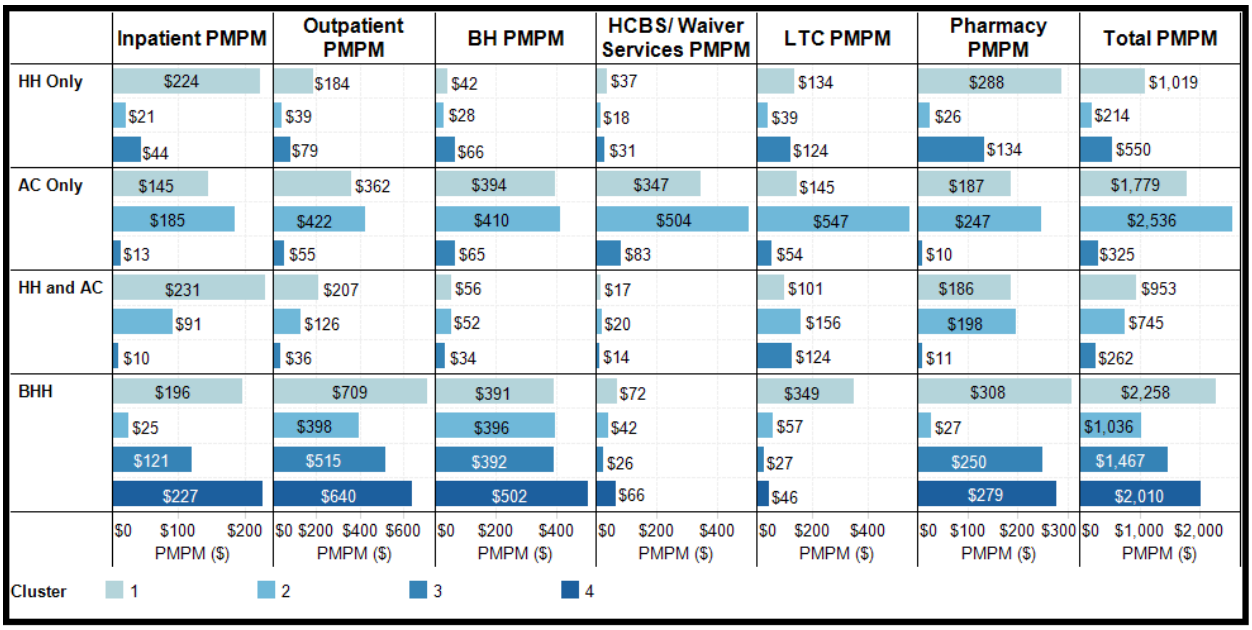


Exhibit 129: Cluster Cost Profiles



Although interesting, the clusters themselves were not of primary interest – ultimately, SIM Core Metric performance was evaluated across all clusters in order to make observations about what member attributes and characteristics appear to be related to high or low performance. There are some clusters that look similar to each other across interventions, such as HH Only Cluster 1, AC Only Cluster 2, and BHH Cluster 1. These clusters have high costs relative to the rest of their intervention and high rates of chronic conditions.

To understand the expected outcomes for each intervention and cluster, regression models were trained for each SIM Core Metric. These regressions account for the varying patient mix in each cluster, e.g. a group with mostly children will have different outcomes than a group with mostly seniors, all else held equal. The regression models adjust for differences in age, gender, risk score and intervention group. Risk scores were included to account for differing health status and risk/cost burdens. Intervention group was adjusted for as well to ensure the overall effect of each intervention was accounted for. These regressions ensure that the difference between observed measure results and expected measure results can be attributed to what makes the cluster unique, and not to its basic member composition.

With each regression model, the predicted and expected Core Metric results were calculated for each member who was eligible for the Core Metric. Summing up all members' expected results within each cluster produces the expected Core Metric results for each cluster.

Observed measure results were compared to expected measure results for clusters and outcomes with at least 50 members in the denominator. This was to ensure small sample sizes did not produce unreliable results. Statistical significance testing was performed to determine if the observed results were significantly different from what was expected. Specifically, for adherence measures a two-tailed binomial test was used with the hypothesized population proportion equal

to the expected measure result. For non-adherence measures (FCI and Non-Emergent ED Use Rate) a two-tailed t-test was used with the hypothesized population mean equal to the expected measure result. Significant differences were noted and synthesized across clusters and interventions to assess which member attributes were related to better or worse outcomes. An Observed to Expected (OE) ratio of one indicates that the cluster performed as expected. For measures where a higher rate was better, such as diabetic HbA1c testing rates, an OE ratio under one indicates that the observed rate was lower, or performed worse, than the expected rate. For measures where a lower rate was better, such as FCI, an OE ratio above one indicates that the observed rate was higher, or performed worse, than the expected rate.

