Independent Review

Health Information Exchange (HIE)
Blueprint Clinical Registry

For the
State of Vermont Agency of Human Services, Department of Vermont Health Access and Department of Information and Innovation

Submitted to the
State of Vermont, Office of the CIO
By

Strategic Technology Services

5/12/2016

Attachments:

1. Project Costing Spreadsheet (FINAL-REVIEW-SOV-AHS-DVHA_HIE_BlueprintClinicalRegistry-STS_Cost_Detail_FINAL.xlsx)
2. Risk Register (FINAL-REVIEW-SOV-AHS-DVHA_HIE_BlueprintClinicalRegistry-STS_Risk_Register_FINAL.pdf)
3. 2014 Blueprint Hospital Service Area (HSA) Profile from the Blueprint for Health (Blueprint Service Area Profiles (2014)c – Burlington.pdf)
4. Vermont Blueprint For Health 2015 Annual Report (Vermont-Blueprint-for-Health-2015-Annual-Report-FINAL-1-27-16.pdf)

Table of Contents

1. Executive Summary

Provide an introduction that includes a brief overview of the technology project and selected vendor(s).

Project Summary

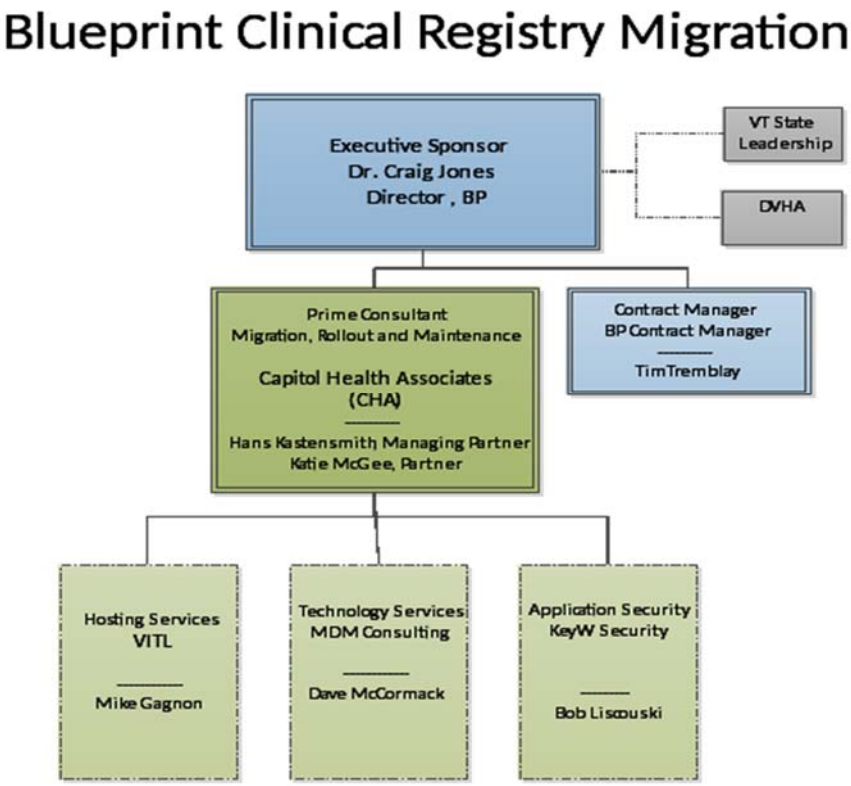
1. **Term**:
    a. This project has started, and has a signed contract stating duration is expected to be 12 months.

2. **Solution and Cost**:
    a. Purchase of a perpetual unlimited user license of DocSite software including source code from Covisint Corp. (*completed December, 2015*): **$1M**
    b. Implementation Services by Capitol Health Associates (CHA): **$1.1M**
    c. Internal and contracted staffing: **$465K**
    d. Other software: **$66K**
    e. Total Costs (1 year): $2.5M

3. **Approach**:
    a. Implementation Services related to design, development, testing of DocSite software by Capitol Health Associates (CHA) to support Blueprint Clinical Registry functionality
        i. Subcontractors:
            - **MDM Technologies**: Programming Services
            - **KeyW**: Application and Hosting Security Services
            - **VITL**: Hosting services (see below)
        ii. Specific 3rd party software licenses to support DocSite (see detail in cost spreadsheet)
    b. Hosting environment provided by VITL via Rackspace
    c. Message transit services supporting Health Information Exchange objectives provided by VITL
    d. Internal staffing supporting the project
    e. Contracted Program and Project Management staffing supporting the project
    f. Before and after summary:

	BEFORE	**AFTER**
DocSite Hosting	Covisint	RackSpace via VITL
DocSite Sys Admin	Covisint	MDM
Service Bus-Messaging	DocSite Connect Engine	Rhapsody
DocSite Application Management	Covisint	CHA

4. **<u>Management:</u>** Senior Business Leadership, Technical Leadership, and Subject Matter Expertise are aligned to complete solution implementation. See project org chart below.



Vendor Profile

1. Capitol Health Associates, LLC (CHA)
    a. Located in Washington, DC, CHA has been deeply involved in Vermont's healthcare reform projects since 2005.
    b. Mr. Hans Kastensmith, a Principal of Capitol Health Associates, has played a leading role in creating the Vermont Health IT Fund, assisted in major healthcare legislation in each annual session, represented the Legislature as a liaison to a number of healthcare reform projects including the Blueprint for Health and VITL, and was instrumental in staffing senior leadership for the Blueprint and was a legislative liaison to the Governor's office on a number of related issues.
    c. Mr. Kastensmith continues his work with the Vermont Blueprint for Health as the Manager of the Sprint Program, a project designed to establish and support quality healthcare data for use in population health management.
    d. Mr. Kastensmith also currently serves as a CEO in residence for Match Point Partners Operating Partners Group, an Investment Banking Firm in NYC specializing in healthcare and a Trustee of Medical Missions for Children, a global telemedicine charity helping children receive much needed medical care and is a director at Halal Processing Solutions.

2. Vermont Information Technology Leaders (VITL)
    a. Vermont Information Technology Leaders, Inc. (VITL)—the operator of the Vermont Health Information, was formed in 2005 under 18 V.S.A. §9352(e) based on a vision shared by health care stakeholders across the state, and realized through legislative action and funding from the State of Vermont.
    b. The Vermont Health Information Exchange (VHIE) — with its depth and breadth of connections around the state—is a clinical data network built to deliver valuable services to providers and provider networks across the state. Today, the VHIE securely receives clinical data from all 14 Vermont hospitals, Dartmouth-Hitchcock Medical Center, all of Vermont's 11 Federally Qualified Health Centers, 120 other primary and specialty care locations, five member agencies of the VNAs of Vermont, and three commercial laboratories. The clinical data are then made available to health care providers and organizations in meaningful ways to improve health care outcomes for Vermonters.
    c. In support of the Vermont Blueprint for Health, the VHIE collects information for the Blueprint for Health clinical registry, which in turn is used to manage chronic diseases in Vermont.
    d. Vermont Information Technology Leaders, Inc. is a 501(c)(3) nonprofit incorporated in the state of Vermont with fiscal years that begin on July 1 of each year and end on June 30 of the subsequent year. The financial summaries presented here are for the fiscal year that ended on June 30, 2015 and are extracted from VITL's audited financial statements. VITL receives revenue primarily from state and federal grants, with the remainder from service revenue, as well as attendance and sponsorship fees from the annual VITL Summit.

Support and Revenue	FY2015
Federal and State Grants	$7,191,304
Service Revenue	$363,453
Conference Revenue	$59,970
Interest Income	$1,145
TOTAL	**$7,615,872**

Expenditures	FY2015
Program Services	$6,087,343
General & Administrative	$1,174,037
Health Care Reform Efforts	$30,651
TOTAL	**$7,292,031**

3. MDM Technologies
    a. David McCormack is understood to be a partner in this firm and is the primary MDM team member on this project.
    b. No other significant information found.
    c. See http://mdmtech.com/

4. KeyW Security
    a. KEYW is a highly specialized provider of mission-critical cybersecurity, cyber superiority and geospatial intelligence solutions to US Government defense, intelligence and national security agencies and commercial enterprises. Executive offices are located at 7740 Milestone Parkway, Suite 400, Hanover, Maryland 21076.
    b. Expected to perform assessment of DocSite application security, and penetration tests of the software and hosting environment.
    c. Publicly traded, NASDAQ: KEYW
    d. For the year ending 12/31/2015, show a loss of $58.6M on revenues of $311M.
    e. See https://www.keywcorp.com
    f. KEYW began operations on August 4, 2008, led by the majority of the former leadership team of Essex Corporation, which was acquired by the Northrop Grumman Corporation in January 2007. Under an agreement between KEYW and Northrop Grumman Corporation, KEYW acquired a core set of capabilities (including over 60 employees) and certain fixed assets from Northrop Grumman Corporation. Since its founding, KEYW has assembled, through a series of highly selective strategic acquisitions, a single distinct platform that provides the high quality and complementary cybersecurity, cyber superiority and intelligence capabilities, solutions and products.

