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The Pacific Health Policy Group

Vermont Global Commitment to Health Section 1115(a)Medicaid Demonstration 11-W-00194/1

Interim Evaluation Report #1, including Evaluation of IMD Expenditures

Submitted to AHS: 3/30/18

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1 EXECUTIVE SUMMARY

The Vermont Global Commitment to Health Medicaid Section 1115(a) Demonstration was originally approved on September 27, 2005 and implemented on October 1, 2005. The Demonstration is designed to use a multi-disciplinary approach to comprehensive Medicaid reform, including the basic principles of public health, the fundamentals of effective administration of a Medicaid managed care delivery system, public-private partnership, and program flexibility. As of January 1, 2017, Vermont and CMS extended the Global Commitment to Health Demonstration to further promote delivery system and payment reform. The State's goal in implementing the Demonstration is to improve the health status of all Vermonters by:

- Promoting delivery system reform through value-based payment models and alignment across public payers;

- Increasing access to affordable and high-quality health care by assisting lower-income individuals who can qualify for private insurance through the Marketplace;

- Improving access to primary care;

- Improving the health care delivery for individuals with chronic care needs; and

- Allowing beneficiaries a choice in long-term services and supports and providing an array of home and community-based (HCBS) alternatives recognized to be more cost-effective than institutional based supports.

The State employs four major elements in achieving the above goals:

1. ***Program Flexibility***: Vermont has the flexibility to invest in certain specified alternative services and programs designed to achieve the Demonstration's objectives (including the Marketplace subsidy program).

2. ***Managed Care Delivery System***: Under the Demonstration the Agency for Human Services (AHS) executes an annual agreement with the Department of Vermont Health Access (DVHA), which delivers services through a managed care-like model, subject to the requirements that would be applicable to a non-risk pre-paid inpatient health plan (PIHP) as defined by the Special Terms and Conditions (STCs).

3. ***Removal of Institutional Bias***: Under the Demonstration, Vermont provides a choice of settings for delivery of services and supports to older adults, people with serious and persistent mental illness, people with physical disabilities, people with developmental disabilities, and people with traumatic brain injuries who meet program eligibility and level of care requirements.

4. ***Delivery System Reform***: Under the Demonstration, Vermont supports systemic delivery reform efforts using the payment flexibility provided through the Demonstration to create alignment across public and private payers.

1.1 Study Design, Research Questions and Hypotheses

This and subsequent reports will rely on quantitative study methods to address research questions regarding the impact of the Demonstration on: access to care; quality of care; cost containment; and stable in-home and community alternatives to institutional care. To limit administrative burden on providers, consumers, and staff and to eliminate duplicative evaluation efforts, this project coordinated and compiled existing measures aimed at studying the impact of various health care initiatives under the Demonstration. This included the:

- Global Commitment to Health Comprehensive Quality Strategy, including HEDIS® metrics;
- AHS Results Based Accountability Scorecards;
- National Core Indicators Project, (Developmental Disability and Aging and Other Disability Program Surveys) for Choices for Care, Developmental Disabilities and Traumatic Brain Injury program enrollees;
- Medicaid Measures for enrollees attributed to an Accountable Care Organization; and
- Blueprint for Health Multi-Payer Delivery Reform Initiative for enrollees attributed to a Patient Centered Medical Home (PCMH) or Advanced Primary Care Practice.

The study design includes longitudinal analysis to measure change over time and differential statistics to describe the population and findings. Results will be compared to national benchmarks, as applicable.

Vermont's Demonstration is a statewide effort; since 2013 it has encompassed all LTSS, acute and specialized operations, and Medicaid enrollees. As such, Medicaid eligibility is synonymous with enrollment in the public managed care-like model. This makes traditional time series, comparison and/or control groups difficult. However, two health care initiatives were identified where data for Medicaid comparison groups may be available in future reports, the Blueprint for Health and the Vermont Medicaid Next Generation (VMNG) Accountable Care Organization (ACO) program.

The hypotheses examined to study Value-Based Purchasing under the Global Commitment to Health Demonstration are related to the development of a Medicaid ACO. The first year of the State's ACO contract agreement established the baseline measurement period as calendar year 2017. Baseline results for this hypothesis will be available July of 2018 and included in future reports. Measures for Medicaid enrollees in the ACO will be examined year over year and, where feasible, in relationship to a comparison group of Medicaid members not attributed to the ACO. Specifically, in future years, if applicable, difference in difference methods will be used to characterize differences between Medicaid members when data exists before and after intervention for a treatment group and for a group that did receive services/benefits (e.g., a comparison group). For example, it is anticipated that ACO practice attribution will allow measurement in at least one-time period before ACO practice intervention and at least one time after ACO practice intervention.

Several hypotheses are measured through evaluation efforts associated with the Blueprint for Health. A cornerstone of delivery reform since the original Global Commitment to Health Demonstration, the Blueprint for Health is a state-led, multi-payer program dedicated to achieving well-coordinated and seamless health services, with an emphasis on prevention and wellness. As such, the Blueprint employs several different approaches to incentivizing delivery system reform and increased quality and performance through payment reform. The foundation of the Blueprint model is a Multi-Payer

Advanced Primary Care Practice (MAPCP) program. Participation is optional for providers, but mandatory for Vermont's commercial payers (excluding self-insured plans) and Medicaid. Measures of quality and cost for Medicaid enrollees in the Blueprint to Health will be examined year over year. Where feasible, results will be examined in relationship to a comparison group of Medicaid members not attributed to Blueprint practices.

Information contained in this Interim Report #1 represents the first of four evaluation reports for the Global Commitment to Health Section 1115 Medicaid Demonstration. Each report will build on data presented in the prior report and form the basis for the final summative report due June 30, 2022, six months following the end of the current extension period. This five-year evaluation is designed to examine year over year change related to the following research questions and their associated hypotheses:

Research Question	Hypothesis
Will the Demonstration result in improved access to care?	• The Demonstration will result in improved access to community based medical and dental care and Medication Assisted Treatment for Opioid Use Disorder. • The Demonstration will reduce the percent of potentially avoidable ED visits. • Premium requirements for eligible families above 195% FPL will not impede access to enrollment. • The VPA Qualified Health Plan subsidy program will result in continued access to health care coverage.

Will the Demonstration result in improved quality of care?	• The Demonstration will improve:
	  ○ Asthma care;
	  ○ Preventative health screenings for female enrollees;
	  ○ Mental health follow-up after psychiatric hospitalization; and
	  ○ Initiation and engagement in SUD treatment.
	• The Demonstration will improve enrollee experience of care and rating of the health plan.

Will value-based payment models increase access to care?	• The Medicaid ACO will show a lower overall cost of care. • The Medicaid ACO will improve access to mental health care and substance use disorder treatment. • ACO enrollees will receive developmental screenings in the first 3 years of life • ACO enrollees will show improved diabetes and hypertension outcomes.
Will improved access to preventive care result in lower overall costs for the healthcare delivery system?	• The Blueprint for Health initiative will reduce per capita expenditures for enrollees whose diabetes is in control. • The Blueprint for Health initiative will contain or reduce total per capita expenditures for enrollees ages 1-64 years.
Will improved access to primary care result in improved health outcomes?	• The Blueprint for Health will improve diabetes control for members age 18-75.
Will enhanced care coordination improve timely access to needed care?	• Blueprint for Health enrollees will report timely access and satisfaction with their experience of care.
Will the Demonstration will result in increased community integration?	• The Demonstration will increase community living and integration for persons needing LTSS. • The Demonstration will increase choice and autonomy for persons needing LTSS.

Research Question	Hypothesis
	• The Demonstration will increase integrated employment options for persons needing LTSS.
Will the Demonstration maintain or reduce spending in comparison to what would have been spent absent the Demonstration?	• The Demonstration will contain or reduce spending.

1.2 IMD SUB-EVALUATION

Since its inception in 2005, Vermont's Global Commitment to Health Medicaid Demonstration has included payment flexibilities to support cost-effective alternatives to traditional Medicaid State Plan benefits. The State has used this authority and other payment flexibilities, such as Managed Care Investments or value-added benefits, to provide a continuum of treatment programs for persons who need inpatient psychiatric treatment, detoxification and/or residential treatment for substance use disorder (SUD). As part of this first Interim Report, the State also conducted an evaluation of IMD settings used to assure access to needed psychiatric and substance use disorder treatment services for Medicaid beneficiaries. Research questions and associated hypotheses include:

Research Question	Psychiatric IMD Hypothesis	SUD Hypothesis
Will expanded IMD authority support enrollees to receive care in the least restrictive most clinically appropriate setting possible?	The projected elimination of psychiatric IMD capacity will negatively impact: emergency room utilization; access to acute inpatient treatment and length of stay; and cost of community hospital care.	The projected elimination of SUD IMD capacity will negatively impact emergency room utilization
	IMD services result in improved quality of care and community integration as evidenced by lower re-admission rates	IMD services result in improved quality of care and community integration as evidenced by lower re-admission rates
		Initiation and engagement rates will be higher when the index event occurs at a residential IMD program when compared to an IMD hospital detoxification program or non-IMD facility.
		The projected amount and scope of current IMD services is adequate to meet the need.
Is expanded IMD authority necessary to support Vermont's small size and community hospital system?	There is no capacity in the current community hospital system in Vermont to absorb the downsizing necessary to eliminate IMD claiming.	N/A
Will elimination of federal participation result in reductions in community-based treatment capacity due to increased pressure on the State budget?	The projected impact of removing Federal Financial Participation (FFP) for psychiatric IMD on other services and providers in the community will be negative.	N/A

1.3 KEY FINDINGS AND POLICY IMPLICATIONS

The Vermont Demonstration has been in operation since 2005. While the baseline year is identified as calendar year (CY) 2016 for the study period (January 1, 2017 through December 31, 2021), results suggest a mature delivery system. In many cases the Demonstration is already meeting or exceeding its identified national HEDIS® benchmarks as well as other national trends. The Demonstration is showing positive results relative to each of its overarching hypothesis. In its first year using new budget neutrality methodology and terms, the Demonstration is also meeting its goal to maintain or reduce spending in comparison to what would have been spent absent the waiver.

1.3.1 Overall Global Commitment to Health Operations

National benchmarks for HEDIS® measures used to monitor performance in the areas of Access to Care and Quality of Care were set at the 50th percentile for Medicaid plans for each year. In the six HEDIS® measures selected for study in the area of Access to Care, Vermont scored above its identified national benchmark in five of the measures and within three percentage points below the benchmark on the sixth as illustrated below.

Access to Care HEDIS® Measures	HEDIS® 50th Percentile	VT GC Baseline
Percent of adult enrollees who had an ambulatory or preventive care visit (HEDIS® AAP-Total)	82.20%	80.13%
Well-child visits first 15 months of life, 6 or more visits (HEDIS® W15)	59.60%	71.63%
Well-child visits 3rd, 4th, 5th, & 6th year of life (HEDIS® W34-Total)	71.40%	73.97%
Percent of adolescents ages 12 to 21 who receive one or more well-care visits with a PCP during the measurement year (HEDIS® AWC)	48.40%	50.89%
Children age 2-20 years with at least one dental visit (HEDIS® ADV-Total)	51.79%	68.12%
Rate of ED visits per 1,000-member months (HEDIS® EDU - a lower rate is desirable)	62.80	44.72

In the eight HEDIS® measures selected to study Quality of Care, Vermont scored above its identified national benchmark in six of the measures, within three percentage points below the benchmark on one measure and five percentage points under the national benchmark in just one metric as illustrated below.

Quality of Care HEDIS® Measures	HEDIS® 50th Percentile	VT GC Baseline
Percent of enrollees receiving appropriate asthma medication management 50% Compliance (HEDIS® MMA-Total)	56.10%	75.46%
Percent of enrollees receiving appropriate asthma medication management 75% Compliance (HEDIS® MMA-Total)	31.40%	58.10%
Percent of female enrollees age 50 to 74 who receive breast cancer screening at appropriate intervals (HEDIS® BCS)	58.10%	55.10%
Percent of female enrollees screened for chlamydia (HEDIS® CHL-Total)	55.10%	50.80%
Percent of enrollees with follow-up after hospitalization for mental illness at 7 days (HEDIS® FUH)	43.90%	60.10%
Percent of enrollees with follow-up after hospitalization for mental illness at 30 days (HEDIS® FUH)	63.80%	75.80%

Quality of Care HEDIS® Measures	HEDIS® 50th Percentile	VT GC Baseline
Percent of enrollees using substances who initiate in treatment for alcohol and other drug dependence (HEDIS® IET-Total Initiation)	38.00%	45.30%
Percent of enrollees using substances who engage in treatment for alcohol and other drug dependence (HEDIS® IET-Total Engagement)	9.70%	16.80%

Similar results were found in looking at national findings in the NCI project for persons with a developmental disability (NCI-DD). In measures selected for study, Vermont results were identified by the NCI project as "within the average range" on three measures and slightly below the national average in two measures.

NCI-DD Community Integration and Health Measures	Nat'l Average	VT GC Baseline
Proportion of people who regularly participate in integrated activities in their communities	86.00%	84.00%
The proportion of people who make choices about their everyday lives	88.00%	87.00%
The proportion of people who make decisions about their everyday lives	67.00%	58.00%
The proportion of people who do not have a job in the community but would like to have one	47.00%	52.00%
The proportion of people who were reported to be in poor health	3.00%	4.00%

Consumer Assessment of Healthcare Providers and Systems (CAHPS) measures were benchmarked against the national average for all State Medicaid plans that submitted their results to the national CAHPS database. Data presented in this report represents CAHPS-child version results. Historically, CAHPS surveys alternated annually between the child and adult versions. Beginning in CY2017 data will be collected for both versions annually and included in future reports. In examining results for respondents who completed the CAHPS (child version), the Demonstration scored favorably on both access and quality metrics. Of the six measures reviewed, 3 scored above the average score for Medicaid plans nationally and 3 scored within three percentage points below the target.

CAHPS (Child version) Measures	Nat'l Average	VT GC Baseline
Percent of respondents indicating they received necessary care	85.00%	91.00%
Percent of respondents with positive ratings of the health plan	91.00%	90.00%
Percent of respondents with positive ratings of their ability to get care quickly	90.00%	93.00%
Percent of respondents with positive ratings of the care they received	91.00%	90.00%
Percent of respondents with positive ratings of customer service	88.00%	86.00%
Percent of respondents with positive ratings of how well their physician explains things, listens to their concerns, shows respect and spends enough time with them	94.00%	96.00%

The Blueprint to Health also supported strong outcomes for Medicaid beneficiaries. Results show that significantly more Blueprint enrollees were identified whose Diabetes HbA1c was in control (N=2288) as compared to those found with poor control (N=288). Along these lines, inpatient hospitalization rates per 1,000 members for members whose diabetes was controlled showed lower rates of utilization (206.7 per 1000 members) when compared to those in poor control (333.73 per 1000 members). Similarly, Blueprint results show that per capita expenditures for enrollees age 18 – 75, is $3,218 lower than those enrollees whose HbA1c was in poor control.

Overall budget neutrality for the Demonstration shows: a $286,604,366 savings in PMPM expenditures and a $73,978,445.00 savings in the New Adult Group as compared to limits set in the Special Terms and Conditions.

Global Commitment to Health Budget Neutrality Limits CY2017			
Expenditure Category	**Neutrality Limit**	**Actual Expenditures**	**Variance to Limit**
PMPM	$1,383,008,678	$1,096,404,312	$ (286,604,366)
New Adult Group	$369,604,893	$295,626,448	$ (73,978,445)

This Interim Report is the first in a series of four reports on the impact of the Global Commitment to Health Section 1115 Medicaid Demonstration and represents Demonstration operations in calendar year 2016, the last year of operation using a risk-based public managed care model as its foundation. Initial results suggest that the Demonstration has been successful at delivery high quality services while reducing or containing costs. Effective January 1, 2017 new terms and conditions were implemented that align Vermont's model with that of a non-risk Prepaid Inpatient Health Plan (PIHP). Future reports will examine changes in performance and impact under this new model and with the addition of a Medicaid ACO delivery system program implemented in 2017.

In several instances, Vermont's health care and long-term service and support (LTSS) programs have become models for other states (e.g., Blueprint for Health, Hub and Spoke Model of Opioid Treatment, Choices for Care, Self/Surrogate-directed care). This report represents the first baseline period for the most recent Demonstration extension. It is expected that as the evaluation progress additional aspects of the Demonstration will be highlighted for generalizability in subsequent interim and summative reports.

1.3.2 Psychiatric and Substance Use Disorder IMD

Results suggest that Vermont's decentralized system is of high quality. The system relies on small scale IMD settings to stabilize and treat persons in acute psychiatric crisis and those needing the highest level of placement for OUD/SUD treatment, based on the American Society for Addiction Medicine (ASAM) guidelines. The Vermont psychiatric and SUD systems of care employ nationally recognized placement and concurrent review criteria for these most intensive levels of care. Vermont also supports an extensive community-based system for both SUD and mental health care including: mobile crisis supports; integrated physical health care; regional OUD treatment centers (Hubs) and office-based OUD treatment and recovery services (Spokes); and community based psychiatric placement.

Vermont IMD settings appear to be providing high quality targeted treatment services as evidenced by lower ED utilization post discharge, low readmission rates and high rates for follow-up in the community post placement, including initiation and engagement in SUD treatment post discharge. Results for IMD settings on HEDIS® measures for 7 and 30-day follow-up after hospitalization for mental illness outperformed the general VT Medicaid results and the national HEDIS® benchmark at the 50th percentile. The same trends were found for SUD IMD settings on HEDIS® measures for initiation and engagement in treatment for alcohol and other drug dependence. Results suggest that IMD settings are achieving a high quality of discharge planning and making effective linkages to community-based settings.

Quality of discharge planning in making effective linkages to community-based care	4-Year Average Scores HEDIS® 50th Percentile	VT Medicaid	VT IMD
Percent of enrollees with follow-up after hospitalization for mental illness 7-days (HEDIS® FUH)	45.00%	57.00%	65.00%
Percent of enrollees with follow-up after hospitalization for mental illness 30-days HEDIS® FUH)	66.00%	74.00%	85.00%
Percent of SUD IMD enrollees who initiate treatment for alcohol and other drug dependence (HEDIS® IET)	38.00%	43.00%	74.00%
Percent of SUD IMD enrollees who engage in treatment for alcohol and other drug dependence (HEDIS® IET)	11.00%	17.00%	23.00%

Although measures were not exclusive to Medicaid participants, psychiatric IMD facilities reported high scores on quality measures related to transitions of care, as did SUD IMD settings when examined for successful completion of residential treatment. Successful discharge was defined as those persons successfully transferring to another level of care and those successfully completing their residential SUD treatment objectives.

Vermont IMD-settings also performed well on measures of quality of care for comorbid physical health conditions. Vermont outperformed rates published in the NCQA report card for Medicaid programs for diabetes screenings for persons with co-morbid psychiatric conditions and who use antipsychotic medications, with 89% of Vermont recipients screened in 2016. The percent of persons who had a PCP visit within 30-days of discharge averaged 52% for both SUD and psychiatric cohorts across the four-year study period. Vermont's public managed care Demonstration has been actively supporting the integration of physical and behavioral health care since its inception in 2005. In most recent years, office-based MAT treatment has been expanded under the State's 'Hub and Spoke' specialized health home model for opioid addiction. Office-based practices, FQHC's and independent physicians form the "spokes" for each regionalized "hub". The overall integration of health care with SUD treatment in the community is a high priority. Similarly, DMH has supported active partnerships between FQHCs, local PCP practices and designated mental health providers to ensure collaboration and integration in care planning and service delivery.

Length of stay was an important variable when readmissions to the same setting type were examined. In all settings, readmission rates were the lowest for lengths of stay between 16 – 29 days and dropped to near zero for lengths of stay over 29 days. Results suggest that psychiatric stabilization and SUD treatment, for persons with the highest and most complex needs, may warrant stays over 16 days. Results may have implications for recent federal policy that allows a Medicaid Managed Care Organization to receive capitation payments for enrollees who have inpatient level of care needs that necessitate treatment for no more than 15 days (or longer if the IMD stay spans consecutive months, so long as the stay was no more than 15 days in each month). However, small sample sizes and low frequency of readmission overall, limit the generalizability of findings, implications warrant further study.

Emergency room utilization showed the greatest reductions in visits post discharge in IMD settings for both psychiatric and SUD cohorts, with IMD psychiatric settings seeing declines that ranged from 23% to 44% across the study years and residential SUD setting seeing declines ranging from 39% to 56%. These results support the State's hypotheses that the elimination of inpatient treatment in the IMD settings studied will negatively impact emergency room utilization.

Admission trends and bed days remained relatively consistent across the four-year period for SUD treatment services, as has length of stay and readmission rates. Currently the state reports no wait list for these specific programs or the ASAM level of care they represent. This would suggest that for the SUD treatment continuum the projected amount and scope of current SUD IMD services is adequate to meet the need.

The State is working with CMS on a Global Commitment to Health OUD/SUD amendment to maintain and enhance the Vermont continuum of SUD treatment services. The results of this study suggest that Vermont's SUD treatment continuum is of high quality, supports the shared CMS and State goals of integration and aligns with ASAM best practices as outlined by CMS's November 1, 2017 guidance for similar OUD/SUD Demonstrations.

In looking at the psychiatric cohort, Vermont has steadily increased psychiatric beds capacity since the closure of the former Vermont State Hospital in August 2011 due to Tropical Storm Irene. Vermont's adult psychiatric inpatient system had a total of 188 beds as of December 31, 2016, which is four (4) more than in 2011. As reported by DMH in its 2017 Act 79 Report to the Vermont State Legislature community-based crisis and intensive residential beds also increased from 49 (Pre-Irene) to 87 in 2016. Additionally, a peer-supported community-based residential program in Chittenden County was also added to the system of care along with other mental health system enhancements. Combined community and inpatient capacity increased by almost 50 beds during the study period[1].

Given Vermont's use of nationally recognized placement criterion to determine the most appropriate level of care for each admission, high occupancy rates for inpatient care and lower occupancy for community beds, data suggest that the current IMD/psychiatric bed capacity is not adequate to meet the need. A September 2016 policy brief, compiled by the Treatment Advocacy Center, suggests that the most commonly cited bed target is 40-60 psychiatric beds per every 100,000 residents. However, these per capita guidelines do not account for differences in state systems relative to care models and community psychiatric capacity or other innovated hospital diversion or step-down options. Using the range suggested in the Treatment Advocacy Center report, Vermont's inpatient bed target would be between 248 and 372 beds statewide. In 2017 10 beds were opened for Medicaid use at the Veterans Administration Hospital, bringing Vermont's available supply to 198 hospital inpatient beds. Without considering Vermont's community based psychiatric settings (Intensive Residential Recovery and Secure Residential Programs), Vermont would be 50 beds below the lower end of the target range of 248 beds. However, counting these innovated, small scale psychiatric programs, Vermont's capacity would be four beds above the lower end of the range with 252 psychiatric beds.

Vermont is a small rural state. The IMD settings studied are an integral part of the overall psychiatric and SUD treatment continuum that supports integrated care in the most clinically appropriate, least restrictive setting possible. The most intensive treatment services (inpatient and residential) are provided through a combination of IMD and non-IMD settings.

The feasibility of phasing down IMD capacity and placing those beds in a community hospital setting is challenging given Vermont's small size, rural nature and delivery system. There are 14 non-profit general hospitals spread throughout Vermont and one Veterans Administration hospital. Common challenges associated with facility expansion include considerations such as, but not limited to: financing, physical

[1] Reforming Vermont's Mental Health System: port to the Legislature on the Implementation of Act 79; January 15, 2017.

plant and site characteristics, local zoning and other regulatory restrictions or limitations. However, Vermont's small size and rural nature offers additional delivery system and workforce barriers. Of Vermont's 14 community hospitals, four currently have designated psychiatric units and 8 are small critical access hospitals (CAHs) of twenty-five beds or less. The small scale of these CAH facilities makes psychiatric expansion difficult and if undertaken, expansion in any given facility would be limited to 10 psychiatric beds or less due to federal IMD and CAH policy. Additionally, Vermont has been challenged by a shortage of psychiatric professionals (e.g., MD, APRN's, Psychologist and Social Workers). Difficulties in recruiting psychiatric staff for scattered site locations across multiple rural regions may limit the State's ability to adequately staff a statewide expansion and/or replacement of IMD psychiatric capacity.

To achieve the target number of beds necessary for a complete psychiatric IMD phasedown (98-beds) and maintain the low end of the suggested target range per capita (248 beds), services would need to be cited across the State in community hospital settings or small-scale free standing psychiatric facilities of 16 beds or less. Adding the SUD/IMD beds to the phasedown could negatively impact the current delivery system infrastructure, workforce and financial resources.

Aside from a focus on setting type and capacity, additional analysis is warranted regarding the expertise and specialized psychiatric programs needed throughout the system. For example, the DMH statistical report from State Fiscal Year 2011, the last full year of operation prior to the State Hospital closure, indicates that 49% of the psychiatric admissions to the former Vermont State Hospital included persons who also had a SUD diagnosis. This suggests that attention to co-occurring SUD/MH treatment may be needed and warrants further study. Current AHS policy discussions regarding psychiatric capacity are also exploring the need for specialized geriatric and forensic capacity in the inpatient treatment system.

In conclusion, overall results suggest that a high quality, high value service system, for both psychiatric and SUD treatment, can be supported using IMD authorities along with clinical standards and payment policies, such as those used in Vermont, that:

- Support integrated physical and behavioral care for psychiatric and SUD treatment and PCP providers;
- Value community integration and living for persons with psychiatric and SUD challenges; and
- Apply nationally recognized psychiatric and ASAM placement criteria throughout the system of care.

2 DEMONSTRATION DESCRIPTION

The Vermont Global Commitment to Health Medicaid Section 1115(a) Demonstration was originally approved on September 27, 2005 and implemented on October 1, 2005. The Global Commitment to Health Section 1115(a) Demonstration is designed to use a multi-disciplinary approach to comprehensive Medicaid reform, including the basic principles of public health, the fundamentals of effective administration of a Medicaid managed care delivery system, public-private partnership, and program flexibility.

As of January 1, 2017, Vermont and CMS extended the Global Commitment to Health Demonstration to further promote delivery system and payment reform to meet the goals of the State working with the Center for Medicaid and CHIP Services, and the Center for Medicare and Medicaid Innovation (CMMI). Consistent with Medicare's payment reform efforts the Demonstrations allow for alignment across public payers. Specifically, Vermont expects to demonstrate its ability to achieve universal access to health care, cost containment, and improved quality of care.

Since 2005, the Global Commitment to Health Demonstration has reduced Vermont's uninsured rate from 11.4% in 2005 to approximately 2.7% in 2015 through expansion of eligibility and other Accountable Care Act reforms. The Demonstration has also enabled Vermont to address and eliminate bias toward institutional care and offer cost-effective, community-based services. For example, the proportion of Choices for Care participants served in the community has passed 50% and continues to increase. In addition, Vermont no longer has a waiting list for individuals in the Highest and High Need Groups under the Choices for Care component of the Demonstration.

Due to the expansion of eligibility under the Vermont State Plan pursuant to the Affordable Care Act, expansion of eligibility is no longer the primary focus of the Demonstration. However, the Demonstration continues to promote delivery system reform and cost-effective community-based services as an alternative to institutional care. The State's goal in implementing the Demonstration is to improve the health status of all Vermonters by:

- Promoting delivery system reform through value-based payment models and alignment across public payers;
- Increasing access to affordable and high-quality health care by assisting lower-income individuals who can qualify for private insurance through the Marketplace;
- Improving access to primary care;
- Improving the health care delivery for individuals with chronic care needs; and
- Allowing beneficiaries a choice in long-term services and supports and providing an array of home and community-based (HCBS) alternatives recognized to be more cost-effective than institutional based supports.

The State employs four major elements in achieving the above goals:

1. ***Program Flexibility***: Vermont has the flexibility to invest in certain specified alternative services and programs designed to achieve the Demonstration's objectives (including the Marketplace subsidy program).

2. ***Managed Care Delivery System***: Under the Demonstration the Agency for Human Services (AHS) executes an annual agreement with the Department of Vermont Health Access (DVHA), which delivers services through a managed care-like model, subject to the requirements that would be applicable to a non-risk pre-paid inpatient health plan (PIHP) as defined by the Special Terms and Conditions (STCs).

3. ***Removal of Institutional Bias***: Under the Demonstration, Vermont provides a choice of settings for delivery of services and supports to older adults, people with serious and persistent mental illness, people with physical disabilities, people with developmental disabilities, and people with traumatic brain injuries who meet program eligibility and level of care requirements.

4. ***Delivery System Reform***: Under the Demonstration, Vermont supports systemic delivery reform efforts using the payment flexibility provided through the Demonstration to create alignment across public and private payers.

The initial Global Commitment to Health and Choices for Care Demonstrations were approved in September of 2005 and became effective October 1, 2005. The Global Commitment to Health Demonstration was extended for three years, effective January 1, 2011, and again for three (3) years, effective October 2, 2013. The Choices for Care Demonstration was extended for five (5) years effective October 1, 2010 and became part of the Global Commitment to Health Demonstration in January 2015. The following amendments have been made to the Global Commitment to Health Demonstration:

- 2007: A component of the Catamount Health program was added, enabling the State to provide a premium subsidy to Vermonters who had been without health insurance coverage for a year or more, have income at or below 200% of the FPL, and who do not have access to cost-effective employer-sponsored insurance, as determined by the state.

- 2009: The State extended Catamount Health coverage to Vermonters at or below 300% of the FPL.

- 2011: The State included a palliative care program for children who are at or below 300% of the FPL and have been diagnosed with life limiting illness that would preclude them from reaching adulthood. This program allows children to receive curative and palliative care services such as expressive therapy, care coordination, family training and respite for caregivers.

- 2012: CMS provided authority for the State to eliminate the $75 inpatient admission co-pay and to implement nominal co-payments for the Vermont Health Access Plan (VHAP) as articulated in the Medicaid state plan.

- 2013: CMS approved the extension of the Global Commitment to Health Demonstration

which included sun-setting the authorities for most of the Expansion Populations, including Catamount Health coverage, because these populations would be eligible for Marketplace coverage beginning January 1, 2014. The extension also added the New Adult Group under the State Plan to the population affected by the Demonstration effective January 1, 2014. Finally, the extension also included premium subsidies for individuals enrolled in a qualified health plan whose income is at or below 300% of the FPL.

- 2015: In January 2015, the Global Commitment to Health Demonstration was amended to include authority for the former Choices for Care Demonstration. In addition, the State received Section 1115 authority to provide full Medicaid State Plan benefits to pregnant women who are determined presumptively eligible.

2.1 DEMONSTRATION GOALS

The State's high-level goal for all health reforms is to create an integrated health system able to achieve the Institute of Medicine's "Triple Aim" goals of improving patient experience of care, improving the health of populations, and reducing per-capita cost.[2] This is supported in the Global Commitment to Health Demonstration through supporting innovative delivery system reforms, including Medicaid Accountable Care Organizations (ACO) and the development of progressive in-home and community based services and supports that are cost-effective and support persons who have long-term care service and support needs, complex medical, mental health and/or substance use disorder treatment needs. Overarching Demonstration goals are described below:

- ***To increase access to care***: All enrollees must have access to comprehensive care, including financial, geographic, physical, and communicative access. This means having health insurance, appropriate providers, timely access to services, culturally sensitive services, and the opportunity for second opinions as needed.

- ***To contain health care cost***: Cost-effectiveness takes into consideration all costs associated with providing programs, services, and interventions. It is measurable at the category-of-service, individual enrollee, aid category, and aggregate program levels.

- ***To improve the quality of care***: Quality refers to the degree to which programs/services and activities increase the likelihood of desired outcomes. The six domains necessary for assuring quality health care identified by the Institute of Medicine (IOM, 2001) are:
    - *Effectiveness*: Effective health care provides evidence-based services to all who can benefit, refraining from providing services that are not of benefit.
    - *Efficiency*: Efficient health care focuses on avoiding waste, including waste of equipment, supplies, ideas, and energy.
    - *Equity*: Equal health care provides care without variation in quality due to gender, ethnicity, geographic location, or socioeconomic status.
    - *Patient Centeredness*: Patient-centered care emphasizes a partnership between provider and consumer.

[2] Crossing the Quality Chasm: A New Health System for the 21st Century. Washington DC: National Academy Press, Institute of Medicine; 2001.

- *Safety*: Safe health care avoids injuries to consumers from care that is intended to help.
- *Timeliness*: Timely health care involves obtaining needed care and minimizing unnecessary delays in receiving care.

- ***To eliminate institutional bias:*** By allowing specialized program participants choices in where they receive long-term services and supports and by offering a cost-effective array of in-home and community services for older adults, people with serious and persistent mental illness, people with developmental disabilities and people with traumatic brain injuries who meet program eligibility and level of care requirements.

2.2 Global Commitment to Health Delivery System

Vermont operates the Demonstration using a managed care-like model that complies with federal regulations at 42 CFR part 438 that would be applicable to a non-risk PIHP, including beneficiary rights and protections such as independent beneficiary support systems and formal grievance and appeal procedures.

In addition to the Demonstration, the State has also begun its first year of implementation planning for an All Payer Model, Section 1115 Medicare Demonstration through the Center for Medicare and Medicaid Innovation (CMMI). The All Payer Model Medicare Demonstration and the Global Commitment to Health Medicaid Demonstration are expected to complement each other to support systemic delivery reform efforts. Using the payment flexibility provided through both Demonstrations, alignment across public and private payers is expected. A brief description of the Medicaid public managed care model and current reform efforts is provided below.

2.2.1 Public Managed Care Model

The Agency of Human Services (AHS), as Vermont's Single State Medicaid Agency, is responsible for oversight of the managed care-like Medicaid model. The Department of Vermont Health Access (DVHA) operates the Medicaid program as if it were a Managed Care Organization in accordance with federal managed care regulations. Program requirements and responsibilities are delineated in an inter-governmental agreement (IGA) between AHS and DVHA. DVHA also has sub-agreements with the other State entities that provide specialty care for Global Commitment (GC) enrollees (e.g., mental health services, developmental disabilities services, and specialized child and family services). As such, since the inception of the GC Demonstration, DVHA and its IGA partners have modified operations to meet Medicaid managed care requirements, including requirements related to network adequacy, access to care, beneficiary information, grievances, quality assurance, and quality improvement. Per the External Quality Review Organization's annual findings, DVHA and its IGA partners have achieved exemplary compliance rates in meeting Medicaid managed care requirements. Departments of Vermont State government that participate in the provision of covered services to enrollees under the Demonstration are outlined, in brief, below.

Department of Vermont Health Access (DVHA): DVHA, which operates the Medicaid program as if it were a non-risk PIHP under Global Commitment Demonstration, has a three-fold mission:

- To assist beneficiaries in accessing clinically appropriate health services;
- To administer Vermont's public health insurance system efficiently and effectively; and
- To collaborate with other health care system entities in bringing evidence-based practices to Vermont Medicaid beneficiaries.