Particular attention was paid to intervention, cluster, and metric combinations that significantly underperformed their expected result. These underperforming combinations identify where the most opportunity may be for improved outcomes. For each measure, the underperforming clusters were examined to determine what characteristics or attributes they may have in common. These commonalities are related to SIM Core Metric underperformance and were the primary goal of this analysis (see **Exhibit 130** below).

Exhibit 130: Underperforming Clusters by Core Metric

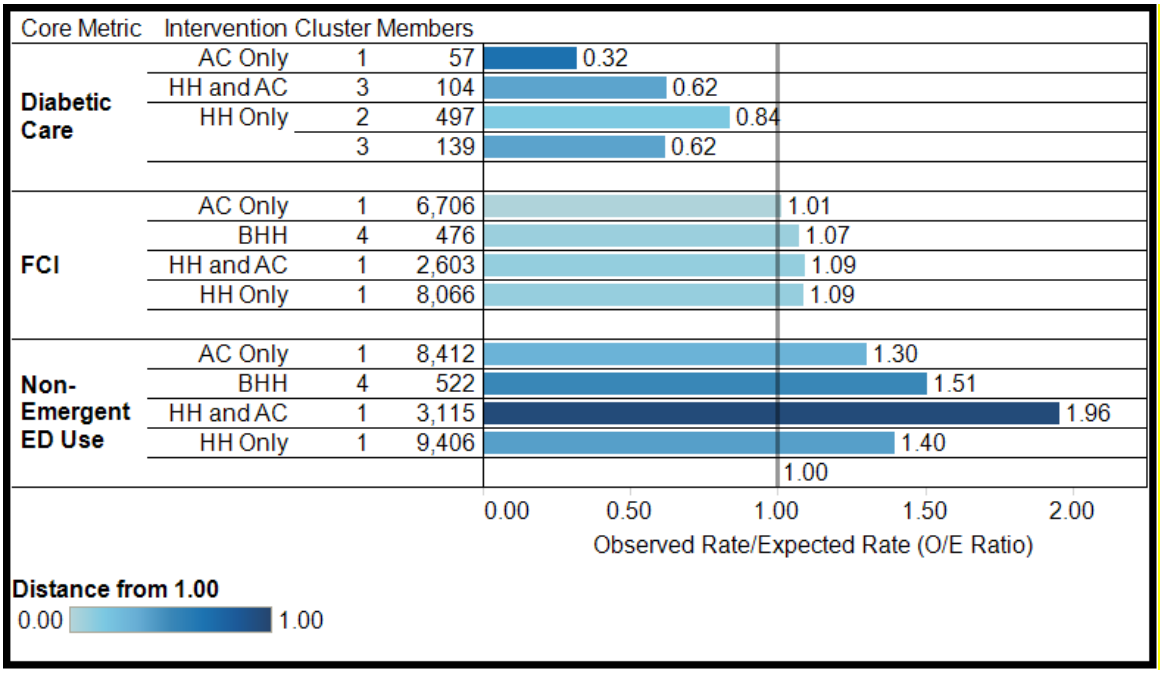
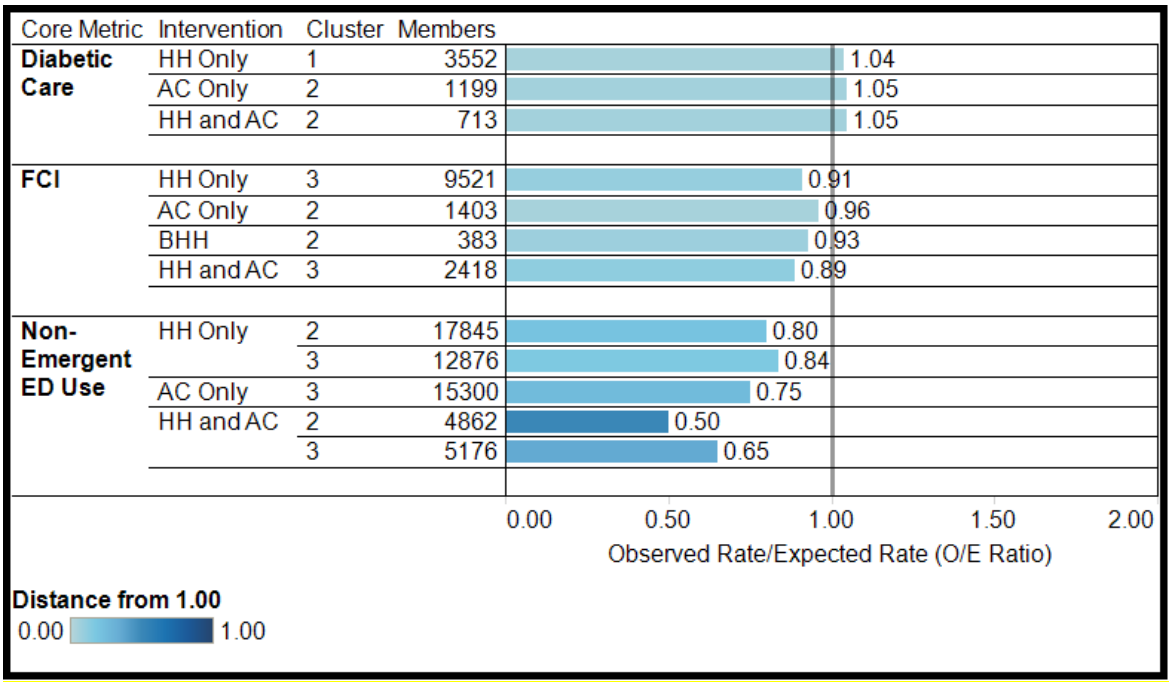