1.1 Cost Summary

IT Activity Lifecycle:	1 Year
Total Lifecycle Costs:	**$ 2.5M**
PROJECT COSTS:	***$2M***
Software Costs:	***$1.06M***
Covisint	*$1.0M*
Other (SQL: $45K; Other: $20K)	*$65K*
CHA Implementation Services:	*$786K*
Contracted Program and Project Management Services:	*$94K*
DII PM/EA Costs:	*$69K*
OPERATING COSTS:	***$596K***
Internal Staffing Costs:	*$86K*
CHA:	***$510K***
CHA PM Services:	*$335K*
Insurance:	*$28.5K*
Registry Maintenance and User Support (MDM):	*$28K*
Hosting Costs (VITL):	*$113K*
Security Services (KeyW):	*$6K*
CURRENT OPERATING COSTS:	**$ 1.19M**
Difference Between Current and New Operating Costs:	**Decrease of $593K** (Go forward Operating Cost of $596K less $1.19M of Current operating cost)
Funding Source(s) and Percentage Breakdown if Multiple Sources:	See table below

Funding Source(s) and Percentage Breakdown if Multiple Sources:

STATE FUNDING: HIT Fund; Fund #GC 93.778; 15% State portion	15.00%	Implementation	5.61%	$143,220.69
STATE FUNDING: HIT Fund; Fund #GC 93.778; 44% State portion; A special fund collected in statute from .199% of each insurance claim and earmarked for projects that strengthen the State's health information infrastructure	44.00%	Operations	8.66%	$221,083.07
STATE FUNDING: MMIS State	10.00%	Funds Sandage/Brown	0.37%	$9,450.00
FEDERAL FUNDING: Federal Match of HIT Fund; 85% Federal portion	85.00%	Implementation	31.80%	$811,583.93
FEDERAL FUNDING: Federal Match of HIT Fund; 56% Federal portion	56.00%	Operations	11.03%	$281,378.46
FEDERAL FUNDING: MMIS Fed	90.00%	Funds Sandage/Brown	3.33%	$85,050.00
FEDERAL FUNDING: SIM purchase of Covisint DocSite source code license (State Innovation Model) (aka Vermont Healthcare Innovation Project or VHCIP); Fund #93.624			39.19%	$1,000,000
TOTAL:			**100.00%**	**$2,551,766**

1.2 Disposition of Independent Review Deliverables

Deliverable	Highlights from the Review *Include explanations of any significant concerns*
Acquisition Cost Assessment	Rates for stated hourly rates and effective hourly rates are **comparable,** while comparisons to projects of similar scope and other bids are not able to be measured, as outlined in the Cost Comparison **Section 5.2**. Some data not available due to lack of actual hours reported as required per the contract.
Technology Architecture Review	The underlying Technology Architecture is sound. See Technology Architecture **Section 6** for details.
Implementation Plan Assessment	The approach to solution implementation appears sound. See Technology Architecture **Section 7** for details.
Cost Analysis and Model for Benefit Analysis	Cost analysis provides accurate annual cost. Monetary benefits defined. Project benefits offset project costs. See Cost Benefit **Section 8** for detail.
Impact Analysis on Net Operating Costs	Decrease in operating costs per cost spreadsheet detail.

1.3 Identified High Impact &/or High Likelihood of Occurrence Risks

Risk Description	State's Planned Risk Response	Reviewer's Assessment of Planned Response
See Risk Register		

1.4 Other Key Issues

Recap any key issues or concerns identified in the body of the report.

1. No other issues identified.

1.5 Recommendation

Provide your independent review recommendation on whether or not to proceed with this technology project and vendor(s).

Compared to other projects where the Independent Review is typically completed before the project has started, as this project has already started, the following recommendations should be implemented where most effective for State of Vermont, specifically either amending the current contract and/or when developing the next annual contract for services:

1. **VENDOR MANAGEMENT**: The following recommendations focus on improving Vendor Management, and suggest more closely managing the efforts and deliverables as defined in the current contract as well as future contract(s):

    a. Remedy the following gaps between the contract and actual performance prior to the end of the contract term and final payment, and manage more closely going forward, both for the remainder of the current contract as well as for future contracts:
        i. The Project Status Reports, Monthly Progress Reports, and/or Invoices submitted by CHA are lacking some of the detail specified in the contract. Examples of missing information include the following:
            1. Task 1: Program Management*
                a. Deliverable 4c: "*Actual hours spent on each program/initiative included in the report.*" Only summary of hours per month is provided. No detail on hours per task or activity is provided.
                b. Deliverable 4e: "*Dates and times of meetings attended.*" No such detail provided.
            2. Task 2: Project Management of Statewide Blueprint Data Quality Initiatives Performance Measures*
                a. Deliverable 5: Performance Measures: "*Metrics-Based Management: The Contractor shall use metrics on schedule and deliverable acceptance throughout the project.*" No such activity appears to have been completed.
            3. Task 4: Involvement in Projects Supporting Data Quality Work*
                a. Deliverable 2a: "*…time spent on the project, meetings attended, stakeholders involved, etc.*" No such detail provided.
            4. Task 16: Technical Support of Blueprint Clinical Registry
                a. Deliverable 5d: "*Time spent on each project, including meetings attended, etc.*" No such detail provided.
        ii. Task 15a (*Actual Hosting Costs)* indicates State may be billed "up to" $9,467.17 for <u>actual</u> costs. No detail of <u>actual</u> costs provided.
        iii. Confirm status/receipt of many of the deliverables defined on Pages 71-79 of the contract titled "Contractor's Responsibilities" within each Deliverable section.

    b. There is inconsistency in the contract language in terms of the detailed reporting deliverables required of the Vendor. As noted above, for example, Task 1 (Program Management) seeks detailed "*actual hours spent*" and "*dates and time of meetings attended*" whereas tasks with similar activities do not seek that same level of detail (i.e. Task 5 (Program Management of DocSite Migration). Ensure any future contract seeks the same level of detail across tasks with a "*time spent*" and/or "*date of activity*" type of service. Specific references are listed below:
        i. Task 5: Program, Project and Vendor Management
            1. Task 5a Project and Vendor Management
            2. Task 5b: Program Management

ii. Task 6: Hosting Setup Services and Support for the DocSite Migration Project
    1. Task 6a: The Contractor may invoice the State up to a maximum of $6,000 within the contract term for project management services
    2. Task 6b: The Contractor may invoice the State up to a maximum of $27,500 within the contract term for hardware setup services within Rackspace for the Blueprint Clinical Registry provided by Contractor through its subcontractor VITL at a rate of $125 per hour
iii. Task 7: Completion of Build for Operational Instance of DocSite
iv. Task 8: DocSite Validation and Functional Testing and Transition Support
v. Task 12: Verification of Source Code Delivery from Covisint
    1. Task 12a: The Contractor may invoice the State at the rate of $150 per hour up to a maximum of $9,000 for technical services
vi. Task 13: Replace Covisint Connect Functions with Rhapsody
vii. Task 15: Ongoing Hosting of Blueprint Clinical Registry
    1. Task 15c: The contractor may invoice the state for up to 120 hours for VITL hosting support at $125.00 per hour
viii. Task 17: Blueprint Registry User Support

c. Validate number of months billing is and will remain accurate for Tasks 5a (up to 9 months), 5b (up to 9 months), 15a (up to 9 months), and 15b (up to 11 months) prior to the end of the contract term and final payment. It appears that those may be billed at least one month early if they end up being billed through June, 2016. See invoices 2347 and 2348. For example, there are 10 months between September through June but some Tasks are to be billed only for 9 months.

d. During the IR fact gathering, Katie McGee indicated she has her own consulting firm called MKM Consulting ("*…Ms. McGee is the Principal of MKM consulting located in the Philadelphia area. Through MKM and CHA she works on various Technology Healthcare projects…*"). However, it was also noted during the IR fact gathering that Ms. McGee is a Partner in CHA. The contract does not currently have Ms. McGee listed as a subcontractor, whereas KeyW, VITL and MDM are listed as subcontractor. It is recommended that AHS work with CHA to determine Ms. McGee's employment status with CHA (i.e. employee with income taxes, Social Security and Medicare taxes withheld, unemployment tax on wages paid to an employee, etc., or independent contractor) and as required, list Ms. McGee as a subcontractor if it is determined Ms. McGee is not a CHA employee.
    i. On 5/16/16, AHS followed up on this item, indicating McGee is a Partner in CHA, an LLC organization, and as such, this is no longer a concern. The Independent Reviewer suggests the AG's office or some other official responsible for contracting confirm one way or the other, whether Ms. McGee needs to be named as a subcontractor.

2. SECURITY:

a. Have NuHarbor conduct a follow up static code review to confirm the resulting fixes from their original static code review adequately address identified security risks prior to go live and/or the end of the contract term and final payment, whichever occurs first. See Risk Register Item 11a for further details.

b. It is recommended security-related work be separated contractually from implementation work when the next contract is executed. Specifically, in this case, KeyW, who are providing security services, and MDM, who are performing the fixes to the security findings of KeyW, are both subcontracted to CHA. In order to establish proper check and balance between security findings and security-related fixes, an entity other than CHA should be responsible for one or the other of those tasks, but not both of those tasks. Consider either DII Security Office or AHS Security Office

direct the security-related work, either hiring NuHarbor or KeyW to report to them, vs. reporting to CHA.

c. Address Risk Register Item #7b, which contemplates whether the VITL/Rackspace hosting environment meets the NIST 800-53 Rev 4 terms and conditions of the contract, particularly in the area of data security of backups, data in transit, and data at rest.

3. RISK REGISTER:

a. Review and mitigate the remaining Risk Register items, with priority first given to those item highlighted in RED, following by the items highlighted in YELLOW.

* The Independent Reviewer reviewed all tasks, deliverables, and costs associated with the entire contract amendment. There was the suggestion raised by AHS BPCR Project Staff and Tim Holland, Oversight Project Manager, that the Scope of this IR not include Tasks 1-4 of the original (vs. amended) contract with CHA. That original contract was amended, retaining Tasks 1-4 and adding Tasks 5-17. After reviewing the matter with the IR Sponsor/State CIO, it was agreed Tasks 1-4 are in Scope of this IR.

1.6 Certification

I certify that this Independent Review Report is an independent and unbiased assessment of the proposed solution's acquisition costs, technical architecture, implementation plan, cost-benefit analysis, and impact on net operating costs, based on the information made available to me by the State.

e-Signed by David Gadway
on 2016-06-07 12:26:02 GMT

Signature

June 07, 2016

Date

1.7 Report Acceptance

The electronic signatures below represent the acceptance of this document as the final completed Independent Review Report.

e-Signed by Tim Holland
on 2016-06-06 20:55:03 GMT

DII Oversight Project Manager

June 06, 2016

Date

e-Signed by Richard Boes
on 2016-06-07 12:48:56 GMT

State of Vermont Chief Information Officer

June 07, 2016

Date

2. Scope of this Independent Review

Add or change this section as applicable.

2.1 In-Scope

The scope of this document is fulfilling the requirements of Vermont Statute, Title 3, Chapter 45, §2222(g):

The Secretary of Administration shall obtain independent expert review of any recommendation for any information technology initiated after July 1, 1996, as information technology activity is defined by subdivision (a)(10), when its total cost is $1,000,000 or greater or when required by the State Chief Information Officer.