Department of Mental Health (DMH): The mission of DMH is to promote and improve the mental health of Vermonters and to provide Vermonters with access to effective prevention, early intervention, and mental health treatment and supports as needed to live, work, learn, and participate fully in their communities. DMH consists of two programmatic divisions: Adult Mental Health Services Division and the Child, Adolescent, and Family Mental Health Services Division. DMH has primary responsibility for overseeing the quality of psychiatric and mental health care provided for two of Vermont's Special Health Needs populations defined under the Global Commitment Demonstration, including persons with a severe and persistent mental illness and children who are experiencing a severe emotional disturbance.

Department of Disabilities, Aging, and Independent Living (DAIL): DAIL assists older Vermonters and people with disabilities to live as independently as possible. It provides support to families of children with disabilities to help maintain them in their home. It helps adults with disabilities find and maintain meaningful employment, and it ensures quality of care and life for individuals receiving health care and/or long-term care services from licensed or certified health care providers. DAIL also protects vulnerable adults from abuse, neglect, and exploitation and provides public guardianship to elders and people with developmental disabilities. DAIL operates specialized Medicaid programs under the Demonstration including Choices for Care, Developmental Disabilities Services and Traumatic Brain Injury Services.

Vermont Department of Health (VDH): VDH's goal is to have the nation's premier system of public health, enabling Vermonters to lead healthy lives in healthy communities. VDH leads the state and communities in the development of systematic approaches to health promotion, safety, and disease prevention. VDH continuously assesses, vigorously pursues, and documents measurable improvements to the health and safety of Vermont's population. VDH will succeed through excellence in individual achievement, organizational competence, and teamwork within and outside of VDH. VDH's division of Alcohol and Drug Abuse Programs supports the innovated Medicaid Health Home program for Medication Assisted Opioid Treatment in partnerships with DVHA, as well as extensive outpatient and residential treatment and recovery support for alcohol and other drugs use disorders.

Department for Children and Families (DCF): DCF promotes the social, emotional, physical, and economic well-being of Vermont's children and families. It achieves this mission by providing Vermonters with protective, developmental, therapeutic, probation, economic, and other support services. To this end, DCF works in statewide partnership with families, schools, businesses, community leaders, and service providers. DCF offers specialized Medicaid services to children and families at risk of or experiencing trauma and early childhood intervention for families with children birth to age six with developmental needs.

Agency of Education (AOE): The AOE is responsible for overseeing coverage and reimbursement under the School-Based Health program. The Special Education Medicaid School-Based Health Services Program is used by the State to support health-related services provided to special education students who are enrolled in Medicaid and receive eligible services in accordance with their individualized

education plans (IEPs). The AOE is established as an "Organized Delivery System" under Medicaid and is responsible for the program adherence to all State and Federal Medicaid and Education laws and regulations.

Under the GC Demonstration, Vermont is authorized to provide an array of cost-effective in-home and community services. Providers of these services must meet designation, certification and/or additional licensing requirements to be approved by the State to serve the most vulnerable of Vermont's citizens. These specialized programs are designed to support a unique group of beneficiaries, each is outlined below.

- *Choices for Care*: long-term services and supports for persons with disabilities and older Vermonters. The Demonstration authorizes HCBS waiver-like and institutional services such as: nursing facility; enhanced residential care; personal care; homemaker services; companion care; case management; adult day services; and adult family care.

- *Developmental Disabilities Services*: provides long-term services and supports for persons with intellectual disabilities. The Demonstration authorizes HCBS waiver-like services, including service coordination, residential habilitation, day habilitation, supported employment, crisis services, clinical intervention, respite and self-directed care.

- *Traumatic Brain Injury Services*: provides recovery oriented and long-term services and supports for persons with a traumatic brain injury. The Demonstration authorizes HCBS waiver-like services including crisis/support services, psychological and counseling supports, case management, community supports, habilitation, respite care, supported employment, environmental and assistive technology and self-directed care.

- *Enhanced Family Treatment*: provides intensive in-home and community treatment services for children who are experiencing a severe emotional disturbance and their families. The Demonstration authorizes HCBS waiver-like services including service coordination, flexible support, skilled therapy services, environmental safety devices, counseling, residential treatment, respite, supported employment, crisis and community supports.

- *Community Rehabilitation and Treatment Program*: provides recovery oriented, in-home and community treatment services for adults who have a severe and persistent mental illness. The Demonstration authorizes HCBS waiver-like services including service coordination, flexible support, skilled therapy services, environmental safety devices, counseling, residential treatment, respite, supported employment, crisis and community supports.

  Through a special provision as a Designated State Health Program, Community Rehabilitation and Treatment benefits can be extended to individuals with severe and persistent mental illness with incomes between 133% and 150% of the federal poverty level, under the Demonstration.

In addition, the Demonstration authorizes the:

- *Children's Palliative Care Program*: provides care coordination, respite care, expressive therapies, family training, and bereavement counseling, for children under the age of 21 years in populations 1, 2, and 3 who have been diagnosed with a life-limiting illness that is expected to be terminal before adulthood.

- *Adult Hospice Program*: allows for hospice services to be delivered concurrently with curative therapy to adults in populations 1, 2, and 3.

Lastly, as a Designated State Health Program, the Demonstration allows:

- *Marketplace Subsidies*: The State offers subsidies for premiums for individuals with incomes at or below 300% of the federal poverty level who are purchasing health care coverage from a Qualified Health plan in the Marketplace. The program, known as Vermont Premium Assistance (VPA), is part of the state-based health benefits exchange.

2.2.2 Delivery System Investments

Under the public managed care model, the Demonstration provides the State with flexibility to invest in the delivery system using two types of investments. The first are health care innovations that:

a. Reduce the rate of uninsured and/or underinsured in Vermont;
b. Increase the access to quality health care by uninsured, underinsured, and Medicaid beneficiaries;
c. Provide public health approaches and other innovative programs to improve the health outcomes, health status and quality of life for uninsured, underinsured and Medicaid-eligible individuals in Vermont; and
d. Encourage the formation and maintenance of public-private partnerships in health care, including initiatives to support and improve the health care delivery system and promote transformation to value-based and integrated models of care.

The second type of investment is specifically related to delivery reform projects. CMS has provided the State with one-time spending authority to support Accountable Care Organizations and Medicaid community providers in delivery system reform through activities such as, but not limited to:

- Infrastructure improvement;
- Quality and heath improvement information development and dissemination;
- Community related population health projects;
- Socio-economic risk assessment and mitigation; and
- Provider integration to build integration across physical health, mental health substance use disorder treatment and long-term services and supports.

Investment awards are expected to give preference to activities that promote collaboration, build capacity across the care continuum, consider social determinates of health, and promote an integrated health care system consistent with the framework set forth in the Vermont All-Payer Model Agreement (described below) and the Global Commitment Demonstration. Specifically, the State would like to encourage ACO-based provider led reform that features (a) collaboration between

providers, (b) reimbursement models that move away from Fee-For-Service payment, and (c) rigorous quality measurement that aligns with the APM quality framework.

In late November of 2017 two new investments were approved by CMS in the ACO delivery system reform category. Investments are scheduled to begin in 2018 and include administrative and infrastructure support for:

- OneCare Vermont ACO Quality Health Management Measurement Improvement investment. This project is designed to assist the ACO in providing technical assistance to network providers in setting quality improvement targets and using a suite of new and enhanced information dissemination tools and reports; and
- OneCare Vermont ACO Advanced Community Care Coordination investment. This project is designed to support an integrated care delivery system that is person-centered, efficient and equitable through the implementation of a community-based care coordination model.

2.2.3 All Payer Model Alignment

The All-Payer Model agreement between the State and the Federal government was approved by the Green Mountain Care Board on October 26, 2016 and signed by the Governor and the Secretary of Human Services on October 27, 2016. The agreement includes a target for a sustainable rate of growth for health care spending in Vermont across Medicaid, Medicare, and commercial payers, and builds on past programs like Vermont's Medicaid and commercial Shared Savings Programs. As currently implemented, this model focuses on a set of health care services roughly equivalent to Medicare Parts A and B (hospital and physician services). The agreement includes quality targets and performance measurement requirements and requires Vermont payers to offer aligned value-based ACO payment models comparable to Medicare's Next Generation ACO program (which may include shared savings/risk arrangements, capitation payments or global budgets). The State must provide a plan in 2019 for integrating any institutional long-term services and supports in the total cost of care in the next Medicare Demonstration period.

The All-Payer Model (APM) Agreement and Global Commitment Medicaid Demonstration are complementary frameworks that support Vermont's health care reform efforts. Each agreement provides federal support to further Vermont's strategic goal of creating an integrated health care system, including increased alignment across payers and providers.

3 GLOBAL COMMITMENT TO HEALTH EVALUATION

Information contained in this Interim Report #1 represents the first of four evaluation reports for the Global Commitment to Health Section 1115 Medicaid Demonstration. Each report will build on data presented in the prior period and form the basis for final summative report due June 30, 2022, six months following the end of the current extension period. Study reporting dates are summarized below:

- Interim Evaluation Report #1 (April 1, 2018)
- Interim Evaluation Report #2 (December 31, 2020)
- Summative Evaluation Report #1 (April 1, 2021)
- Summative Evaluation Report #2 (June 30, 2022)

As part the Interim Evaluation efforts, STC#72 requires the State to also conduct a focused study of its IMD settings. All aspects of the required IMD sub-evaluation for years 2013-2016 (e.g., design, research questions, metrics and findings) are presented in Section 4.

3.1 STUDY METHODS AND DESIGN

Using the State's proposed Global Commitment to Health Medicaid Demonstration Evaluation Design dated August 31, 2017, revised December 2017 and February 2018, and approved March 8, 2018, PHPG worked with the State to review available data, refine, and revise performance measures. Final measure selection was based on considerations such as: State budget and staff resources; NCQA or other changes in measure specifications; sample size; and relevance of each proposed measure to the State's priorities, operations and program policies. Appendix 1 offers a log of changes made to the proposed measure and sampling methods originally presented to evaluators.

PHPG also worked with the State to establish baseline periods for each performance area and measure. The current Demonstration is approved for the period January 1, 2017 through December 21, 2021. For purposes of studying the overall impact of the Demonstration, baseline was established as calendar year (CY) 2016 for most measures. Due to the timing of operations and data collection in the Vermont Medicaid Next Generation (VMNG) Accountable Care Organization (ACO) contract, baseline data collection in the Value-Based Purchasing performance area began in CY2017. Along these lines, in late 2017, the State finalized a data collection agreement for LTSS participation in the National Core Indicators Project for Aging Adults and People with Other Disabilities (NCI-AD). CY2018 will be the baseline year for certain measures related to community integration and employment for persons in the Choices for Care and TBI programs. The final evaluation measures including sampling methods, data sources and baseline years are summarized in Appendix 2.

National benchmarks for HEDIS® measures used to monitor performance in the areas of Access to Care and Quality of Care were set by the State at the 50th percentile for Medicaid plans for each year. CAHPS measures in these two areas were benchmarked against the national average for all State Medicaid plans that submitted their results to the national CAHPS database. Data presented in this report represents CAHPS-child version results. Historically, CAHPS surveys alternated annually between the child and adult versions. Beginning in CY2017 data will be collected for both versions annually and included in future reports.

This and subsequent reports rely on quantitative study methods to address the research questions identified in Section 3.1.1 regarding the impact of Demonstration on: access to care; quality of care; cost containment; and stable in-home and community alternatives to institutional care. To limit administrative burden on providers, consumers, and staff and to eliminate duplicative evaluation efforts, this project coordinated and compiled existing measures aimed at studying the impact of various health care initiatives under the Demonstration. This includes the:

- Global Commitment to Health Comprehensive Quality Strategy, including HEDIS® metrics;
- AHS Results Based Accountability Scorecards;
- National Core Indicators Project, (Developmental Disability and Aging and Other Disability Program Surveys) for Choices for Care, Developmental Disabilities and Traumatic Brain Injury program enrollees;
- Medicaid Quality Measures for enrollees attributed to an ACO; and
- Blueprint for Health Multi-Payer Delivery Reform Initiative for enrollees attributed to a Patient Centered Medical Home (PCMH) or Advanced Primary Care Practice.

The study design includes longitudinal analysis to measure change over time and differential statistics to describe the population and findings. Results are compared to statewide or national benchmarks, as applicable. In future years, if applicable, difference in differences methods will be used to characterize differences between Medicaid members when data exists before and after intervention for a treatment group and for a group that will not be receiving services/benefits (e.g., a comparison group). For example, it is anticipated that ACO practice attribution will allow measurement in at least one-time period before ACO practice intervention (e.g., baseline year of 2017) and at least one time after ACO practice intervention.

AHS will undertake a formative evaluation of Vermont's ACO delivery system reform investments, scheduled to begin in 2018. Findings from the evaluation of these onetime awards will be included in Interim Evaluation Report #2.

Vermont's Demonstration is a statewide effort, since 2013 it has encompassed all LTSS and Acute operations and Medicaid enrollees. Additionally, Medicaid eligibility is synonymous with enrollment in the public managed care-like model making traditional time series, comparison and/or control groups not attributed to the Demonstration difficult. However, two health care initiatives were identified where data for Medicaid comparison groups may be available over time, the Blueprint for Health and the VMNG ACO.

3.1.1 Research Questions and Hypotheses

STC #73 of the Demonstration (posted here) identifies the following overarching hypotheses for the Demonstration.

- The Demonstration will result in improved access to care;
- The Demonstration will result in improved quality of care;
- Value-based payment models will improve access to care;
- Improved access to preventive care will result in lower overall costs for the healthcare delivery system;
- Improved access to primary care will result in improved health outcomes;

- Enhanced care coordination will improve timely access to needed care;
- The Demonstration will result in increased community integration; and
- The Demonstration will maintain or reduce spending in comparison to what would have been spent absent the Demonstration;

Research questions to examine the success of Demonstration were further defined in its Demonstration Evaluation Design, approved by CMS March 8, 2018 (posted here). Following a review of available Vermont data including: sample sizes; budget; staff resources; and policy priorities; final study questions for this project were defined with the State and are presented in Exhibit 3.1-2.

Exhibit 3.1-2: Global Commitment to Health Research Questions and Hypotheses

Research Question	Hypothesis
Will the Demonstration result in improved access to care?	• The Demonstration will result in improved access to community based medical, Medication Assisted Treatment for Opioid Use Disorder and dental care. • The Demonstration will reduce the percent of potentially avoidable ED visits. • Premium requirements for eligible families above 195% FPL will not impede access to enrollment. • The VPA Qualified Health Plan subsidy program will result in continued access to health care coverage.

Will the Demonstration result in improved quality of care?	• The Demonstration will improve:
	  ○ Asthma care;
	  ○ Preventative health screenings for female enrollees;
	  ○ Mental health follow-up after psychiatric hospitalization; and
	  ○ Initiation and engagement in SUD treatment.
	• The Demonstration will improve enrollee experience of care and rating of the health plan.

Will value-based payment models increase access to care?	• The Medicaid ACO will show a lower overall cost of care. • The Medicaid ACO will improve access to mental health care and substance use disorder treatment. • ACO enrollees will receive developmental screenings in the first 3 years of life. • ACO enrollees will show improved diabetes and hypertension outcomes.
Will improved access to preventive care result in lower overall costs for the healthcare delivery system?	• The Blueprint for Health initiative will reduce per capita expenditures for enrollees whose diabetes is in control. • The Blueprint for Health initiative will contain or reduce total per capita expenditures for enrollees ages 1-64 years.
Will improved access to primary care result in improved health outcomes?	• The Blueprint for Health will improve diabetes control for members age 18-75.
Will enhanced care coordination improve timely access to needed care?	• Blueprint for Health enrollees will report timely access and satisfaction with their experience of care.
Will the Demonstration will result in increased community integration?	• The Demonstration will increase community living and integration for persons needing LTSS. • The Demonstration will increase choice and autonomy for persons needing LTSS.

Research Question	Hypothesis
	• The Demonstration will increase integrated employment options for persons needing LTSS.
Will the Demonstration maintain or reduce spending in comparison to what would have been spent absent the Demonstration?	• The Demonstration will contain or reduce spending.

As indicated in Exhibit 3.1-2, several hypotheses are measured through evaluation efforts associated with the Blueprint for Health initiative. A cornerstone of delivery reform since the original Global Commitment to Health Demonstration, the Blueprint for Health is a state-led, multi-payer program dedicated to achieving well-coordinated and seamless health services, with an emphasis on prevention and wellness. As such, the Blueprint employs several different approaches to incentivizing delivery system reform and increased quality and performance through payment reform. The foundation of the Blueprint model is a Multi-Payer Advanced Primary Care Practice (MAPCP) program. Participation is optional for providers, but mandatory for Vermont's commercial payers (excluding self-insured plans) and Medicaid.

Current participating payers in the Blueprint for Health include Medicaid, Medicare, Blue Cross Blue Shield of Vermont, MPV and CIGNA. As such, reporting typically reflects population health outcomes across payers, however for several measures in this study results were stratified for Medicaid enrollees. Measures of quality and cost for Medicaid enrollees in the Blueprint to Health will be examined year over year. (See Appendix 2 and 3 for measurement details).

The hypotheses examining Value-Based Purchasing under the Global Commitment to Health Demonstration are related to the development of the VMNG ACO. Baseline results for this hypothesis will be available July of 2018 and included in future reports. Measures for Medicaid enrollees in the ACO will be examined year over year and, where feasible, in relationship to a comparison group of Medicaid members not attributed to the ACO.

Expected outcomes for Vermont's delivery system reform investments are presented in Exhibit 3.1-3. Findings will be included in Interim Evaluation Report #2.

Exhibit 3.1-3 Expected Outcomes of 2018 Delivery System Reform Investments

ACO Delivery System Reform Investments	
Investment Initiative	**Expected Outcome**
OneCare Vermont ACO Quality Health Management Measurement Improvement investment. This project is designed to assist the ACO in providing technical assistance to network providers in setting quality improvement targets and using a suite of new and enhanced information dissemination tools and reports	• OneCare's analytics platform will be enhanced to meet the needs of OneCare's multi-payer risk bearing ACO participants and the State of Vermont's All Payer ACO model.
	• Care Navigator functionality will be improved to address the needs of care coordinators and patients with complex care coordination needs.
	• OneCare's information dissemination tools to support OneCare's population health care coordination, and financial performance initiatives will show increased adoption and demonstrate value to OneCare providers.

ACO Delivery System Reform Investments	
Investment Initiative	**Expected Outcome**
OneCare Vermont ACO Advanced Community Care Coordination investment. This project is designed to support integrated care delivery system that is person-centered, efficient and equitable through the implementation of a community-based care coordination model.	• OneCare will support the development of a standardized team-based care model that integrates primary care medical homes with the continuum of care provider network.
	• OneCare's care coordination model for complex needs populations will expand to additional communities served in 2018 with several core components in place, bringing stability, scalability, and consistency to the care model.
	• OneCare's expanded investments in team-based care coordination will provide the resource necessary to build upon and strengthen existing partnerships between primary care medical homes and community-based providers; thus, enabling more individuals with complex needs to have access to care coordination services.
	• OneCare will have an actionable framework and sustainable care coordination payment model and corresponding outcome (savings) model to effectively evaluate the long-term return on investment.

3.1.2 Population and Stakeholders

All Demonstration enrollees, Vermont's total Medicaid population, including enrollees participating in specialized programs (e.g., ID/DD, CFC, CRT, TBI), are included in Interim Report #1. In addition, analysis will address:

- The impact of marketplace subsidies for persons covered through Qualified Health Plans;
- Access to care for children in families who are required to make premium payments; and
- Access, cost and quality for substance use disorder and psychiatric IMD services (See Section 4 for a detailed description of the IMD sub-evaluation).

3.1.3 Data Sources and Collection

All data used to evaluate performance against Demonstration goals is derived from Vermont sources and administrative data as described in Exhibit 3.1-3 on the following page.

Exhibit 3.1-3: Global Commitment to Health Data Sources

	Global Commitment to Health Evaluation Data Sources	
Data Lead	**Data Source**	**Brief Description**
DAIL	Social Assistance Management System (SAMS)	Encounter data submitted to the State by providers used to identify residential settings used by enrollees in the Choices for Care program
	National Core Indicators Project (NCI)	Point in time survey data collected on LTSS and HCBS program participants used to assess community integration, choice and control for enrollees in Choices for Care, Developmental Disabilities and Traumatic Brain Injury programs
DMH	Monthly Service Reports (MSR)	Encounter data submitted to the State by providers used to identify consumers receiving specialized mental health services and to support the development of employment statistics for persons with a SPMI
DOL	Employment database	Wage and employment information submitted by employers to the State Department of Labor used to support the development of employment statistics for specialized populations
DVHA	Medicaid Management Information System (MMIS)	Claims data submitted to the State by providers used to support HEDIS® and HEDIS®-like performance, Medication Assisted Treatment, service utilization and cost metrics for all enrollees
	State Medicaid Eligibility and Enrollment files, including VT Health Connect Premium Assistance (VPA) files	Eligibility and enrollment detail for Medicaid beneficiaries used to determine enrollee aid category and stratify data into sub-groups, when applicable, including measures of health coverage for persons who received marketplace subsidies to purchase a QHP
	Consumer Assessment of Healthcare Providers and Systems (CAHPS)	Point in time survey data collected on Medicaid beneficiaries used to assess enrollee experience of care
VDH	Vital Statistics System	Public health birth, death and other vital records used to track overdose deaths attributed to Vermont residents
	Substance Abuse Treatment Information System (SATIS)	Provider, enrollee and encounter data used to assess rates of Medication Assisted Treatment and successful completion of residential treatment
	Household Health Insurance Survey	Point in time survey data collected on Vermonters used to determine rates of uninsured Vermonters
GMCB	Vermont Health Care Uniform Reporting and Evaluation System (VHCURES)	Claims data submitted by all health plans in the State of Vermont used to assess outcomes for Blueprint to Health enrollees
ACO	Provider Encounter Data and Outcome Reports	Provider medical record and HEDIS® outcomes reported to the State and used to assess outcomes for ACO attributed enrollees

3.1.4 Data Limitations

Data used in this analysis includes multiple administrative data sets. Limitations include: inconsistent data collection across sub-populations; inclusion of other payers; inconsistent data entry across provider or service types; lack of available data for all study years due to changes in IT systems or data storage methods. These inconsistencies make it difficult to develop comparison groups or implement academically rigorous study designs. Along these lines, State budget pressures restrict the resources necessary to isolate or test impact of initiatives on enrollees across multiple AHS programs. Lastly, many participants in Vermont's specialized Medicaid programs (e.g., Choices for Care, Developmental

Disabilities, CRT) are dually eligible for Medicare and Medicaid. The absence of Medicare claims data for this project presents challenges for certain metrics such as total cost of care, rates of preventive screens, and PCP follow-ups. The stratification of measures for sub-population of enrollees who receive specialized services was eliminated in most circumstances.

3.1.5 Data Analysis

PHPG obtained benchmark and performance data from the DVHA and its IGA partners. Descriptive statistics were used to describe the basic features of the data and to provide summaries about the sample and measures. The descriptive statistics form the basis of the year over year quantitative analysis of data and summaries about the participants and their outcomes. Data was analyzed as rates, proportions, frequencies and measures of central tendency (e.g., mean, median, mode).

Vermont has been engaged in health care and payment reform since the inception of the Demonstration in 2005. In many cases, specialized programs no longer employ fee-for-service claiming and encounter data may be stored in multiple Medicaid legacy systems across AHS. In cases where programs have moved away from fee-for-service payment models, modified HEDIS® protocols were used to assure data is complete and accurately adjusted. Specifically, modifications were made in the following HEDIS® measures to account for alternative payment models: follow-up after hospitalization for mental illness (7 and 30-days); and initiation and engagement in treatment for alcohol and other drug dependence.

Blueprint to Health is a multi-payer reform effort, as such data is typically aggregated for the entire population irrespective of payer. Through its analytics vendor, Onpoint Health Data, Blueprint to Health links provider reported clinical data to de-identified VHCURES claims data. Onpoint de-identifies the clinical data using the same algorithms to hash the identifiers as was used by insurers for the VHCURES data, using this method the vendor is able to link records between the two de-identified datasets using the hashed, or encrypted, identifiers. Blueprint to Health Diabetes measures were analyzed by its vendor and a stratified for the Medicaid population.

Annually, the Blueprint to Health examines total expenditures and specialized program expenditures for Medicaid patients attributed to Blueprint practices. However, prior to examining findings, the vendor first risk-adjusts the expenditure values. To do so, extreme values are capped, and a regression-based adjustment procedure is used to create an individual-level risk-adjusted expenditure value. The average of this risk-adjusted value is reported. Appendix 3 provides a description of the Blueprint to Health methodology.

3.2 Discussion of Findings and Conclusions

Interim findings represent baseline results for the five-year Global Commitment to Health study period. As indicated earlier, the State's identified benchmark for HEDIS® measurement was identified as the rate attributed to the 50th percentile for Medicaid plans for each year. CAHPS measures were benchmarked against the national average for all State Medicaid plans that submitted their results to the national CAHPS database. Findings are presented below by overall arching goal area, research question and hypotheses as described in section 3.1.1 above.

3.2.1 Findings

3.2.1.1 Access to Care

In this goal area, the research question was identified as "*Will the Demonstration result in improved access to care?*". Each hypothesis supporting this question and the results are presented below.

The first hypothesis explored in this area was: *The Demonstration will result in improved access to community based medical, medication assisted treatment (MAT) for opioid use disorder (OUD) and dental care.* Baseline data typically represents the starting point for year over year comparisons and tracking improvement, however in all but one measure where national comparisons have been established, the Global Commitment to Health is already outperforming identified benchmarks.

The percent of adult enrollees who had an ambulatory or preventive care visit in CY2016 was 80.10%, just 2% lower than its benchmark of 82.20%. In the area of well-child visits, the Demonstration outperformed the HEDIS® benchmark by 20% for visits in the first 15 months of life and 4% for visits in the 3rd, 4th, 5th and 6th year of life. Similar results were seen for the Demonstration's performance in the percent of adolescents ages 12 to 21 who receive one or more well-care visits with a PCP during the measurement year with Vermont performing 5% above the State's identified HEDIS® benchmark.

Access to dental results performed 32% above the State's identified HEDIS® benchmark for children age 2-20 years with at least one dental visit.

Additional measures of access appear strong during the baseline year (CY2016) with 91% of survey respondents on the CAHPS child version indicating they received necessary care (7% above the CAHPS benchmark); and as of 2014, the most recent measurement year, only 3.7% of Vermonters were estimated to be uninsured.

Access to Medication Assisted Treatment (MAT) for OUD will be assessed year over year with baselines levels showing 208 people receiving MAT per 10,000 Vermonters age 18-64 and 131 overdose deaths of Vermont residents in 2016.

A summary of results for this hypothesis are presented in Exhibit 3.2.1.1-1.

Exhibit 3.2.1.1-1 Summary of Access to Care Hypothesis 1 (Access)

THE DEMONSTRATION WILL RESULT IN IMPROVED ACCESS TO COMMUNITY BASED MEDICAL, MEDICATION ASSISTED TREATMENT (MAT) FOR OPIOID USE DISORDER (OUD) AND DENTAL CARE				RESULTS	
Performance Area	**Metric**	**Sampling Methodology**	**Nat'l Benchmark**	**Nat'l Rate (2016)**	**VT Baseline (2016)**
Ambulatory Care	Percent of adult enrollees who had an ambulatory or preventive care visit (Total)	Total Medicaid	HEDIS® AAP	82.20%	80.10%
Well-Child Visits	Well-child visits first 15 months of life 6 or more visits	Total Medicaid	HEDIS® W15	59.60%	71.60%
	Well-child visits 3rd, 4th, 5th, & 6th year of life	Total Medicaid	HEDIS® W34	71.40%	74.00%
Adolescent Well- Care Visits	Percent of adolescents ages 12 to 21 who receive one or more well-care visits with a PCP during the measurement year	Total Medicaid	HEDIS® AWC	48.40%	50.90%
Access to Dental Care	Children age 2-20 years with at least one dental visit (Total)	Total Medicaid	HEDIS® ADV	51.79%	68.10%
Getting Needed Care	Percent of survey respondents indicating they received necessary care	Representative Sample Medicaid	CAHPS-CPC	85.00%	91.00%
Health Coverage	Percent of uninsured Vermonters	Total Vermont	N/A	N/A	3.70%
MAT for OUD	Number of people receiving MAT per 10,000 Vermonters age 18-64	Total Vermont	N/A	N/A	208
Drug Overdose Deaths	Vermont resident deaths related to drug overdose	Total Vermont	N/A	N/A	131

The second hypothesis explored in this area was: *"The Demonstration will reduce the rate of potentially avoidable ED visits".* The overall rate of ED visits was examined per 1,000-member months for the total Medicaid population and is performing 29% better than the HEDIS® benchmark, with fewer visits overall to the ED. The rate of Potentially Avoidable ED Utilization was calculated as a percent of total ED visits for the Medicaid population and represents 17.8%.

General ED utilization rates were also examined for participants in the Global Commitment to Health LTSS (i.e., persons in the Choice for Care Program) and Special Health Needs populations (i.e., persons enrolled in the TBI, CRT, SED and DDS programs). Because several of these specialized programs include a high number of members who are dual Medicare and Medicaid eligible, a modified HEDIS® score for Medicaid and dual Medicare and Medicaid eligible members was used to assess the performance of each subpopulation rate against the adjusted total. These cohorts represent individuals with specialized health care needs and who often have multiple co-morbid conditions. As expected, persons with TBI, frail elders have a higher ED rate per 1000-member months. Vermont practice for individuals with a severe and persistent mental illness includes the completion of a comprehensive screening prior to inpatient admission. These assessments typically occur in the ED, as such results for the CRT program cohort show the highest rate of ED use.

Year over year rates for general use and percent of potentially preventable ED use will be assessed in subsequent reports. A summary of results for this hypothesis are presented in Exhibit 3.2.1.1-2.

Exhibit 3.2.1.1-2 Summary of Access to Care Hypothesis 2 (ED Use)

THE DEMONSTRATION WILL REDUCE THE RATE OF POTENTIALLY AVOIDABLE ED VISITS				RESULTS	
Performance Area	**Metric**	**Sampling Methodology**	**Nat'l Benchmark**	**Nat'l Rate (2016)**	**VT Baseline (2016)**
Emergency Department Visits	Rate of ED visits per 1,000-member months	Total Medicaid	HEDIS® EDU	62.8	44.70
	Rate of ED visits per 1,000-member months	Total Medicaid, including dual eligible members	N/A	N/A	48.76
	Rate of ED visits per 1,000-member months	DDS Program Enrollees	N/A	N/A	50.90
	Rate of ED visits per 1,000-member months	CFC Program Enrollees	N/A	N/A	88.00
	Rate of ED visits per 1,000-member months	TBI Program Enrollees	N/A	N/A	118.70
	Rate of ED visits per 1,000-member months	CRT Program Enrollees	N/A	N/A	134.5
	Rate of ED visits per 1,000-member months	SED Program Enrollees	N/A	N/A	57.3
	Percent of Potentially Avoidable ED Utilization	Total Medicaid	N/A	N/A	17.80%

The third hypothesis explored in this area was: *"Premium requirements for eligible families above 195% FPL will not impede access to enrollment".* In CY2016, 5,975 children were found eligible with a premium required to effectuate coverage. In 99% of the cases coverage was activated. Results suggest that the premium requirement did not impeded access to coverage. Exhibit 3.2.1.1-3 provides a summary of the performance measure and results.

Exhibit 3.2.1.1-3 Summary of Access to Care Hypothesis 3 (Premiums)

PREMIUM REQUIREMENTS FOR ELIGIBLE FAMILIES ABOVE 195% FPL WILL NOT IMPEDE ACCESS TO ENROLLMENT				RESULTS	
Performance Area	**Metric**	**Sampling Methodology**	**Nat'l Benchmark**	**Nat'l Rate (2016)**	**VT Baseline (2016)**
Effect of Children's Premiums	Percent of children found eligible for Dr. Dynasaur with premium whose families paid the premium necessary to effectuate coverage	Total Premium Population	N/A	N/A	99.20%

The fourth hypothesis explored in this area was: *The Vermont Premium Assistance (VPA) Qualified Health Plan (QHP) subsidy program will result in continued access to health care coverage.* In CY2016, 20,276 individuals had QHP coverage with VPA for at least one month during calendar year. In that same year, over 89% of members with VPA had coverage from the month they signed up through the end of the year, without any gaps in coverage or VPA. Results suggest VPA supports continuity in coverage for those who need financial support to access a QHP. Exhibit 3.2.1.1-4 provides a summary of the performance measure and results.

Exhibit 3.2.1.1-4 Summary of Access to Care Hypothesis 4 (VPA)

THE VPA QUALIFIED HEALTH PLAN SUBSIDY PROGRAM WILL RESULT IN CONTINUED ACCESS TO HEALTH CARE COVERAGE				RESULTS	
Performance Area	**Metric**	**Sampling Methodology**	**Benchmark Measure**	**Nat'l Rate (2016)**	**Baseline (2016)**
Impact of VPA Program	Percent of members with VPA who had coverage from the month they signed up through the end of the year, without any gaps in coverage or VPA	Total VPA Enrollees	N/A	N/A	89.20%

3.2.1.2 Quality of Care

In this goal area, the research question was identified as "*Will the Demonstration result in improved quality of care?*". Each hypothesis supporting this question and the results are presented below.

The first hypothesis explored in this area was: *The Demonstration will improve: asthma care; preventative health screenings for female enrollees; mental health follow-up after psychiatric hospitalization; and initiation and engagement in SUD treatment.* In both measures of asthma care, Vermont's baseline outperformed the national benchmark. The percent of enrollees receiving appropriate asthma medication management at 50% compliance was 35% above its HEDIS® benchmark; while the percent of enrollees receiving appropriate asthma medication management at 75% compliance was 85% above its HEDIS® benchmark.

Preventative screens for female enrollees were slightly under the identified benchmark. The breast cancer screening rate was 55% as compared to the benchmark of 58%, while the chlamydia screening rate was 51% as compared to a benchmark of 55%.

The percent of enrollees discharged who had follow-up at 7 days and at 30 days outperformed national benchmarks by 37% and 19% respectively. The percent of enrollees using substances who initiate in treatment performed 19% above its benchmark and the percent of enrollees using substances who engage in treatment outpaced its national benchmark by 73%.

The proportion of people who were reported to be in poor health, in a representative sample of DDS program participants, surveyed through Vermont's participation in the National Core Indicators Project was 4% as compared to national average of 3%. Exhibit 3.2.1.2-1 provides a summary of measures and results related to this hypothesis.