Exhibit 131: High Performing Clusters by Core Metric



VII. Analysis

Special Study One analyzed the characteristics of members receiving care from HHs, BHHs, and ACs. Specifically, the analysis described which member characteristics are associated with better or worse than expected health outcomes as represented by the SIM Core Metrics.

The analysis showed that the exact same clusters of members underperformed in both FCI and non-emergent ED use, meaning their rates were worse than expected as seen in **Exhibit 130**. In **Exhibits 128** and **129**, AC Cluster 1, BHH Cluster 4, HH and AC Cluster 1, and HH Cluster 1 all have relatively high numbers of chronic conditions (i.e., high acuity), high cost, and moderate to high substance abuse prevalence. For these groups of members, the care they receive is often not appropriate (high non-emergent ED use) and not centralized (high FCI). Therefore, these members may present significant opportunity for improved outcomes and cost savings if provided with more centralized and appropriate care.

Alternatively, there was a subset of clusters that performed better than expected in both FCI and non-emergent ED use as seen in **Exhibit 131**. These members in HH and AC Cluster 3 and HH Cluster 3 have low numbers of chronic conditions (i.e., low acuity) and low cost, as seen in **Exhibits 128** and **129**. These groups of members were generally in better health, and sought care outside the ED, often with the same provider each time (low FCI).

The analysis also found that diabetes HbA1c testing rates are worse than expected for healthier (i.e. low acuity), young to middle age members identified as diabetic, based on their claims in the previous 24 months. Because regular HbA1c testing is considered an important part of diabetes management, this information provides another opportunity for investigation and intervention. Attention to patient engagement efforts may be particularly important in order to encourage low-

acuity diabetics to come in for testing, who have less need to visit their providers because of their relative good health.

Building on this, the analysis found that higher acuity and higher cost members had better diabetic HbA1c testing rates than expected. These members likely see providers more often for other chronic conditions and receive HbA1c tests during their visit. However, it is not possible to determine the results of the HbA1c tests from claims data, so HbA1c improvement cannot be measured. Additionally, Maine may choose to investigate further with a review of detailed clinical data in order to assess whether or not compliance with standard HbA1c testing intervals is in fact reflective of good diabetes management in all cases.