The independent review report includes:

- An acquisition cost assessment
- A technology architecture review
- An implementation plan assessment
- A cost analysis and model for benefit analysis
- An impact analysis on net operating costs for the agency carrying out the activity
- A procurement negotiation advisory services contract (as needed)

2.2 Out-of-Scope

If applicable, describe any limits of this review and any area of the project or proposal that you did not review.

- Review of/comments on/recommendations regarding the vendor contract.

3. Sources of Information

3.1 Independent Review Participants

List the individuals that participated in this Independent Review.

Name	Employer and Title	Participation Topic(s)
Dr. Craig Jones	Director, Blueprint for Health – DVHA**; PROJECT SPONSOR**	Discussed project vision and desired outcomes
Larry Sandage	Health Information Exchange (HIE) Program Manager	Discussed desired outcomes, project management, and staffing
Jon Brown	Blueprint Clinical Registry Project Manager	Discussed desired outcomes, project management, and staffing
Timothy Tremblay	Blueprint for Health Data Analyst and Contract Manager	Discussed functional requirements, desired outcomes, project management, and staffing
Tim Holland	SOV; DII Oversight Project Manager	Project Management Oversight
Casey Cleary	SOV; DII Chief Technology Office	Discussed technology architecture
Jack Green	SOV; DII Deputy Security Officer	Discussed application security
Katie McGee	Capitol Health Associates Project Manager	Discussed roles, responsibilities, pricing model, comparable projects, how VT pricing compares to comparable projects, ability to meet security requirements, technical architecture, PM Approach, Training Approach, Implementation Approach, Deployment Approach, Risk Management Approach
Hans Kastensmith	Capitol Health Associates Client Relationship Manager	Ditto
Michael Gagnon, Justin Zellem	VITL CTO, VITL System Architect	Hosting Services
Dave McCormack	MDM Consulting Partner	DocSite Software Development (*Note: did not speak directly with Mr. McCormack, rather, relevant answers provided through CHA*)
Bob Liscouski	KeyW Security	Application and Hosting Security (*Note: did not speak directly with Mr. Liscouski, rather, relevant answers provided through CHA*)

3.2 Independent Review Documentation

Complete the chart below to list the documentation utilized to compile this independent review.

Document Name	Description	Source
capitol-health-associates-contract-29244-for-vendor-signed.pdf	Original Contract with Capitol Health to perform Program and Project Management of Blueprint Data Quality Initiatives	Project SharePoint site
cha-29244-amendment-1-signed-final.pdf	Revised Contract with Capitol Health for expanded services. Those services are the focus of this IR.	Project SharePoint site
covisint-contract-29340-signed-final.pdf	Contract with Covisint for DocSite software.	Project SharePoint site
HIE Blueprint Clinical Registry - SOW for Independent Review.docx	SOW requesting BPCR Independent Review services	Project SharePoint site
HIE Blueprint Clinical Registry Migration - IT ABC.pdf	BPCR IT ABC Form	Project SharePoint site
BlueprintClinicalRegistry_CommunicationPlan_v1.2_Signed.pdf	BPCR Communication Plan	Project SharePoint site
BPCR_Communications_Matrix_v1_01-08-16.xlsx	BPCR Communication Matrix	Project SharePoint site
BlueprintClinicalRegistry_HumanResourceManagementPlan_Signed.pdf	BPCR HR Plan	Project SharePoint site
BPCR Milestones.docx	BPCR Project Milestones and Dates	Project SharePoint site
Blue Print Clinical Registry PMP 01-15-2016 v1.3_TimTSigned.pdf	BPCR Project Management Plan including Project Charter and Subsidiary Plan	Project SharePoint site
BlueprintClinicalRegistry_RiskAndIssueManagementPlan_v1.0_Signed.pdf	BPCR Risk and Issue Management Plan	Project SharePoint site
BPCR Project_Log_v2_01-07-2016.xlsx	BPCR spreadsheet containing Risks and Issues	Project SharePoint site
BPCR RACI Form v1 12-15-15.xlsx	BPCR RACI Form	Project SharePoint site
CHA BPCR Plan 1-4-16 v2.mpp	BPCR MS Project Task List/Gantt Chart	Project SharePoint site
BlueprintClinicalRegistry_ScopeManagementPlan_v1.1_Signed.pdf	BPCR Scope Management Plan	Project SharePoint site
BPCR Project Status Reports: 1-4-16.pdf , 1-11-16.pdf, 1-18-16.pdf, 1-25-16.pdf, 2-01-16.pdf, 2-08-16.pdf, 2-15-16.pdf, 2-22-16.pdf, 2-29-16.pdf, 3-7-16.pdf, 3-14-16.pdf, 3-28-16.pdf, 4-4-16.pdf, 4-14-16.pdf	BPCR Project Status reports (Project Highlights, Schedule, Green/Yellow/Red score of Scope, Schedule, Budget, Deliverables, Risks), Accomplishments, Plans for the next week, Risks/Issues, Change Requests	Project SharePoint site
FY16 VITL Grant Development Meeting (Apr_24_2015).pdf	Minutes from meeting to come to an agreement with what's in scope for the Grant and what could possibly be shifted to the Contract	Project SharePoint site
HIE Charter Final.pdf	HIE Program Charter	Project SharePoint site
AHS-HIE-BluePrint-Clinical-Registry_IR_KickoffAgenda.docx	Agenda and notes of IR Kickoff meeting	David Gadway
ANR_Blueprint_CR_Meeting_Template.docx	IR-related questions for BPCR team	David Gadway
AHS_Blueprint_CR_Meeting_Template.docx	IR-related questions for CHA	David Gadway
AHS Communication Project - Kick-off slides.pptx and related project status report (AHS Communication Project Status Report 01252016.pdf)	AHS staff member be responsible for ongoing communications on AHS IT Projects	Project SharePoint site

AHS Customer Facing Projects - Kick-off slides.pptx	Plan regarding AHS Provider-facing	Project SharePoint site
AHS Provider Facing Projects 12-11-2015.xlsx and AHS Provider Facing Projects Status Report 01252016.pdf	Listing of AHS Provider-facing projects and project status	Project SharePoint site
Blueprint Service Area Profiles (2014)c - Burlington.pdf	Sample Blueprint for Health HAS (Hospital Service Area) report summarizing demographics and health status.	Project SharePoint site
Vermont-Blueprint-for-Health-2015-Annual-Report-FINAL-1-27-16.pdf	Blueprint for Health 2015 Annual Report	Project SharePoint site
2342.pdf, 2343.pdf, …2366.pdf	Invoices	Project SharePoint site

4. Project Information

4.1 Historical Background

Provide any relevant background that has resulted in this project.

A **health information exchange (HIE)** is a secure computer network that connects the electronic health information systems of different health care providers, enabling those providers to share clinical and demographic data of patients they have in common. Because different health information systems use their own codes, they may not be able to communicate with each other directly. An HIE, makes it easier for those different systems to send and receive information through the successful transmission of accurate, up-to-date, and meaningful clinical data among healthcare providers and supporting State and State-funded agencies throughout the Vermont healthcare ecosystem.

Vermont Information Technology Leaders, Inc. (VITL) is a nonprofit organization that advances health care reform efforts in Vermont through the use of health information technology, and is the legislatively designated operator of the **Vermont Health Information Exchange (VHIE)** through 18 V.S.A. 9351.

A primary objective of HIE is to **improve access to clinical data and data sets, thereby lowering healthcare costs and providing better health-related outcomes**.

In May 2006, Vermont's state legislature passed the Health Care Affordability Act, which refocused the state's **Blueprint for Health** program on prevention and management of chronic conditions through helping primary care providers operate their practices as patient-centered medical homes. Over time the initiative switched from being focused solely on chronic care to tackling full delivery system reform. The Blueprint initiative was rolled out in several pilot sites, and in 2008 Blueprint started its first pilot communities: St. Johnsbury (July 2008), Burlington (October 2008), with later expansion to Central Vermont (January 2010) and the Bennington area (November 2010).

All these sites include a mix of hospital-affiliated practices, independent practices, and federally qualified health centers. In addition to employing a Web system (from the Detroit-based **Covisint DocSite**, built on Microsoft .NET technology) that combines a portal, health exchange, analytics, data warehouse, and electronic health record for patient data collection and interpretation, the infrastructure employs community care teams to aid in patient management. These teams work across practices, offering decision support, integrated care plans, and performance reporting and health information exchange interoperability.

The 2015 Blueprint for Health annual report provides the following summary of its efforts:

> The Vermont Blueprint for Health (the Blueprint) is a state-led, nationally-recognized initiative transforming health care delivery and payments. The foundation is the Blueprint's Transformation Network, a network of Practice Facilitators, Community Health Team leaders, and Project Managers, who work with Patient-Centered Medical Homes (PCMHs), Community Health Teams (CHTs), and local health and human services leaders. This network allows for rapid response to Vermont's health priorities through statewide implementation of new initiatives. Blueprint programs are continuously informed by comprehensive evaluations of health care quality and outcomes at the practice-, community-, and state-levels. As the care delivery system and payment model evolve, the Blueprint's aim is constant: connecting Vermonters with whole person health care that is evidence-based, patient and family-centered, and cost-effective.

The Blueprint's unique reforms aimed at improving health quality and outcomes and reducing expenditures are evident in the Blueprint's process of health systems **design**, **implementation**, and **research**. Each step feeds the next.

The Clinical Registry falls within the Health Systems Research category:

> Health Systems Research encompasses all of the Blueprint's data collection, data quality assurance, data merging, measurement, analysis, performance reporting, and self- and system-evaluation work. The essential utility behind the Blueprint's Health Systems Research is the Blueprint Clinical Registry (**formerly DocSite**) for which the state acquired a perpetual software license in late 2015. **Beginning in 2016, the reconstructed Registry will be hosted by VITL and managed by the Blueprint.**

The 2015 Blueprint annual report also noted that "The Blueprint" acquired the Blueprint Clinical Registry from the former vendor/host Covisint.