Exhibit 3.2.1.2-1 Summary of Quality of Care Hypothesis 1

THE DEMONSTRATION WILL IMPROVE: ASTHMA CARE; PREVENTATIVE HEALTH SCREENINGS FOR FEMALE ENROLLEES; MENTAL HEALTH FOLLOW-UP AFTER PSYCHIATRIC HOSPITALIZATION; AND INITIATION AND ENGAGEMENT IN SUD TREATMENT				RESULTS	
Performance Area	**Metric**	**Sampling Methodology**	**Nat'l Benchmark**	**Nat'l Rate (2016)**	**VT Baseline (2016)**
Medication Management for People with Asthma	Percent of enrollees receiving appropriate asthma medication management 50% Compliance (Total)	Total Medicaid	HEDIS® MMA	56.10%	75.50%
	Percent of enrollees receiving appropriate asthma medication management 75% Compliance (Total)	Total Medicaid	HEDIS® MMA	31.40%	58.10%
Breast Cancer Screening	Percent of female enrollees age 50 to 74 who receive screening at appropriate intervals	Total Medicaid	HEDIS® BCS	58.10%	55.10%
Chlamydia Screening	Percent of female enrollees screened (Total)	Total Medicaid	HEDIS® CHL	55.10%	50.80%
Follow up after Hospitalization for Mental Illness	Percent of enrollees discharged who had follow-up at 7 days	Total Medicaid	HEDIS® FUH	43.90%	60.10%
	Percent of enrollees discharged who had follow-up at 30 days	Total Medicaid	HEDIS® FUH	63.80%	75.80%
Substance Use Disorder Treatment	Percent of enrollees using substances who initiate in treatment (Total)	Total Medicaid	HEDIS® IET	38.00%	45.30%
	Percent of enrollees using substances who engage in treatment (Total)	Total Medicaid	HEDIS® IET	9.70%	16.80%
Health Wellness	The proportion of people who were reported to be in poor health	DDS Representative Sample	NCI-DD	3.00%	4.00%

The second hypothesis explored in the quality area was: *The Demonstration will improve enrollee experience of care and rating of the health plan.* In 2016 Vermont surveyed children enrolled in the Medicaid program. In each measure of quality, demonstration performance was high. In 2016, 90% of enrollees rated the health plan as a "7" or above on a scale where 10 is the best; 93% indicated they can usually or always get needed care quickly; 92% of enrollees rated their care as a "7" or above on a scale where 10 is the best; 86% reported "usually" or "always" getting what they needed from customer service; and 96% reported their physician "usually" or "always" explains things, listens to their concerns, shows respect and spends enough time with them. In subsequent years both child and adult CAHPS will be administered annually. Exhibit 3.2.1.2-2 provides a summary of the performance measure and results.

Exhibit 3.2.1.2-2 Summary of Quality of Care Hypothesis 2 (CAHPS-CPC)

THE DEMONSTRATION WILL IMPROVE ENROLLEE EXPERIENCE OF CARE AND RATING OF THE HEALTH PLAN				RESULTS	
Performance Area	**Metric**	**Sampling Methodology**	**Nat'l Benchmark**	**Nat'l Rate (2016)**	**VT Baseline (2016)**
Health Plan	Enrollee rating of health plan	Representative Sample Medicaid	CAHPS-CPC	91.00%	90.00%
Quick Care	Enrollee rating of ability to get care quickly	Representative Sample Medicaid	CAHPS-CPC	90.00%	93.00%
Overall Rating of Care	Enrollee rating of care received	Representative Sample Medicaid	CAHPS-CPC	93.00%	92.00%
Customer Service	Enrollee rating of customer service	Representative Sample Medicaid	CAHPS-CPC	88.00%	86.00%
Communication	Enrollee rating of how well their physician explains things, listens to their concerns, shows respect and spends enough time with them	Representative Sample Medicaid	CAHPS-CPC	94.00%	96.00%

3.2.1.3 Primary Care and Enhanced Care Coordination

In this goal area, the first research question was identified as: *Will improved access to preventive care result in lower overall costs for the healthcare delivery system?.* The first hypothesis explored in this area was: *The Blueprint for Health initiative will reduce per capita expenditures for enrollees whose diabetes is in control.* Calendar year 2016 was the first year this measure was stratified for a Medicaid only cohort of Blueprint enrollees. In this first year Blueprint results show that per capita expenditures for enrollees age 18 – 75, is $3,218 lower than those enrollees whose HbA1c was in poor control. Results are presented in Exhibit 3.2.1.3-1 and will be monitored for year over year changes in future reports.

Exhibit 3.2.1.3-1 Summary of Primary Care and Cost Hypothesis 1 (Enrollees with Diabetes)

THE BLUEPRINT FOR HEALTH INITIATIVE WILL REDUCE PER CAPITA EXPENDITURES FOR ENROLLEES WHOSE DIABETES IS IN CONTROL			RESULTS	
			Per Capita Expenditures VT Baseline (2016)	
Performance Area	**Metric**	**Sampling Methodology**	**Controlled**	**Poor Control**
Health Outcomes & Cost	Expenditures per capita for continuously enrolled members, ages 18-75 whose Diabetes HbA1c was in control compared to those with poor control	Blueprint Medicaid Enrollees	$16,549	$19,767

The second hypothesis explored in this area was: *The Blueprint for Health initiative will contain or reduce total per capita expenditures for enrollees ages 1-64 years.* Expenditures for Blueprint Medicaid enrollees will be examined year over year in two areas: total expenditures, excluding specialized Medicaid services and total expenditures for specialized Medicaid services. Special Medicaid Services (SMS) are those that are funded exclusively by Medicaid and include transportation, LTSS, home and community-based services, case management, dental, residential treatment, day treatment, mental health facilities, and school-based services. Results for CY2016 are provided in Exhibit 3.2.1.3-2.

Exhibit 3.2.1.3-2 Primary Care and Cost Hypothesis 2 (Per capita Expenditures for Medicaid)

THE BLUEPRINT FOR HEALTH INITIATIVE WILL CONTAIN OR REDUCE TOTAL PER CAPITA EXPENDITURES FOR ENROLLEES AGES 1-64 YEARS.			RESULTS
Performance Area	**Metric**	**Sampling Methodology**	**VT Baseline (2016)**
Cost	Total expenditures per capita, excluding specialized program services, for enrollees ages 1-64 years	Blueprint Medicaid Enrollees	$3,888.94
	Specialized Medicaid expenditures per capita, for enrollees ages 1-64 years		$2,262.46

A second research question was examined related to access to primary care: *Will improved access to primary care result in improved health outcomes?.* The hypotheses tested was: *The Blueprint for Health initiative will improve diabetes control for members 18-75.* Results show that significantly more Blueprint enrollees were identified whose Diabetes HbA1c was in control (N=2288) as compared to those found with poor control (N=288). Along these lines, inpatient hospitalization rates per 1,000 members for members whose diabetes was controlled showed lower rates of utilization (206.7 per 1000 members) when compared to those in poor control (333.73 per 1000 members). Results are presented in Exhibit 3.2.1.3-2 and will be monitored for year over year changes in future reports.

Exhibit 3.2.1.3-2 Access to Primary Care and Outcomes Hypothesis 1 (Diabetes Control)

THE BLUEPRINT FOR HEALTH INITIATIVE WILL IMPROVE DIABETES CONTROL FOR MEMBERS 18-75.			RESULTS	
			VT Baseline (2016)	
Performance Area	**Metric**	**Sampling Methodology**	**Controlled**	**Poor Control**
Health Outcomes & Cost	Inpatient hospitalizations per 1,000 members for continuously enrolled members, ages 18-75 whose Diabetes HbA1c was in control compared to those with poor control	Blueprint Medicaid Enrollees	206.7	333.3
	Number of continuously enrolled members, ages 18-75 whose Diabetes HbA1c was in control compared to those with poor control		2288	288

The third and last research question examined related to Blueprint to Health was: *Will enhanced care coordination will improve timely access to needed care?.* The hypotheses tested was: *Blueprint for Health enrollees will report timely access and satisfaction with their experience of care.* Performance was measured using the CAHPS-PCMH. Baseline results show 61.52% of all enrollees report "usually" or "always" when asked about their ability to get desired appointment and 83.69% report their physician "usually" or "always" demonstrates good communication. Results are presented in Exhibit 3.2.1.3-3 and will be monitored for year over year changes in future reports.

Exhibit 3.2.1.3-3 Access to Needed Care Blueprint Enrollees

BLUEPRINT FOR HEALTH ENROLLEES WILL REPORT TIMELY ACCESS AND SATISFACTION WITH THEIR EXPERIENCE OF CARE,				RESULTS	
Performance Area	**Metric**	**Sampling Methodology**	**Nat'l Benchmark**	**Nat'l Rate (2016)**	**VT Baseline (2016)**
Access to Care	Enrollee rating of ability to get desired appointment or information	Blueprint Representative Sample	N/A	N/A	61.52%
Communication	Enrollee rating of how well their physician explains thigs, listens to their concerns, shows respect and spends enough time with them		N/A	N/A	83.69%

3.2.1.4 Community Integration for LTSS and Specialized Program Recipients

This goal area focused on LTSS participants in the Choices for Care program and the specialized health needs populations in the DDS, TBI, and CRT programs. The research question identified was: *Will the Demonstration result in increased community integration?*. The first hypothesis was: *The Demonstration will increase community living and integration for persons needing LTSS*. Baseline results show that the Choices for Care program is meeting its goal of serving people in community settings of their choice, 2315 members or 54% of program participants are living in community-based settings (1808 members in a home-based setting and 507 members in a community residential setting) and 1966 members or 46% of program participants are living in Nursing Facility Settings. Results are presented in Exhibit 3.2.1.4-1 and will be monitored for year over year changes in future reports.

Exhibit 3.2.1.4-1 Choices for Care Program Participants in Community-Based Settings

THE DEMONSTRATION WILL INCREASE COMMUNITY LIVING AND INTEGRATION FOR PERSONS NEEDING LTSS			RESULTS VT BASELINE (2016)		
Performance Area	**Metric**	**Sampling Methodology**	**Nursing Facility**	**Home Setting**	**Community Residential**
Eliminating Institutional Bias	Average number of people served per month by setting: nursing facility, home, licensed residential facility	CFC Program Enrollees	1966	1808	507

Community Integration was also explored in the context of community access using Vermont data collected as part of the NCI Project for persons receiving Developmental Disabilities Services. CY2016 results show the proportion of people who regularly participate in integrated activities to be 84%. Results place Vermont scores "within the average range" for NCI measures. Future reports will include NCI data for persons participating in the Choices for Care and TBI programs. Results are presented in Exhibit 3.2.1.4-2.

Exhibit 3.2.1.4-2 Community Integration for Persons Needing LTSS

THE DEMONSTRATION WILL INCREASE COMMUNITY LIVING AND INTEGRATION FOR PERSONS NEEDING LTSS				RESULTS	
Performance Area	**Metric**	**Sampling Methodology**	**Benchmark Measure**	**Nat'l Average (2016)**	**VT Baseline (2016)**
Community Access	Proportion of people who regularly participate in integrated activities in their communities	DDS Representative Sample	NCI-DD	86.00%	84.00%

The second hypothesis explored was: *The demonstration will increase choice and autonomy for persons needing LTSS*. 2016 results show the proportion of people who make choices about their everyday lives to be 87% and those who make decisions about their everyday lives to be 58%. Results place Vermont scores "within the average range" for NCI measures. Future reports will include NCI data for persons participating in the Choices for Care and TBI programs. Results are presented in Exhibit 3.2.1.4-3 and will be monitored for year over year change.

Exhibit 3.2.1.4-3 Choice and Control for Persons Needing LTSS

THE DEMONSTRATION WILL INCREASE CHOICE AND AUTONOMY FOR PERSONS NEEDING LTSS				RESULTS	
Performance Area	**Metric**	**Sampling Methodology**	**Benchmark Measure**	**Nat'l Average (2016)**	**VT Baseline (2016)**
Choice and Control	The proportion of people who make choices about their everyday lives	DDS Representative Sample	NCI-DD	88.00%	87.00%
	The proportion of people who make decisions about their everyday lives	DDS Representative Sample	NCI-DD	67.00%	58.00%

The third hypothesis explored was: *The Demonstration will increase integrated employment options for persons needing LTSS.* Employment data for program participants of working age yielded state fiscal year rates of employment as 48% for participants in the DDS program, 26% for persons in the TBI program, and 22% for persons in the CRT program. NCI data on a representative sample of enrollees in the DDS program resulted in 52% of respondents reporting they do not have a job but want one.

Results are presented in Exhibit 3.2.1.4-4 and will be monitored for year over year change.

Exhibit 3.2.1.4-4 Employment Rates for Specialized Program Participants

THE DEMONSTRATION WILL RESULT IN INCREASED COMMUNITY INTEGRATION				RESULTS	
Performance Area	**Metric**	**Sampling Methodology**	**Benchmark Measure**	**Nat'l Average (2016)**	**VT Baseline (2016)**
Employment	The proportion of people who do not have a job in the community but would like to have one	DDS Representative Sample	NCI-DD	47.00%	52.00%
	Employment rate of people of working age receiving DDS services (SFY)	DDS Program Enrollees	N/A	N/A	48.00%
	Employment rate of people of working age receiving TBI rehabilitation services (SFY)	TBI Program Enrollees	N/A	N/A	26.00%
	Employment rate of people of working age receiving CRT services (SFY)	CRT Program Enrollees	N/A	N/A	22.00%

3.2.1.5 Cost

The research question identified was: *Will the Demonstration maintain or reduce spending in comparison to what would have been spent absent the waiver?*. The hypothesis studied was: *Demonstration will maintain or reduce spending in comparison to what would have been spent absent the Demonstration*. Beginning January 1, 2017, the State agreed to new terms and conditions with CMS resulting in adjusted Demonstration neutrality caps. 2017-year end results show that, as in previous Demonstrations, the State continues to spend less in comparison to what would have been spent absent the Demonstration. STC #62 provides guidance for the annual PMPM expenditure limit, actual spending in 2017 was $286,604,366 under that limit. STC#64 provides guidance for the annual expenditure limit for the New Adult Group, actual spending was $73,978,445 under that limit. STC #81 provides guidance for the annual limits on investment spending, actual spending equaled the agreed upon cap. Results are presented in Exhibit 3.2.1.5-1.

Exhibit 3.2.1.5-1 Budget Neutrality CY2017

Global Commitment to Health Budget Neutrality Limits CY2017			
Expenditure Category	**Neutrality Limit**	**Actual Expenditures**	**Variance to Limit**
PMPM	$1,383,008,678	$1,096,404,312	$(286,604,366)
Investments	$142,500,000	$142,500,000	$0
New Adult Group	$369,604,893	$295,626,448	$(73,978,445)

Rate of growth in PMPM limits will be analyzed over the study period. 2017 PMPs by Eligibility Group are provided in Exhibit 3.2.1.5-2.

Exhibit 3.2.1.5-2 CY2017 PMPM Expenditures

CY2017 Expenditures	
Medicaid Eligibility Group	**Actual PMPM**
ABD Non-Medicare - Adult	$1713.16
ABD Non-Medicare - Child	$2308.38
ABD Dual	$1752.94
ANFC Non-Medicare - Adult	$533.20
ANFC Non-Medicare - Child	$419.21
New Adult Group	$518.26

3.2.2 Successes, Challenges and Lessons Learned

The Vermont Demonstration has been in operation since 2005. While the baseline year selected is calendar year 2016, for the study period 2017 through 2021, the baseline results suggest a mature delivery system. In many cases the Demonstration is already meeting or exceeding identified HEDIS® benchmarks set by the State, as well as other national trends. For example, in the six HEDIS® measures selected to study Access to Care, Vermont scored above its identified benchmark of the 50th percentile, in five of the measures and within three percentage points below on the sixth. Vermont's performance on ED visits per 1,000-member months is significantly better than the identified HEDIS® benchmark, suggesting Vermont's efforts to improve chronic care management and access to primary are effective at lowering ED use.

Access to Care HEDIS® Measures	**HEDIS® 50th Percentile**	**VT GC Baseline**
Percent of adult enrollees who had an ambulatory or preventive care visit (HEDIS® AAP-Total)	82.20%	80.13%
Well-child visits first 15 months of life 6 or more visits (HEDIS® W15-Total)	59.60%	71.63%
Well-child visits 3rd, 4th, 5th, & 6th year of life (HEDIS® W34-Total)	71.40%	73.97%
Percent of adolescents ages 12 to 21 who receive one or more well-care visits with a PCP during the measurement year (HEDIS®-AWC)	48.40%	50.89%
Children age 2-20 years with at least one dental visit (HEDIS® ADV-Total)	51.79%	68.12%
Rate of ED visits per 1,000-member months (HEDIS® EDU -lower score is desirable)	62.8	44.72

In the eight HEDIS® measures selected to study Quality of Care Vermont scored above its identified benchmark in six of the measures, within three percentage points below on one measure and under the identified benchmark by 5% in just one metric. As illustrated below, results suggest Vermont is meeting its goal of delivering high quality health care and supporting members in adhering to medication protocols, preventive screening and treatment guidelines.

Quality of Care HEDIS® Measures	**HEDIS® 50th Percentile**	**VT GC Baseline**
Percent of enrollees receiving appropriate asthma medication management 50% Compliance (HEDIS® MMA-Total)	56.10%	75.46%
Percent of enrollees receiving appropriate asthma medication management 75% Compliance (HEDIS® MMA-Total)	31.40%	58.10%
Percent of female enrollees age 50 to 74 who receive breast cancer screening at appropriate intervals (HEDIS® BCS)	58.10%	55.10%

Quality of Care HEDIS® Measures	HEDIS® 50th Percentile	VT GC Baseline
Percent of female enrollees screened for chlamydia (HEDIS® CHL-Total)	55.10%	50.80%
Percent of enrollees with follow-up after hospitalization for mental illness 7 days (HEDIS® FUH)	43.90%	60.10%
Percent of enrollees with follow-up after hospitalization for mental illness 30 days (HEDIS® FUH)	63.80%	75.80%
Percent of enrollees using substances who initiate in treatment for alcohol and other drug dependence (HEDIS® IET-Total)	38.00%	45.30%
Percent of enrollees using substances who engage in treatment for alcohol and other drug dependence (HEDIS® IET-Total)	9.70%	16.80%

Similar results were found in looking at national findings in the NCI project for persons with a developmental disability. In measures selected for study, Vermont results were identified by the NCI project as "within the average range" on three measures and slightly below the national average in two measures.

NCI-DD Community Integration and Health Measures	Nat'l Average	VT GC Baseline
Proportion of people who regularly participate in integrated activities in their communities	86.00%	84.00%
The proportion of people who make choices about their everyday lives	88.00%	87.00%
The proportion of people who make decisions about their everyday lives	67.00%	58.00%
The proportion of people who do not have a job in the community but would like to have one	47.00%	52.00%
The proportion of people who were reported to be in poor health	3.00%	4.00%

In examining results for respondents who completed the CAHPS (child version), the Demonstration scored favorably on both access and quality metrics. Of the six measures reviewed, 3 scored above the average score for Medicaid plans nationally and 3 scored within three percentage points below the target. Historically the State has alternated the administration of child and adult CAHPS on an annual basis. Beginning in 2017, both child and adult CAHPS will be completed annually.

CAHPS (Child version) Measures	Nat'l Average	VT GC Baseline
Percent of survey respondents indicating they received necessary care	85.00%	91.00%
Percent of respondents with positive ratings of the health plan	91.00%	90.00%
Percent of respondents with positive ratings of their ability to get care quickly	90.00%	93.00%
Percent of respondents with positive ratings of the care they received	91.00%	90.00%
Percent of respondents with positive ratings of customer service	88.00%	86.00%
Percent of respondents with positive ratings of how well their physician explains things, listens to their concerns, shows respect and spends enough time with them	94.00%	96.00%

The Blueprint to Health also supported strong outcomes for Medicaid beneficiaries. Results show that significantly more Blueprint enrollees were identified whose Diabetes HbA1c was in control (N=2288) as compared to those found with poor control (N=288). Along these lines, inpatient hospitalization rates per 1,000 members for members whose diabetes was controlled showed lower rates of utilization (206.7 per 1000 members) when compared to those in poor control (333.73 per 1000 members).

Similarly, Blueprint results show that per capita expenditures for enrollees age 18 – 75, is $3,218 lower than those enrollees whose HbA1c was in poor control.

Overall budget neutrality for the Demonstration shows: a $286,604,366 savings in PMPM expenditures; budget neutral spending in investment category; and a $73,978,445.00 savings in the New Adult Group compared to limits set in the STCs.

The Demonstration is showing positive results relative to each of its overarching hypothesis. Along these lines, in its first year with new budget neutrality methodology and terms, the Demonstration is also meetings its goal to maintain or reduce spending in comparison to what would have been spent absent the waiver.

3.3 Policy Implications

This Interim Report is the first in a series of four reports on the impact of the Global Commitment to Health Section 1115 Medicaid Demonstration. Data presented represents Demonstration operations in calendar year 2016, the last year of operation using a risk-based public managed care model, as its foundation. Initial data suggest that the Demonstration has been successful at delivery high quality services while reducing or containing costs. Effective January 1, 2017 new terms and conditions were implemented that align Vermont's model with that of a non-risk Prepaid Inpatient Health Plan (PIHP). Future reports will examine changes in performance and the impact of the new model, including the addition of a Medicaid ACO program implemented in 2017.

In several instances, Vermont's health care and LTSS programs have become models for other states (e.g., Blueprint for Health, Hub and Spoke Model of Opioid Treatment, Choices for Care, Self/Surrogate-directed care). While this report represents the first baseline period for the most recent Demonstration extension, it is expected that as the evaluation progress additional aspects of the Demonstration will be highlighted for generalizability in subsequent interim and summative reports.

3.4 Interactions with Other State Initiatives

Over the past several years the State has sought to align its health care reforms across all populations and payers. The current Global Commitment to Health Medicaid Demonstration and Medicare All-Payer Model were designed to create a seamless system. For example, the Blueprint for Health and the Vermont Medicaid Next Generation ACO are working together to eliminate duplication, align quality measures and create a seamless delivery system across initiatives and settings.

As part of its health care reform efforts, Vermont is also developing enhanced IT infrastructure including unified care management systems across specialized Medicaid programs, comprehensive Health Information Exchange (HIE) networks and improved data warehouse capacities. As feasible, given state budget and staff resources, future reports will attempt to compare outcomes for members who may be attributed to a specific initiative or specialized program with those who are not involved in the program.

4 IMD UTILIZATION FOR PSYCHIATRIC AND SUBSTANCE USE DISORDERS

Since its inception in 2005, Vermont's Global Commitment to Health Medicaid Demonstration has included payment flexibilities to support cost-effective alternatives to traditional Medicaid State Plan benefits. The State has used this authority and other payment flexibilities, such as Managed Care Investments or value-added benefits, to provide a continuum of treatment programs for persons who need inpatient psychiatric treatment, detoxification and/or residential treatment for substance use disorder (SUD).

Vermont supports small-scale highly integrated community-based programs for all mental health and SUD treatment services. However, as need has grown, so have providers. In some facilities services are rendered by providers whose bed capacity is over 16 beds. Thus, these SUD treatment programs are considered Institutions for Mental Disease (IMD) facilities. CMS is continuing time-limited expenditure authority for services in several facilities that meet the definition of an IMD and as such requires an evaluation of their role and effectiveness in Vermont's Medicaid Demonstration.

In addition to the study of IMD related services, the State is working with CMS on a Global Commitment to Health OUD/SUD amendment to maintain and enhance the Vermont continuum of Substance Use Disorder Treatment Services in alignment with CMS's November 1, 2017 guidance for similar OUD/SUD Demonstrations. Vermont has also agreed to develop an IMD transition plan for the phasedown of these investments, due to CMS in December of 2018. Section 4.4 below provides an overview of the study questions and design components for both psychiatric and substance use disorder treatment programs.

4.1 VERMONT IMD HISTORY AND BACKGROUND

As part of its original 1115 Demonstration for the Vermont Health Access Plan (VHAP) Medicaid Expansion, Vermont received a waiver of the IMD exclusion. This waiver, effective January 1, 1996, permitted Vermont to reimburse IMDs for individuals enrolled under the 1115 Demonstration. At that time, the rationale behind this waiver was to permit the use of IMDs as alternatives to potentially more costly, general acute hospital services.

The 1115 Demonstration was amended in April 1999 to include the Community Rehabilitation and Treatment (CRT) program for adults who had a severe and persistent mental illness. The CRT model recognized the Department of Mental Health as a managed care entity, responsible for the provision of all behavioral health services in exchange for a capitated payment. Capitation payments included funding for all inpatient hospital services, including the Vermont State Hospital and the Brattleboro Retreat. Prior to approval of the CRT managed care model, Vermont (like several other states) relied on Disproportionate Share Hospital (DSH) funding as the mechanism to bring federal Medicaid dollars to support its State Hospital.

In 2004, CMS elected to no longer grant IMD waivers under its 1115 Demonstration authority; states with existing IMD waivers (including Vermont) were given a schedule to phase out available Medicaid reimbursement. Under the phase-out terms Vermont was permitted to continue Medicaid reimbursement of IMD services through Calendar Year 2004; reimbursement was limited to 50% of allowable expenditures in Calendar Year 2005. When the former Vermont State Hospital (VSH) lost its

Medicare certification in 2005, CMS sought assurances that Medicaid funds would not be used to support VSH. Vermont removed funding for VSH from the CRT capitation rates in 2005. The IMD waiver was completely phased out January 1, 2006.

The Global Commitment to Health Demonstration, approved in 2005, historically enabled Vermont to operate under a statewide, public managed care model. The Global Commitment Demonstration provides the State with additional flexibility regarding health care service financing, including the purchase of healthcare services that are not traditionally covered by Medicaid. In the past Vermont used this authority to purchase alternative services, provided that:

- Services are determined to be medically appropriate;
- Care is delivered by a licensed (and not Medicare de-certified) healthcare provider; and
- Coverage of the service achieves program objectives related to cost, quality and/or access to care in the least restrictive, clinically appropriate setting possible.

Since 2005 Vermont has used its "in lieu of" authority under Global Commitment to purchase in-state residential substance use disorder in lieu of more costly hospital-based care from several private facilities: Brattleboro Retreat, providing residential detoxification services and psychiatric treatment; The Lund Home, providing specialized services to pregnant women and mothers with young children; Valley Vista and Serenity House, providing residential substance abuse treatment based on American Society of Addiction Medicine's (ASAM) recommended care levels. One facility, Maple Leaf closed in early 2017 and was replaced, in part, by a new 19-bed program for Women.

In 2011, the former State psychiatric hospital was shut down by Tropical Storm Irene. As part of the planning process for building a new 25-bed State psychiatric hospital, post- Tropical Storm Irene, Vermont sought clarification from CMS in 2012 regarding its authority to access Medicaid funding, once certified, to support the new facility. In response to this request, CMS indicated that costs of psychiatric inpatient services for individuals between the ages of 21 and 65 residing in an IMD could not be included in the calculating the annual Medicaid managed care PMPM limits. However, Vermont was assured that it had authority under the Demonstration to fund IMD services by using its "managed care savings." Vermont planned the construction of the Vermont Psychiatric Care Hospital and entered into new agreements with the Brattleboro Retreat, a free-standing psychiatric and addictions treatment center including a new specialized 14-bed unit for individuals approved by DMH with the highest level of acuity.

4.1.1 Mental Health Services and Psychiatric IMD

Over the past 30 years, Vermont has accomplished a virtually complete deinstitutionalization of its programs for individuals with mental illness. Following the closure of 54 beds at the former Vermont State Hospital due to flooding in 2011, the State replaced the aging facility with a 25-bed State Psychiatric Care Hospital which opened in July of 2014. The Vermont mental health system is reliant on a network of private non-profit community mental health centers, hospitals and specialized treatment providers to support persons with mental health challenges, including those with a serious and persistent mental illness, in their homes and communities. The State's emergency mental health response includes mobile crisis services, mental health staff embedded with local police, psychiatric stabilization services, including community crisis beds in apartment-like settings. Hospital diversion and

step-down facilities are also available for individuals who may need intensive recovery services on a short-term or intermittent basis.

The Commissioner of the Department of Mental Health (DMH) is responsible for supervising the operations of hospitals that provide inpatient care for individuals with mental illness (18 V.S.A. § 7401). To compliment Vermont's long-standing commitment to individualized integrated mental health care in home and community-based settings, the State has developed a decentralized system of adult inpatient care. During the study years 2013 – 2016, persons in need of psychiatric hospitalization were provided treatment at either the state-run inpatient facility or one of five Designated Hospitals throughout the state. As of December 31, 2016, there were 188 psychiatric inpatient beds across Vermont's hospital system.

In addition to CMS and national accreditation, each of the Designated Hospitals is reviewed and re-designated every two years against psychiatric care standards established and maintained by DMH. Designated Hospitals provide treatment to both voluntary and involuntary patients. The Vermont system recognizes three acuity levels for adults:

- Level 1 Involuntary– involuntary hospitalization stays paid at-cost to contracted and state providers for people who are the most acutely distressed who require additional clinical resources to support their treatment while hospitalized;
- Non-Level 1 Involuntary – involuntary hospitalization stays for individuals who do not require additional clinical resources to support their treatment while hospitalized; and
- Voluntary – Voluntary hospitalization stays for individuals who do not require additional clinical resources to support their treatment while hospitalized.

Level 1 Involuntary care is provided at specific units across three hospitals for a total of 45 beds. These beds require admission and concurrent review by the DMH utilization review care managers. Level 1 capacity is described in Exhibit 4.1.1-1 below.

Exhibit 4.1.1-1: Vermont Level 1 (High Acuity) Psychiatric Inpatient Beds

Facility	Hospital Type	Level 1 Bed Capacity
Brattleboro Retreat	IMD	14
Rutland Regional Medical Center	General	6
Vermont Psychiatric Care Hospital	IMD	25
	Total	45

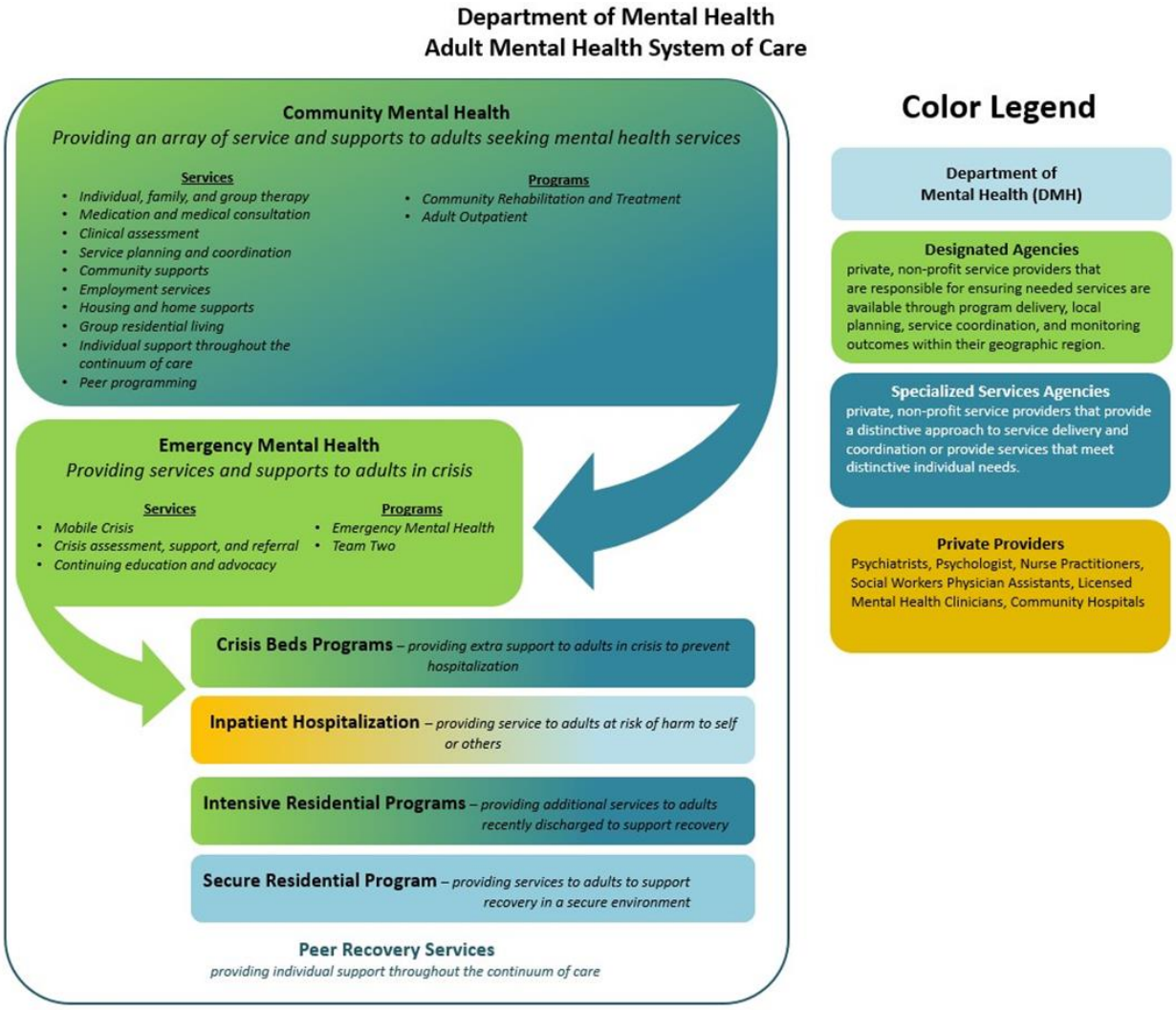
The remaining 143 beds are used for Non-Level 1 Involuntary and Voluntary inpatient stays and are described in Exhibit 4.1.1-2 below.

Exhibit 4.1.1-2: Vermont General Acuity Psychiatric Inpatient Beds

Facility	Hospital Type	Bed Capacity
Brattleboro Retreat	IMD	75
Rutland Regional Medical Center	General	17
Central Vermont Medical Center	General	14
University of Vermont Medical Center	General	27
Windham Center at Springfield Hospital	General	10
	Total	143

Exhibit 4.1.1-3 below provides an overview of the adult mental health system.

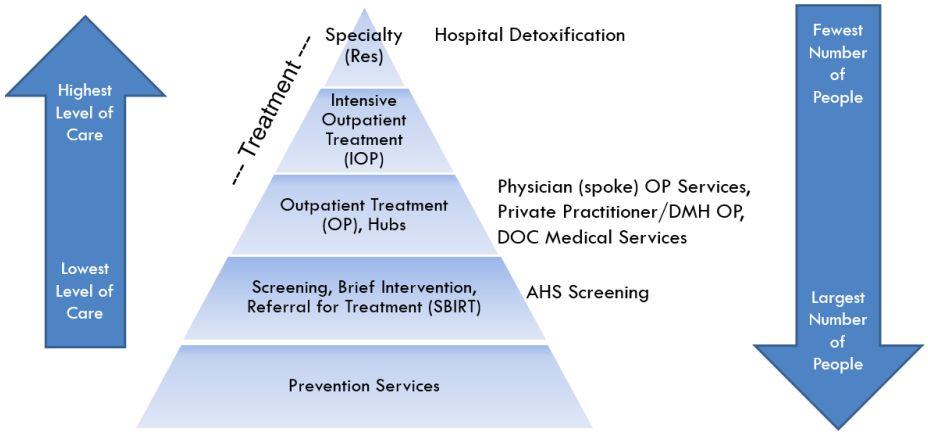
Exhibit 4.1.1-3: Vermont's Adult Mental Health System of Care



4.1.2 Substance Use Disorder and IMD

Vermont maintains a comprehensive continuum of addiction treatment based on the American Society of Addiction Medicine (ASAM) Patient Placement Criteria, including withdrawal management, inpatient detoxification, short-term and longer-term residential treatment, intensive outpatient treatment, outpatient treatment, partial hospitalization, medication assisted treatment in intensive and office-based settings, and recovery supports across the State. Vermont offers ancillary support services such as case management, recovery and peer-supports, including a statewide network of 12 Recovery Centers that complement the State's treatment programs. The State has also been aggressive in promoting public awareness, school-based prevention and early intervention, in partnership with the Substance Abuse and Mental Health Services Administration (SAMHSA). Exhibit 4.1.2-1 depicts Vermont's overall approach to SUD care.