Special Study Two: Early Learnings from High-Performing BHHs

VIII. Background

Through SIM, BHHs were given support to begin or expand innovative health care delivery initiatives. These initiatives included:

- Staffing of a Care Manager, typically a nurse, to coordinate the physical health needs of clients
- Improved coordination of all care, including community supports such as group health and wellness programs
- Adding a Peer Support person to improve client engagement
- Targeted support to improve diabetes care, reduce ED visits, and better manage care for clients on psychotropic medication

To further understand the experience of BHHs, SIM /MaineCare leadership requested a deeper exploration of experiences of BHHs that were identified as early innovators or more successful in their initial implementation of the BHH Model. A summary of key themes of findings are provided below, and a fully detailed report can be found in **Appendix II**.

IX. Methodology

For this research, MDR conducted a series of in-depth interviews with leadership at selected BHHs. The sample file provided by SIM/MaineCare leadership consisted of leadership representatives from eight BHHs from throughout the state. In all, six BHHs participated in the research and two could not be reached.

The interview tool was designed in collaboration with SIM Leadership and consisted largely of open ended questions. MDR recruited participants by email and confirmed by phone. Participation was voluntary and no financial incentives were provided to participants. The study design included anonymity for participants and their individual responses. The research was conducted remotely via WebEx, an online meeting tool. This allowed the presentation of material, for the interviewer and interviewee to see each other using cameras embedded in their computers, and for voice communication over the phone or computer. For each interview, participants were shown text slides as background for topics and then asked questions about the topics. The interviews were recorded (with respondent permission) and then transcribed. Key Findings

Stages of BHH Implementation: The six BHHs in this study were at various stages of model implementation. One had not integrated the HIE, one just began using HIE in January, another had not yet filled a peer support position, one had planned but not acted on its plans for wellness classes, while one had been implementing BHH concepts well prior to the initiation of the SIM grant. This makes it difficult to compare BHHs and also suggests that their work can best be viewed as "in process."

Interlocking Components of BHH Effort: Respondents reported that the foundation for success of BHHs is not the result of one particular aspect or one activity, but rather a comprehensive set of services applied flexibly so that care is customized for the individual. Noted model attributes supporting this effort are the important roles of Care Coordinator and Peer Support, and the much-appreciated information tool, HIN's HIE. Respondents described the BHH effort as a truly patient-centric approach, engaging patients while providing whatever supports they may need from a very full toolkit.

Health Care Education and Patient Engagement: Respondents noted that when the new Care Managers and existing Care Coordinators work with clients to improve client health, they are often simultaneously educating and motivating. Their goal is for clients to want to take good care of themselves, and to have the information and tools they need to successfully manage their illness.

Care Coordinator Role: Among the aspects that BHH respondents in this study were most enthusiastic about was the new staff role of Care Coordinator. They indicated that this role was central to the coordination of all aspects of care to clients. It brought necessary physical health expertise in house and allowed peer to peer communication with medical providers. From respondent comments, it appears that Care Coordinators collaborated effectively with existing staff, medical providers, and community supports.

Obstacles to Care Coordination: Respondents noted that cooperation from medical care providers required in-person visits from Care Coordinators and nurturing of a relationship. This took time.

Care Management: Respondents shared that Care Coordinators view their role comprehensively; they work to assure that clients see medical providers and then follow-up appropriately. Care Coordinators actively intervene with providers on their clients' behalf and aggressively work with clients on follow-up. They coordinate with community supports, provide group and customized education, and collaborate with behavioral health staff at the BHH. Central to this role is a personalized approach that identifies and leverages the specific motivating factors of each client.

Obstacles to Care Management : Tempering enthusiasm for Care Management was the recognition that there were still significant obstacles to be overcome. Ineffective information technology, lack of sufficient time, and a payment model that does not support the increased costs of care management were the most common obstacles mentioned.

Population Health Initiatives: Respondents noted that at the time of this study, their efforts to manage health of populations were focused in ED overuse, diabetes care, and management of psychotropic medications (discussed later in this section). While these efforts appeared to be in their infancy, respondents at BHHs were positive about the impact of these efforts on quality of care and reducing costs.

Wellness Classes and Community Supports: Some of the respondents noted being "aggressive" in using group wellness classes in their educational tool kit. The thinking was that

these sessions combined education with peer support. Other respondents were considering or planning wellness classes.

Peer Support Person: The other staff addition implemented as part of the BHH initiative was a peer support person. This was not as frequently discussed as other aspects of the initiatives, but when mentioned, it was seen as a useful role.