The 2015 Blueprint annual report goes on to explain data collection and reporting in the following sections:

> 2.8 DATA UTILITY, MEASUREMENT & ANALYTICS SUPPORTS A LEARNING HEALTH SYSTEM
> The production and use of data is threaded throughout the Blueprint program. This data is used to evaluate the current status of health care delivery in Vermont and the progress made in quality of care, utilization, and cost of services. These evaluations, in turn, play a critical role in improvement. **The data the Blueprint works with include claims from the all-payers claims database, also known as the Vermont Health Care Uniform Reporting and Evaluation System (VHCURES), and clinical data from the Blueprint Clinical Registry, formerly known as DocSite.** Claims data provides important insights into utilization of services and the cost of care. For example, the Blueprint can identify the rates at which Vermonters go to the emergency department (ED), changes in rates of visits to primary care providers, and how long patients are staying in the hospital. Data in the Blueprint Clinical Registry comes from clinical documentation entered in practices' electronic medical records (EMRs). EMRs record the care delivered to patients and clinical measurements like height, weight, blood pressure, blood tests results, and much more. Linked claims and clinical data are more powerful than either dataset alone. The linked data can identify, for instance, the number of persons diagnosed with hypertension that have their blood pressure under control based on their most recent reading or the number of diabetics who are obese or who do not have their hemoglobin (Hb) A1c in control. The Blueprint includes these and many more clinically relevant measurements in dashboards for practices, and community-level profiles. Clinicians use this information to improve care at their practices and communities use it to collaborate on addressing root causes, such as access to prescriptions, transportation, or nutrition support. The Blueprint also routinely evaluates its own performance and reports on program impact and return on investment (ROI) through its annual reports to the Vermont Legislature and peer-reviewed articles.
>
> 6 DATA COLLECTION, ANALYSIS AND REPORTING HIGHLIGHTS FOR 2015
> 6.2 THE BLUEPRINT CLINICAL REGISTRY IN 2016
> The Blueprint's registry has been aggregating clinical data for the last seven years. Data flows from Patient-Centered Medical Homes' (PCMHs') Electronic Medical Records (EMRs) to the Vermont Health Information Exchange (VHIE), operated by Vermont Information Technology Leaders (VITL), to the clinical registry. The clinical registry is also used for direct clinical data entry and clinical data management by some Blueprint partners, including the Support and Services at Home (SASH) program, some Community Health Teams (CHTs), Tobacco Cessation Counselors, and Self-Management Support Programs.
>
> **The registry software product, "DocSite" was operated by the vendor Covisint Corporation. When Covisint decided to discontinue support of their health care software products, the State developed a plan to acquire a perpetual license to use the DocSite software application and source code. The registry**

will be hosted by VITL. Blueprint staff and contractors will manage its development, maintenance, and operations.

DocSite, as managed by Covisint, went offline on August 31, 2015. Contracts for the purchase of the perpetual use software license and management of the **new clinical registry – to be known as the Blueprint Clinical Registry – were signed in December 2015**. The acquisition of the perpetual use software license was supported by State Innovation Model Testing funds through the Vermont Health Care Innovation Project. **The Blueprint Clinical Registry will re-launch to users in 2016**. The revitalized clinical registry will continue to enable data collection from providers across the state, creating a comprehensive clinical dataset documenting medical care and health outcomes for the majority of Vermonters. This dataset, together with all-payer claims data, is the basis for the Blueprint's performance reporting to practices and communities and its program and health system evaluations.

6.3 INTERFACE CONNECTIONS FROM BLUEPRINT PRACTICES EMRS TO THE VHIE AND REGISTRY

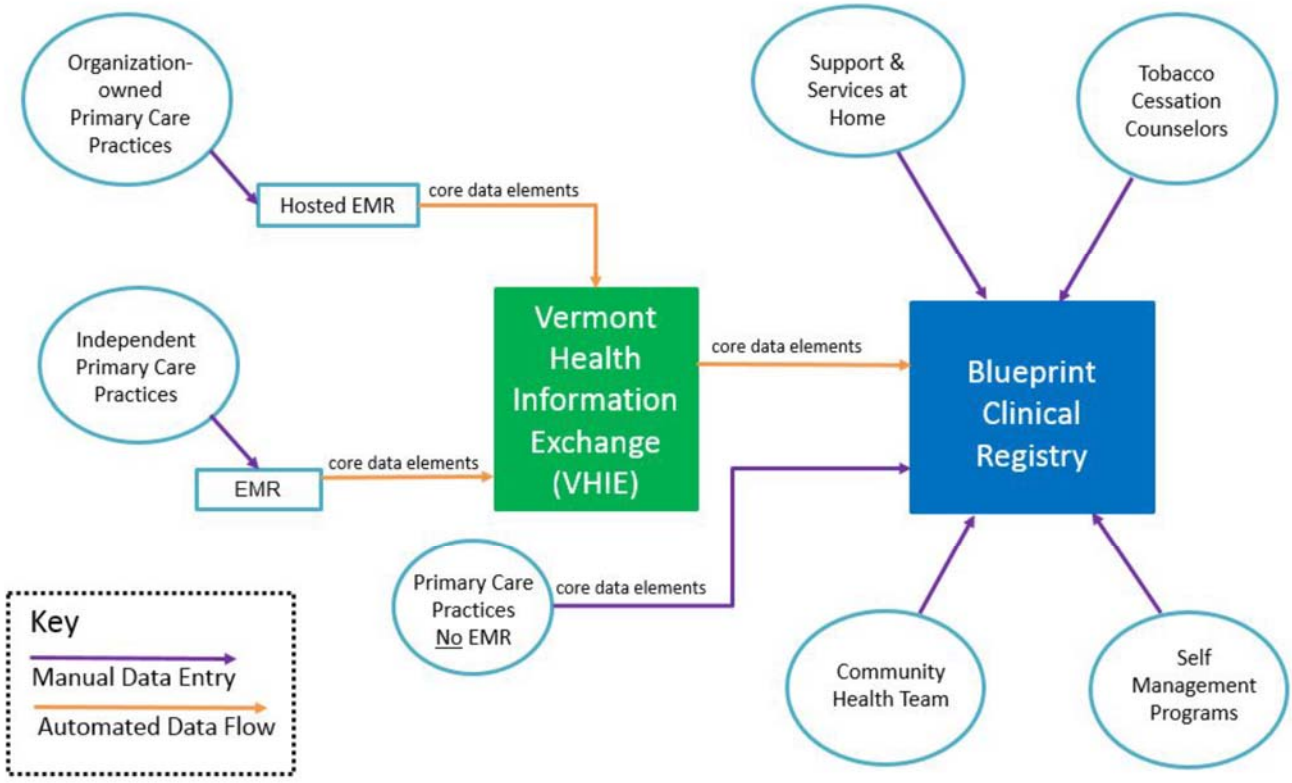
The programs and services provided through the Blueprint are supported by a statewide health information technology (HIT) infrastructure. One important part of the infrastructure is the VHIE, which is operated by VITL. The Blueprint and VITL continue their collaborative relationship, providing connectivity to the VHIE and assisting Blueprint practices with improving the quality of data that are being sent to the Blueprint clinical registry (DocSite). With the assistance of the Blueprint, VITL connects practice EMR systems to the VHIE via three different types of interfaces:

- Admit, Discharge and Transfer orders (ADT)
- Continuity of Care Documents (CCD)
- Medical Document Management (MDM) reports

The Blueprint clinical registry is the single largest consumer of clinical data from the VHIE. The registry serves as a data aggregator and reporting engine with the capability for population health analysis across the state. In addition to data coming from interfaces with the VHIE, PCMHs can also send information to the registry via flat files, while program users, such as SASH, CHT, and TCC, can perform direct manual data entry. The graphic below shows a schematic of the Blueprint's statewide clinical HIT infrastructure:

6.4 END-TO-END HEALTH CARE INFORMATION TRANSMISSION - DATA QUALITY

As soon as the DocSite software, licensed for application and source code use by the Blueprint in December 2015, can be re-established as a production system to be known as the **Blueprint Clinical Registry**, demographic and clinical data interfaces for certain practice sites will be connected to the Registry. At that time, all backlogged messages, being held by the VHIE since August 31, 2015, will be transferred into the Registry.



In 2015, the Sprint team had initially targeted 18 onboarding and data quality Sprints for completion. The team met 80% of its stated goals in relation to new interfaces connected to the VHIE. Due to lack of Covisint resource availability and eventual DocSite system availability, the team met only 11% of its stated goals for the establishment of interfaces sending data into DocSite. As of December 2015, two onboarding and data quality Sprints have been completed with data filing into DocSite with 11 projects pending final data quality checks and production interfaces to the Blueprint Clinical Registry. Five sites were deferred for either programmatic reasons or practice readiness, and one new site was added. In 2015, the Sprint Management Team worked with a total of 52 practice sites using 7 EMR systems in nine health services areas (HSAs).