Exhibit 4.1.2-1: Vermont's Substance Abuse Continuum of Care



Recovery Services are Available to Those at All Service Levels

All treatment options follow the ASAM recommended Levels of Care and include outpatient, residential, and inpatient SUD treatment services, at various levels of intensity, for Medicaid, Medicare, commercial, uninsured, and private (self) payers. This continuum includes specialized programs for adolescents, pregnant teens, and a specialized residential program for pregnant women and mothers with children under the age of five (Lund Home). Exhibit 4.1.2-2 provides an overview of Vermont Residential SUD/IMD programs and their role in the system of care.

Exhibit 4.1.2-2: SUD IMD Residential and Detoxification Programs

Facility	Type and Target Group(s)	Treatment Focus	# of Beds
Lund Home	• Residential treatment for pregnant and parenting women with children under 5 years old	OUD/SUD	26
Valley Vista (Bradford)	• Residential treatment for women, men, and adolescents	OUD/SUD	80
Valley Vista (Vergennes)	• Residential treatment for women	OUD/SUD	19
Serenity House	• Residential treatment adults	OUD/SUD	24
Maple Leaf	• Residential treatment adults	OUD/SUD	Closed 2017
Brattleboro Retreat: Substance Use Disorder	• Inpatient detoxification and treatment for adults	OUD/SUD	30

4.2 IMD Study Methods and Design

Consistent with Vermont's Section 1115(a) Special Terms and Conditions (STC), PHPG conducted a focused study to examine IMD performance based as outlined in the State's Global Commitment to Health Evaluation Plan Design. As per STCs #75 and #86, this report chapter covers IMD service delivery for the four years immediately preceding the Demonstration extension, or January 1, 2013 - December 31, 2016. The IMD sub-evaluation variables were identified by CMS in STC #72 (b) and include:

A. Emergency room utilization;
B. Lengths of stay in emergency rooms;
C. Access to acute inpatient treatment for mental health and substance use disorders;
D. Lengths of stay in acute inpatient settings for treatment for those conditions;
E. Quality of acute mental health or substance use disorder treatment;
F. Quality of discharge planning in making effective linkages to community-based care;
G. Readmissions for inpatient treatment;
H. Cost of treatment for acute mental health or substance use disorder conditions;
I. Access to care for co-morbid physical health conditions;
J. Quality of care for co-morbid physical health conditions; and
K. Overall cost of care for mental health and substance use disorders and co-morbid physical conditions combined.

Vermont's IMD facilities (psychiatric and SUD) are statewide providers that have been available in Vermont since the inception of the Global Commitment to Health Demonstration in 2005 and in most cases earlier. Their state-wide availability coupled with the historic nature of the State's utilization of these programs, rule out the use of an evaluation of outcomes using a pre/post demonstration renewal, regional cohorts, or time series designs.

Additionally, Vermont adopts nationally recognized placement criterion to determine the most appropriate level of care for each admission (psychiatric and SUD). Placement decisions are based on the level of clinical acuity, the need for co-occurring medical care or monitoring, the individual's home community, and the patient mix of the receiving facility at the time of admission. The individualized nature of placement and relatively small sample sizes found in Vermont's population makes the identification of controlled comparison groups such as match samples within IMD and Non-IMD facilities difficult.

4.2.1 Research Questions, Hypotheses and Study Population

Research questions to examine the State's use of IMD settings were defined in its Demonstration Evaluation Design revised with final CMS approval received March 8, 2018 (posted here). Following a review of available Vermont data including: sample sizes; budget; staff resources; and priorities; final study questions and hypothesis for this project were defined with the State and are described in Exhibit 4.2.1-1.

Exhibit 4.2.1-1: IMD Research Questions and Hypothesis

Research Question	Psychiatric IMD Hypothesis	SUD Hypothesis
Will expanded IMD authority support enrollees to receive care in the least restrictive most clinically appropriate setting possible?	The projected elimination of psychiatric IMD capacity will negatively impact: emergency room utilization; access to acute inpatient treatment and length of stay; and cost of community hospital care.	The projected elimination of SUD IMD capacity will negatively impact emergency room utilization
	IMD services result in improved quality of care and community integration as evidenced by lower re-admission rates	IMD services result in improved quality of care and community integration as evidenced by lower re-admission rates
		Initiation and engagement rates will be higher when the index event occurs at a residential IMD program when compared to an IMD hospital detoxification program or non-IMD facility.
		The projected amount and scope of current IMD services is adequate to meet the need.
Is expanded IMD authority necessary to support Vermont's small size and community hospital system?	There is no capacity in the current community hospital system in Vermont to absorb the downsizing necessary to eliminate IMD claiming.	N/A
Will elimination of federal participation result in reductions in community-based treatment capacity due to increased pressure on the State budget?	The projected impact of removing Federal Financial Participation (FFP) for psychiatric IMD on other services and providers in the community will be negative.	N/A

Medicaid paid claims (excluding Medicare crossover claims) and supplemental data (described in Section 4.2.2 below) were used for all analysis. PHPG received inpatient and residential claims for Medicaid beneficiaries between the ages of 21-65 who had a psychiatric or SUD admission (IMD or Non-IMD) in the four-year period preceding the most recent demonstration extension, i.e., calendar years 2013 - 2016. Beneficiaries were assigned to a psychiatric or SUD study cohort based on the criteria identified in Exhibit 4.2.1-2 below.

Exhibit 4.2.1-2: IMD Study Cohort Assignments

Study Cohort	Inclusion Criteria
Psychiatric Cohort	Medicaid beneficiaries 21-65 who had an: • Inpatient claim with a psychiatric Diagnosis Rate Group (DRG) or DMH Fund Source; or • Inpatient stay at the VPCH
Substance Use Disorder Cohort	Medicaid beneficiaries 21-65 who had an: • Inpatient claim that included a diagnosis or procedure codes associated with the HEDIS® measure for initiation and engagement in SUD treatment; or • A claim from a residential IMD (provider IDs 0000303, 0000304, 1010872, 1029486 and procedure code H0011, H0018); or • Admission to the Lund Home

Medicaid enrollment and State population figures for each of the years studied are presented in Exhibit 4.2.1-3 below.

Exhibit 4.2.1-3: Vermont Population Figures

Calendar Year	Medicaid Enrollment	State of Vermont
2013	180,496	626,630
2014	189,143	626,562
2015	200,956	626,042
2016	213,180	624,594

Data for VPCH and the Lund Home were analyzed separately as both programs represented specialized facilities. The Lund Home serves pregnant women and mothers of young children under the age of five, both mother and child reside at the facility, it is the only SUD treatment facility of its type in Vermont. The VPCH is the only facility dedicated to high acuity Level 1 designees and persons who cannot be admitted to other settings due to their overall patient mix and the patient's level of acuity at the time of admission.

4.2.2 Data Sources and Limitations

Information used in this analysis included calendar year data for each year 2013-2016 from the following sources:

- **DMH Core Data Elements for Adults in Custody of the Commissioner of Mental Health** – Information on all dates and times for adults waiting in emergency rooms for inpatient care wo under the custody of the Commissioner.
- **DMH Residential and Inpatient Bed Availability** – Number and type of beds available across the residential and inpatient care system.
- **DMH Financials** – Financial tracking and accounting for all payments, including Medicaid that are not processed through the MMIS.
- **DVHA MMIS** – Identifiable information on all Medicaid-paid claims for care in Vermont.
- **DCF Encounter Data for Lund Home Admissions** – Information on Medicaid admissions and discharge from the Lund Home not processed through the MMIS.
- **Vermont Psychiatric Care Hospital (VPCH) Encounter Data** - Information on Medicaid admissions and discharge from the VPCH not processed through the MMIS.
- **VDH Substance Abuse Treatment Information System** – Information on Substance Abuse Treatment Services delivered across all payers and treatment levels and settings. Information is de-identified and not reported by payer.

Data used in this analysis includes multiple administrative data sets. Limitations included inconsistent data entry and collection across: the target population; payer source; providers; and study years. For example, ED wait time data is collected regardless of payer and only for a small subset of individuals who are in the care and custody of the Commissioner of Mental Health. Along these lines, quality

measures related to psychiatric care are not available by payer source, thus data on Medicaid beneficiaries could not be isolated, and overall sample sizes are small, limiting the generalizability to a Medicaid only population.

The key variables, metrics used for assessment, data source and data limitations are described in Exhibit 4.2.2-1.

Exhibit 4.2.2-1: Key Variables, Metrics, Data Sources and Limitations

Key Variable(s) (STC #72(b))	Metric	Data Source	Data Limitations
Emergency room utilization; and Lengths of stay in emergency rooms	Average number of people per day in ER waiting for inpatient psychiatric care - Adults (18+) in care and custody of DMH	DMH Core Data Elements	Not collected for all Medicaid Members; Not specific to Medicaid Payer; Study Year 1 (2013) represents 9 months
	Time from need for hospitalization to disposition, less time for medical clearance Adults (18+) in care and custody of DMH	DMH Core Data Elements	
	ED utilization pre/post inpatient discharge	MMIS	
Access to acute inpatient treatment	Utilization per 1,000 population	MMIS; VPCH	
Lengths of stay (LOS) in acute inpatient	Average LOS by reporting year	MMIS; VPCH; Lund	Lund encounter data not inclusive of all admission fields
Quality of acute mental health and SUD IMD treatment	Patients discharged on multiple antipsychotic medications with appropriate justification (HBIPS-5) *	Provider Report*	Not specific to Medicaid or available from all providers or for all study years; measures include participants 18-65 versus IMD target population 21-65
	Screening for metabolic disorders (IPFQR FY2018) *	Provider Report*	
	Admission Screening for Violence Risk, Substance Use, Psychological Trauma History and Patient Strengths completed (HBIPS-5d) *	Provider Report*	
	Successful Completion of Residential Treatment		
Quality of discharge planning in making effective linkages to community-based care	Post Discharge Continuing Care Plan (HBIPS-6d)	Provider Report*	
	Post Discharge Continuing Care Plan Transmitted (HBIPS-7d)	Provider Report*	
	Follow-up after hospitalization for mental illness (HEDIS® FUH-modified)	MMIS; MSR	Specifications modified in 2014 to include MSR data
	Percent of IMD enrollees using substances who initiate and engage in treatment (HEDIS® IET-modified)	MMIS	
Quality of care for co-morbid physical health conditions	Diabetes screening for people with schizophrenia or bipolar disorder who are using antipsychotic medications (SSD - NCQA NQF 1932)	MMIS	
	Cardiovascular monitoring for people with cardiovascular disease and schizophrenia (SMC - NCQA NQF 1933)	MMIS; VPCH	Sample size (fewer than 5 persons met inclusion criteria across study period)
Access to Care for co-morbid physical health conditions	Percent of persons with discharged who have PCP visit (well or sick) within 30 days of discharge from IMD (HEDIS® - modified)	MMIS	
Lengths of stay (LOS) in Residential SUD Treatment	Median and Mean LOS	MMIS	
Readmissions for Same Level of Care	Readmissions: 30 and 180 days	MMIS; VPCH	Small sample size

Key Variable(s) (STC #72(b))	Metric	Data Source	Data Limitations
	Readmission rates by length of stay <16 days; 16-29 days and 30+ days	MMIS	Small sample size
Overall Cost of Care	Average cost per day for IMD services and total cost of care	MMIS; DMH Financials	Administrative data includes a mix of fiscal and calendar year information; single records per enrollee not available
* These measures are descriptive in nature only, they are not stratified for Medicaid beneficiaries, not available from all facilities and not collected 2013-2016			

4.2.3 Methods and Data Analysis

PHPG obtained paid claims (excluding Medicare crossover claims), encounter and administrative data, for the study cohort, directly from the State of Vermont. Data was reviewed, duplicate entries and incomplete records were removed from the data files. Multiple claims for the same hospital admission were combined to create a single record for purposes of calculating length of stay and readmissions. Recipients who had both an IMD and non-IMD admission during the reporting period were included in both settings. The current study considered; utilization of services over time; and comparison of key variables for IMD settings versus non-IMD settings.

Vermont has been engaged in health care and payment reform since the inception of the Demonstration in 2005. In many cases, specialized programs no longer employ fee-for-service claiming and encounter data may be stored in multiple legacy Medicaid systems across AHS. In cases where mental health and SUD programs employ alternative payment models, modified HEDIS® protocols are used to assure data is complete and accurately adjusted. Specifically, modifications were made in the following HEDIS® measures to account for alternative payment models: follow-up for hospitalization after mental illness (7 and 30-days); and initiation and engagement in treatment for alcohol and other drug dependence.

4.3 Discussion of IMD Findings and Conclusions

4.3.1 Psychiatric IMD Findings

A. Emergency room utilization

General hospital emergency department (ED) utilization was examined for both 30 days and 90 days pre/post inpatient admission. For the general hospital setting post discharge declines in ED use were seen in each of the four years of 3% in 2013, 29% in 2014, 22% in 2015 and 21% in 2016. ED visits for the 30-day period prior to an inpatient psychiatric stay in a general hospital setting increased slightly from 2013 levels (529 visits) in CY2014 and 2015 (579 visits each respective year) to 565 visits in 2016. While ED visits for the 30-day period post psychiatric stay in a general hospital setting declined 2013 to 2016 (512, 410, 454 and 449 visits for each respective year).

ED utilization pre/post IMD inpatient admission showed the same trend in overall ED use. ED visits for the 30-day period to an inpatient psychiatric stay in an IMD setting increased each year 2013 to 2016 (68, 129, 186, 233 visits each year respectively), with a 243% increase 2013 to 2016 in pre-admission levels. However, ED visits for the 30-day period post psychiatric stay in an IMD setting declined 2013 to 2016 (50, 82, 105, 179 for each year respectively), when compared to ED use prior to the IMD admission. Decline in ED utilization post IMD discharge represented a 26% decrease in 2013, a 36% decrease in 2014, a 44% decrease in 2015 and a 23% decrease in 2016.

Results for the Vermont Psychiatric Care Hospital (VPHC) showed similar results for the six-month period in 2014 and 2015 dropping to zero, while ED showed a 14% increased for the 2016 it represents the difference of one ED visit. Emergency Department Use 30 days Pre- and Post-Admission for General and IMD settings is presented in Exhibits 4.3 A-1 for general hospital, 4.3.1 A-2 for IMD and 4.3.1 A-3 for VPCH.

Exhibit 4.3.1 A-1: Emergency Department Use 30 days Pre- and Post-Admission to General Hospital

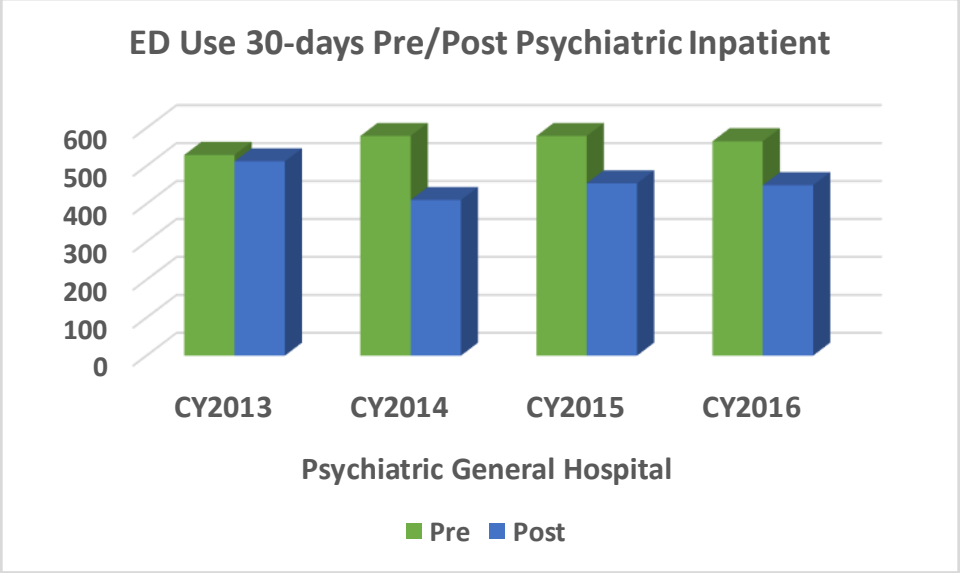


Exhibit 4.3.1 A-2: Emergency Department Use 30 days Pre- and Post-Admission to IMD

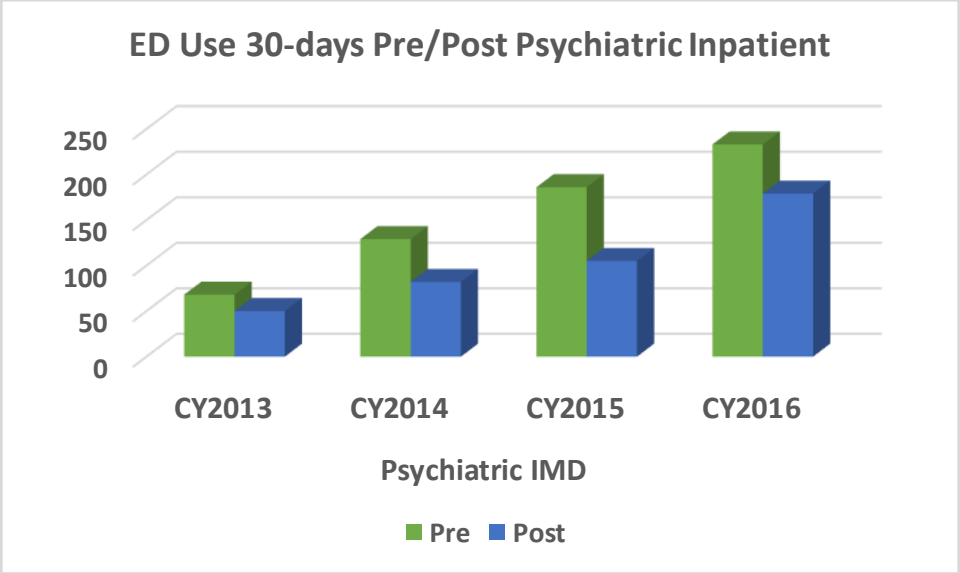
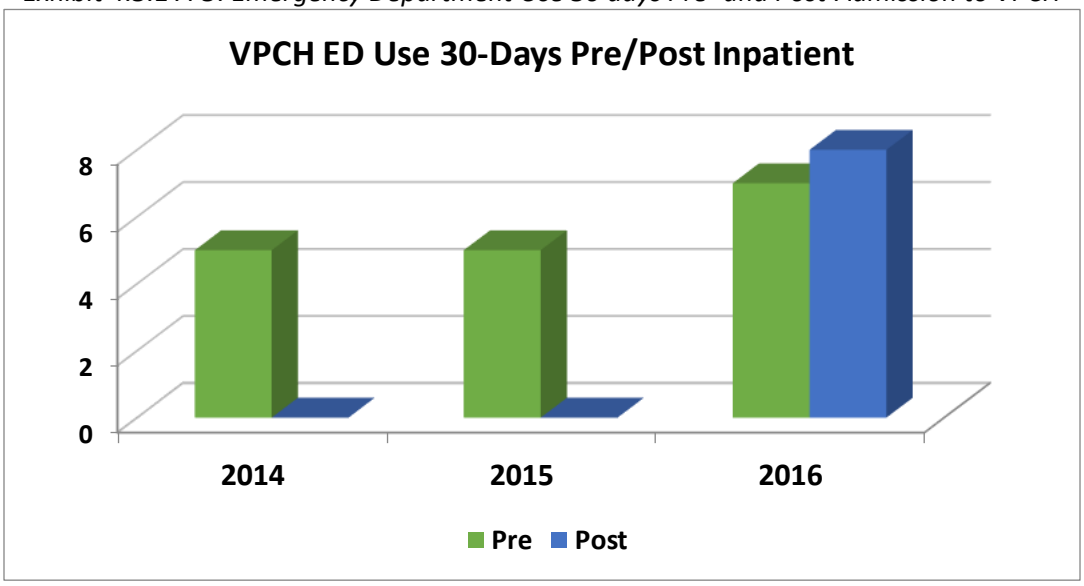


Exhibit 4.3.1 A-3: Emergency Department Use 30 days Pre- and Post-Admission to VPCH



Except for CY2013, emergency department (ED) utilization for persons with a general hospital admission showed a similar trend as the 30-day results when examining utilization 90 days prior to admission and within 90 days of discharge. With the exception of Year 1 (2013), there were slightly fewer ED visits post discharge. ED visits 90 days prior to admission were 1131, 1218, 1180 and 1131 respectively CY2013-2016. ED visits 90 days post admission were 1197, 1041, 1050 and 1087 respectively CY2013-2016. Representing a post discharge increase of 6% in 2013 and a post discharge decline of 15%, 11% and 4% 2014-2016 respectively.

ED utilization pre/post IMD inpatient admission within 90 days showed the same trend as the 30 days results. ED use prior to admission significantly increased year-over-year (137, 285, 388 and 413, respectively CY2013-2016), with a 201% increase 2013 to 2016. While ED visits for the 90-day period post IMD stay declined slightly 2013 to 2016 (119, 186, 282, 397 for each respective year). Decline in ED utilization post IMD discharge represented a 13% decrease in 2013, a 35% decrease in 2014, a 27% decrease in 2015 and a 4% decrease in 2016.

Results for the VPHC showed a post discharge decline in ED use of 67% in 2014 (a six-month period) and 43% decline in 2015, while ED utilization increased 144% post discharge in 2016. Emergency Department Use 90 days Pre- and Post-Admission for General, IMD and VPCH is presented in Exhibits 4.3.1 A-4 -A-6 below and on the following page.

Exhibit 4.3.1 A-4: Emergency Department Use: 90 days Pre- and Post-Admission to General Hospital

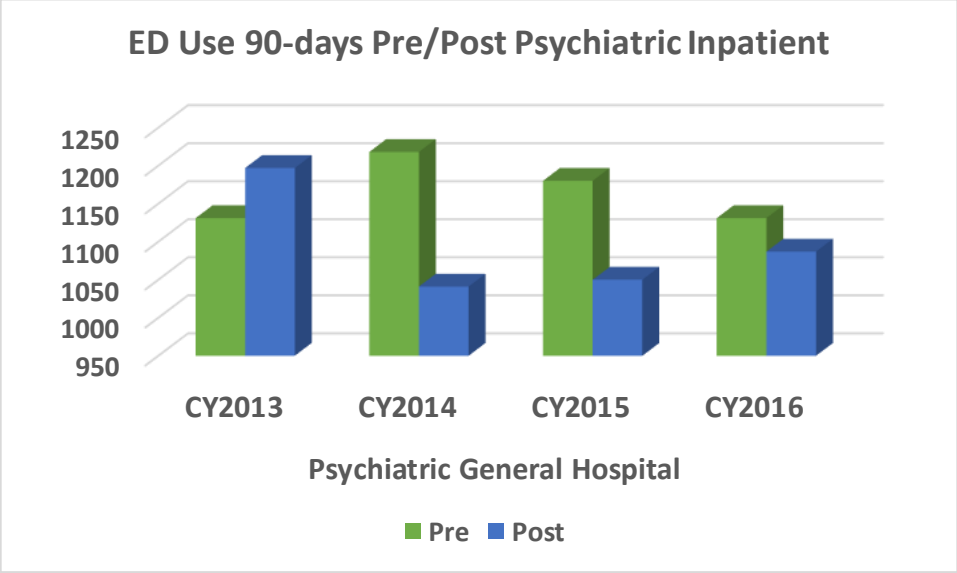


Exhibit 4.3.1 A-5: Emergency Department Use: 90 days Pre- and Post-Admission to IMD

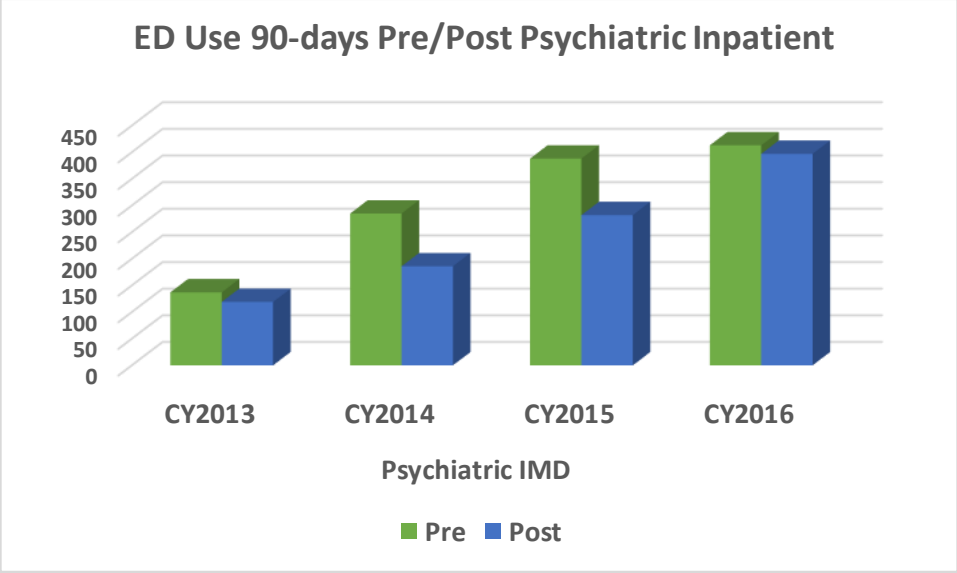
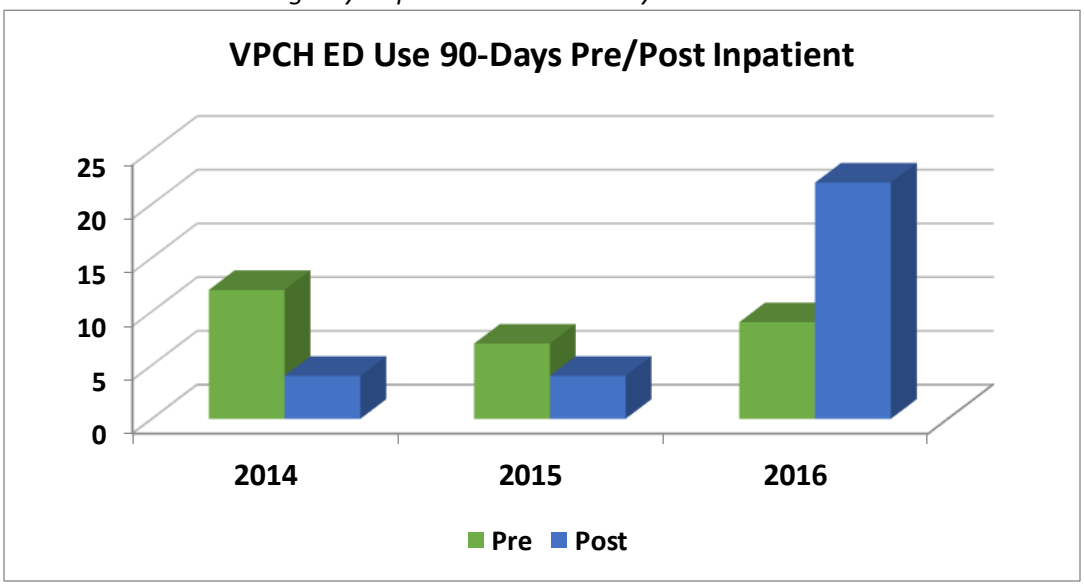


Exhibit 4.3.1 A-6: Emergency Department Use: 90 days Pre- and Post-Admission to VPCH



B. Lengths of stay in emergency rooms

Length of stay in the ED is only collected for persons who are in the care and custody of the Commissioner of the Department of Mental Health. This is a small subset of the psychiatric population who access the ED and cannot be generalized to the total population. Using administrative data collected by DMH, average monthly wait times in the ED were the highest in 2014 averaging approximately 80 hours per month across all persons presenting with psychiatric care needs. Wait times for 2013 represent 9-month period and were 53 hours, 2015 averaged 46 hours per month and 2016 averaged 56 hours per month. The average number of persons waiting on a given day were 4 people in 2013, 6 people in 2014, 4 people in 2015 and 5 people in 2016. The average percent of individuals waiting for more than 24-hours ranged from a low of 36% in 2013, to a high of 52% in 2016. The average percent of individuals waiting in 2014 and 2015 was 47% and 48% respectively. Results are provided on Exhibit 4.3.1 B-1 and 4.3.1 B-2.

Exhibit 4.3.1 B-1: Average ED Wait Time per Month for Persons in Care and Custody of DMH

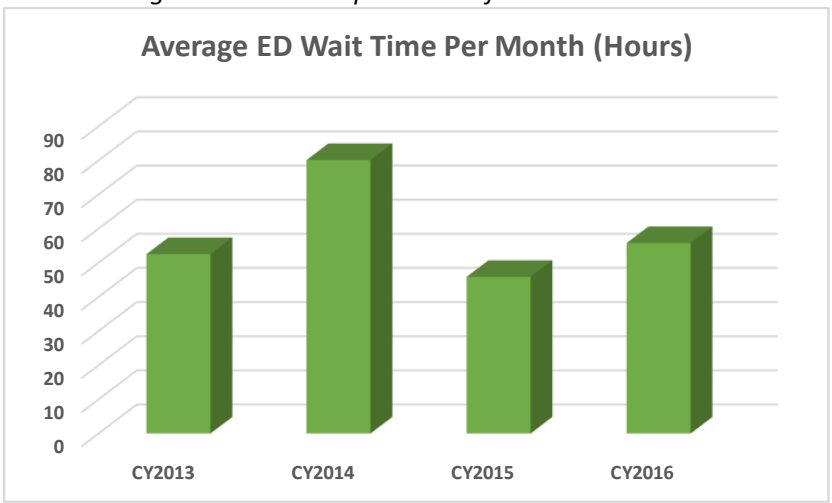
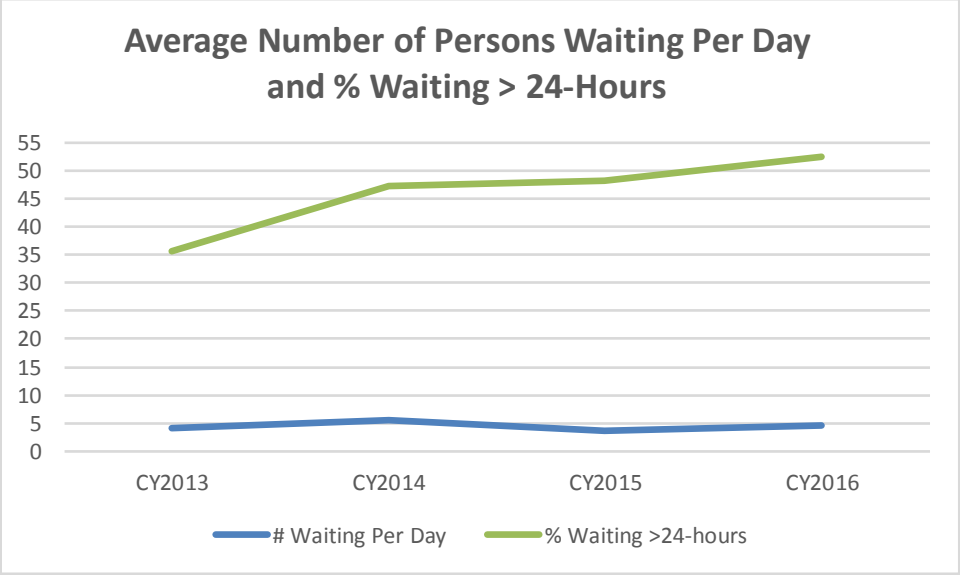


Exhibit 4.3.1 B-2: Emergency Department Wait Times for Persons in Care and Custody of DMH



C. Access to acute inpatient treatment for mental health

The number of general hospital inpatient psychiatric bed days for the study sample remained relatively flat, from 9964 in CY2013, to 9636 in CY2016. In contrast, IMD inpatient psychiatric bed days rose during the same period 51% from CY2013 with 2989 bed days to 4507 bed days in CY2014. CY2016 (3614 bed days) represented a 21% increase from CY2013 levels.

The percent of general hospital inpatient psychiatric admissions increased negligibly by 2.5% from 1270 in CY2013 to 1302 in 2016. Conversely, IMD inpatient psychiatric admissions experienced a 100% increase for the same period from 133 in CY2013 to 267 in 2016.

In 2014, VPCH bed days represents six months of operations, with full years in 2015 and 2016 yielding 6324 and 8696 days respectively.

Overall general hospital settings account for the largest percent of all admissions year over year with 91% in 2013, 84% in 2014, 81% in 2015 and 80% in 2015. The VPCH serving the highest acuity patients represents the smallest percent of all admissions with 2% in 2014 (six-months of operation) and 3% in 2015 and 4% 2016. Private IMD settings percent of overall admission ranged from 9% in 2013 to 16% in 2015 and 2016 respectively.

The number and percent of psychiatric admissions is presented in Exhibits 4.3.1 C-1 and 4.3.1 C-2 on the following page.