Effectiveness of HIE: Next to the addition of the role of Care Coordinator, respondents were most enthusiastic about their access to HIN's HIE. The tool has been actively used to improve physical health care coordination and reduce unnecessary ED visits. Many respondents were excited to have medical information about their clients that would help them better support their clients' healthcare.

Staff Education: Respondents highlighted that one challenge for the implementation of BHH was the changing roles of existing staff. Client Coordinators added responsibility for physical health but lacked expertise in this area. The need for education was addressed by Care Coordinators with formal training sessions and informal follow-up.

Staff Reaction to BHH Initiatives: Respondents reported that at first, the existing staff at BHHs were skeptical and apprehensive about the BHH initiative. The most common concern was the new responsibility for physical health of clients. As implementation proceeded, they saw improvement in the patients without a significant additional burden on their time. Respondents reported that staff were ultimately very supportive of the model.

Patient Reaction to BHH Initiatives: Initially some patients balked at the more active interventions into health care, some considered knowledge of their medical situation by the Care Manager and their follow-up to be intrusive. However, as the positive impact of the efforts became clear, respondents reported that patients largely appreciated the new approach.

Management of Psychotropic Medications: The extent of management of psychotropic medications varied by respondents. It appears that at least one BHH was co-located or closely allied with a psychiatric care provider but others were not. If the BHH had psychiatric expertise, management of psychotropic medications was well coordinated. In other BHHs without this expertise, management was elusive. Those respondents could only observe their clients and look for symptoms that would alert them to a problem.

Diabetes Care Management: Since BHHs do not conduct tests or screenings for diabetes, respondents reported that diabetes care was focused on education of clients and support for self-management and monitoring.

Core Issues: As some respondents mentioned, there are fundamental issues that make caring for the BHH client population particularly difficult. These comments are important reminders to those that seek to change how care is delivered at BHHs.

SIM Governance Structure & Processes - Focus Groups

X. Background

One of the aims of the Maine SIM was to actively involve stakeholders in developing, planning, and managing health care innovations. Towards that end, SIM established one Steering Committee and four subcommittees[56] that generally met monthly beginning in October 2013 continuing through the fall of 2016. The committees included representation from a broad range of stakeholders. More than 150 state health care leaders from government, health care delivery, health care associations, as well as consumer protection, academia, and Medicaid members were invited to participate in these committees.

Formal focus groups were conducted to understand the effectiveness of the SIM governance structure and processes. Participants also shared their perspectives on the overall progress of SIM interventions. Findings from this analysis may be applied to future health care system governance structure designs in Maine.

XI. Methodology

Two focus groups were conducted with Maine SIM stakeholders. Participants in the focus groups were recruited from the rosters of members of the SIM Steering Committee and SIM Subcommittees. These lists were then refined to include only active members who routinely participated in committee meetings. MDR staff contacted all those on the lists by email and by telephone, as necessary, to invite them to participate and to remind them of the date and time of the meetings. No financial incentive was provided for participation. The study design included anonymity for focus group participants and their individual responses.

A Steering Committee focus group with eight participants and a separate subcommittee focus group with seven participants each met in person with a professionally trained moderator to share their thoughts and experiences. This qualitative research was designed and conducted by MDR in collaboration with Lewin and SIM Leadership. A full report with detailed findings can be found in **Appendix II**.

XII. Key Findings

Governance Vision & Responsibilities: Focus group participants in the Steering Committee and the subcommittees saw their roles as monitoring the actions on projects, discussing options to improve the performance on projects, and making suggestions for change. Participants noted that although each one of them represented the interests of his or her organization, over time, relationships developed between members of committees, and there was a greater commitment to the common good. It was challenging to oversee the work with the committee time available and with multiple initiatives.

[56] Payment Reform, Delivery System Reform, Data Infrastructure, and Evaluation

Subcommittee Responsibilities: Focus group participants expressed that subcommittees were "closer to the action" than the Steering Committee and were better able to contribute, being aligned by topic and populated by stakeholders familiar with the topic. Participants in subcommittees indicated that they had productive discussions, and through the power of ideas, were able to influence the work on projects.

Reason for Ongoing Participation: Committee members in the focus group initially participated for a number of reasons, including wanting to represent the position of their organization, or to be at the table for important decisions. Over time, they also developed relationships with other stakeholders and appreciated the discussions and the peer to peer networks that were created.