Sprint Project Work in 2015

Blueprint Sprint Program 2015		
Health Service Area	**Health Care Organization**	**Clinical**
Bennington	Southern Vermont Medical Center Pediatrics - Complete	Sites - 1
Windsor	White River Family Practice - Complete	Sites - 1
Bennington	Brookside Pediatrics - Live VHIE, Pending Registry	Sites - 1
Burlington	Alder Brook Family Health - Live VHIE, Pending Registry	Sites - 1
Burlington	Charlotte Family Health - Live VHIE, Pending Registry	Sites - 1
Middlebury	Porter Medical Center - Live VHIE, Pending Registry	Sites - 13
Randolph	Gifford Medical Center - Live VHIE , Pending Registry	Sites - 9
St. Johnsbury	Northern Vermont Regional Medical Center - Live VHIE, Pending Registry	Sites - 9
St. Johnsbury	Northern Counties Health Care - Live VHIE, Pending Registry	Sites - 5
Windsor	Grace Cottage - Live VHIE, Pending Registry	Sites - 1

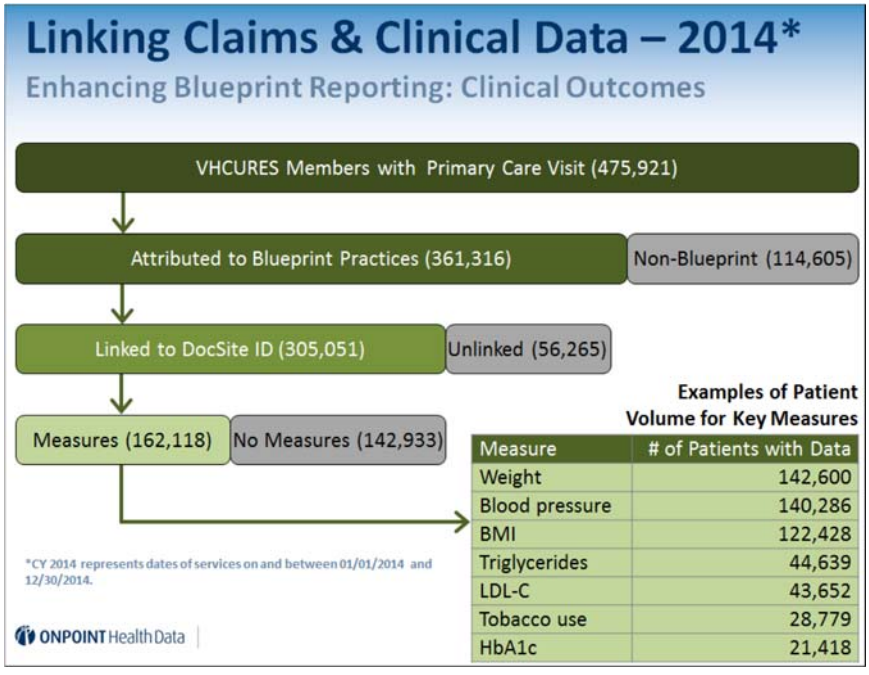
Windsor	Mt. Ascutney Hospital and Health Center - Live VHIE, Pending Registry	Sites - 2
Bennington	Battenkill - Deferred	Sites - 1
Bennington	Keith Michl, MD-PC - Deferred	Sites - 1
Bennington	Shaftsbury Medical Associates - Deferred	Sites - 1
Morrisville	Community Health Services of Lamoille Valley - Deferred	Sites - 3
Morrisville	Paul Rogers, MD - Deferred	Sites - 1
Upper Valley	Little Rivers Health Care - Deferred	Sites - 5
Burlington	Good Health PC - Pending VITL	Sites - 1

6.4.7 Planned 2016 Sprint Project Work

In 2016, the Sprint Management team plans to complete data quality and interface onboarding projects for all remaining eligible practices in Vermont. Currently, there are four health care organizations that have begun the Sprint process of onboarding their demographic information (ADT interfaces) in 2015 and will be working on the submission of clinical data (CCD interfaces), including required data quality efforts, in the early part of 2016. As Sprint projects are completed, an additional six sites will be added to the program. Two existing sites have acquired new EMR systems and need to go through the process again in the coming year. The Sprint team will assist these sites in performing data migration, focusing on quality initiatives, and establishing the required interfaces. In total, the Sprint Management team has a goal of completing eleven onboarding and data quality Sprints in 2016, in addition to two new EMR implementations, accounting for 32 practice sites.

6.5 HOW CLINICAL AND CLAIMS DATA ARE AGGREGATED FOR COMPREHENSIVE REPORTING

The Blueprint has developed a process for aggregating Vermont's clinical data, from the clinical registry, and claims data, from the all-payer claims database, Vermont Health Care Uniform Reporting and Evaluation System (VHCURES). After analysis of the data in the clinical registry for quality and completeness, de-identification of this data, and linkage of individuals' clinical records in the registry with individuals' claims records in VHCURES, the Blueprint's analytics vendor, Onpoint Health Data (Onpoint), determines the portion of the population in VHCURES for which clinical data can be assessed with claims, as shown in the figure below.



Several projects comprise the **HIE**, and are listed below. This Independent Review focuses on one of those projects: **Clinical Registry**.

- **ACO Analytics Gateway Development**
- **Clinical Data Quality Activities**
- **Clinical Registry**
- Vermont's vision for the statewide Clinical Registry system (formerly DocSite) is to provide a robust and complete clinical data record at the point of care for clinical and social services providers. The Clinical Registry would also work to aggregate clinical data records at the patient, provider site, community, and State level to provide, with the help of analytics, population health and health measures.
- **Designated Agency/Specialized Service Agency (DA/SSA) Data Quality and Repository (DQR)**
- **Data Analytics**
- **Data Gap Analysis for Population Health Measures**
- **Data Repository**
- **EHR Incentive Program (EHRIP)**
- **Event Notification System**
- **42 CFR Part 2 Compliance**
- **Interface Build for replacement EHR systems**
- **Long Term Services and Support Data Quality and Planning**
- **Patient Portal (Single Sign-on)**
- **Provider Data Portal (Stone Environmental)**
- **Provider On-Boarding into the HIE**
- **Provider Portal (Single Sign-on)**
- **Provider Reimbursement for EHR adoption**
- **Universal Transfer Protocol**
- **Vermont Health Information Technology Plan (VHITP)**

4.2 Project Goal

Explain why the project is being undertaken.

The amended contract with Capitol Health Associates (Contract #29244 AMENDMENT #1: December 11, 2015 through June 30, 2016; $1,298,851.73) expands the scope of the original contract with CHA (Contract #29244: July 1, 2015 through June 30, 2016; $339,000.00) to include **project management control of and implementation of the DocSite software solution and source code from Covisint and implement that solution on the VITL technology platform/infrastructure**.

The chart below highlights the summary of changes between the original and amended contracts, and describes the goals of this project:

ORIGINAL CONTRACT (#29244: July 1, 2015 through June 30, 2016; $339,000.00)	**AMENDED CONTRACT** (#29244 AMENDMENT #1: December 11, 2015 through June 30, 2016 $1,298,851.73)
Attachment A (Specifications of Work to be Performed) • Tasks Outlined in Attachment A of the original contract: o **Task 1**: Program Management ($120K max) o **Task 2**: Project Management of Statewide Blueprint Data Quality Initiatives ($48K max plus up to $30K for milestones being met) o **Task 3**: Project Management for Onboarding of New Blueprint Data Quality Initiatives ($60K max) o **Task 4**: Involvement in Projects Supporting Data Quality Work ($72K max) o Expenses ($9K max)	**Attachment A (Specifications of Work to be Performed)** All original tasks plus added several tasks as described below. Specific monetary changes include: Total contract amount increased from $339,000.00 to $1,298,851.73. Travel/expense budget increased from $9K to $18K. Contractor may now seek reimbursement up to $28,577 for actual costs incurred to secure required cyber liability insurance and related technology professional liability insurance, upon providing proof of payment and certifications of insurance. (Professional/Cyber Liability: $3M; 1st Excess Layer: $2M; 2nd Excess Layer: $5M) Task 1 payments may increase up to $5K max. The amended contract **added** these: **DocSite Migration Project:** • **Task 5**: Program, Project and Vendor Management o Project and Vendor Management ($73,750 max) o Program Management ($65,101 max) • **Task 6**: Hosting Setup Services and Support for the DocSite Migration Project ($121,459.20 max) • **Task 7**: Completion of Build for Operational Instance of DocSite ($20,250) • **Task 8**: DocSite Validation and Functional Testing and Transition Support ($9,000) • **Task 9**: Message Processing Investigation ($23,250) • **Task 10**: Reporting Configuration and Validation for Operational Instance of DocSite ($15,000)

	• **Task 11**: Initial and Ongoing Security Assessments, Penetration Tests, and Remediation ($109,870) • **Task 12**: Verification of Source Code Delivery from Covisint ($24,000) **<u>Post-Migration Activities for DocSite (Rebranded as the Blueprint Clinical Registry)</u>** • **Task 13**: Replace Covisint Connect Functions with Rhapsody ($13,150) • **Task 14**: Transition and Connect Production Data Feeds to Blueprint Clinical Registry ($242,090) • **Task 15**: Ongoing Hosting of Blueprint Clinical Registry ($113,404) o Actual hosting costs for Blueprint Clinical Registry: Up to $9467.17 per month (for 9 months) o Network Assets Allocated to Blueprint Clinical Registry: $1,200 per month (for 11 months) o VITL Hosting Support (Ongoing) Up to 120 hours @ $125.00/hour: $15,000.00 • **Task 16**: Technical Support of Blueprint Clinical Registry ($58,950) • **Task 17**: Blueprint Registry User Support ($28,000)
Attachment B (Payment Provisions) The Contractor shall invoice the State monthly for staff time, travel, and operating expenses for work associated with Tasks 1 through 4	**Attachment B (Payment Provisions)** *Changed to:* The Contractor shall be reimbursed based on a combination of defined monthly, hourly, or project-based amounts for each Task (budget line item), milestone payments, and actual expenses incurred, as further set forth in this Attachment B, dependent on acceptance by the State of monthly progress reports and deliverables as completed. Payment for activities under each Task will only be issued after all monthly progress reports are received and accepted by the State.
	Added ATTACHMENT G: OTHER PROVISIONS 1. OWNERSHIP AND LICENSE IN DELIVERABLES 2. CONFIDENTIALITY AND NON-DISCLOSURE; SECURITY BREACH REPORTING 3. SUBCONTRACTORS 4. CONTRACTOR'S REPRESENTATIONS AND WARRANTIES 5. INDEMNIFICATION 6. PROFESSIONAL LIABILITY INSURANCE COVERAGE 7. LIMITATION OF CONTRACTOR LIABILITY. 8. SOVEREIGN IMMUNITY 9. DISPUTE RESOLUTION 10. REMEDIES FOR DEFAULT 11. ACCESS TO STATE DATA 12. STATE FACILITIES 13. CONFLICTS OF INTEREST

	14. MISCELLANEOUS
	Substituting a new Department of Vermont Health Access *Request for Approval to Subcontract*
	Substituting a new *Appendix I (Required Forms)*
	Substituting a new *Appendix II (Details of Blueprint Clinical Registry Maintenance and Operation Activities)*