Exhibit 4.3.1 C-1: Number of Inpatient Psychiatric Bed Days

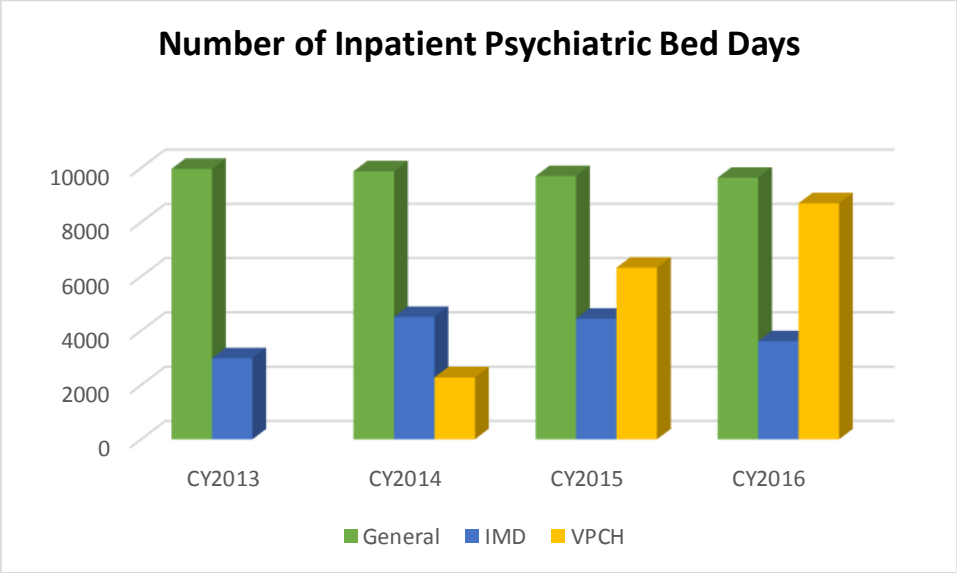
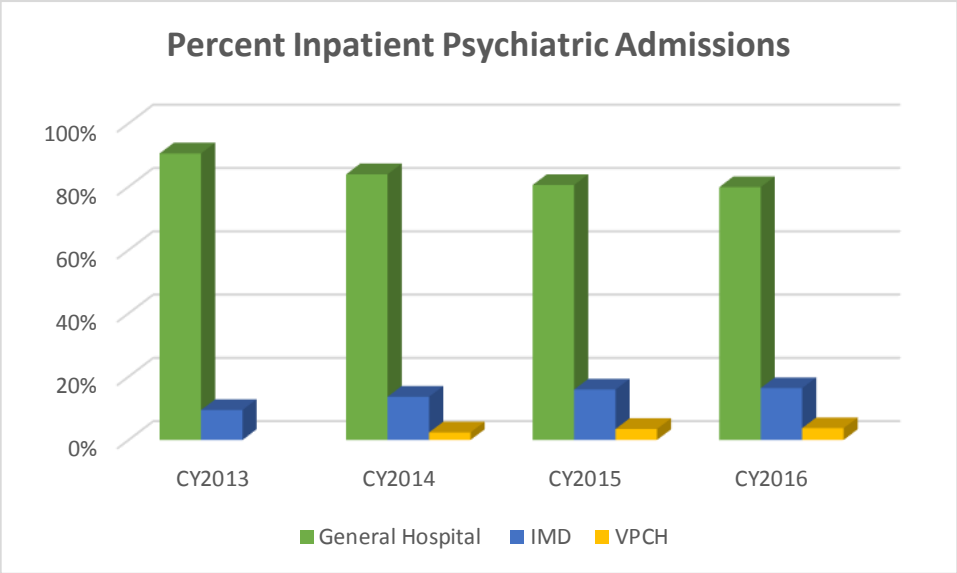
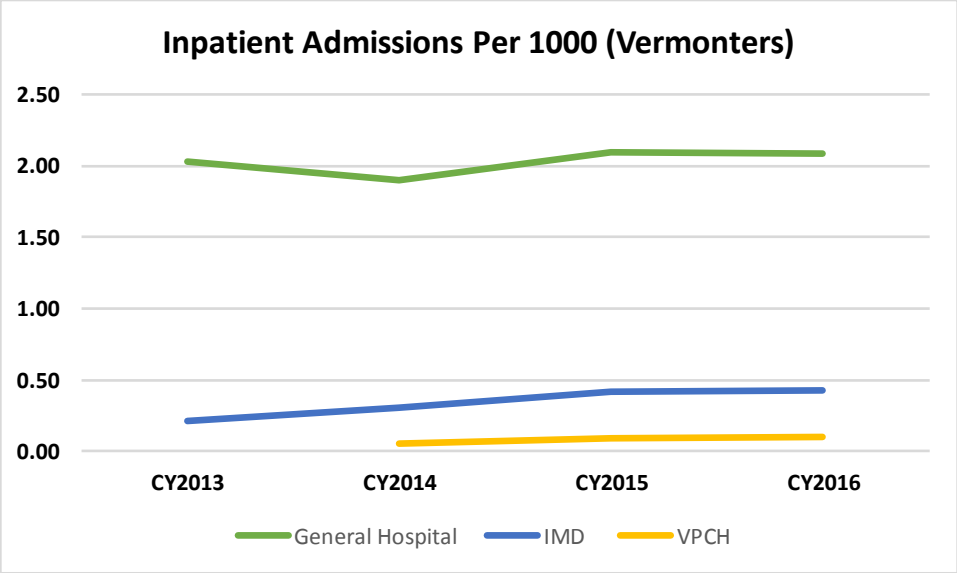


Exhibit 4.3.1 C-2: Percent of Inpatient Psychiatric Admissions by Setting



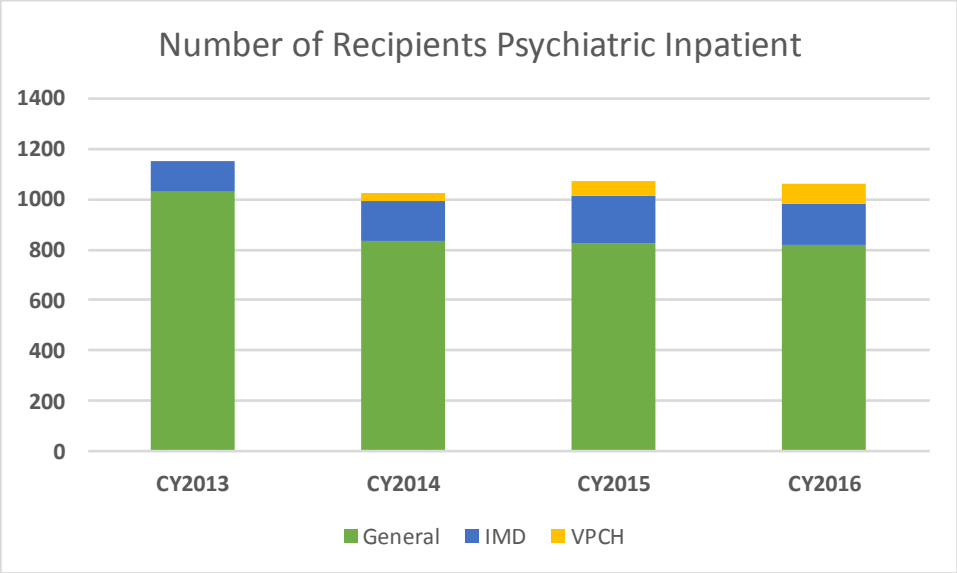
In examining psychiatric inpatient utilization PHPG reviewed rates per 1000 Vermonters. Aligning with other results IMD settings, including VPCH show the lowest rates for each of the four study years. Utilization per 1000 Vermonters is provided on Exhibit 4.3.1 C-3.

Exhibit 4.3.1 C-3: Inpatient Psychiatric Utilization per 1000 Vermonters



The number of inpatient service recipients remained fairly steady over the four-year studied period with a 7% decline from of 1149 recipients in 2013 to 1063 recipients in 2016. The number of recipients in the study cohort by setting for each year is provided on Exhibit 4.3.1 C-4.

Exhibit 4.3.1 C-4: Inpatient Psychiatric Recipients by Study Year

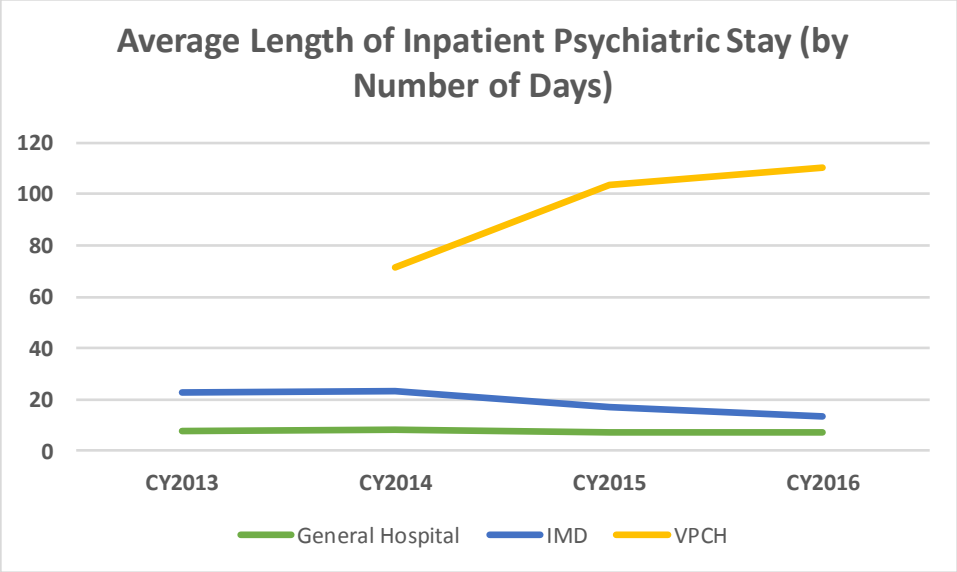


D. Lengths of stay (LOS) in acute inpatient settings

The average LOS in the general hospital setting, remained at 8 days between CY2013 and CY2016. The average LOS for IMD admissions declined from 23 days in CY2014 to 14 days in CY2016. Length of stay

for the VPCH increased from 71 days in the first six months of operation to 110 days for 2016. Average LOS by setting type is presented in Exhibit 4.3.1 D-1 below.

Exhibit 4.3.1 D-1: Average Length of Inpatient Psychiatric Stay by Number of Days

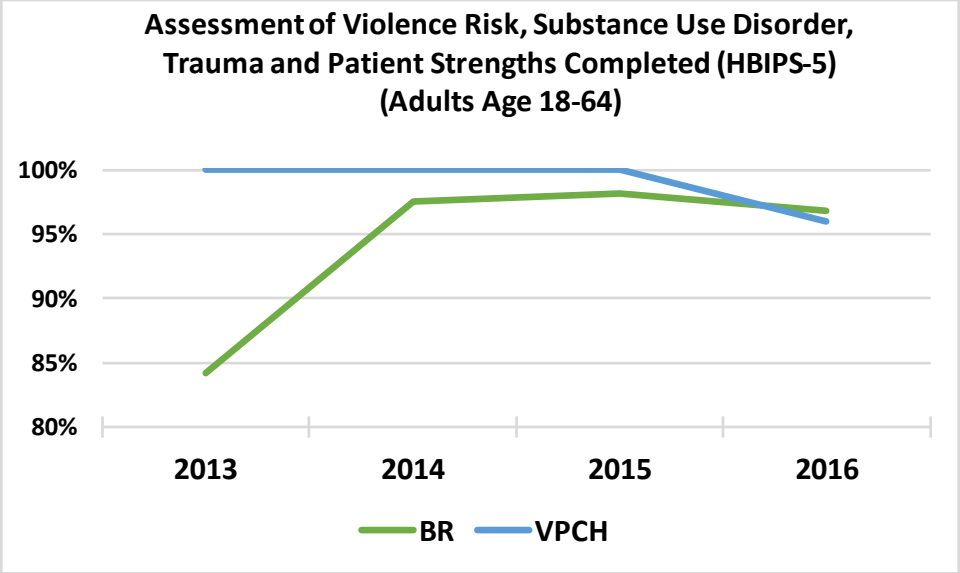


E. Quality of acute mental health treatment

Measures of quality were hampered by a variety of data limitations and are included as descriptive background only. Measures were created independently by a third party vendor under separate contract with each facility. The measures originally anticipated for inclusion in this study are not specific to Medicaid payer; not available from all providers; and not available for all study years. Additionally, the measures also include participants age 18-21 years old and thus are not focused exclusively on the population targeted by the IMD exclusion. One measure, patients discharged on multiple antipsychotic medications with appropriate justification (HBIPS-5) was only available for one facility, however sample size ranged from 4 to 28 persons in the years 2013 to 2016 and results were not included in this study. Data for the third measure, screening for metabolic disorders (Adults Age 18-64) was not available for the study years 2013-2016.

One measure of quality, assessment of violence risk, substance use disorder, trauma and patient strengths (HBIS-5) was available for the two IMD facilities, the VPCH and Brattleboro Retreat (BR) and is presented in Exhibit 4.6.1 E-1 below. Performance for both providers was high, averaging 84% to 100% across the four years.

Exhibit 4.3.1 E-1: Assessment of Violence, Risk, SUD, Trauma and Patient Strength Completed (IMD)



F. Quality of discharge planning in making effective linkages to community-based care

Measures of quality of discharge planning in making effective linkages were hampered by a variety of data limitations and are included as descriptive background only. Measures were created independently by a third party vendor under separate contract with each facility. The measures originally anticipated for inclusion in this study, Transition record with specified elements received by discharge patients; and Timely transition of transition record were replaced by: Post Discharge Continuing Care Plan (HBIPS-6d) and Post Discharge Continuing Care Plan Transmitted (HBIPS-7d), both, however, were discontinued at the end of 2015. Measures are not specific to Medicaid payer; not available from all providers; and not available for all study years. Additionally, the measures also include participants age 18-21 years old and thus not focused exclusively on the population targeted by the IMD exclusion. Results 2013-2015 are presented in Exhibit 4.3.1 F-1 and 4.3.1 F-2.

Exhibit 4.3.1 F-1: Post Discharge Continuing Care Plan (HBIPS-6d) IMD Settings

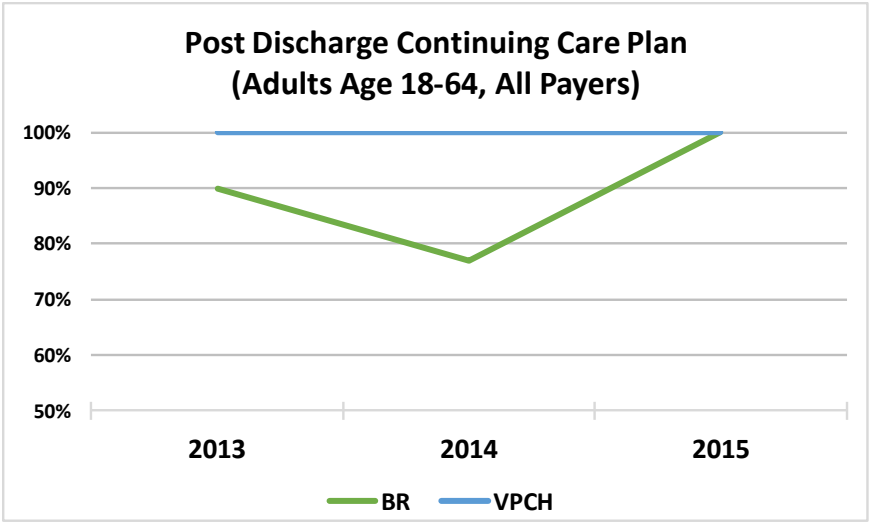
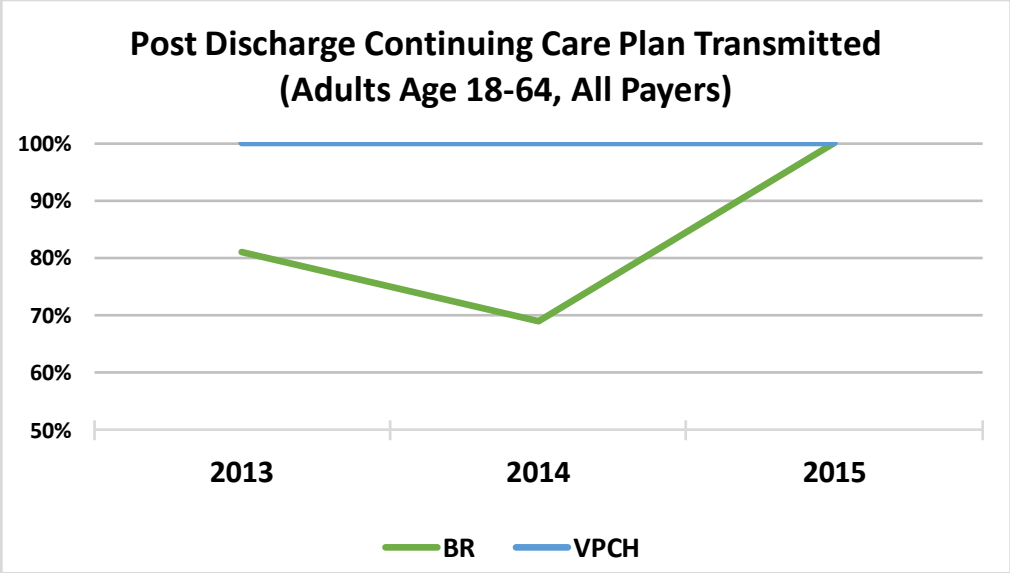


Exhibit 4.3.1 F-2: Post Discharge Continuing Care Plan Transmitted (HBIPS-7d) IMD Settings



Lastly, 7 and 30-day follow-up after hospitalization for mental illness for IMD was examined for Medicaid beneficiaries who had IMD admissions in the measurement year. In CY2014 the measure specifications were revised to include Medicaid encounter data from the State's specialized community mental health services contained in the DMH MSR database. IMD settings outperformed the general Medicaid population in Vermont and the national HEDIS® results, at the 50th percentile, in each of the four study years for both measures.

Results for follow-up after hospitalization at 7-days were relatively stable and averaged 65% over the four years, compared to a four-year average of 57% for the overall VT Medicaid population and 45% for the national Medicaid HEDIS® result at the 50th percentile. Results for 30-day follow-up yielded the same trend and averaged 81% over the four years, compared to 74% for VT Medicaid and 66% for the national Medicaid benchmark at the 50th percentile.

VPCH admissions and discharges are not processed through the MMIS and thus are excluded from these results. Results for both measures are presented in Exhibit 4.3.1 F-3 and 4.3.1 F-4.

Exhibit 4.3.1 F-3: 7 Day Follow-up after Hospitalization for Mental Illness - IMD Discharges

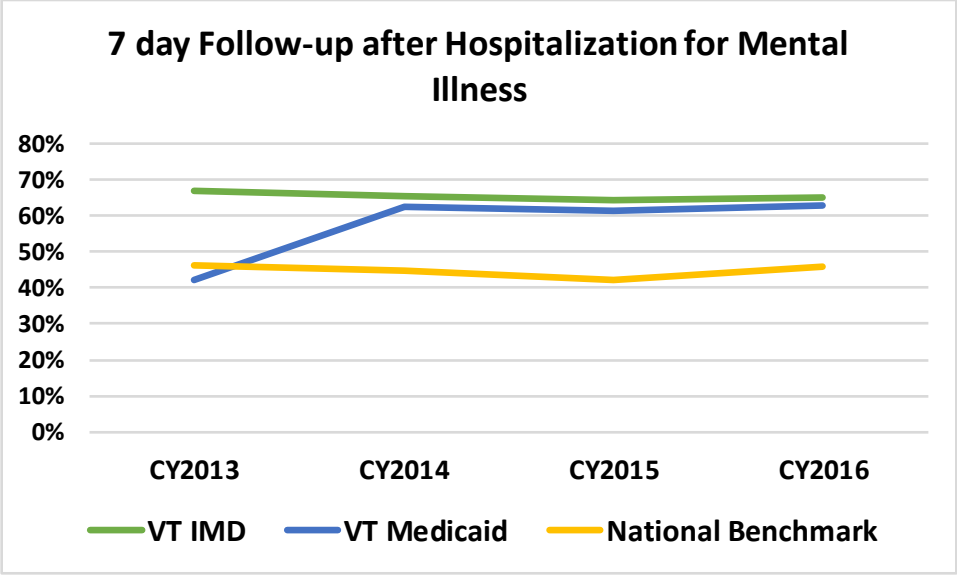
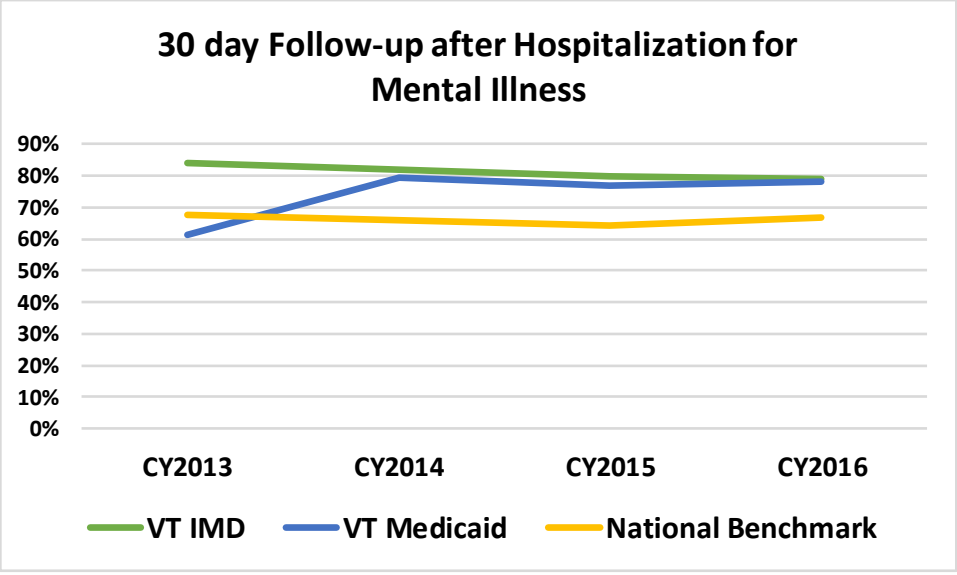


Exhibit 4.3.1 F-4: 30 Day Follow-up after Hospitalization for Mental Illness - IMD Discharges

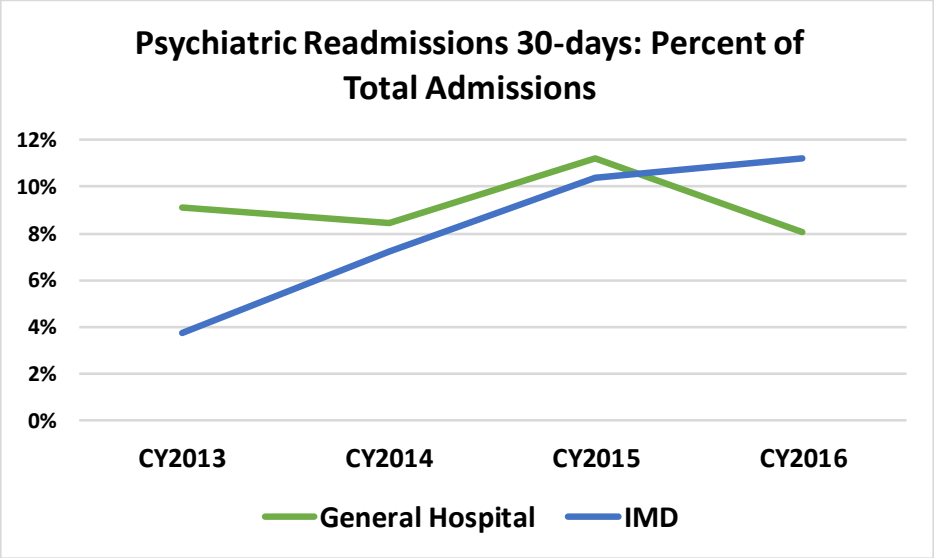


G. Readmissions for inpatient treatment

General hospital psychiatric readmissions within 30 days as a percent of total admissions remained under 15% for both setting types. General hospital readmissions rose slightly to 11% in CY2015 but averaged 9% during CY2013 - CY2016. IMD psychiatric readmissions within 30 days ranged from 4% in 2013 to 11% CY2016 with an average of 8%.

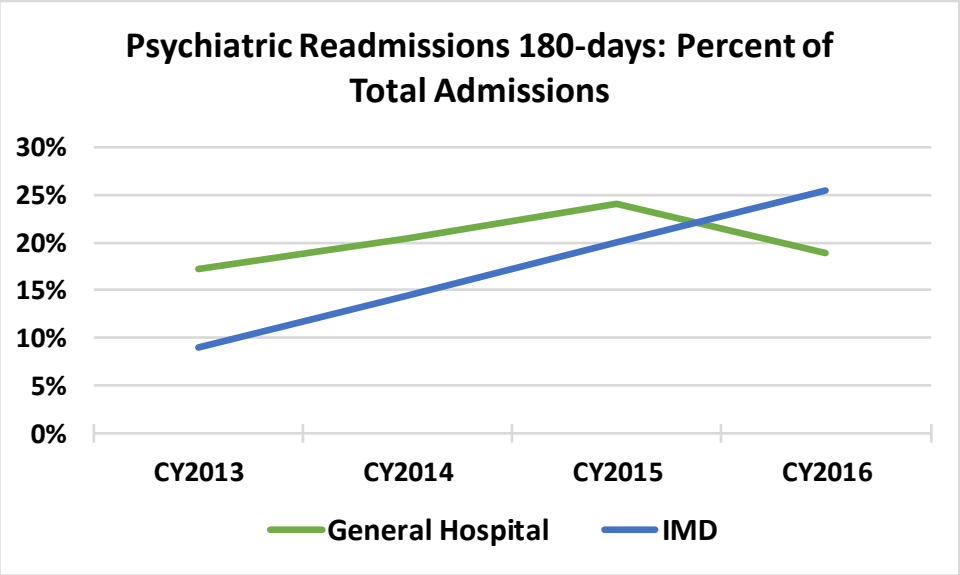
The percent of total readmissions within 30 days by setting type is presented in Exhibit 4.3.1 G-1.

Exhibit 4.3.1 G-1: Psychiatric Readmissions 30-days: Percent of Total Admissions



General hospital psychiatric readmissions within 180 days averaged 20% of total admissions between CY2013 – CY2016 while IMD psychiatric readmissions within 180 days averaged 17% of total admissions for the same period. The percent of total and number of readmission within 180 days by setting type is presented in Exhibit 4.3.1 G-2.

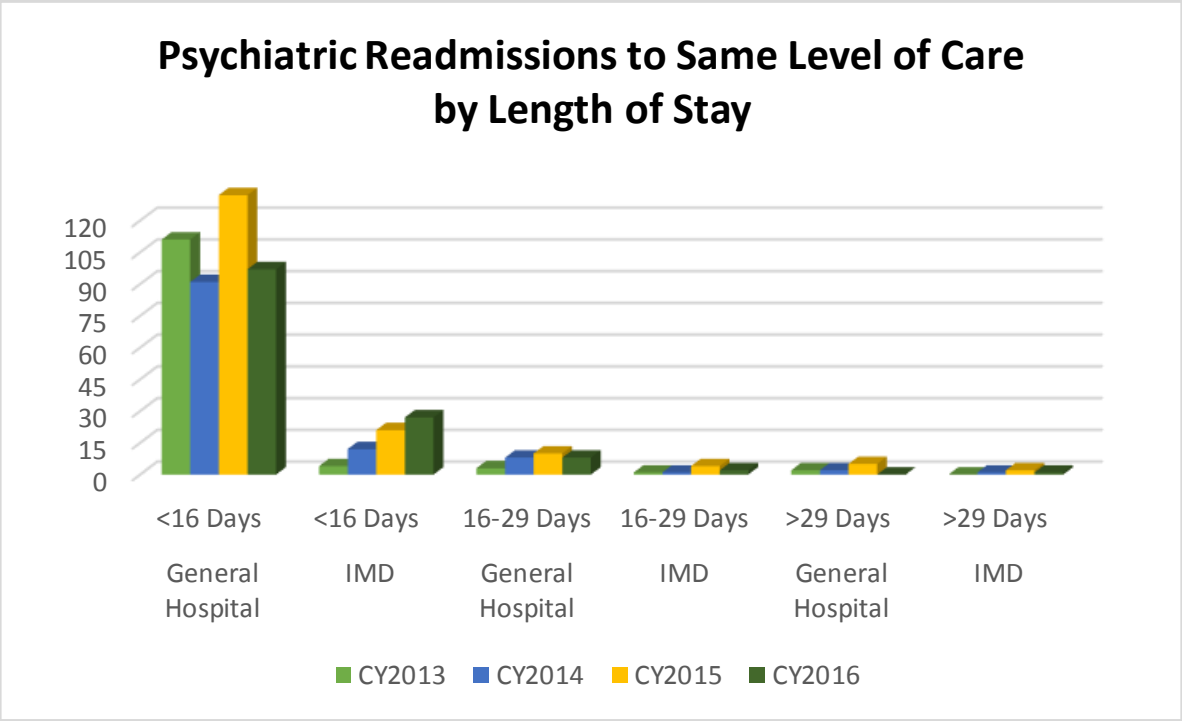
Exhibit 4.3.1 G-2: Psychiatric Readmissions 180-days: Percent of Total Admissions



The number of psychiatric readmissions to same setting type were highest at lengths of stay under 16 days for both IMD and non-IMD settings across all four years. Readmissions for general hospital stays of less than 26 days were 111, 91, 132 and 97, 2013-2016 respectively, while readmissions for stays between 16-29 days dropped to 3, 8, 10 and 8 readmissions, CY2013-2016 respectively. Readmissions for stays over 29 days also remained low at 2, 2, 5, 0 readmissions CY2013-2016 respectively.

The IMD setting saw similar results with the number of readmissions the highest for persons with stays less than 16 days, (4, 12, 21, 27 readmissions, 2013-2016 respectively). For persons with stays between 16-29 days readmissions dropped to 1, 1, 4, 2 for CY2013-2016 respectively. IMD readmissions for stays over 29 days also remained low (0, 1,2,1 CY2013-2016 respectively). See Exhibit 4.3.1 G-5 for results by setting.

Exhibit 4.3.1 G-5: Number of Psychiatric Readmissions to Same Level of Care by Length of Stay



H. Cost of inpatient treatment for acute mental health conditions

Inpatient cost was examined using paid claims to derive an average daily cost for the psychiatric cohort included in this study, excluding VPCH admissions. VPCH daily rates are based on a cost settlement process completed by DMH annually and payments are made outside of the claims system. Recipients who had both an IMD and non-IMD inpatient admission during the calendar year were counted in both settings.

General hospital and IMD providers, excluding the VPCH, also receive supplemental payments for high acuity patients designated as "Level 1". VPCH opened July 1, 2014 phasing in 25 inpatient beds for Level 1 high acuity patients. At that same time, 12 psychiatric beds in the community hospital system, reserved for high acuity patients post Tropical Storm Irene, reverted to general psychiatric capacity. This conversion resulted in 6 Level 1 high acuity beds available in the general hospital setting after CY2014.

In an examination of available data for 2014, expense per day for Level 1 patients ranged from $1369 to $3,086 per day in the general hospital system, while VPCH daily rate was $2,277 (during its first six months of operation in 2014). The VPCH daily rate in 2016, with all 25-beds in operation, declined to $2,177. Results, excluding VPCH and supplemental Level 1 payments, are presented in Exhibit 4.3.1 H-1.

Exhibit 4.3.1 H-1 Cost of Treatment per Day by Setting, Excluding VPCH

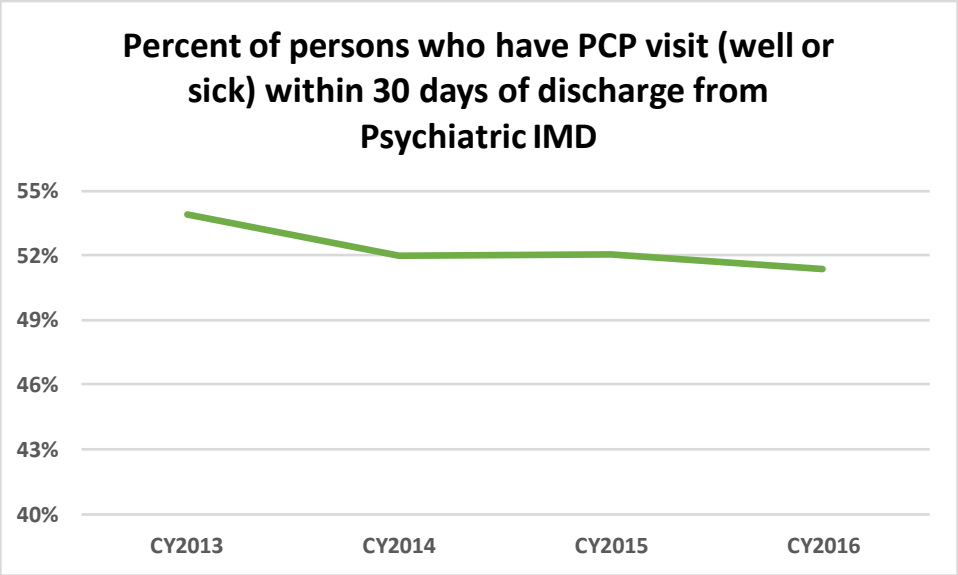
Inpatient Treatment Cost Per Day by Setting				
	General Hospital		IMD	
Year	Recipients	Cost /Day*	Recipients	Cost/Day*
CY2013	1029	$1,379	120	$1,251
CY2014	834	$1,414	156	$1,187
CY2015	826	$1,402	185	$1,284
CY2016	817	$1,392	167	$1,255

**rate excludes supplemental payments for Level 1 high acuity patients*

I. Access to care for co-morbid physical health conditions

The percent of persons who had a PCP visit within 30 days of discharge from a Psychiatric IMD averaged 52% across the study years, with a slight decline from 54% in 2013, to 52% in 2014 and 2015 and 51% in 2016. Results are presented in Exhibit 4.3.1 I-1.

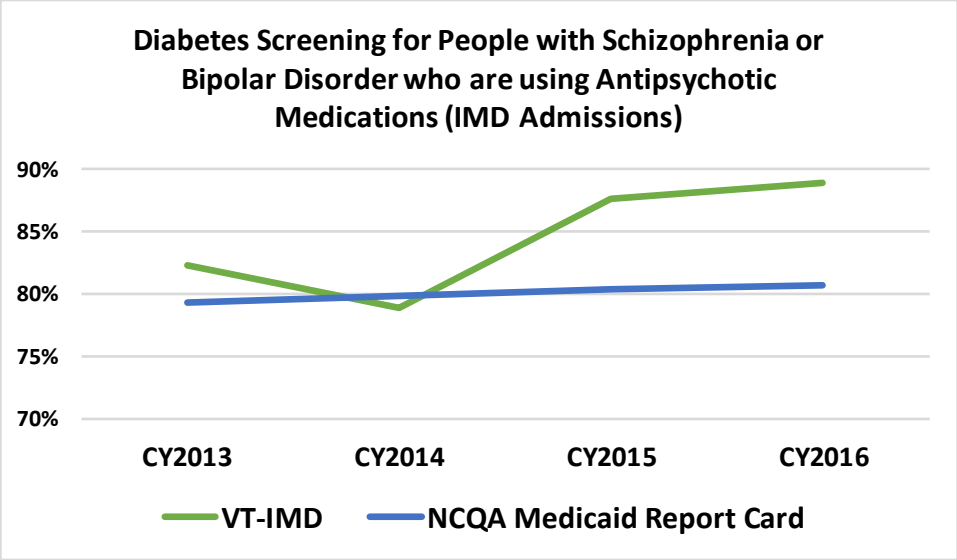
Exhibit 4.3.1 I-1: Percent of Persons with PCP Visit within 30 days of Discharge



J. Quality of care for co-morbid physical health conditions

Vermont IMD-settings outperformed the NCQA rates as published for Medicaid programs in three of the four study years and matched within one percentage point the rate for 2014 (accessed online January 9, 2018 at http://www.ncqa.org/report-cards/health-plans/state-of-health-care-quality/2016-table-of-contents/schizophrenia). Diabetes screenings for co-morbid psychiatric conditions and for those who use antipsychotic medications demonstrated an overall increase from 82% in CY2013 to 89% in CY2016. Results are presented in Exhibit 4.3.1 J-1.

Exhibit 4.3.1 J-1: Co-Morbid Physical Health Conditions: Diabetes Screening



Vermont also sought to examine performance for persons discharged from an IMD on the HEDIS® metric *Cardiovascular Monitoring for People with Cardiovascular Disease and Schizophrenia*, which assesses adults 18–64 years of age with schizophrenia and cardiovascular disease, who had an LDL-C test during the measurement year. However, sample criteria resulted in fewer than five persons meeting inclusion criteria across the four study years and results were not included in this study.