Strategic Objective Review Team (SORT) Process: Steering Committee focus group participants indicated that through the SORT process they had an important role in identifying and discussing issues and making recommendations that were enacted. Participants felt engaged and listened to.

Six "Pillars" Structure: Participants found that the focus on six pillars actually diluted efforts. It was thought that there were too many objectives to allow for necessary focus. Of the six pillars, two were identified as the most important accomplishments of SIM: Integrating Physical and Behavioral Health and Using Centralized Data and Analysis to Drive Change.

Most Important SIM Results / Accomplishments: Focus group participants most often mentioned support and progress of BHHs as the most important accomplishment of SIM. This was followed by improved overall data availability to providers, including the data provided by HIN's HIE. Some participants mentioned the committees themselves as an accomplishment, as this was the first time stakeholders with many different interests were brought together to focus on health care reform.

Future of Multi-Stakeholder Groups: Committee members thought that bringing together stakeholders was a success. Participants in the committees liked getting to know others interested in health care reform, they appreciated the discussion and debate of issues, and they thought that their combined wisdom could be very helpful to government as it sorts out options and alternatives. Participants in the committees indicated a willingness to continue to participate in future health care delivery system related committees.

Summary: There was strong support from the focus group participants for continuing to focus efforts on integrating physical and behavioral health and using centralized data and analysis to drive change

Focus group participants believed that subcommittees were enjoyable for members of the committees, and members appeared to serve an important role. The subject matter experts were able to provide practical advice to the managers of the programs and initiatives. They indicated that the process for decision making on SORT was an effective model and that committees may have been more effective if their roles were narrower and more clearly defined. Participants reported ongoing advisory committees comprised of subject matter experts representing various components of the health care system, could inform better health care policy, particularly considering the limited number of staff in the DHHS.

Brief summation of Progress to Impact Diabetes Care and Outcomes

XIII. Background

One of the goals of the Maine SIM award is to improve the overall health of Maine's population with efforts targeting prevention and improved management of diabetes. The following section provides a brief summary of progress of SIM interventions and outcome findings related to diabetes care.

> *"If somebody has diabetes, for example, and is being managed by another provider with HealthInfoNet, our nurses are able to monitor if they are meeting with the provider, able to review the provider's notes, that way we can be on the same page, and if those recommendations came from primary care, we can make sure that we understand that stuff. If the client doesn't necessarily understand it correctly, we can help clarify and help support whatever the recommendations of the doctor are."– BHH Provider*

XIV. Interventions

NDPP: SIM provided resources to expand the number of NDPP sites and lifestyle coaches that are operational in the State and further institutionalized the program statewide by incorporating the NDPP into Health plan designs; HH, BHH, and AC service delivery models; and Population health management and wellness strategies as part of Maine Value Based Insurance Design (VBID) health plans.

As a result of the SIM NDPP investment, Maine saw growth in the number of participants, trained lifestyle coaches, and sites offering NDPP (a detailed report of the targeted NDPP evaluation conducted by John Snow Inc. can be found in **Appendix III**).