- **Additional tasks Outlined in Attachment A: There is a section under each TASK describing specific DELIVERABLES, but these items are NOT included in those lists:**
    - The Contractor and its approved subcontractors will perform all functions required as relates to the migration, hosting, configuration and setup, testing, production launch (including rebuilding the system from source code, establishing a new interface engine, establishing user credentials, and supporting end-users through the transition), and ongoing maintenance and operations of the State's instance of **DocSite (rebranded as the Blueprint Clinical Registry)**. This work is required to support the State in acquiring a perpetual license for use and access to source code of the DocSite application and database from Covisint. These functions shall include, but not be limited to:
        - Providing program, project, and vendor management for the State's DocSite migration project
        - Completing the migration of DocSite to a new, secure hosting environment and hosting the system
        - Setting up and configuring the instance of DocSite delivered from Covisint to meet the State's Success Criteria as set forth in the source code license agreement between the State and Covisint dated as of December 11, 2015 (the "Covisint License")
        - Rebuilding the system from source code licensed by the State from Covisint
        - Update, author and maintain required system documentation and operational plans based on State requirements
        - Conducting an initial Pass/Fail penetration test on the Blueprint Clinical Registry to identify and remediate any high-risk threats before the system is put into production
        - Author and maintain system security plan and conduct ongoing application and network security tasks.
        - Acquiring any third-party licenses required to run the State's instance of DocSite on behalf of the State and installing and testing said software to ensure full compatibility with the DocSite application
        - Acquiring from Covisint any remaining software components required for message processing and installing and testing these components in the State's Blueprint Clinical Registry
        - Acquiring from Covisint any remaining software components required for reporting services and installing and testing these components in the State's Blueprint Clinical Registry
        - Evaluating, consulting on, and assisting with implementation of an appropriate interface engine for the system
        - Remediating any critical findings of the Independent Review required by Vermont state statute)
        - Maintaining and enhancing the DocSite source code
        - Supporting activities involved in onboarding interfaces from new organizations into the Blueprint Clinical Registry, including acquiring Business Associate Agreements (BAAs) on behalf of the State from all user organizations and practices that submit data to DocSite
        - Supporting end-user transition to the migrated system
        - Providing ongoing support of end-users

- The data quality program and project management and vendor management of the Blueprint Clinical Registry operations will be performed by Katie McGee and Hans Kastensmith of Capitol Health Associates.
- After receiving written approval from the State's Blueprint Executive Director and/or designated Assistant Director(s), the Contractor may subcontract for the other services required to operate the Blueprint Clinical Registry, such as migration, setup, configuration, and testing services; hosting; security testing; maintenance and operations; enhancements to the source code; interface engine selection, configuration, and testing; and end-user transition and ongoing support services.
- The Contractor shall subcontract with Vermont Information Technology Leaders (VITL) for hosting services, which may be provided through VITL's subcontractor, Rackspace®. The Contractor shall subcontract with MDM Technologies, LLC for the provision of technical support for the Blueprint Clinical Registry; the MDM subcontract shall require the services of Dave McCormack as key staff. The Contractor shall subcontract with a vendor approved by the State to conduct security assessments of the system, an initial pre-production penetration test, and ongoing vulnerability tests.

4.3 Project Scope

Describe the project scope and list the major deliverables. Add or delete lines as needed.

The Project Scope is defined through the Contract (Contract #29244 AMENDMENT #1**) and are described in some detail below by the Tasks and associated Deliverables.**

TASKS FROM ORIGINAL CONTRACT:

- Task 1: Program Management
- Task 2: Project Management of Statewide Blueprint Data Quality Initiatives
- Task 3: Recruitment and Onboarding of New Blueprint Data Quality Initiatives
- Task 4: Involvement in Projects Supporting Data Quality Work

NEW TASKS ADDED IN AMENDED CONTRACT:

- **DocSite Migration Project**
  - Task 5: Program, Project and Vendor Management
  - Task 6: Hosting Setup Services and Support for the DocSite Migration Project
  - Task 7: Completion of Build for Operational Instance of DocSite
  - Task 8: DocSite Validation and Functional Testing and Transition Support
  - Task 9: Message Processing Investigation
  - Task 10: Reporting Configuration and Validation for Operational Instance of DocSite
  - Task 11: Initial and Ongoing Security Assessments, Penetration Tests, and Remediation
  - Task 12: Verification of Source Code Delivery from Covisint

- **Post-Migration Activities for DocSite (Rebranded as the Blueprint Clinical Registry)**
  - Task 13: Replace Covisint Connect Functions with Rhapsody
  - Task 14: Transition and Connect Production Data Feeds to Blueprint Clinical Registry
  - Task 15: Ongoing Hosting of Blueprint Clinical Registry
  - Task 16: Technical Support of Blueprint Clinical Registry
  - Task 17: Blueprint Registry User Support

DELIVERABLES BY TASK:

ORIGINAL CONTRACT

Task 1: Program Management

Deliverables:

1. Involvement in HIT/HIE strategy and operations meetings as requested by the Blueprint Executive Director, examples of which may include:
   a. Weekly check-in/status update meeting with Blueprint Executive Director and/or designated Assistant Director(s)
   b. DVHA/VITL Quarterly Grant Review meetings
   c. Weekly Blueprint analytics meetings
   d. Analytic and Evaluation Workgroup meetings
2. Leadership of Sprint Management Team for prioritizing and coordinating statewide data quality, connectivity, and data optimization efforts
3. Summarized findings of data frequency and quality from analytics reports, including recommended plans for optimization strategies

4. The Contractor shall develop and submit program reports monthly that include the following information:
    a. Programs/initiatives on which consultation services were provided
    b. New projects/initiatives on which consultation services were requested by the Blueprint Executive Director within the reporting month
    c. Actual hours spent on each program/initiative included in the report
    d. High-level summaries of advisory expertise given on these programs/initiatives
    e. Dates and times of meetings attended
    f. Anticipated next steps based on direction given
5. The Contractor, in consultation with the State, shall implement Tasks 2-4, as set forth below.

Task 2: Project Management of Statewide Blueprint Data Quality Initiatives

Deliverables:

1. Project plan/timeline submitted to the State within 15 days of project start
2. Project Initiation document submitted to the State within 15 days of project start
3. Agendas for and leadership of weekly project team calls
4. Attendance sheets for weekly calls
5. Weekly, bi-weekly, and monthly progress reports as indicated under the Performance Measures section above
6. Attendance at and (upon request) leadership of Sprint Management Team calls as scheduled
7. Updates to Blueprint Executive Director and Assistant Directors as requested, including proactive escalation of issues presenting obstacles to project completion and requiring timely attention
8. Documentation of project completion

Task 3: Recruitment and ~~Project Management for~~ Onboarding of New Blueprint Data Quality Initiatives

Deliverables:

1. Outreach to practices about the Sprint process or targeted data optimization initiative via phone calls or on-site meetings (if required and travel approved through the Blueprint management team)
2. In consultation with the Blueprint Executive Director and/or Assistant Directors, prioritize practices/organizations for new Sprints as project slots become available (up to 8 concurrent project slots available at a time)
3. Tracking of prioritized projects in the queue awaiting a project slot and communication of status and level of urgency for connecting new practices to the VHIE/DocSite via appropriate interfaces
4. Provision of technical expertise on connectivity (interface) setup efforts, data quality remediation at the source EHR systems, and/or data optimization strategies to project teams
5. Mentoring and management of other identified Sprint project leaders
6. Support of future recruitment and onboarding activities for the Blueprint Clinical Registry
7. Monthly status report related to recruitment and onboarding that includes the following information:
    a. Names of practices in the recruitment and onboarding stage for new Sprints or data optimization efforts and outreach performed
    b. EHR vendors involved
    c. Coordination of resources for the recruitment and onboarding , such as individuals at State HIE vendors upon whom the Contractor may depend for project completion
    d. Obstacles encountered during the recruitment and onboarding process and, if applicable, feasibility of project continuation and estimated date for project slot availability

Task 4: Involvement in Projects Supporting Data Quality Work

Deliverables:

1. As directed by the Blueprint Executive Director or as required for proper support of Sprint project work, the Contractor shall participate in and, as appropriate, lead projects related to data quality efforts.
2. The Contractor shall submit a monthly status report related to these projects (formatted as one status report listing all projects under subheadings) that includes the following information:
    a. Name of project based on specific work in which the Contractor is involved
    b. Report of work performed, including but not limited to: time spent on the project, meetings attended, stakeholders involved, etc.
    c. Coordination of resources on the project, if needed, such as individuals at State HIE vendors upon whom the Contractor may depend for project completion
    d. Report of project's current status, including, but not limited to: Obstacles encountered, project successes, anticipated timeline and upcoming project plans.

AMENDED CONTRACT: DocSite Migration Sub-Project

Task 5: Program, Project and Vendor Management

Deliverables:

1. This task pertains to expert consultation on the overall Blueprint Clinical Registry strategy and operations for the State of Vermont. Direct oversite of all program staff, subcontractors, program goals and objectives. Direct all major projects as requested by the Blueprint Executive Director. In particular, the Contractor shall provide recommendations for optimization of system capabilities to ensure the Blueprint Clinical Registry meets or exceeds all programmatic goals.
2. The Contractor Program Manager shall provide high-level oversight of and recommendations related to Blueprint Clinical Registry operations, maintenance and development in coordination with the Contractor and subcontractor project leader(s).
3. Independent Review, as specified in Section 9 (Independent Review) of this Contract.
4. **Deliverable AII-4C** - System Source Code and Documentation as defined in CHA Contract.
5. The Contractor shall, in consultation with the State's HIE HIPAA expert and attorney, draft new Business Associate Agreements (BAAs) between the State and manual entry user organizations and practices. The Contractor shall communicate with all manual entry user organizations and practices that have historically submitted data to DocSite, explain the need for the new BAA and the altered terms, and collect signed BAAs from these organizations. The Contractor shall identify a secure electronic storage location acceptable to the State for the executed BAAs and file all BAAs in this location.
6. Any proposed staffing changes of named resources by the Contractor or a Subcontractor shall be submitted in writing to the State and are subject to review and approval by the Blueprint Executive Director and/or designated Assistant Director(s). Provided, however, Contractor shall be fully responsible for the management, compensation, and performance of all Contractor personnel, and the filing of any and all returns and reports and the withholding and/or payment of all applicable federal, State, and local wage tax, or employment-related taxes, including, but not limited to, income taxes, gross receipt taxes, taxes measured by income, social security taxes, and unemployment taxes for Contractor and Contractor's employees. Notwithstanding the foregoing, Contractor's employees shall adhere to the State's policies and procedures, of which Contractor is made aware while on State Premises, and shall behave and perform in a professional manner. The State's right to request replacement of Contractor personnel hereunder relates solely to the removal of individuals from work on this Contract with the State and does not create an employment relationship. Nothing in this Contract authorizes the State to direct the Contractor's termination of the employment of any individual.