K. Overall cost of care for mental health and co-morbid physical conditions combined.

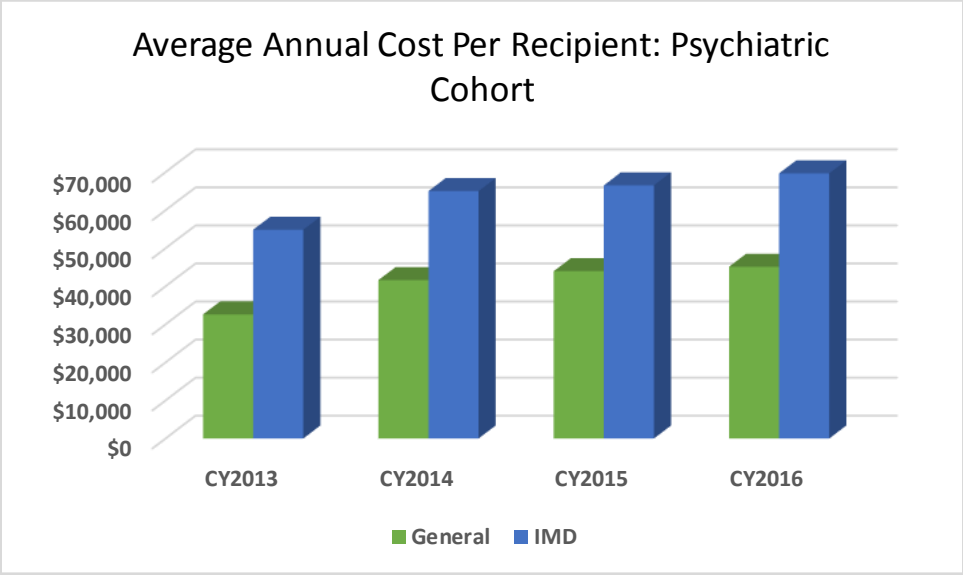
Total cost of care for the general hospital and IMD setting was derived from total paid claims (physical and mental health) for recipients in the psychiatric cohort, excluding payments made to providers outside of the claims system. Total cost of care for VPCH was derived from total paid claims for recipients served plus the cost of VPCH psychiatric care (i.e., DMH daily rate multiplied by length of stay) during each of the reporting years. Recipients who had both an IMD and non-IMD inpatient admission during the calendar year are counted in both settings. Total cost of care by setting, excluding supplemental Level 1 payments, is presented in Exhibit 4.3.1 K-1.

Exhibit 4.3.1 K-1: Total Cost of Care and Recipients by Setting

Total Cost of Care*						
	General Hospital		IMD		VPCH	
Year	Recipients	Cost	Recipients	Cost	Recipients	Cost
CY2013	1029	$33,555,201	120	$6,585,111	N/A	N/A
CY2014	834	$34,719,126	156	$10,145,213	32	$7,318,302
CY2015	826	$36,324,401	185	$12,307,324	61	$15,358,001
CY2016	817	$36,877,458	167	$11,640,107	79	$20,123,825
**excluding payments made outside of the claims system for hospital and IMD settings*						

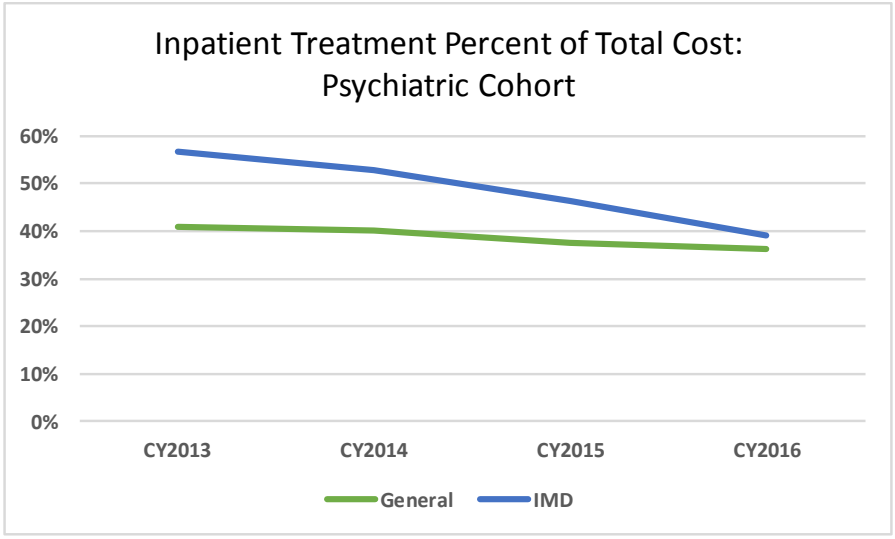
Results show the average annual total cost of care is higher for recipients who had an IMD admission when compared to those who had a general hospital admission. Results are expected to be higher for the IMD cohort, given their higher acuity level and longer lengths of stay. Total cost of care per recipient for persons who had an IMD admission, excluding VPCH, averaged $54,876 in CY2013, $65,033 in CY2014, $66,526 in CY2015 and $69,701 in CY2016. Comparatively, total cost of care per recipient who had a general hospital admission averaged $32,610 in CY2013, $41,630 in CY2014, $43,976 in CY2015 and $45,138 in CY2016. Average annual cost of care per recipient is presented in Exhibit 4.3.1 K-2.

Exhibit 4.3.1 K-2: Average Annual Cost per Recipient by Setting



As a percent of overall cost, inpatient treatment averaged 39% of the cost for the general hospital cohort and 49% for the IMD cohort, excluding VPCH, across the four study years. Results are presented in Exhibit 4.3.1K-3.

Exhibit 4.3.1 K-3: Inpatient Treatment as a Percent of Total Cost of Care



4.3.2 SUD IMD Findings

A. Emergency room utilization

General hospital emergency department (ED) utilization was examined for both 30 days and 90 days pre/post admission for all three SUD treatment settings, general hospital, IMD detox, and IMD residential care.

ED visits for the 30-day period prior to a general hospital stay increased slightly each year from 2013 levels of 284 visits, to 336 in CY2014, 406 visits in 2015 and slight drop to 372 in 2016, resulting in an overall increase 2013 to 2016 of 31%. ED visits for the 30-day period post stay increased 6% over preadmission levels in 2013 and decreased 5% in 2014, 2% in 2015 from preadmissions levels with the largest pre/post change seen in 2016 representing a post discharge decline of 16%.

ED utilization 30 days pre/post IMD detox stays showed lower utilization post discharge in each of the four years studied. With post discharge utilization dropping 33% in each year 2013, 2014 and 2016 and decreasing 18% in 2015.

Along these lines, ED utilization 30 days pre/post residential treatment in an IMD setting yielded the greatest positive change with lower ED use post discharge in each of the four years studied. With post discharge utilization dropping 39% in 2013, and 49% in 2014, 41% in 2015 and 56% in 2016.

Pregnant women and mothers receiving specialized residential services for themselves and their young children at the Lund Home averaged fewer than 50 members per year. ED utilization 30-days pre/post treatment was in the single digits for most study years.

Emergency Department Use 30 days Pre- and Post-Admission for General and IMD SUD treatment settings, excluding the Lund Home, is presented in Exhibits 4.3.2 A-1-3.

Exhibit 4.3.2 A-1: Emergency Department (ED) Use 30-days Pre/Post General Hospital Detox

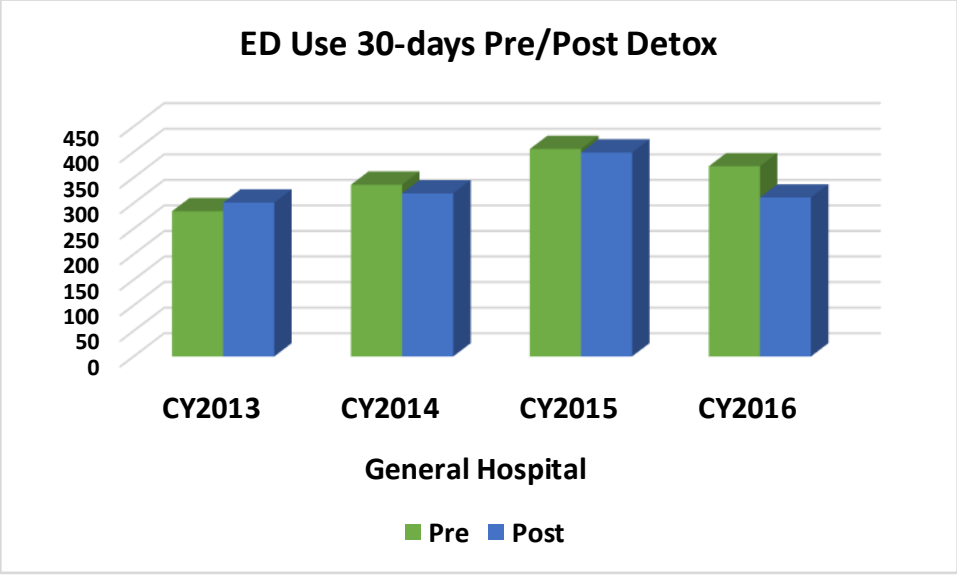


Exhibit 4.3.2 A-2: Emergency Department (ED) Use 30-days Pre/Post IMD Detox

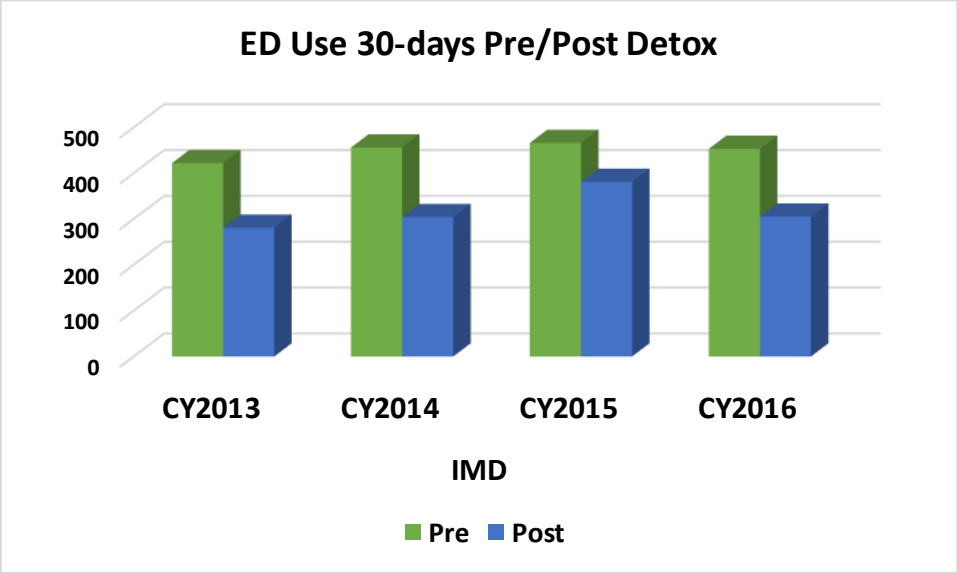
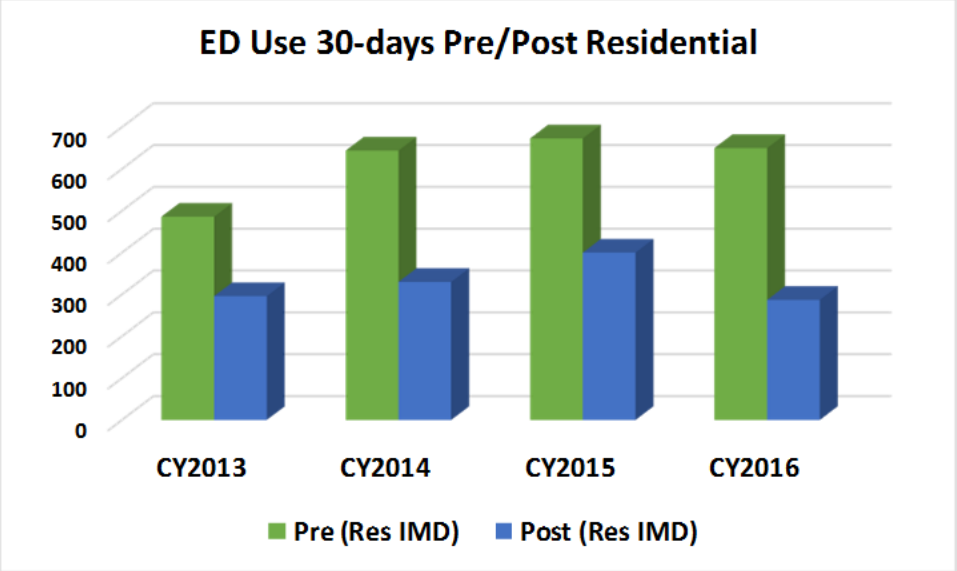


Exhibit 4.3.2 A-3: Emergency Department (ED) Use 30-days Pre/Post Residential



ED visits for the 90-day period prior to a general hospital stay increased slightly each year from 2013 levels of 617 visits, to 697 visits in CY2014, 838 visits in 2015 and 867 visits in 2016 representing a 41% increase 2013 to 2016. ED visits for the 90-day period post stay also increased over preadmission levels for each year except 2016, which saw a preadmission level of 867 visits and a 21% drop post admission to 682 visits.

ED utilization 90 days pre/post IMD detox stays showed lower utilization post discharge in each of the four years studied. With post discharge utilization dropping 16% in 2013, 20% in 2014, 5% in 2015 and 19% in 2016.

Along these lines, ED utilization 90 days pre/post residential treatment in an SUD/IMD setting also yielded positive results with lower ED use in each of the four years studied. With post discharge utilization dropping 16% in 2013, 30% in 2014, 25% in 2015 and 37% in 2016.

Pregnant women and mothers receiving specialized residential treatment services for themselves and their young children at the Lund Home averaged fewer than 50 members per year. ED utilization 90-days pre/post treatment was in the single digits for most study years.

Emergency Department Use 90 days Pre- and Post-Admission for General and IMD SUD settings, excluding the Lund Home, is presented in Exhibits 4.3.2 A 4-6.

Exhibit 4.3.2 A-4: Emergency Department (ED) Use 90-days Pre/Post General Hospital Detox

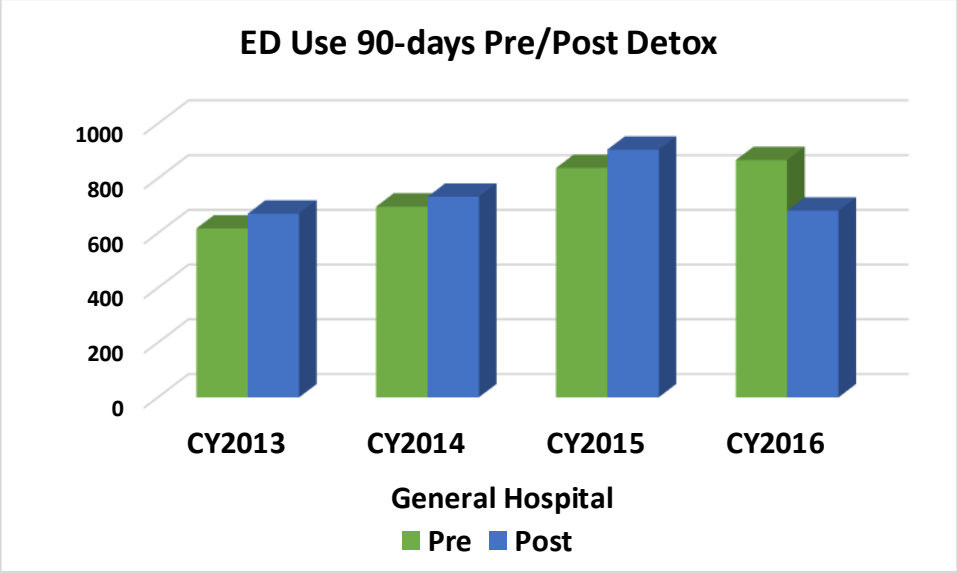


Exhibit 4.3.2 A-5: Emergency Department (ED) Use 90-days Pre/Post IMD Detox

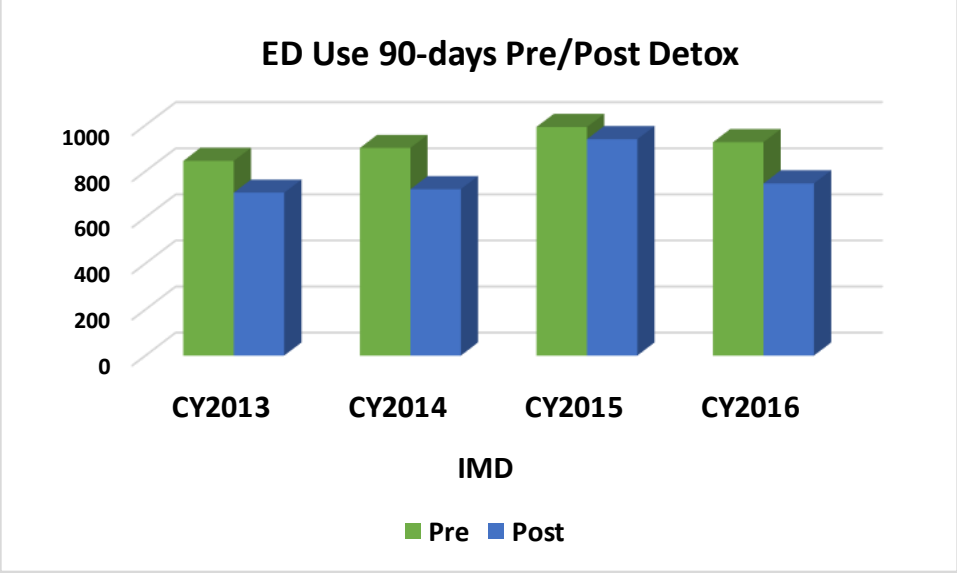
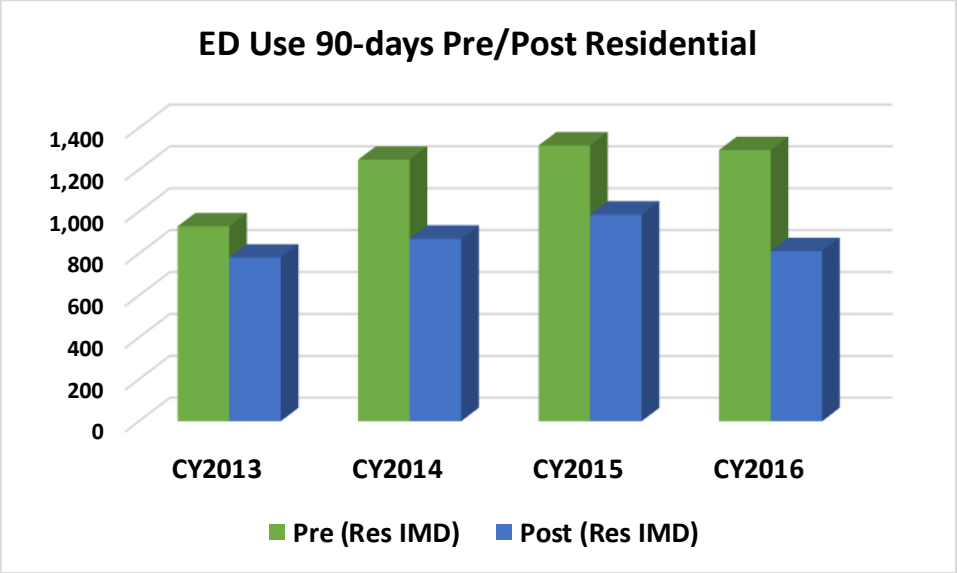


Exhibit 4.3.2 A-6: Emergency Department (ED) Use 90-days Pre/Post Residential



B. Access to acute inpatient treatment substance use disorders

The percent of general hospital and IMD detox admissions remained relatively flat, at approximately 25% each year CY2013 to CY2016 for the percent of general hospital admissions and between 28% in 2013 to 21% in CY2016 for IMD detox admissions. The percent of residential treatment admissions increased slightly year-over-year in each of the four years studied (47%, 51%, 51% and 54% CY2013 to 2016 respectively).

Along, these lines, the overall number of bed days for general hospital and IMD detox remained relatively unchanged, while the number of residential treatment bed days increased year-over-year with a 23% overall increase 2013 to 2016.

The number and percent of SUD admissions by setting type, excluding the Lund Home, is presented in Exhibits 4.3.2 B-1-2.

Exhibit 4.3.2 B-1: Percent of SUD Admissions by Setting

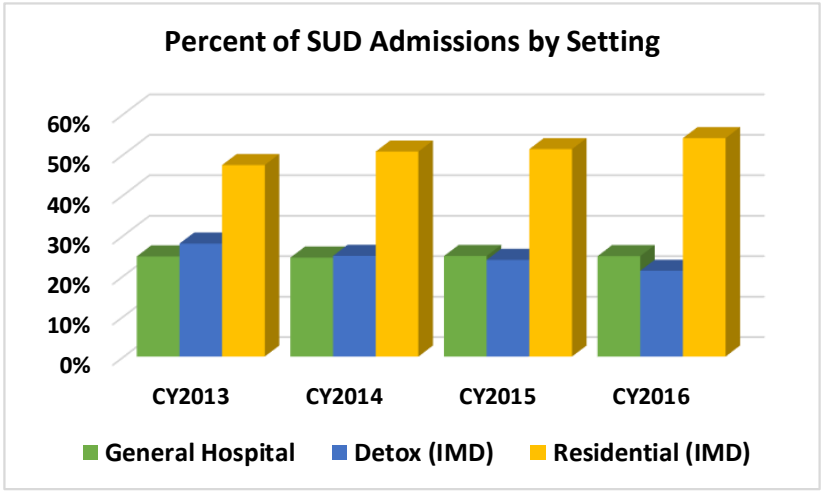
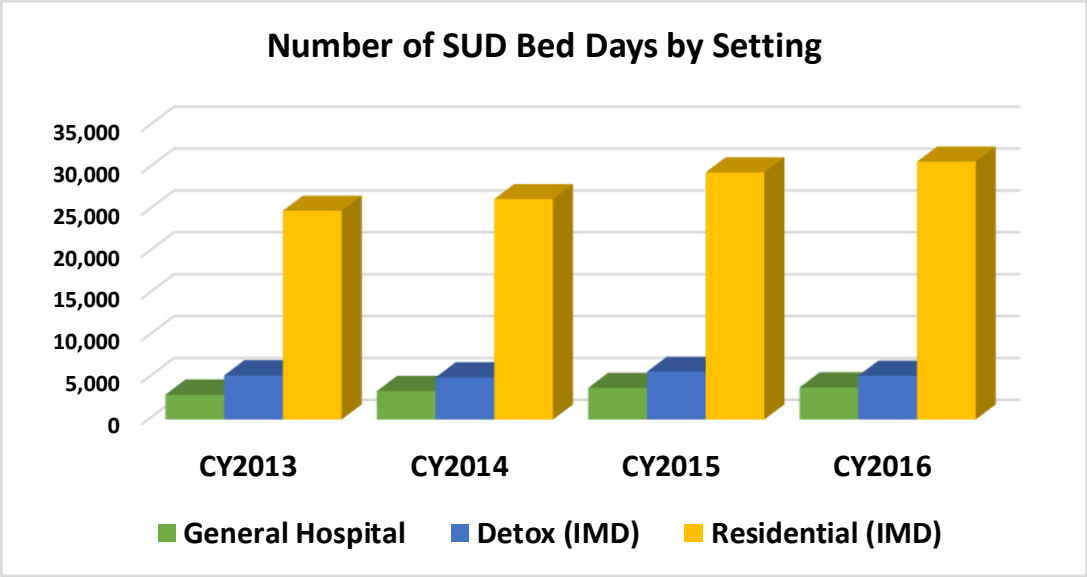


Exhibit 4.3.2 B-2: Number of SUD Bed Days by Setting



The number of recipients by setting type for each of the study years is presented in Exhibit 4.3.2 B-3.

Exhibit 4.6.2 B-3: Number of Recipients by Setting

Number of Recipients by SUD Setting					
	General Hospital	Detox (IMD)	Residential (IMD)	Lund Home	Total
CY2013	650	683	1290	51	2674
CY2014	635	540	1164	63	2402
CY2015	642	506	1137	46	2331
CY2016	547	326	1005	30	1908

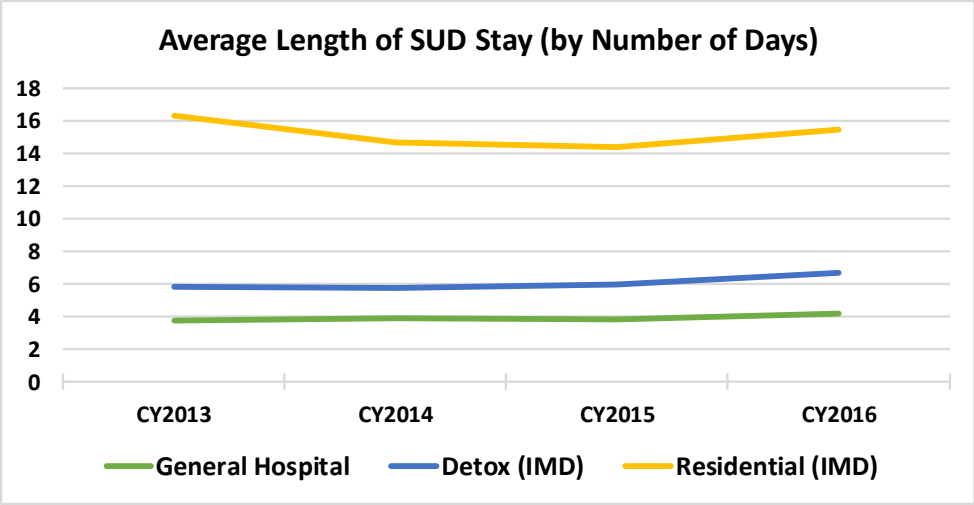
C. Lengths of stay in acute inpatient settings

Average length of stay across all four study years was 4 days for general hospital admissions, 6 days for IMD detox stays with a range of 6 to 7 days; and 15 days for residential IMD admissions with a range of 14-16 days. The median length of stay for each of the four study years was 15 days.

The Lund Home which provides specialized SUD treatment for pregnant women and mothers during the course of their pregnancy and post-partum, had an average length of stay of six months across the four study years.

Results, excluding the Lund Home, are presented in Exhibit 4.3.2 C-1.

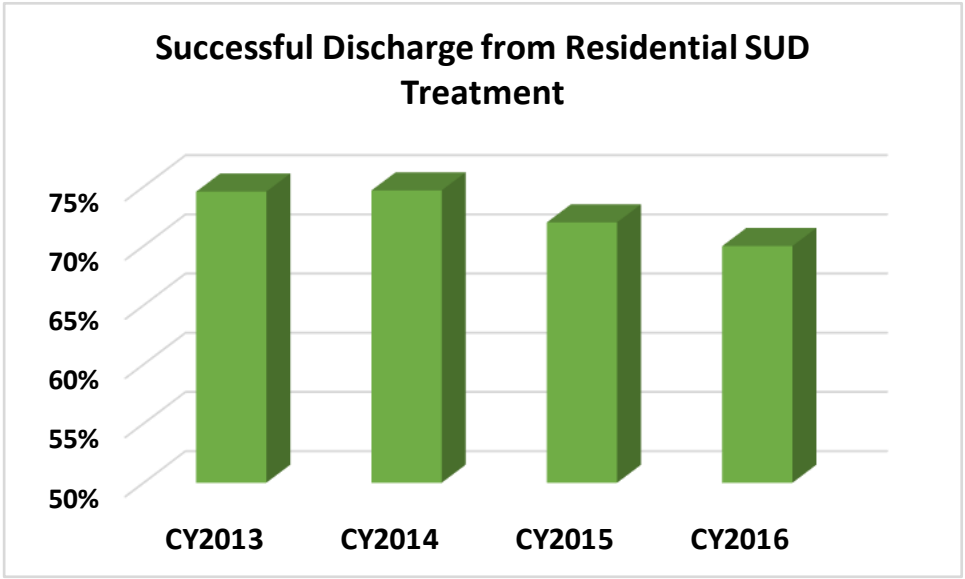
Exhibit 4.3.2 C-1: Average Length of Inpatient SUD Stay



D. Quality of acute substance use disorder treatment

The measure of quality of SUD treatment was defined as a Successful Discharge from Treatment and analyzed for residential SUD programs. The measure includes all clients in the facility regardless of payment source and thus is included as descriptive background only. Successful discharge was defined as those persons successfully transferring to another level of care and those successfully completing their residential treatment objectives. Successful completion data was not available for participants in the Lund program. Results showed successful discharges at 70% or greater in each of the four study years with 75% in both 2013 and 2014, 72% in 2015 and 70% in 2016. Successful discharges averaged 73% across all four study years and is presented in Exhibit 4.3.2 D-1 below.

Exhibit 4.3.2 D-1: Successful Discharge from Residential SUD Treatment



E. Quality of discharge planning in making effective linkages to community-based care

Quality of discharge planning for IMD settings was measured using HEDIS® specifications modified for Vermont programs relative to the percent of IMD enrollees using substances who initiate and engage in treatment. In both measures of initiation and engagement IMD enrollees scored higher than the general Vermont Medicaid population and the national benchmark for Medicaid plans. Overall for the four study years IMD enrollees average an initiation of treatment rate of 74%, while the general Vermont Medicaid population averaged 43% initiation. The national benchmark for Medicaid programs, set at the 50th percentile, averaged 38% across the four years.

Similar results were found for engagement in treatment. Overall for the four study years IMD enrollees average an engagement in treatment rate of 23%, while the general Vermont Medicaid population averaged 17% for engagement. The national benchmark for Medicaid programs, set at the 50th percentile, averaged 11% across the four years.

Lund Home payments for specialized services to pregnant women are not made through the claims system and thus not included in these HEDIS® results. Initiation and engagement rates for enrollees using substances is presented in Exhibit 4.3.2 E-1-2.

Exhibit 4.3.2. E-1: Percent of IMD Enrollees Using Substances Who Initiate Treatment

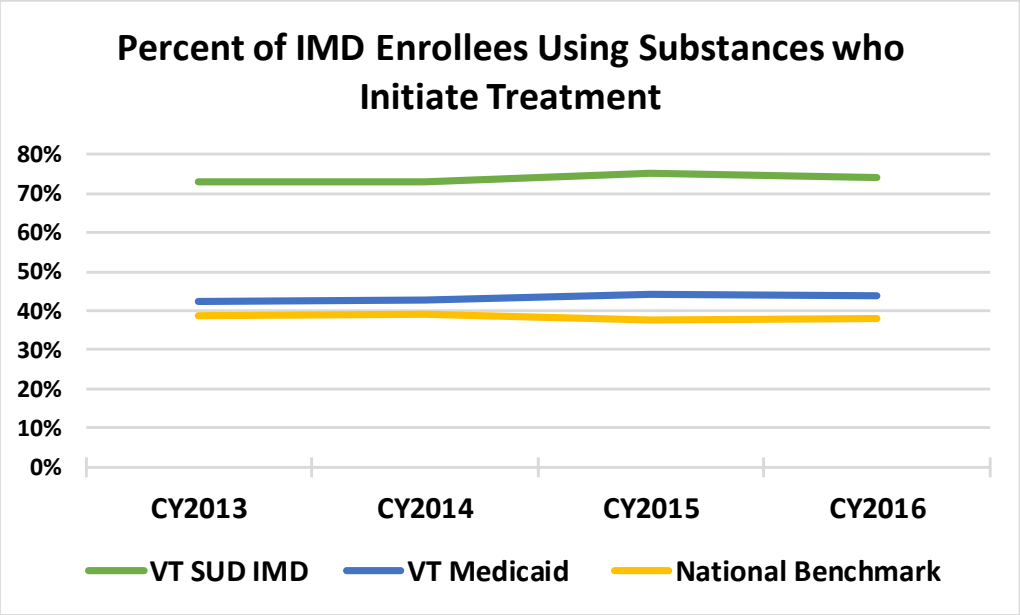
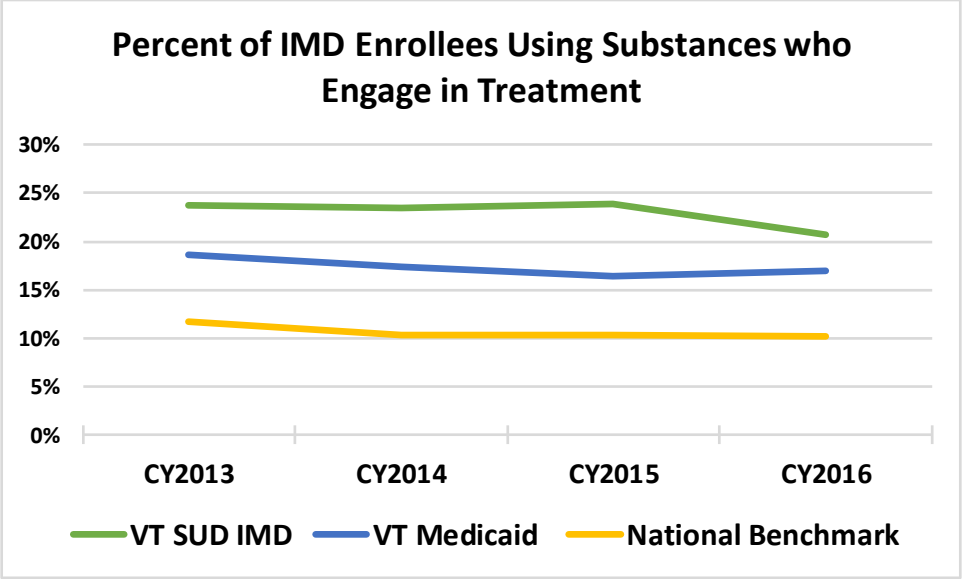


Exhibit 4.3.2 E-2: Percent of IMD Enrollees Using Substances Who Engage in Treatment



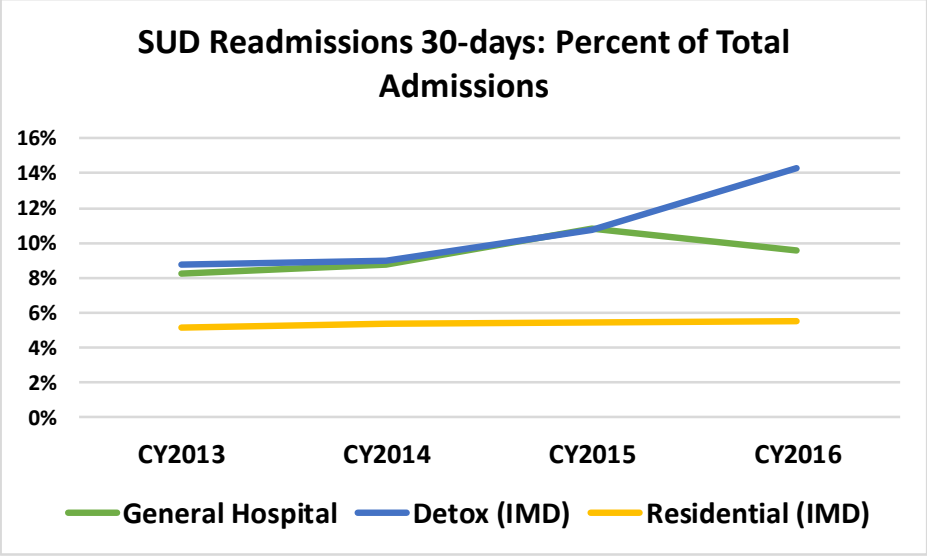
F. Readmissions for SUD treatment

In the general hospital setting readmissions within 30 days represented 8% of the total admissions in 2013, 9% in 2014, 11% in 2015 and 10% in 2016. Readmissions in the IMD detox setting represented 9% of the total admission in each year 2013 and 2014, 11% in 2015, and 14% in 2016. Levels remained low and stable across all four years for residential IMD readmissions representing 5% of the total admissions in each year 2013-2015 and 6% in 2016.