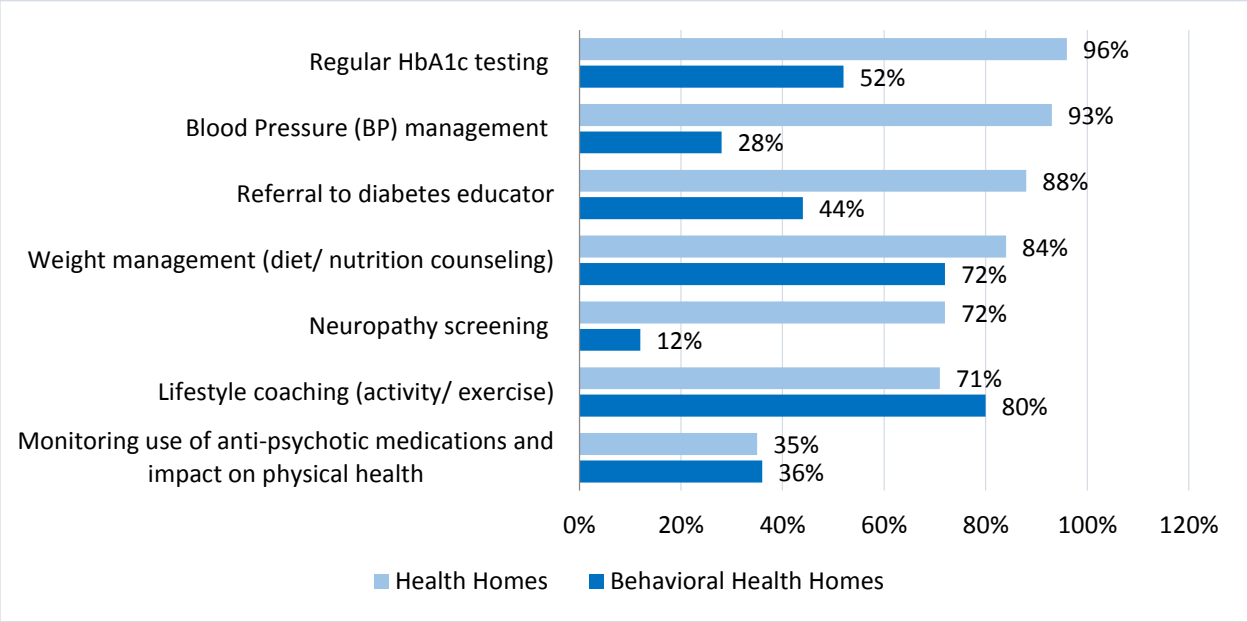
HHs and BHHs made practice changes aimed at improving diabetes care:

HH providers (97%) indicated that they were somewhat or very effective in addressing diabetes care. Providers believed they had the health care resources necessary to focus on improving diabetes care, including a complete set of tests and screenings. They used these resources and indicated that they were effective.

BHH providers (58%) indicated that they were somewhat or very effective at addressing diabetes related needs of their patients. Providers expressed having obstacles to overcome, including staff members' lack of familiarity with or training in diabetes care, as well as limited access to patient records. Further, BHH providers indicated that they rely on referrals and cooperation with PCPs for testing and treatment. This required building new relationships, which is a process that takes time.

Exhibit 132 below shows responses to the 2016 provider survey, indicating their different approaches and self-assessment of their success.

Exhibit 132. HH & BHH Practice Change to Impact Diabetes from 2016 Provider Survey



2016 Maine Quality Counts Learning Collaborative events included workshops on best practices for diabetes care and management. While not all are at the same level of transformation, many BHHs have made dramatic changes in their approach to physical healthcare.

XV. Outcomes

Outcomes identified in this SIM Self-Evaluation are mixed. There are improvements in some measures and declines in others compared to the control groups. For example, a key method for tracking diabetes care management is HbA1c testing rates. HbA1c levels should be tested at least once every year, or more depending on clinical recommendations. However, claims analysis for the 2016 SIM Self-Evaluation has found that HbA1c testing rates have slightly declined for all Maine SIM intervention groups (HH, BHH, and AC) as well as the control group. In particular, younger healthier diabetics (meaning fewer co-occurring conditions) have lower observed versus expected testing rates.

While these results are not statistically significant, HHs did experience positive outcomes regarding diabetes and thirty-day hospital readmissions. Among those who were readmitted, the percentage with a diabetes diagnosis increased by 18% in the control group but only 14% in the intervention group, meaning that patients with diabetes make up a smaller than expected proportion of readmissions. This is also true of the HH and AC group, where the control saw a 25% increase in proportion of diabetics among those readmitted, and the intervention group increased by only 16%.

The opposite was shown in non-emergent ED use group characteristics, although this again was not statistically significant. The proportion of individuals with diabetes who used the ED for non-emergent purposes increased more in the HH group (21% increase) versus the control group (13% increase). Similarly, the proportion of individuals with non-emergent ED use with a diagnosis of diabetes in the HH and AC group showed an increase of 8% compared to a decrease of 6% in the control group.

XVI. Analysis

Additional time is needed to further measure the impact of targeted diabetes interventions on care outcomes. As many providers have noted anecdotally, change is happening.