7. Manage performance of tasks related to migration and ongoing technical, hosting, quality assurance testing, and end-user support services of the Blueprint Clinical Registry.
8. In consultation with the State and Covisint, identify risks and issues related to the DocSite migration project and facilitate agreement on mutual decision points in a timely manner.
9. The Contractor, in consultation with the State, shall implement Tasks 6-17, as set forth below.

Task 6: Hosting Setup Services and Support for the DocSite Migration Project

Deliverables: During the migration of DocSite from Covisint's hosting environment at Savvis to Rackspace, the Contractor shall:

1. Provide technical expertise and consultation on how best to execute a successful migration of DocSite into a new hosting environment
2. Use input from Covisint to ensure successful setup in Rackspace.
3. Provide services required to stand up Test and Production environments for the Blueprint Clinical Registry that conform with the specifications provided by Covisint for the DocSite hosting environment, within three (3) business days of hardware availability within Rackspace®.
4. Acquire on behalf of the State and install specified third-party licenses required to run the DocSite system. Required third-party licenses include:
    a. SQL Server Enterprise - 14 licenses
    b. Telerik - 1 license
    c. Active Reports Professional - 1 license
    d. MediSpan - 1 license
    e. Nevron Chart for .NET - 1 license
    f. EVO PDF - 1 license
5. If direct State licensing is required, Contractor shall facilitate communications between the State and the third party software provider.
6. Provide specified access to the Blueprint Clinical Registry hosting environment to either Covisint or the Contractor's Subcontractor MDM Technologies, as the State may elect, to ensure the loading of DocSite onto the Test and Production servers within two (2) business days of full hosting environment availability (Deliverable 1 above).
7. Provide local server administrative privileges and direct remote access to the Blueprint registry environment to its Subcontractor MDM Technologies, and to Covisint if requested, as soon as the environments are available in Rackspace.
8. Successfully complete the build of an operational instance of the DocSite software, including a load of all of the State's data from the Covisint full database extract current as of September 1, 2015, onto the Test servers.
9. Perform hosting environment troubleshooting and testing as needed to ensure a successful build and validation of an operational instance of DocSite software on the Test servers.

Task 7: Completion of Build for Operational Instance of DocSite

Deliverables:

1. Complete a successful build of the DocSite software, including a load of all of the State's data (from the final Covisint data extract current as of September 1, 2015), in the Rackspace Test environment.
2. Make named Contractor resources available to the State during the designated system testing period (5 business days after the effective date of the Covisint License), to address questions and resolve issues encountered during testing.
3. In consultation with the State's Blueprint Executive Director and/or designated Assistant Director, address identified issues encountered during testing with Covisint and provide backup evidence and documentation to support rejection of the operational instance and a request for remediation from Covisint, if applicable.

Task 8: DocSite Validation and Functional Testing and Transition Support

Deliverables:

1. Take the lead role in coordinating functional testing (validation) of the operational instance of the DocSite software against the Success Criteria.
2. Solicit input on functional test plans from manual entry users of DocSite and recruit representatives from these groups for functional testing at least one month prior to the designated testing period (currently scheduled for November 19 through November 25, 2015).
3. Develop functional test plans for each manual entry user group drafted at least two weeks prior to the testing period.
4. **Deliverable AII-3A Test Plan** as defined in CHA Contract.
5. Schedule testing with representatives from each program or practice during the allotted five-day testing period.
6. Perform functional testing as needed and based on expertise during testing period.
7. Track testing results and report issues to Covisint and Contractor resources, as appropriate, for troubleshooting and resolution during testing period.
8. Perform validation on the database extract functionality (through its subcontractor MDM Technologies) and verify both that the extracted data matches the data file that was loaded and that it is extracted in a usable format for analytics within the designated testing period.
9. At least three weeks prior to the State's planned Go Live date, coordinate a second round of functionality testing in the Production environment.
10. Provide transition support to end-users in the two weeks prior to Go Live, including recommendations for a communication plan, the delivery of new user credentials, and the creation of training materials for new login processes and changes to the system.

Task 9: Message Processing Investigation

Deliverables:

1. Based on the technical and functional evaluation of Connect, provide the specifications and requirements to VITL for replacing Connect with VITL's current Rhapsody interface engine, and work collaboratively with VITL to determine the timeline for this project.
2. In consultation with the State, identify and ensure delivery of all software components, including any third-party software components, required to establish the Rhapsody interface engine and the Reporting Objects (RO) jobs for configuration and testing purposes.
3. Take the lead role in coordinating the replacement of Covisint's Connect interface engine with VITL's Rhapsody system and develop specifications for message processing.
4. Using the Connect software documentation received previously from Covisint and based on an evaluation of the DocSite source code, develop the specifications to use VITL's Rhapsody system as a replacement interface engine.
5. Using previously delivered Covisint documentation, investigate how messages from existing practice electronic health record (EHR) interfaces, including those flowing into the VHIE and those captured via flat files, will be processed by the Rhapsody interface engine. Verify that data passed through Rhapsody files correctly into the discrete database fields of the State's Test instance of the DocSite software.
6. Support interface testing in a Test instance of DocSite to ensure successful filing of messages, including verification of the organization hierarchy within the registry, processing of messages, and message validation at the field level.
7. **Deliverable AII-3B** - Documented System Results as defined in CHA Contract.

Task 10: Reporting Configuration and Validation for Operational Instance of DocSite

Deliverables:

1. In consultation with the State, identify and ensure delivery of all software components, including any third-party software components, required to establish the Reporting Objects (RO) jobs for configuration and testing purposes.
2. Properly configure all software required to verify reporting services within two weeks of receiving all components from Covisint.
3. Take the lead role in coordinating reporting services testing (validation) of the operational instance of the DocSite software.
4. Solicit input on reporting test plans from manual entry users of DocSite and recruit representatives from these groups for reports testing at least one month prior to the designated testing period
5. Develop reporting test plans for each manual entry user group drafted at least two weeks prior to the testing period.
6. Schedule Reports testing with representatives from each program or practice during the testing period designated by the State.
7. Perform reports testing as needed and based on expertise during testing period.
8. **Deliverable AII-3B** - Documented System Results as defined in CHA Contract.

Task 11: Initial and Ongoing Security Assessments, Penetration Tests, and Remediation

Deliverables:

1. Conduct initial application and network penetration testing and vulnerability scans of the Blueprint Clinical Registry in the pre-Production environment including threat modeling, review and reconnaissance and test development.
2. Contractor will also provide a copy of the DocSite source code to the Vermont Department of Information and Innovation (VT DII) upon VT DII's request.
3. Conduct quarterly vulnerability scans of the Blueprint Clinical Registry in Production.
4. Produce a log file and detailed final report from penetration test and provide email notification to the AHS Security Director of the findings of the report within 30 days of conducting the test.
5. Work with the AHS Security Director to identify a method to review the findings of the report and to discuss the outcomes and recommendations of the scan.
6. Remediate any known deficiencies or threats identified in the report and make available the remediation or mitigation steps taken to the State.
7. Update and or develop application security plan, control assessments, risk assessment, and disaster recovery plan, web penetration test report and vulnerability assessment test report
8. **Deliverable AII-1B** - System Architecture as defined in CHA Contract.

Task 12: Verification of Source Code Delivery from Covisint

Deliverables:

1. Accept delivery of DocSite source code, contingent on the State's purchase of a perpetual license pursuant to the Covisint License.
2. Verify that the licensed software conforms to the documentation provided by Covisint, that the media on which it is provided is free of material damage and defects, and that the delivered software does not contain any routine or element that could be considered malware within 10 days of receipt. Report any anomalies to the State immediately upon encountering them.
3. Use the delivered source code to verify that DocSite can be rebuilt using materials supplied from the State's source code repository (delivered by Covisint) within 30 days of delivery. A rebuild from source code shall allow for:
    a. Full current state manual data entry and reporting functionality available to end users
    b. Functionality to file data from existing interfaces (both from the VHIE and via flat file) once a new interface engine is implemented as set forth above

c. Functionality to onboard new interfaces (both from the VHIE and via flat file) once a new interface engine is implemented as set forth above
d. Operational scripts for extracting full database to a usable format for analytics

4. Report any missing elements or components of the DocSite source code immediately to the State in order to verify completeness of the delivery from Covisint within the 90-day warranty period.

AMENDED CONTRACT: Post-Migration Activities for DocSite (Rebranded as the Blueprint Clinical Registry) Sub-Project

Task 13: Replace Covisint Connect Functions with Rhapsody

Deliverables:

1. In consultation with the State, determine a project timeline for integrating the Rhapsody interface engine with the Blueprint Clinical Registry. Provide the timeline to the State within five (5) business days of the request.
2. Based on the development and review of technical and functional specifications for the expected operation of Rhapsody with the Blueprint Clinical Registry, provide the services required to replace the current functions of Covisint's interface engine, Connect, as possible, with the Rhapsody interface engine in accordance with the project timeline agreed to in deliverable 1 above.
3. Assist with troubleshooting and testing as needed to ensure a successful interface engine replacement for the Blueprint Clinical Registry.

Task 14: Transition and Connect Production Data Feeds to Blueprint Clinical Registry

Deliverables:

1. **Deliverable AII-4A** - Deployment Plan as defined in CHA Contract.
2. Implement Rhapsody as the interface engine for the Blueprint Clinical Registry.
3. Establish sFTP services for processing flat files, connect the flat file interfaces to the Blueprint Clinical Registry, and provide the services required to assist with testing and troubleshooting.
4. After the Rhapsody interface engine is implemented for the Blueprint Clinical Registry, ensure the successful testing, troubleshooting, and connection of Production data feeds from the VHIE into the Blueprint Clinical Registry, including verification of the organization hierarchy within the registry, processing of messages, and message validation at the field level, based on a mutually agreed upon project timeline as proposed by the State.
5. **Deliverable AII-1A**-Interface Design Document as defined in CHA Contract .
6. Ensure Production data feeds via a sFTP site in support of flat file interfaces are successfully tested and connected to the Blueprint Clinical Registry on a mutually agreed upon project timeline as proposed by the State.
7. After the successful completion of deliverables 4 and 5 above, begin processing all messages held in Rhapsody as requested by the State starting August 31, 2015, for all established trading partners.
8. **Deliverable AII-2** - System Maintenance and Support as defined in CHA Contract.