Lund Home participants included in this study showed no readmissions within 30-days of discharge in each of the four study years.

The percent of total and number of readmission within 30 days by setting type, excluding the Lund Home is presented in Exhibits 4.3.2 F-1.

Exhibit 4.3.2 F-1: SUD Readmissions 30-days as Percent of Total Admissions

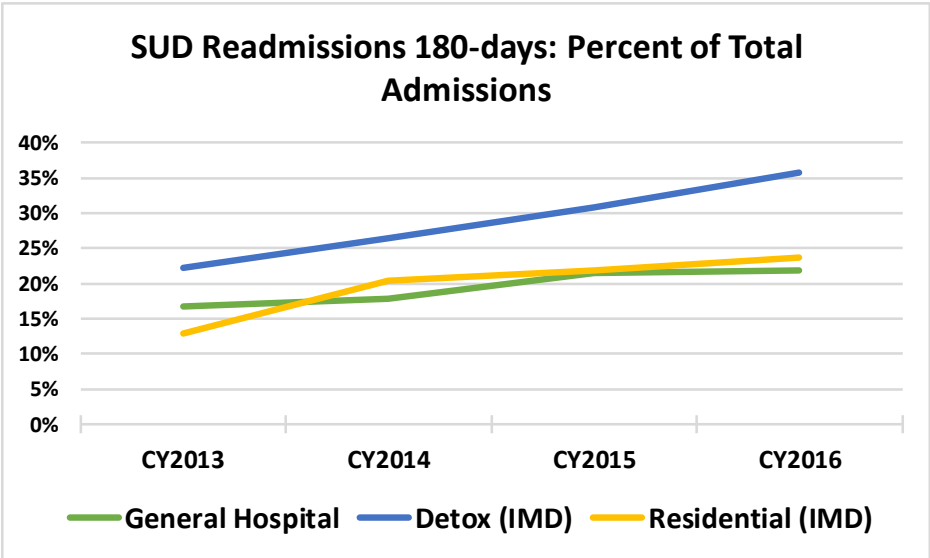


In the general hospital setting readmissions within 180 days represented 17% of the total admissions in 2013, 18% in 2014, 22% in 2015 and 22% in 2016. Readmissions within 180 days in the IMD detox setting represented 22% of the total admission in 2013, 26% in 2014, 31% in 2015, and 36% in 2016. Readmission within 180 days for residential IMD represented 13% of the total admissions in 2013, 20% in 2014, 22% in 2015 and 24% in 2016.

Lund Home participants included in this study showed one readmissions within 90-days of discharge in each of the three study years 2014, 2015 and 2016 and no readmissions in 2013.

The percent of total and number of readmission within 180 days by setting type, excluding the Lund Home, is presented in Exhibit 4.3.2 F-3.

Exhibit 4.3.2.F-3: SUD Readmissions 180-days as Percent of Total Admissions



The percent of SUD readmissions to same level of care/setting type were highest at lengths of stay (LOS) under 16 days for all IMD and non-IMD settings. The percent of readmissions for general hospital settings with LOS of less than 16 days 9% in each of 2013 and 2014, 12% in 2015 and 10% in 2016; while readmissions for stays between 16-29 and over 29 days dropped to zero across all years.

The IMD detox setting saw similar results with readmissions the highest for persons with stays less than 16 days, (9% for 2013, 10% for 2014, 12% for 2015 and 15% for 2016). For persons with stays between 16-29 days percent dropped to zero for 2013-2015 and 1% in 2016.

Results for residential SUD treatment in an IMD setting yielded similar findings with readmissions the highest for persons with stays less than 16 days at 5% for each of the four study years. For persons with stays between 16-29 days residential readmissions dropped to 1% for each of the study and zero for stays over 29 days for each of study years. Exhibit 4.3.2 F-5 through 4.3.2 F-7 for results by setting, excluding the Lund Home.

Exhibit 4.3.2 F-5: SUD Readmissions to General Hospital Care by LOS

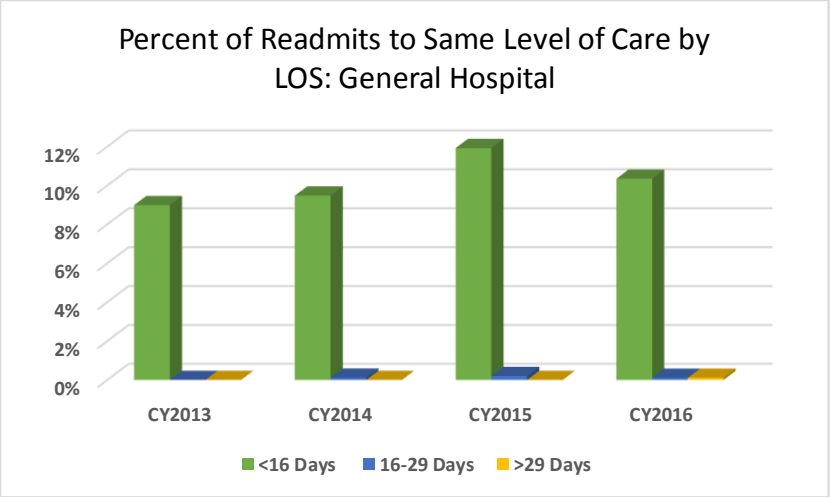


Exhibit 4.3.2 F-6: SUD Readmissions to IMD Detox by LOS

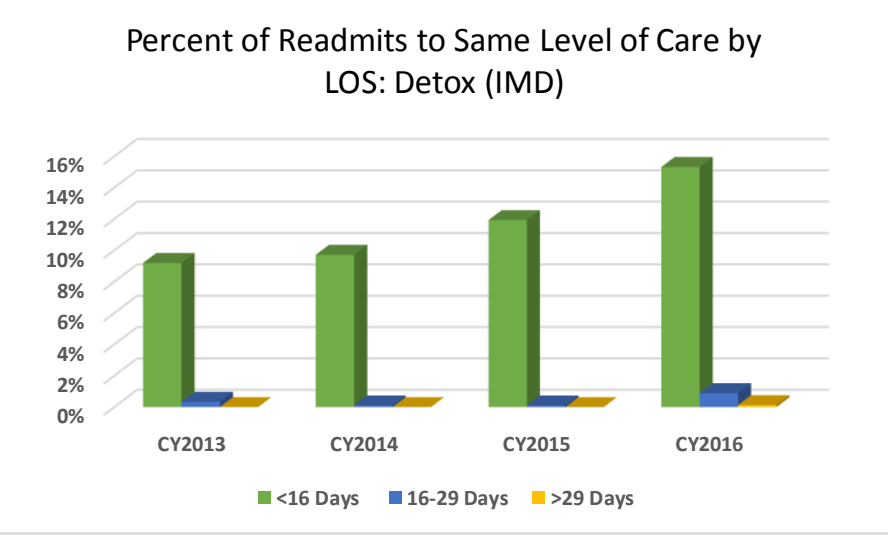
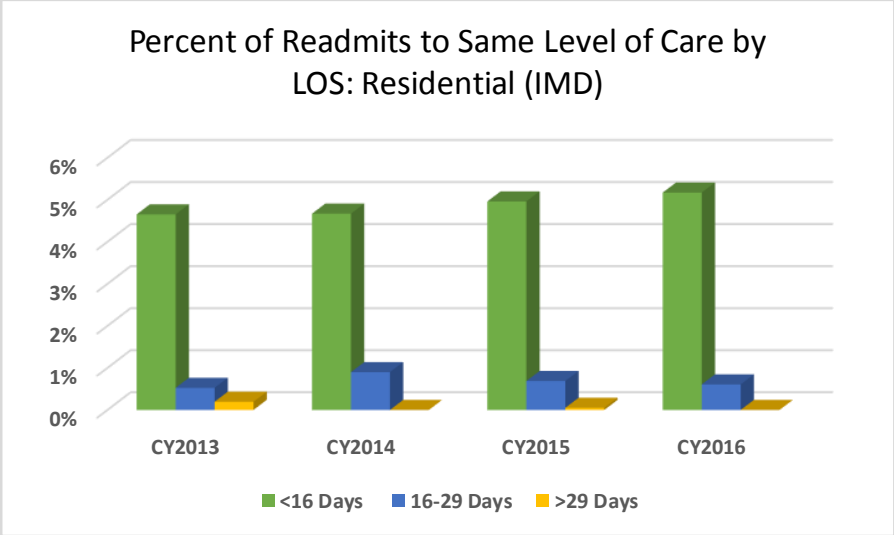


Exhibit 4.3.2 F-7: SUD Readmissions to Residential Care (IMD) by LOS



G. Cost of treatment for substance use disorder conditions

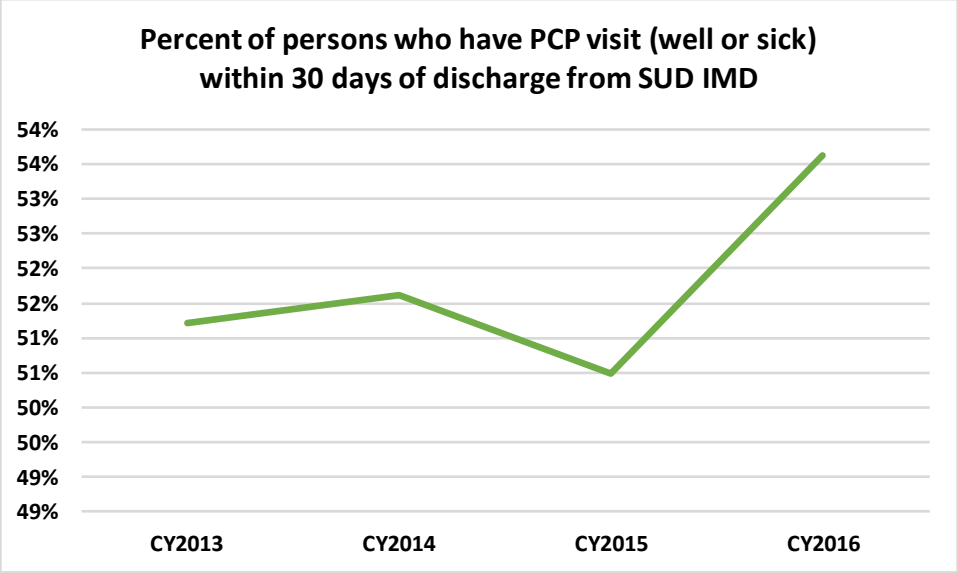
Treatment cost were derived from Medicaid claims for recipients in the SUD cohort. Recipients who had both an IMD and non-IMD admission are counted in both settings. In the SUD cohort, each setting type represents a different service type based in clinical needs of the recipient. Hospital settings offer medically managed detox services for those persons who may have co-morbid or complex medical needs, while residential treatment offers stabilization, treatment and recovery services for SUD treatment. As expected, cost per day is lowest in the residential treatment setting. Results are presented in Exhibit 4.3.2 G-1.

Exhibit 4.3.2 G-1 Cost of Treatment per Day by Setting

SUD Treatment Cost Per Day by Setting						
	General Hospital		Detox (IMD)		Residential (IMD)	
Year	Recipients	Cost /Day	Recipients	Cost/Day	Recipients	Cost/Day
CY2013	650	$1793	683	$995	1290	$227
CY2014	635	$1813	540	$1095	1164	$236
CY2015	642	$1800	506	$1093	1137	$236
CY2016	547	$1768	326	$1088	1005	$239

H. Access to care for co-morbid physical health conditions was examine by looking HEDIS® scores on the percent of persons with SUD discharged who have PCP visit (well or sick) within 30 days of discharge from IMD. Rates for the four study years averaged 52% and were 51% for 2013, 52% for 2014, 50% for 2015 and 54% for 2016. Results are provided in Exhibit 4.3.2 H-1.

Exhibit 4.3.2 H-1: Percent of persons who have PCP visit within 30-days post SUD IMD discharge



I. Overall cost of care for substance use disorders and co-morbid physical conditions combined.

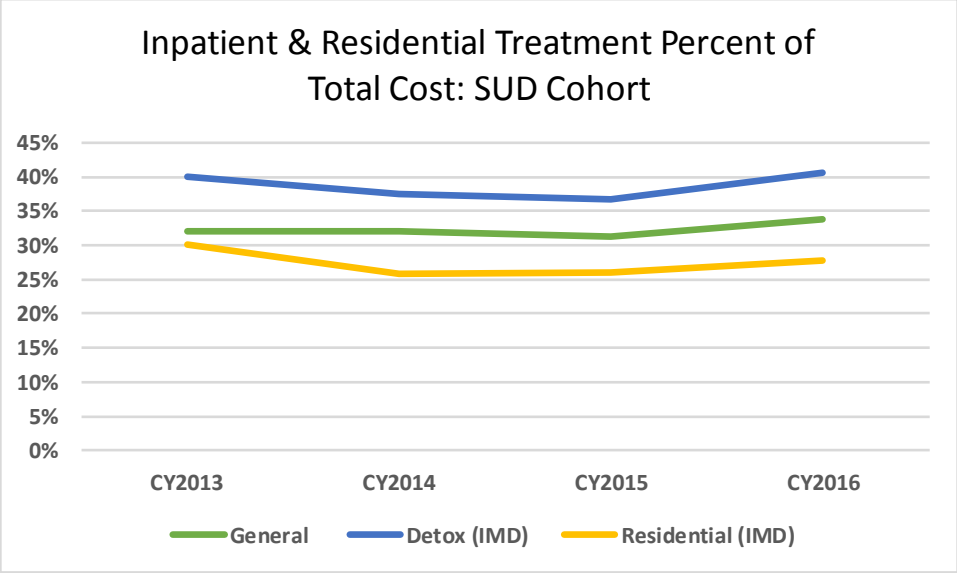
Total cost of care was derived from total paid claims for recipients in the SUD cohort. Recipients who had both an IMD and non-IMD admission during the calendar year are counted in both settings. Results show the average annual total cost of care is higher for recipients in settings that offered medically managed detox services as compared to residential treatment settings. Average annual cost per recipient is presented in Exhibit 4.3.2 I-1.

As a percent of overall cost, inpatient treatment averaged 32% of the cost for the general hospital setting, 39% for the Detox IMD setting and 27% for the residential setting across the four study years. Results are presented on Exhibit 4.3.2 I-2.

Exhibit 4.3.2 I-1 Average Annual Cost of Care per Recipient by Setting

Average Annual Cost of Care Per Recipient			
Year	Setting Type		
	General	Detox (IMD)	Residential (IMD)
CY2013	$25,595	$19,221	$14,531
CY2014	$30,244	$27,175	$20,654
CY2015	$33,984	$33,515	$23,506
CY2016	$36,520	$42,918	$26,300

Exhibit 4.3.2 I-2 Inpatient and IMD Treatment as Percent of Total Cost of Care



4.3.3 Successes, Challenges and Lessons Learned

Overall Vermont IMD settings appear to be providing high quality targeted treatment services as evidenced by lower ED utilization post discharge, low readmission rates and high rates for follow-up post placement, including initiation and engagement in SUD treatment post discharge.

Except for CY2013, in the general hospital setting, ED utilization was lower in all settings for the 30-day and 90-day period post discharge than the same period prior to admission. The post discharge drop in ED utilization was most dramatic for enrollees receiving services in IMD settings (SUD and Psychiatric) suggesting that these settings are successful at stabilizing and addressing the issues that led to higher pre-admission ED use. The decrease in ED utilization post discharge may also suggest that the IMD programs are successful in linking members to necessary care as they transition out of the IMD setting.

All IMD settings (SUD and Psychiatric) performed well on measures of transition and successful discharge. For example, when the measures for 7 and 30-day follow-up after hospitalization for mental illness was stratified for psychiatric IMD admissions, results for the IMD setting (which averaged 65% for 7-day follow-up and 81% for 30-day follow-up) outpaced the general VT Medicaid (which averaged 57% for 7-day follow-up and 74% for 30-day follow-up) and the national Medicaid benchmark (which averaged 45% for 7-day follow-up and 66% for 30-day follow-up). Although measures were not exclusive to Medicaid participants, both IMD facilities reported high scores on quality measures related to transitions with a range of 79% to 100% across the four years for post discharge continuing care plan and a range of 70% to 100% across the four years on post discharge continuing care plan transmitted.

Similar performance results were seen for enrollees who received Residential SUD treatment in IMD settings on measures of initiation and engagement in treatment. When the measure for initiation and engagement in treatment were stratified for IMD admissions, results outpaced the general VT Medicaid and national benchmarks on both measures. Overall for the four study years IMD enrollees average an initiation of treatment rate of 74%, compared to a Vermont Medicaid average of 43% and average of 38% for the national Medicaid benchmark across the four years. Averages across the four study years for

engagement also proved higher in the IMD setting at 23% as compared to 17% for Vermont Medicaid and 11% for the national benchmark.

Length of stay (LOS) was shorter in general psychiatric hospital setting with a four-year average of 8-days compared to a 19-day average across the years for the higher acuity beds found in the IMD setting. Vermont, free standing psychiatric care hospital, the Brattleboro Retreat, includes 14-beds under contract with DMH for individuals who need inpatient treatment, but who also require additional clinical resources due to the complex nature of their condition e.g., Level 1 placements. Outside of the IMD setting, there were only six "Level 1" beds available in the general hospital setting.

In the SUD ASAM treatment continuum LOS for Residential Treatment can extend to 30 -90 days (or more) based on individual need, whereas hospital and residential detox stays are expected to be 3 to 10 days depending on individual need. Study results aligned with these expectations showing average annual hospital and residential detox stays at 4 days for the general hospital and 6 days for IMD settings. Residential SUD treatment averaged a LOS of 15 days with the median stay also 15 days in each of the four study years.

Length of stay was an important variable when readmissions to the same setting type were examined. In all settings, readmission rates were the lowest for lengths of stay between 16-29 days and dropped to near zero for lengths of stay over 29 days. However, small sample sizes in the study cohort may contribute to the findings and could limit the generalizability of the results.

Vermont IMD-settings also performed well on measures of quality of care for comorbid physical health conditions. Vermont outperformed rates published in the NCQA report card for Medicaid programs for diabetes screenings for persons with co-morbid psychiatric conditions and who use antipsychotic medications. Vermont rates ranged from a low of 79% in CY 2014 to a high 89% in CY2016. HEDIS® measures were used to examine the percent of persons discharged from an IMD setting who had a PCP visit (well or sick) within 30-days. In both the psychiatric setting and SUD setting, results indicated an average of 52% of the persons discharged saw their PCP across the four study years.

4.4 IMD Policy Implications

Results suggest that Vermont's decentralized system is of high quality. The system relies on small scale IMD settings to stabilize and treat persons in acute psychiatric crisis and those needing the highest level of ASAM placement for OUD/SUD treatment. The Vermont psychiatric and SUD systems of care employ nationally recognized placement and concurrent review criteria for these most intensive levels of care. Vermont also supports an extensive community-based system for SUD and mental health care including: mobile crisis supports; integrated physical health care; regional OUD treatment "Hubs" and office-based MAT "Spokes"; and community based psychiatric placement. The variables examined in this study provide initial support for the State's hypotheses as outlined in Section 4-2. Research questions and hypotheses relative to the interim evaluation findings are summarized below.

Research Question #1	Hypothesis
Will expanded IMD authority support enrollees to receive care in the least restrictive most clinically appropriate setting possible?	• The projected elimination of psychiatric IMD capacity will negatively impact: emergency room utilization; access to acute inpatient treatment and length of stay; and cost of community hospital care. • The projected elimination of SUD IMD capacity will negatively impact emergency room utilization.

Based on these findings, emergency room utilization showed the greatest reductions in visits post discharge from IMD settings for both psychiatric and SUD cohorts. IMD psychiatric settings saw declines that ranged from 23% to 44% across the study years. Residential SUD settings saw declines ranging from 39% to 56%. General hospital settings for the psychiatric cohort also saw declines in ED use post discharge (3% to 29% across the study years), although not as steep as the IMD settings. Comparatively the general hospital settings saw an increase for the SUD cohort in post discharge ED use in 2013 (6%) and declines ranging from 2% to 16% in each of the last three study years. These results support the State's hypotheses that the elimination of inpatient treatment in the IMD settings studied will negatively impact emergency room utilization.

Given its almost exclusive focus on the highest acuity patients in the system, the VPCH data was examined separately and shows similar results its first two years of operation, with post-discharge ED use dropping to zero. In 2016, these results reversed with patients seeing a slightly higher rate of ED use post discharge, warranting further longitudinal study.

IMD settings also support access to acute inpatient treatment for both the SUD and psychiatric cohorts. Admissions, and LOS have remained relatively flat in the general hospital setting for both psychiatric and SUD placements. Admissions to IMD settings have steadily risen year over year. SUD residential admissions moved from 47% in 2013 to 54% of total admissions in 2016.

Psychiatric IMD settings serve, almost exclusively, the highest acuity patients in the delivery system. Currently, there are 6 Level 1 beds in the community hospital system and 14 in the IMD setting outside of the VPCH. Both general hospital and IMD providers, excluding VPCH, receive supplemental payments for these high acuity patients. In an examination of available data for 2014, expenses for Level 1 patients

ranged from $1369 to $3,086 per day in the community, while the VPCH daily rate was $2,277 (during its first six months of operation in 2014). VPCH cost per day in 2016, with all 25-beds in operation, declined to $2,177. Available data supports the State's hypothesis that elimination of IMD capacity at the VPCH and other IMD settings will result in increased cost to the community system and negatively impact the cost of community hospital care.

Research Question #2	Hypothesis
Is expanded IMD authority necessary to support Vermont's small size and community hospital system?	• IMD services result in improved quality of care and community integration as evidenced by lower re-admission rates. • Initiation and engagement rates will be higher when the index event occurs at a residential IMD program when compared to an IMD hospital detoxification program or non-IMD facility. • The projected amount and scope of current IMD services is adequate to meet the need.

Based on study findings, the IMD authority appears to be integral to the overall system of care by supporting community integration and high treatment initiation and engagement rates for recipients. In the psychiatric IMD cohort readmission rates were low for both the 30 and 180 days, with a four-year average of 8% for the 30-day measure and 17% for the 180-day measure. The four-year average for psychiatric general hospital setting showed 9% and 20%.

In the SUD cohort the general hospital setting, IMD detox and residential treatment are each used for distinctly different clinical purposes and represent different service types. Readmission rates within 30 days are under 15% in all settings. Rates of readmission within 180 days average 19% for general hospital management of detox, 29% for residential IMD detox and 20% for residential IMD treatment.

When readmissions were examined by length of stay the highest rate of readmission was seen for stays shorter than 16 days across both SUD and psychiatric cohorts. Results suggest that psychiatric stabilization and SUD treatment for persons with the highest and most complex needs may be most beneficial for stays over 16 days. Results may have implications for recent federal policy that allows a Medicaid managed care organization to receive capitation payments for enrollees who have inpatient level of care needs that necessitate treatment for no more than 15 days (or longer if the IMD spans consecutive months, so long as the stay was no more than 15 days in each month)[3]. However, small sample sizes and low frequency of readmission overall limit the generalizability of findings, implications warrant further study.

Community engagement and integration, post IMD discharge, was also evident when follow-up in the community was measured. When four-year annual averages were compared for the HEDIS® measure follow-up after hospitalization for mental illness at 7-days, enrollees receiving treatment in IMD settings

[3] Medicaid and CHIP Managed Care Final Rule (CMS-2390-F) Frequently Asked Questions (FAQs) – Section 438.6(e) August 2017 (https://www.medicaid.gov/federal-policy-guidance/downloads/faq08172017.pdf)

exceeded both the Vermont general Medicaid rate and the national HEDIS® rate at the 50th percentile, with an average of 65%. Results remained consistent for follow-up after hospitalization for mental illness at 30-days, with an IMD average of 76% across the four study years. Results lend support to the Vermont hypotheses that recipients of IMD services engaged in community services post discharge.

Due to sample size limitations, initiation and engagement rates were not compared by type of service, but rather for the total SUD IMD cohort regardless of service type (detox or residential). The four-year average score for the IMD cohort on HEDIS® measures of initiation (74%) and engagement (23%) where higher than the Vermont Medicaid average for the same four-year period (initiation of 43% and engagement of 17%), and the national Medicaid HEDIS® rate for the same four-year period (38% initiation and 11% for engagement) at the 50th percentile. These results provide support for the general hypothesis that initiation and engagement rates will be higher for the cohort of members receiving SUD treatment in IMD settings.

Vermont IMD-settings also performed well on measures of quality of care for comorbid physical health conditions. Vermont outperformed rates published in the NCQA report card for Medicaid programs for diabetes screenings for persons with co-morbid psychiatric conditions and who use antipsychotic medications. Vermont rates ranged from a low of 79% in CY2014 to a high 89% in CY2016.

In both the psychiatric and SUD cohorts, results showed an average of 52% of the persons discharged saw their PCP within 30-days, across the four study years. Vermont's public managed care Demonstration has been actively supporting the integration of physical and behavioral health care since its inception in 2005. In most recent years, office-based MAT treatment has been expanded under the State's 'Hub and Spoke' specialized health home model for opioid addiction. Office-based practices, FQHC's and independent physicians form the "spokes" for each regionalized "hub" The integration of health care and SUD treatment in the community is a high priority. Similarly, DMH has supported active partnerships between FQHCs, local PCP practices and designated mental health providers to ensure collaboration and integration in care planning and service delivery.

Admission trends and utilization of bed days remained relatively consistent across the four-year period for SUD treatment services, as has length of stay and readmission rates. Currently the State reports no wait list for these SUD programs or the ASAM level of care they represent. This would suggest that for the SUD treatment continuum the amount and scope of current SUD IMD services is adequate to meet the need.

The State is working with CMS on a Global Commitment to Health OUD/SUD amendment to maintain and enhance the Vermont continuum of SUD treatment services. The results of this study suggest that Vermont's SUD treatment continuum is of high quality, supports the shared CMS and State goals of integration, and aligns with ASAM best practices as outlined by CMS's November 1, 2017 guidance for similar OUD/SUD Demonstrations.

In looking at the psychiatric cohort, Vermont has steadily increased psychiatric beds capacity since the closure of the former Vermont State Hospital in August 2011, due to Tropical Storm Irene. Vermont's adult psychiatric inpatient system had a total of 188 beds as of December 31, 2016, which is four (4) more than before the 2011 closure. As reported by DMH, in its February 2017 Act 79 Report to the Vermont State Legislature, crisis and intensive residential beds also increased from 49 (Pre-Irene) to 87 in 2016. Additionally, a peer-supported community-based residential program in Chittenden County was

also added to the system of care along with other mental health system enhancements. Combined community and inpatient capacity increased by almost 50 beds during the study period. [4]

Despite this increase in capacity, Emergency Department staff report a crisis of psychiatric boarding. Patients who require inpatient psychiatric treatment often wait for an available bed in a treatment setting that is appropriately matched to meet their clinical needs. Anecdotal reports suggest that the patient mix on any given psychiatric unit is often such that that the unit cannot admit additional patients who may have highly complex or more challenging psychiatric profiles[5].

Data on length of stay in the ED was available only for persons who are in the care and custody of the Commissioner of the Department of Mental Health. Findings show wait times of over 24-hours for 36% to 52% of the persons waiting for placement across the four study years. This is a small subset of the psychiatric population who access the ED and cannot be generalized to the total population. However, coupled with other data such as inpatient occupancy rates and current Vermont bed capacity, this information, in total, suggests the need for additional psychiatric bed capacity.

Vermont hospital stakeholders report a practice standard of 85% occupancy for inpatient bed capacity to allow for "surge capacity" as needed. This level is thought to offer support for a therapeutic milieu responsive to a mix of high, moderate and lower acuity patient needs at any given time[6]. In its 2018 report to the legislature, DMH reported overall state fiscal year (SFY) occupancy rates for inpatient psychiatric capacity ranged from a high of 93% in SFY 2013 (prior to the opening of VPCH) to a low of 87% in SFY2015[7]. Most recent data for SFY2017 show occupancy rates of 92%. These rates consistently exceed the optimal threshold for occupancy of 85%, as suggested by Vermont stakeholders, in each year that data has been collected by DMH.

During this same period, the Vermont legislature and DMH also invested in increasing mobile crisis teams, crisis bed and hospital step down capacity in the community-based system. These beds have seen a steady decline in occupancy moving from a high of 79% in SFY2013 to 72% in SFY2016 and most recently 70% in SFY2017[8].

Given Vermont's use of nationally recognized placement criterion to determine the most appropriate level of care for each admission, high occupancy rates for inpatient care and lower occupancy for community beds, data suggest that the current IMD/psychiatric bed capacity is not adequate to the meet the need. A September 2016 policy brief, compiled by the Treatment Advocacy Center, suggests that the most commonly cited bed target is 40-60 psychiatric beds per every 100,000 residents[9]. However, these guidelines do not account for differences in State systems relative to community psychiatric capacity or other innovated hospital diversion or step-down options. Using the range suggested in the Treatment Advocacy Center report, Vermont's inpatient bed target would be between 248 and 372 beds statewide. In 2017 10 beds were opened for Medicaid use at the Veterans

[4] Reforming Vermont's Mental Health System: Report to the Legislature on the Implementation of Act 79; January 15, 2017

[5] Reforming Vermont's Mental Health System: Report to the Legislature on the Implementation of Act 82 Section 3 and 4 December 15, 2017

[6] Green L. V., How Many Beds? Inquiry 39:400-412 Winter 2002/2003 Excellus Health Plan, Inc

[7] Reforming Vermont's Mental Health System, Report to the Legislature on the implementation of Act 79, January 15, 2018.

[8] Ibid

[9] Psychiatric Bed Supply Need Per Capita, The Treatment Advocacy Center, September 2016, retrieved Feb. 28, 2018 http://www.treatmentadvocacycenter.org/evidence-and-research/learn-more-about/3696

Administration Hospital, bringing Vermont's available supply to 198 hospital inpatient beds. Without considering Vermont's community based psychiatric settings (Intensive Residential Recovery and Secure Residential Programs), Vermont would be 50 beds below the lower end of the target range of 248 beds. However, counting these innovated, small scale psychiatric programs, Vermont's capacity would be four beds above the lower end of the range with 252 psychiatric beds.

Research Question #3	Hypothesis
Will elimination of federal participation result in reductions in community-based treatment capacity due to increased pressure on the State budget?	• There is no capacity in the current community hospital system in Vermont to absorb the downsizing necessary to eliminate IMD claiming. • The projected impact of removing Federal Financial Participation (FFP) for psychiatric IMD on other services and providers in the community will be negative.

Vermont is a small rural state, the IMD settings studied are an integral part of the overall psychiatric and SUD treatment continuum that supports integrated care in the most clinically appropriate, least restrictive setting possible. The most intensive treatment services (inpatient and residential) are provided through a combination of IMD and non-IMD settings. Psychiatric IMD admissions represent less than 20% of the total inpatient Medicaid admissions across the four study years. Interim findings suggest that these settings are providing high quality targeted treatment services as evidenced by lower ED utilization post discharge, low readmission rates and high rates for community follow-up, including initiation and engagement in SUD treatment post discharge.

To maintain or enhance capacity using the target ranges suggested by the Treatment Advocacy Center (248 to 372 beds), Vermont will need to add beds to its current inpatient inventory, while phasing out psychiatric IMD capacity at two facilities. Absent IMD waiver authority this may be difficult. The State would need to eliminate 9 beds at the VPCH to meet the 16-bed IMD standard and eliminate the use of 89 psychiatric and 30 SUD treatment beds at the Brattleboro Retreat.

The feasibility of phasing down IMD capacity and placing those beds in a community hospital setting will be difficult given Vermont's small size and current delivery system. There are 14 non-profit general hospitals spread throughout Vermont and one Veterans Administration hospital. Common challenges associated with facility expansion include, but are not limited to: financing, physical plant and location, local zoning limitations and regulatory restrictions. However, Vermont's small size and rural nature offers additional delivery system and workforce barriers. Of Vermont's 14 community hospitals, four currently have designated psychiatric units and 8 are small critical access hospitals (CAHs) of twenty-five beds or less. The small scale of these CAH facilities makes psychiatric expansion difficult and if undertaken, expansion in any given facility would be limited to 10 psychiatric beds or less due to federal IMD and CAH policy. Additionally, Vermont has been historically challenged by a shortage of psychiatric professionals (e.g., MD, APRN's, Psychologist and Social Workers) to staff programs across the state.

To achieve the target number of beds necessary for a complete psychiatric IMD phasedown (98-beds) and maintain the low end of the suggested target range per capita (248 beds), beds would need to be cited across the State in community hospital settings or small-scale free standing psychiatric facilities of 16 beds or less. Adding the SUD/IMD beds to the phasedown could negatively impact current delivery system infrastructure, workforce and financial resources.

Aside from a focus on setting type and capacity, additional analysis is warranted regarding the expertise and specialized psychiatric programs needed throughout the system. For example, the DMH statistical report from State Fiscal Year 2011, the last full year of operations prior to the State Hospital closure, indicates that 49% of the psychiatric admissions to the former Vermont State Hospital included persons who also had a SUD diagnosis. This suggests that attention to co-occurring SUD/MH treatment may be needed and warrants further study. Current AHS policy discussions regarding psychiatric capacity are also exploring the need for specialized geriatric and forensic capacity in the inpatient treatment system.

In conclusion, overall results suggest that a high quality, high value service system, for both psychiatric and SUD treatment, can be supported using IMD authorities along with clinical standards and payment policies, such as those used in Vermont, that:

- Support integrated physical and behavioral care for psychiatric and SUD treatment and PCP providers;
- Value community integration and living for persons with psychiatric and SUD challenges; and
- Apply nationally recognized psychiatric and ASAM placement criteria throughout the system of care.

4.5 IMD Interactions with Other State Initiatives

The AHS has developed a preliminary model to address infrastructure needs of its member departments including geriatric care as the Medicaid population ages; forensic and correctional care for persons in the care and custody of the State; child and adolescent psychiatric populations; and the complex needs of persons in need of inpatient care. Preliminary estimates of need were delineated in the AHS Act 84 Major Facilities Report to the legislature in 2018[10]. This report represents the beginning of policy discussions on the potential phase down of VPCH capacity and 14 high acuity beds at the Brattleboro Retreat.

Further study is warranted to determine how the need for critical inpatient and SUD capacity can be supported as Vermont addresses human service workforce and infrastructure needs, including the role of Medicare and commercial payers in supporting access to psychiatric and SUD care for all Vermonters.

[10] A Report to the Legislature on AHS Major Facilities in accordance with Section 31 of Act 84 of 2017, Report Date January 15, 2018

APPENDIX 1: MEASUREMENT CHANGE LOG

Using the State's proposed Global Commitment to Health Medicaid Demonstration Evaluation Design dated August 31, 2017, revised December 2017 and February 2, 2018, and approved March 8, 2018, PHPG worked with the State to review available data, refine, and revise performance measures. Final measure selection was based on considerations such as: State budget and staff resources; NCQA or other changes in measure specifications; sample size; and relevance of each proposed measure to the State priorities, operations and program policy.