> *"When people were feeling physically better, their mental health was improving. They were less depressed. They were less anxious. They were feeling better about themselves because they were losing weight or they're eating healthier and so those kinds of things are very rewarding for people to see when they work with people where progress is so "inch by inch by inch." It takes such a long time to get anything done. It helped everybody's energy levels, as you could say." – BHH Provider*

Continued support of efforts toward diabetes prevention, improving physical/behavioral health integration, provider education on chronic care management best practices, and use of data to identify those at risk will further impact future diabetes care and outcomes. Regarding HbA1c testing, attention to patient engagement efforts may be particularly important for healthier diabetics in order to encourage them to come in for needed testing, given that because of their relative good health they may have less need to visit their providers. Additionally, Maine may choose to conduct a review of detailed diabetes related clinical data, in order to assess whether or not compliance with standard HbA1c testing intervals is in fact reflective of good diabetes management in all cases.

Future Considerations

The findings presented by Lewin in this report offer an in-depth look at how Maine SIM activities are impacting the health care landscape in the state. Given what has been learned through this study, possible future considerations for Maine are noted below.

- The main driver of negative cost avoidance for the AC Only group was increased behavioral health expenditures. This finding warrants further analysis of the users of behavioral health services, the kinds of services used, and their contribution to healthcare costs. ACs could explore increased linkages to BHHs or other methods of behavioral health integration
- The HH and AC population performed significantly worse than the control group in all three child health measures (Well-child Visits, developmental screenings, and access to primary care). Additionally, "Provider's attention to child's growth and development" was one of the least positive consumer survey scores for ACs. This may be an area that warrants further investigation, noting that the AC Only population performed significantly worse for developmental screenings but significantly better for access to primary care as compared to their control group
- Clusters of members in HHs, ACs, and HH and ACs with high utilization and multiple co-occurring conditions drive higher than expected non-emergent ED use. These clusters additionally have high ED PMPM costs. MaineCare could investigate further to understand the causes and develop potential strategies, in order to change utilization patterns of this targeted population and reduce avoidable ED use
- HHs report that they have most often addressed integration of behavioral health with increased screening, or by adding staff to the practice. Lack of behavioral health providers and the lack of reimbursement to support adding behavioral health staff to the practice were the most commonly cited obstacles for better integration of behavioral health. Conversely, BHHs most often addressed integration of physical health through increased coordination of care and collaboration with physical health providers, and their most often mentioned obstacle to better integration included communication and collaboration between providers and that developing collaborative relationships with physical health care providers has not been easy. Given these two situations noted above, there appears to be a disconnect in the integration approach between HHs and BHHs. Further investigation might help to identify the most effective approach, or combination of approaches, in order to ensure that members receive the best, most integrated patient-centered care
- HHs might consider increasing their use of peer support staff such as Community Health Workers or enable peer support with wellness groups. BHHs have expressed that this approach has been instrumental in increasing their patient engagement
- MaineCare could further investigate the level of service provided by the BHHO Payments under the administrative payment to see if it provides value over equivalent FFS payments

- BHHs that became connected to the HIE gave very positive feedback about it improving care coordination and enabling a more proactive approach to patient care. Maine might consider facilitating more HIE connections so that all BHHs are able to share patient health data with other BHHs and HHs
- Cost growth for both BHHs and HHs has been historically lower than for MaineCare overall, and MaineCare is expanding participation in these initiatives which will help lower costs overall. If not already doing so, MaineCare could analyze the population not participating in these initiatives to identify patient cohorts that could benefit from participation in health homes or other initiatives
- While many patients face difficulties in accessing care, BHH patients are the most likely to have structural barriers, with about one in four reporting an inability to get needed care. A lack of providers was reported to prevent many MaineCare respondents from getting needed behavioral health care and dental care. Additionally, even with MaineCare coverage, 26% of BHH patients indicate that they experience problems getting needed services due to their cost, especially dental care and prescription medications. BHH patients also reported having to switch providers or having to see multiple providers to meet their needs. Further investigation is suggested in order to understand the causes and identify potential strategies or patient education needs to address these barriers to care
- Claims analysis suggests that HbA1c testing rates have slightly declined for all Maine SIM intervention groups (HH, BHH, and AC). This result may warrant further research to fully understand the drivers that impact diabetes testing i.e. patient compliance / transportation issues or provider practice challenges, to formulate a targeted strategy moving forward.

Appendices I, II, & III

Appendices I, II, and III are found in separate files that are distributed with this document.

Appendix I- Additional materials compiled by Lewin

Appendix II- Full reports and related technical documents of qualitative research completed by Market Decisions Research

Appendix III- Full qualitative research report from John Snow, Inc.