Appendix 1 offers a log of changes made to the proposed measure and sampling methods originally presented to evaluators.

Global Commitment to Health Evaluation Measures: Change Log				
Goal Area	***Performance Measure***	***Original Metric***	***Brief Description of Issue or Modification***	***Type of Action***
Access	Effect of Children's Premiums	Percent of families that activate enrollment by paying the first month's premium	Modify to more accurately reflect available data	Modify
	Impact of VPA Program	Percent of enrollees receiving VPA subsidy who maintain QHPs with no breaks in coverage	Modify to more accurately reflect available data	Modify
	Emergency Department Visits	Rate of ED visits per 1,000-member months	Not produced by SUD sub-population; should read SED	Modify
		Rate of Potentially Avoidable ED Utilization	Measure is expressed as a percent for Total Medicaid population; Measure is not stratified for sub-groups; many sub-group members are duals; data difficult to interpret without access to Medicare utilization	Modify
	Ambulatory Care	Percent of adult enrollees who had an ambulatory or preventive care visit	Measure is not stratified for sub-groups; many sub-group members are duals; data difficult to interpret without access to Medicare utilization	Modify
	Well-Child Visits	Percent of children under age 12 who received well-child care from a PCP in accordance with EPSDT periodicity schedule	Well child visit data includes 2 HEDIS® measures – First 15 months of life and 3rd, 4th, 5th & 6th years of life	Modify
	Access to Dental Care	Percent of Medicaid enrollees with at least one dental visit	HEDIS dental access measure is for children ages 2-20	Modify
	Inpatient Admissions	Rate of inpatient admissions per 1,000-member months	Measure not indicative of good or bad outcome	Remove Measure
	Mental Health	Percent of enrollees receiving mental health services	Measure not indicative of good or bad outcome	Remove Measure
	Substance Use Disorder Treatment Utilization	Percent of enrollees receiving substance use disorder treatment services	Measure not indicative of good or bad outcome	Remove Measure
	Getting Needed Care	Percent of survey respondents indicating they received necessary care	The Children with Chronic Conditions supplemental survey was done once in 2015	Remove Sub-population
	Physician Participation in Medicaid	Percent of active physicians participating in Medicaid: Primary care	Data production delay/competing State priorities; AHS may reassess inclusion in later years	Remove Measure
		Percent of active physicians participating in Medicaid: Specialists	Data production delay/competing State priorities; AHS may reassess inclusion in later years	Remove Measure
Community Integration	Choice and Control	The proportion of people who make choices about their everyday lives	This measure is reported as two separate composite scales scores; recommend deleting this one and added two separate measures	Modify
	Community Access	Proportion of people who regularly participate in integrated activities in their communities	Slight wording change to match NCI-DD	Modify

Global Commitment to Health Evaluation Measures: Change Log				
Goal Area	**Performance Measure**	**Original Metric**	**Brief Description of Issue or Modification**	**Type of Action**
	Employment	The proportion of people who have a job in the community (NCI)	VT DOL data is more accurate than NCI scores	Remove Measure
Cost	Emergency Department Cost	Average annual per enrollee cost of ED visits	Data is not currently tracked	Remove Measure
	Chronic Care Management Costs	Average annual per enrollee costs for chronic care management program participants	Recent program, system and vendor changes have caused gaps in data production and utility	Remove Measure
	Inpatient Hospital Cost	Average annual per enrollee cost of inpatient hospital	Data production delay/competing priorities; AHS may reassess inclusion in later years	Remove Measure
	Pharmacy Cost	Average annual per enrollee cost of prescription drugs	Data production delay/competing State priorities; AHS may reassess inclusion in later years	Remove Measure
	Total Cost per Major Aid Category	Average annual total cost per major aid category group	Data production delay/competing priorities; AHS may reassess inclusion in later years	Remove Measure
	Total Cost per Enrollee	Average annual total cost per enrollee	Data is not currently tracked	Remove Measure
IMD-Psych	Access to Care for co-morbid physical health conditions	Percent of persons discharged who have PCP visit (well or sick) within 30 days of discharge from IMD	Measure added for Psych IMD	Add
	Access to acute inpatient treatment for mental health	State Hospital Utilization per 1,000 population (Total Vermont)	Modify to include all IMD (not just VPCH); focus on Medicaid; General Hospital data set has several years lag	Modify
		Other Psychiatric Utilization per 1,000 population (Total Vermont)	Added measure for Total Medicaid population	Modify
	Readmissions for IMD inpatient treatment	State Hospital Involuntary Hospital Readmissions: 30 days	Modify to include all IMD (not just VPCH or involuntary)	Modify
	Lengths of stay (LOS) in acute inpatient IMD	Median and Mean LOS for discharged patients (Total, < 1 yr., >1yr)	Does not capture LOS for persons not discharged during reporting period	Modify
	ER Utilization	% population with avoidable ED utilization	Not currently run; time and expense to recreated for 2013-2017 not in budget to produce	Remove Measure
	Quality of acute mental health IMD treatment	Hours of physical restraint use (HBIPS-2)	Not a treatment measure	Remove Measure
		Hours of seclusion use (HBIPS-3)	Not a treatment measure	Remove Measure
		Alcohol use screening (SUB-1)	Not reported for Medicaid only cohort; Not reported by all facilities or for all study years	Remove Measure
		Alcohol use brief intervention provided or offered and the subset alcohol use brief intervention (SUB-2/-2A)	Not reported for Medicaid only cohort; Not reported by all facilities or for all study years	Remove Measure
		Tobacco use screening (TOB-1)	Not reported for Medicaid only cohort; Not reported by all facilities or for all study years	Remove Measure

Global Commitment to Health Evaluation Measures: Change Log				
Goal Area	***Performance Measure***	***Original Metric***	***Brief Description of Issue or Modification***	***Type of Action***
		Tobacco use treatment provided or offered and the subset tobacco use treatment (TOB-2/-2A)	Not reported for Medicaid only cohort; Not reported by all facilities or for all study years	Remove Measure
		Assessment of patient experience of care (IPFQR FY2018)	Not reported for Medicaid only cohort; VPCH; alternate survey low sample size; Not available 2013-2017	Remove
	Readmissions for IMD inpatient treatment	State Hospital Involuntary Hospital Readmissions: 180 days	Admission type not a study variable	Remove Measure
	Quality of care for co-morbid physical health conditions	Preventative care and screening: Adult BMI screening and follow up (CMS NQF 0419)	Resources not available to compile medical records information needed to complete hybrid measure	Remove Measure
		Controlling high blood pressure (NCQA NQF 0018)	Resources not available to compile medical records information needed to complete hybrid measure	Remove Measure
		Preventative care and screening: unhealthy alcohol use: screening and brief counseling (AMA-PCP1 NQF 2152)	Resources not available to compile medical records information needed to complete hybrid measure	Remove Measure
		Diabetes care for people with SMI: Hemoglobin A1c (HbA1c) poor control (>9.0%) (NCQA NQF 2607)	Resources not available to compile medical records information needed to complete hybrid measure	Remove Measure
	Quality of discharge planning in making successful linkages to community-based care	Post Discharge Continuing Care Plan (HBIPS-6d)	Measure added	Add
		Post Discharge Continuing Care Plan Transmitted (HBIPS-7d)	Measure added	Add
	Overall Cost of Care	Average cost per enrollee for MH IMD services	Resources not available to match and convert administrative data and paid claims into single record for each of the four study years	Modify
		Average cost per enrollee for MH services		
		Average cost per enrollee for all Medicaid services		
IMD-SUD	Quality of discharge planning in making successful linkages to community-based care	Successful Completion of Residential Treatment	Measure added	Add
	Readmissions for Same Level of Care	Readmission rates by length of stay (<16 days, 16-29, 30+ days) (Total Medicaid)	Measure focus is residential readmissions; modify sample	Modify
	Quality of Care	Patient Experience of Care	Survey no longer used	Remove Measure
	Overall Cost of Care	Average cost per enrollee for SUD IMD services	Resources not available to match and convert administrative data and paid claims into single record for each of the four study years	Modify
		Average cost per enrollee for all SUD services		

Global Commitment to Health Evaluation Measures: Change Log				
Goal Area	***Performance Measure***	***Original Metric***	***Brief Description of Issue or Modification***	***Type of Action***
		Average cost per enrollee for all Medicaid services		
Primary Care	Health Outcomes & Cost	Number of continuously enrolled members, ages 18-75 whose Diabetes HbA1c was in control compared to those with poor control	Measure will be produced for subgroup of Blueprint Members who are Medicaid recipients	Modify
		Expenditures per capita for continuously enrolled members, ages 18-75 whose Diabetes HbA1c was in control compared to those with poor control	Measure will be produced for subgroup of Blueprint Members who are Medicaid recipients	Modify
		Inpatient hospitalizations per 1,000 members for continuously enrolled members, ages 18-75 whose Diabetes HbA1c was in control compared to those with poor control	Measure will be produced for subgroup of Blueprint Members who are Medicaid recipients	Modify
Quality	Follow up after Hospitalization for Mental Illness	Percent of enrollees discharged who had follow-up at 7 days	Total Medicaid rates vary from HEDIS® specs for this measure by including encounter visit data from DMH DA's (MSR)	Modify
		Percent of enrollees discharged who had follow-up at 30 days	Total Medicaid rates vary from HEDIS® specs for this measure by including encounter visit data from DMH DA's (MSR)	Modify
	Substance Use Disorder Treatment	Percent of enrollees using substances who initiate and engage in treatment	Medicaid rates adjusted for MAT and behavioral health residential treatment payment models	Modify
	Health Plan	Enrollee rating of satisfaction with health plan	The Children with Chronic Conditions supplemental survey was done once in 2015. For all general child and adult populations report metric will report "overall rating of health plan"	Remove Sub-population; modify measure name
	Quick Care	Enrollee rating of ability to get care quickly	The Children with Chronic Conditions supplemental survey was done once in 2015	Remove Sub-population
	Overall Rating of Care	Enrollee rating of care received	The Children with Chronic Conditions supplemental survey was done once in 2015	Remove Sub-population
	Customer Service	Enrollee rating of customer service	The Children with Chronic Conditions supplemental survey was done once in 2015	Remove Sub-population
	Communication	Enrollee rating of how well their physician explains things, listens to their concerns, shows respect and spends enough time with them	The Children with Chronic Conditions supplemental survey was done once in 2015	Remove Sub-population
	Chronic Care Management	Percent of enrollees with targeted chronic conditions enrolled in chronic care management program	Recent program, system and vendor changes have caused gaps in data production and utility	Remove Measure

Global Commitment to Health Evaluation Measures: Change Log				
Goal Area	***Performance Measure***	***Original Metric***	***Brief Description of Issue or Modification***	***Type of Action***
Value-Based Purchasing	ACO Attributed Members	Percent of Medicaid enrollees eligible for ACO attribution aligned with ACO	Added measure	Add
	ACO Cost Per Enrollee	Cost of Care for Medicaid enrollees aligned with ACO	ACO reports two measures actual and expected cost	Modify
	Prevention	Developmental Screening in the first 3 years of life	Will use claims data only	Modify
	Prenatal Care	Timeliness of Prenatal Care	Discontinued; loss of national endorsement	Remove Measure

APPENDIX 2: FINAL EVALUATION MEASURE SET

Using the State's proposed Global Commitment to Health Medicaid Demonstration Evaluation Design dated August 31, 2017, revised December 2017 and February 2, 2018, and approved March 8, 2018, PHPG worked with the State to review available data, refine, and revise performance measures. Final measure selection was based on considerations such as: State budget and staff resources; NCQA or other changes in measure specifications; sample size; and relevance of each proposed measure to the State priorities, operations and program policy.

Appendix 2 offers a summary of final measures, sampling methods, identified benchmarks, data sources, reporting periods and baseline years each of the overall Global Commitment to Health evaluation measures. The summary also indicates those measures included in this Interim Evaluation Report #1. Please see Exhibit 4.2.2 for final IMD measures.

Global Commitment to Health Final Evaluation Measures								
Goal Area	**Performance Area**	**Metric**	**Sampling Methodology**	**Source of Data**	**Nat'l Benchmark**	**Data Collection**	**Baseline Year**	**Include in Report #1 4/2018**
Access	Ambulatory Care	Percent of adult enrollees who had an ambulatory or preventive care visit (Total)	Total Medicaid	MMIS	HEDIS® AAP	Calendar Year	2016	Yes
	Well-Child Visits	Well-child visits first 15 months of life, 6 or more visits	Total Medicaid	MMIS	HEDIS® W15	Calendar Year	2016	Yes
		Well-child visits 3rd, 4th, 5th, & 6th year of life	Total Medicaid	MMIS	HEDIS® W34	Calendar Year	2016	Yes
	Adolescent Well-Care Visits	Percent of adolescents ages 12 to 21 who receive one or more well-care visits with a PCP during the measurement year	Total Medicaid	MMIS	HEDIS® AWC	Calendar Year	2016	Yes
			ACO Members	MMIS	HEDIS® AWC	Calendar Year	2017	No
	Access to Dental Care	Children age 2-20 years with at least one dental visit (Total)	Total Medicaid	MMIS	HEDIS® ADV	Calendar Year	2016	Yes
	Emergency Department Visits	Rate of ED visits per 1,000-member months	Total Medicaid	MMIS	HEDIS® EDU	Calendar Year	2016	Yes
			Total Medicaid, including dual eligible members	MMIS	N/A	Calendar Year	2016	Yes
			DDS Program Enrollees	MMIS	N/A	Calendar Year	2016	Yes
			CFC Program Enrollees	MMIS	N/A	Calendar Year	2016	Yes
			TBI Program Enrollees	MMIS	N/A	Calendar Year	2016	Yes
			CRT Program Enrollees	MMIS	N/A	Calendar Year	2016	Yes
			SED Program Enrollees	MMIS	N/A	Calendar Year	2016	Yes
		Percent of Potentially Avoidable ED Utilization	Total Medicaid	MMIS	N/A	Calendar Year	2016	Yes
	Inpatient Admissions	All cause unplanned admissions for patients with multiple chronic conditions	ACO Members	MMIS	NQF-2888	Calendar Year	2017	No
	Effect of Children's Premiums	Percent of children found eligible for Dr. Dynasaur with premium whose families paid the premium necessary to effectuate coverage	Total Premium Population	Eligibility Records	N/A	Calendar Year	2016	Yes

Global Commitment to Health Final Evaluation Measures								
Goal Area	**Performance Area**	**Metric**	**Sampling Methodology**	**Source of Data**	**Nat'l Benchmark**	**Data Collection**	**Baseline Year**	**Include in Report #1 4/2018**
	Impact of VPA Program	Percent of members with VPA who had coverage from the month they signed up through the end of the year, without any gaps in coverage or VPA	Total VPA Enrollees	VPA Data	N/A	Calendar Year	2016	Yes
	Getting Needed Care	Percent of survey respondents indicating they received necessary care	Representative Sample Medicaid	CAHPS - Adult	CAHPS-CPA	Calendar Year	2017	No
				CAHPS - Child	CAHPS-CPC	Calendar Year	2016	Yes
	Health Coverage	Percent of uninsured Vermonters	Total Vermont	Vermont Household Insurance Survey	N/A	Every 3rd Calendar Year	2014	Yes
	Medication Assisted Treatment (MAT) for Opioid Addiction	Number of people receiving MAT per 10,000 Vermonters age 18-64	Total Vermont	MMIS; SATIS	N/A	Calendar Year	2016	Yes
	Drug Overdose Deaths	Vermont resident deaths related to drug overdose	Total Vermont	Vital Statistics	N/A	Calendar Year	2016	Yes
Community Integration	Eliminating Institutional Bias	Average number of people served per month by setting: nursing facility, home, licensed residential facility	CFC Program Enrollees	MMIS	N/A	Calendar Year	2016	Yes
	Community Access	Proportion of people who do things they enjoy outside of their home when and with whom they want to	CFC Representative Sample	NCI-AD	NCI-AD	Point-In-Time	2018	No
			TBI Representative Sample	NCI-AD	NCI-AD	Point-In-Time	2018	No
		Proportion of people who regularly participate in integrated activities in their communities	DDS Representative Sample	NCI-DD	NCI-DD	Point-In-Time	2016	Yes
	Choice and Control	Proportion of people who can choose or change what kind of services they get and determine how often and when they get them	CFC Representative Sample	NCI-AD	NCI-AD	Point-In-Time	2018	No
			TBI Representative Sample	NCI-AD	NCI-AD	Point-In-Time	2018	No
		The proportion of people who make choices about their everyday lives	DDS Representative Sample	NCI-DD	NCI-DD	Point-In-Time	2016	Yes

Global Commitment to Health Final Evaluation Measures								
Goal Area	***Performance Area***	***Metric***	***Sampling Methodology***	***Source of Data***	***Nat'l Benchmark***	***Data Collection***	***Baseline Year***	***Include in Report #1 4/2018***
		The proportion of people who make decisions about their everyday lives	DDS Representative Sample	NCI-DD	NCI-DD	Point-In-Time	2016	Yes
	Employment	Proportion of people who have a paying job in the community, either full-time or part-time	CFC Representative Sample	NCI-AD	NCI-AD	Point-In-Time	2018	No
			TBI Representative Sample	NCI-AD	NCI-AD	Point-In-Time	2018	No
		Proportion of people who would like a job (if not currently employed)	CFC Representative Sample	NCI-AD	NCI-AD	Point-In-Time	2018	No
			TBI Representative Sample	NCI-AD	NCI-AD	Point-In-Time	2018	No
		The proportion of people who do not have a job in the community but would like to have one	DDS Representative Sample	NCI-DD	NCI-DD	Point-In-Time	2016	Yes
		Employment rate of people of working age receiving DDS services	DDS Program Enrollees	Vermont Department of Labor; VT Division of Vocational Rehabilitation	N/A	State Fiscal Year	2016	Yes
		Employment rate of people of working age receiving TBI rehabilitation services	TBI Program Enrollees	Vermont Department of Labor; VT Division of Vocational Rehabilitation	N/A	State Fiscal Year	2016	Yes
		Employment rate of people of working age receiving CRT services	CRT Program Enrollees	Vermont Department of Labor; VT Division of Vocational Rehabilitation	N/A	State Fiscal Year	2016	Yes
Cost	Budget Neutrality	Actual aggregate expenditures versus budget neutrality limit	Total Medicaid	MMIS	N/A	Calendar Year	2016	Yes
PCP	Cost	Total expenditures per capita, excluding specialized program services, for enrollees ages 1-64 years	Blueprint Medicaid Enrollees	MMIS	N/A	Calendar Year	2016	Yes

Global Commitment to Health Final Evaluation Measures								
Goal Area	**Performance Area**	**Metric**	**Sampling Methodology**	**Source of Data**	**Nat'l Benchmark**	**Data Collection**	**Baseline Year**	**Include in Report #1 4/2018**
		Specialized Medicaid expenditures per capita, for enrollees ages 1-64 years	Blueprint Medicaid Enrollees	MMIS	N/A	Calendar Year	2016	Yes
	Access to Care	Enrollee rating of ability to get desired appointment or information	Blueprint Representative Sample	CAHPS - PCMH	N/A	Calendar Year	2016	Yes
	Communication	Enrollee rating of how well their physician explains thigs, listens to their concerns, shows respect and spends enough time with them		CAHPS - PCMH	N/A	Calendar Year	2016	Yes
	Health Outcomes & Cost	Number of continuously enrolled members, ages 18-75 whose Diabetes HbA1c was in control compared to those with poor control	Blueprint Medicaid Enrollees	VCHURES; Medical Records	N/A	Calendar Year	2016	Yes
		Expenditures per capita for continuously enrolled members, ages 18-75 whose Diabetes HbA1c was in control compared to those with poor control		VCHURES; Medical Records	N/A	Calendar Year	2016	Yes
		Inpatient hospitalizations per 1,000 members for continuously enrolled members, ages 18-75 whose Diabetes HbA1c was in control compared to those with poor control		VCHURES; Medical Records	N/A	Calendar Year	2016	Yes
Quality	Medication Management for People with Asthma	Percent of enrollees receiving appropriate asthma medication management 50% Compliance (Total)	Total Medicaid	MMIS	HEDIS® MMA	Calendar Year	2016	Yes
		Percent of enrollees receiving appropriate asthma medication management 75% Compliance (Total)	Total Medicaid	MMIS	HEDIS® MMA	Calendar Year	2016	Yes
	Breast Cancer Screening	Percent of female enrollees age 50 to 74 who receive screening at appropriate intervals	Total Medicaid	MMIS	HEDIS® BCS	Calendar Year	2016	Yes

Global Commitment to Health Final Evaluation Measures								
Goal Area	**Performance Area**	**Metric**	**Sampling Methodology**	**Source of Data**	**Nat'l Benchmark**	**Data Collection**	**Baseline Year**	**Include in Report #1 4/2018**
	Chlamydia Screening	Percent of female enrollees screened (Total)	Total Medicaid	MMIS	HEDIS® CHL	Calendar Year	2016	Yes
	Follow up after Hospitalization for Mental Illness	Percent of enrollees discharged who had follow-up at 7 days	Total Medicaid	MMIS & MSR	HEDIS® FUH	Calendar Year	2016	Yes
			ACO Members	MMIS	HEDIS® FUH	Calendar Year	2017	No
		Percent of enrollees discharged who had follow-up at 30 days	Total Medicaid	MMIS & MSR	HEDIS® FUH	Calendar Year	2016	Yes
			ACO Members	MMIS	HEDIS® FUH	Calendar Year	2017	No
	Substance Use Disorder Treatment	Percent of enrollees using substances who initiate in treatment (Total)	Total Medicaid	MMIS	HEDIS® IET	Calendar Year	2016	Yes
			ACO Members	MMIS	HEDIS® IET	Calendar Year	2017	No
		Percent of enrollees using substances who engage in treatment (Total)	Total Medicaid	MMIS	HEDIS® IET	Calendar Year	2016	Yes
			ACO Members	MMIS	HEDIS® IET	Calendar Year	2017	No
	Health Wellness	The proportion of people who describe their overall health as poor	CFC Representative Sample	NCI-AD	NCI-AD	Point-In-Time	2018	No
			TBI Representative Sample	NCI-AD	NCI-AD	Point-In-Time	2018	No
		The proportion of people who were reported to be in poor health	DDS Representative Sample	NCI-DD	NCI-DD	Point-In-Time	2016	Yes
	Health Plan	Overall rating of health plan	Representative Sample Medicaid	CAHPS - Adult	CAHPS-CPA	Calendar Year	2017	No
				CAHPS - Child	CAHPS-CPC	Calendar Year	2016	Yes
	Quick Care	Enrollee rating of ability to get care quickly	Representative Sample Medicaid	CAHPS - Adult	CAHPS-CPA	Calendar Year	2017	No
				CAHPS - Child	CAHPS-CPC	Calendar Year	2016	Yes
	Overall Rating of Care	Enrollee rating of care received	Representative Sample Medicaid	CAHPS - Adult	CAHPS-CPA	Calendar Year	2017	No

Global Commitment to Health Final Evaluation Measures								
Goal Area	**Performance Area**	**Metric**	**Sampling Methodology**	**Source of Data**	**Nat'l Benchmark**	**Data Collection**	**Baseline Year**	**Include in Report #1 4/2018**
				CAHPS - Child	CAHPS-CPC	Calendar Year	2016	Yes
	Customer Service	Enrollee rating of customer service	Representative Sample Medicaid	CAHPS - Adult	CAHPS-CPA	Calendar Year	2017	No
				CAHPS - Child	CAHPS-CPC	Calendar Year	2016	Yes
	Communication	Enrollee rating of how well their physician explains things, listens to their concerns, shows respect and spends enough time with them	Representative Sample Medicaid	CAHPS - Adult	CAHPS-CPA	Calendar Year	2017	No
				CAHPS - Child	CAHPS-CPC	Calendar Year	2016	Yes
	Getting Needed LTSS	Proportion of participants needing assistance who always get enough assistance with everyday activities when needed	CFC Representative Sample	NCI-AD	NCI-AD	Point-In-Time	2018	No
			TBI Representative Sample	NCI-AD	NCI-AD	Point-In-Time	2018	No
		The rate at which people report that they do not get the services they need	DDS Representative Sample	NCI-DD	NCI-AD	Point-In-Time	2018	No
Value-Based Purchasing	ACO Attributed Members	Percent of Medicaid enrollees aligned with ACO	Total Medicaid	Enrollment Files (PCP selection) and MMIS	N/A	Calendar Year	2017	No
			ACO Eligible	Enrollment Files (PCP selection) and MMIS	N/A	Calendar Year	2017	No
	ACO Cost Per Enrollee	Expected Cost of Care for Medicaid enrollees aligned with ACO	ACO Members	MMIS	N/A	Calendar Year	2017	No
		Actual Cost of Care for Medicaid enrollees aligned with ACO	ACO Members	MMIS	N/A	Calendar Year	2017	No
	ACO Access to Mental Health Treatment	30-day follow-up after discharge from ED for mental health	ACO Members	MMIS	HEDIS® FUM	Calendar Year	2017	No
	ACO Access to Substance Use Disorder Treatment	7-day follow-up after discharge from ED for alcohol or other drug dependence mental health	ACO Members	MMIS	HEDIS® FUA	Calendar Year	2017	No

Global Commitment to Health Final Evaluation Measures								
Goal Area	*Performance Area*	*Metric*	*Sampling Methodology*	*Source of Data*	*Nat'l Benchmark*	*Data Collection*	*Baseline Year*	*Include in Report #1 4/2018*
		30-day follow-up after discharge from ED for alcohol or other drug dependence mental health	ACO Members	MMIS	HEDIS® FUA	Calendar Year	2017	No
	ACO Depression Screening and Follow-up	Screening for clinical depression and follow-up plan	ACO Members	MMIS; ACO Medical Records	HEDIS® DSF	Calendar Year	2017	No
	Prevention	Developmental Screening in the first 3 years of life	ACO Members	MMIS	NQF-1448	Calendar Year	2017	No
	Health Outcomes	Diabetes Mellitus: Hemoglobin A1c poor control (>9%)	ACO Members	MMIS; ACO Medical Records	NQF-0059	Calendar Year	2017	No
		Hypertension: Controlling High Blood Pressure	ACO Members	MMIS; ACO Medical Records	HEDIS® CBP	Calendar Year	2017	No

APPENDIX 3: BLUEPRINT TO HEALTH MEDICAID EXPENDITURE ANALYSIS METHODS

Blueprint to Health is a multi-payer reform effort, as such data is typically aggregated for the entire population irrespective of payer. Through its analytics vendor, Onpoint Health Data, Blueprint to Health links provider reported clinical data to de-identified VHCURES claims data. Onpoint de-identifies the clinical data using the same algorithms to hash the identifiers as was used by insurers for the VHCURES data, using this method the vendor is able to link records between the two de-identified datasets using the hashed, or encrypted, identifiers. Blueprint to Health Diabetes measures were analyzed by its vendor and a stratified for the Medicaid population.

Annually, the Blueprint to Health examines total expenditures and specialized program expenditures for Medicaid patients attributed to Blueprint practices. However, prior to examining findings, the vendor first risk-adjusts the expenditure values. To do so, extreme values are capped, and a regression-based adjustment procedure is used to create an individual-level risk-adjusted expenditure value. The average of this risk-adjusted value is reported.

Appendix 3 provides a description of the Blueprint to Health risk adjustment methodology.

Measure	CY16
Total Risk-Adjusted Expenditures per Capita, Excluding SMS Expenditures, for Blueprint Medicaid Enrollees, ages 1-64 years	$3,888.94
Risk-adjusted SMS Expenditures per Capita for Blueprint Medicaid Enrollees, ages 1-64 years	$2,262.46

Risk Adjustment

Risk adjustment for reporting was implemented in SAS (Version 9.3) using regression methods. For utilization measures, a Poisson distribution was assumed. Models included age/gender stratification groups, Blueprint-selected chronic conditions, CRG classification, maternity, and the additional Medicaid and Medicare adjustments described above. Adjusted rates were produced by summing the differences between each member's actual value and their predicted measurement from the model. Rates were weighted for partial lengths of enrollment.

To calculate the adjusted rate, adjusted values were computed for each member by adding model residuals (e) to the population grand mean ($\bar{y}$). The following equations represent the models for the adult and pediatric HSA Profiles.[11]

Outcome measures are capped at the 99th percentile within each major payer, year, and age group. The risk adjustment methodology is identical to the profiles with exception of a few minor differences in risk adjustment variables—since this analysis combines the entire population and does not separate pediatric members from adults.

Combined Model:

$$y = \alpha + (F\_AGE0104)\beta_1 + (M\_AGE0104)\beta_2 + (M\_AGE0511)\beta_3 + (F\_AGE0511)\beta_4 + (F\_AGE1217)\beta_5 + (M\_AGE1217)\beta_6 + (M\_AGE1834)\beta_7 + (F\_AGE3544)\beta_8 + (F\_AGE4554)\beta_9 + (F\_AGE5564)\beta_{10} + (F\_AGE6574)\beta_{11} + (F\_AGE7584)\beta_{12} + (F\_AGE85PLUS)\beta_{13} + (M\_AGE3544)\beta_{14} + (M\_AGE4554)\beta_{15} + (M\_AGE5564)\beta_{16} + (M\_AGE6574)\beta_{17} + (M\_AGE7584)\beta_{18} + (M\_AGE85PLUS)\beta_{19} + (MEDICAID)\beta_{20} + (MEDICARE)\beta_{21} + (DUAL\ ELIGIBILITY)\beta_{22} + (DISABLED)\beta_{23} + (ESRD)\beta_{24} + (CHRONIC)\beta_{25} + (CRG\_ACUTE\_MINOR)\beta_{26} + (CRG\_CHRONIC)\beta_{27} + (CRG\_SIGNIFICANT\_CHRONIC)\beta_{28} + (CRG\_CANCER\_CATASTROPHIC)\beta_{29} + (MATERNITY)\beta_{30} + (MATERNITY * MEDICAID)\beta_{31} + \varepsilon$$

$$\bar{y} = \left(\frac{\sum y_i}{MMA}\right)$$

[11] For the adult model, males, ages 18–34 years, and "healthy" individuals (from the 3M CRG categories) served as the reference group and therefore do not appear in the model statement. For the pediatric model, males, ages 1–4 years, and "healthy" individuals (from the 3M CRG categories) served as the reference group and therefore do not appear in the model statement.

$$y_{\text{adj}} = \bar{y} + e$$

$$e = y - \hat{y}$$

$$\bar{y}_{\text{statewide}} = \left(\frac{\sum y_{adj_i}}{\sum MMA_i}\right) \text{ for all members (equals the grand mean)}$$

Where:

- α is the intercept
- ε is the error term
- $\hat{y}$ is the predicted value from the regression model for each member
- e is the residual
- MMA is the average enrollment for each participant (i.e., the cumulative member months of enrollment during the year divided by 12)
- Subscript $_i$ indicates a value for an individual member

Measurement of Expenditures

Expenditures were measured based on the allowed amount on claims, which included both the plan payments and the member's out-of-pocket payments (i.e., deductible, coinsurance, and copayments). For each member, total expenditures were determined for the measurement year. In addition, expenditures by major and selected service categories were determined. Each detailed expenditure category was capped separately at the 99th percentile of the statewide study population to reduce the distorting influence of extreme outlier cases.

Expenditures rates were computed as an annualized adjusted rate using the risk-adjustment methods described previously. Lower and upper confidence intervals of 95 percent also were included.

The major and detailed expenditure categories (see Table 5) were based on type of claim, primary diagnosis codes, revenue codes, site of service codes, provider taxonomy codes, and pharmacy therapeutic groupings based on assignment of National Drug Codes (NDCs) using Red Book®. The reporting was hierarchical and rolled up service-line claim payments to the header claim level. For example, if an outpatient hospital claim contained a primary diagnosis of mental health or substance abuse (i.e., ICD-9 codes 290–316 or ICD-10 codes F01–F99), then the entire claim, regardless of the specific services performed, was assigned to the category of outpatient hospital mental health / substance abuse.

Table 5. Expenditure Reporting Category Definitions

Description	Major Category	Detail Category
Hospital Inpatient	Claim type description = 'Facility', type of setting = 'Inpatient', and place of setting = 'Acute inpatient or hospital' (whole claim is assigned hierarchically in order below based on finding the diagnosis or revenue code)	
Mental Health / Substance Abuse – Inpatient		1. Primary diagnosis code ICD-9 290–316, ICD-10 F01–F99
Maternity-Related and Newborns		2. Primary diagnosis code ICD-9 630–677, 760–779, V22–V24, V27, V30–V39; ICD-10 O00–O9A, P00–P96, Z33, Z34, Z38, Z39
Surgical		3. Revenue code 0360–0369 (operating room service) within the claim
Medical		4. All others
Hospital Outpatient	Claim type description = 'Facility', type of setting = 'Outpatient', and place of setting = 'Hospital' (whole claim is assigned hierarchically in order below based on finding the diagnosis or revenue code)	
Hospital Mental Health / Substance Abuse		1. Primary diagnosis code ICD-9 290–316, ICD-10 F01–F99
Observation Room		2. Revenue code 0762
Emergency Room		3. Revenue codes 0450–0459
Outpatient Surgery		4. Revenue codes 0360–0369 (operating room services)
Outpatient Radiology		5. Revenue codes 0320–0359, 0610–0619
Outpatient Lab		6. Revenue codes 0300–0319
Hospital-Dispensed Pharmacy		7. Revenue codes 0250–0259
Outpatient Physical Therapy		8. Revenue Codes 0420–0429

Description	Major Category	Detail Category
Outpatient Other Therapy		9. Revenue Codes 0430–0439, 0440–0449
Other Outpatient Hospital		10. All Others
Professional Total	Claim type description = 'Professional' and type of setting = 'Provider' or claim type = 'Outpatient' and type of setting = 'FQHC' or 'Rural Health Clinic'	
Physician Services	Primary diagnosis code not ICD-9 290–316 or ICD-10 F01–F99	Provider taxonomy coding indicates provider specialty is an allopathic or osteopathic physician (excluding psychiatrist)
Physician Inpatient Setting		With Place of Service code 21
Physician Outpatient Setting		With Place of Service codes 19, 22
Physician Office Setting		With Place of Service code 11
Professional Non-Physician		Provider taxonomy coding indicates nurse practitioner, physician assistant, physical therapist, chiropractor, podiatrist, speech therapist, occupational therapist, optometrist/optician, respiratory therapist
Professional Mental Health Provider	Primary diagnosis code ICD-9 290–316 or ICD-10 F01–F99	Provider taxonomy coding indicates psychiatrist, psychologist, MSW, LICSW, LCSW, or claims from other providers with a principal diagnosis of mental health or substance abuse
Pharmacy	From pharmacy claims and medical claims paid to pharmacies	
Pharmacy Mental Health		Red Book classification used to determine therapeutic CNS medications based on NDC codes
Special Medicaid Services	From Category of Service and Fund Source Coding as identified in consultation with Vermont Medicaid staff.	Examples include day treatment, residential care, school-based services, dental services, transportation, and case-management