Task 15: Ongoing Hosting of Blueprint Clinical Registry

Deliverables:

1. The Contractor will host the State's DocSite system within the continental United States of America using Rackspace as the hosting environment. At no time shall the system or data be accessed by personnel or systems outside the continental United States.
2. In the event of technical failure, such as a server going down, service shall be restored within 24 hours. In the event of a catastrophic event, the Contractor shall make every effort to restore service within 72 hours, assuming it is possible to do so. (For example, an extended East Coast power outage might prevent restoration from occurring within this timeframe.)

3. The Contractor shall host the Test and Production environments of the Blueprint Clinical registry through a third-party hosting provider.
4. The Contractor shall use best efforts to provide 120-day advanced written notice to the State of any changes to the hosting provider or location.
5. The Contractor shall provide copies of the Blueprint Clinical Registry security plans, risk assessments, operational guides, disaster recovery plans, policies and procedures pertaining to system operation and maintenance, due within 30 calendar days of request by the State.
6. The Contractor will maintain 99.0% yearly uptime for the Production (Live) environment within normal business hours for the application (8 a.m. through 10 p.m. EST) once the system has been deployed into the Production Environment.
7. The Contractor shall review patches and updates provided by the manufacturers of the third-party software in the Test and Production environments. This review will be done weekly at a minimum. Critical security patches and updates will always be immediately applied.

Task 16: Technical Support of Blueprint Clinical Registry

Deliverables:

1. The Contractor, through its Subcontractor MDM Technologies, shall administer, update, optimize, maintain, and support the Blueprint registry database and application source code.
2. The Contractor shall provide expert-level technical guidance and support for the Blueprint Clinical Registry, including:
    a. Maintenance and enhancement of source code, including database optimization
    b. Onboarding of interfaces or flat files for new organizations
    c. Interface engine consultation and integration
3. Implement enhancements to the source code or data dictionary for the Blueprint Clinical Registry based on end-user requests and requirements and as directed and approved by the Blueprint Executive Director and/or designated Assistant Director(s) in writing.
4. **Deliverable AII-2** - System Maintenance and Support as defined in CHA Contract.
5. **Deliverable AII-5B** - Operations and System Administration Procedures Manual as defined in CHA Contract.
6. In support of Onboarding Sprints (Task 3), perform technical tasks related to onboarding data from new organizations into the Blueprint Clinical Registry, including:
    a. Set up of new organization hierarchy
    b. Processing of messages
    c. Message validation at the field level
7. Submit a monthly status report related to these projects, including:
    a. Enhancement requests, grouped by pending approval, approved, and denied
    b. Deployments, including minor defect fixes through major upgrades for new functionality or reporting
    c. Onboarding Sprint work performed, including status of each site, sites set up and brought Live, and those in the pipeline with estimated completion dates and dependencies
    d. Time spent on each project, including meetings attended, etc.
8. Create and maintain System documentation as defined in CHA Contract.
9. **Deliverable AII-1A**-Interface Design Document as defined in CHA Contract.

Task 17: Blueprint Registry User Support

Deliverables:

1. Assign at least 1 support resource to the State who shall meet general support needs of the Blueprint Clinical Registry users.
2. Develop and implement an issue tracking system for triaging and prioritizing user-reported Blueprint Clinical Registry issues.
3. Report critical issues to the State or its designee(s) immediately.
4. Meet weekly and upon request with the Blueprint Clinical Registry management team to review the list of user-reported issues and discuss possible paths to resolution
5. Submit quarterly program reports to include high-level support issues from the previous quarter and any issues requiring attention or action from the Blueprint Executive Director and/or Assistant Director.

4.3.1 Major Deliverables

The following lists deliverables by Deliverable ID (not assigned to Tasks):

Deliverable AII-1 – Requirements Analysis and System Design

Deliverable AII-1A–Interface Design Document

Contractor will develop Interface Design Documents for each identified integration point. A diagram or conceptual model will create for each integration detailing the source and target systems.

Building on the documentation provided by Covisint this document will detail the requirements outlined by the Blueprint. The Interface Design Document must include updated documents including the following components:

1. Data Flow Diagrams
2. Data Dictionary
3. Data Test plans
4. Interconnection Security Agreement

Contractor's Responsibilities	• Contractor will develop a Design Document to include data flow diagrams, data dictionary, and data test plans
Blueprint's Responsibilities	Review and approve the document
Location	N/A

Deliverable AII-1B – System Architecture

The Contractor will update the delivered DocSite System Architecture document, which includes a conceptual model or diagram that is a representation of the components that make up the System. This deliverable will be maintained throughout the project as system components are added or changed to reflect the most current state.

The Contractor shall provide the System Architecture deliverable that are part of the Solution. This System Architecture shall define and document:

1. A conceptual architecture
2. A detailed list of all the proposed production environment platforms, including Hardware, OS, Networking, and all COTS and third party systems/tools/ utilities, etc.
3. The details of Security, Privacy and Consent Management Plan for DocSite.
4. The Security Plan will provide the technical approach to satisfy the following where applicable:
   a. Network segmentation
   b. Perimeter security
   c. Contractor's System security and data sensitivity classification
   d. Intrusion management
   e. Monitoring and reporting
   f. Remote access
   g. Encryption
   h. State -wide active directory services for authentication
   i. Interface security
   j. Security test procedures
   k. Managing network security devices
   l. Security patch management

m. Secure communications over the Internet

5. Detailed diagrams depicting all security-related devices and subsystems and their relationships with other systems for which they provide controls will be within the Security Plan.

Contractor's Responsibilities	System Architecture document will include: • Conceptual architecture • Logical architecture layers • Environment definitions • Security, privacy and consent management plan
Blueprint's Responsibilities	Review, comment and provide feedback
Location	N/A

Deliverable AII-2 – System Maintenance and Support

The System's Maintenance and Support Plan deliverable will include the processes, policies and responsibilities of the product support services team.

The Contractor shall provide a written plan for the Maintenance and Operations Support of the Blueprint Clinical Registry prior to any new functionality is added to the system. The following documentation shall be prepared by the Contractor and included in the System Maintenance and Support Plan provided to the State:

1. Development of the System's support structure and organization, including estimates of manpower requirements to support operation and maintenance of the System.
2. Completed Code, where applicable.
3. Maintenance and repair policies and procedures.
4. Updated system architecture diagrams and inventory (systems, servers, etc.)
5. Data Dictionary/VT measure sets.

The Contractor shall provide a System Maintenance and Support Plan to include the elements defined above.

Contractor's Responsibilities	• Development of system support structure and organization • Operating procedures manual • Maintenance manual
Blueprint's Responsibilities	Review and comment
Location	N/A

Deliverable AII-3 – TESTING

Deliverable AII-3A – Test Plan

The Contractor's Test Plan will detail the approach to thoroughly testing all additional business functions added to the system post go-live. The three major components of the plan include:

1. Test coverage
2. Test methods
3. Test responsibilities

The Contractor will be responsible for the development of a Test Plans for all new functionality added to the system post go-live, which includes the following testing events:

1. Unit and Integration Testing – The Contractor shall perform Unit and Integration testing as necessary.
2. System Testing – The System testing is aimed at proving that the System meets the stated requirements by validating the total system in a real world scenario. The System's testing will be combined into a single test phase to provide streamlined testing without compromising the testing objectives.
3. System Test Execution – The System's test shall utilize "real" data, and shall be performed by the Contractor. The System's test shall be intended to demonstrate the critical business functions that is being added to the system at the request of the Blueprint Executive Director. The Contractor shall provide and the BP Executive Director shall accept the System Test Plan before it is executed. The Contractor shall incorporate the following activities during System Testing:
    a. Demonstrate Critical Business Function Scenarios (as defined by and approved by the State)
    b. End-to-end business process testing (as defined and approved by the State).
    c. Interface Testing (if applicable).
    d. Performance Testing (stress, load testing if applicable).
    e. Security Testing.
    f. Regression Testing.
4. User Acceptance Testing – The purpose of User Acceptance Testing is to confirm that the System enhancements are developed according to industry standard business development best practices and that it is ready for enterprise deployment and operational use. During UAT, selected end-Users will compare the System's functionality, features, and performance to the Requirements Documents and Design documents.
5. Performance Testing – The Contractor shall perform Performance Testing as deemed applicable by the Blueprint Executive Director. Performance Testing shall include both Stress and Load Testing to verify Contractor's System performance in accordance with the SLRs.
6. System Regression Testing – The Contractor shall perform Regression Testing on any new functionality added to the system post go-live to verify the System's integrity after functional improvements or fixes have been made as a result of the System's Integration and User Acceptance test activities. Regression testing shall be designed to confirm that fixes have not created any new problems and that the results are as planned. The Contractor team shall document all tests performed. The Contractor shall provide a Test Plan that includes the elements outlined above and a detailed schedule for each of the activities to be completed within the test phase, including the individuals (named and role) responsible for the completion and/or approval of each activity.

Contractor's Responsibilities	• Unit and integration testing • System testing • User acceptance testing protocols • Evaluation of UAT test results • Regression testing • Performance testing

	• Release test schedule
Blueprint's Responsibilities	• Identify End User to do UAT • Sign-off on release to production
Location	UAT testing will be conducted online in System's provided Test environment.

Deliverable AII-3B – Documented System Results

The Contractor will capture all testing results via a tracking system. Complete traceability from the requirement to the development and eventual test result is available real-time electronically.

Contractor's Responsibilities	• System results document • Reporting (defects and corrective actions)
Blueprint's Responsibilities	Review
Location	N/A

Deliverable AII-4 – DEPLOYMENT

Deliverable AII-4A – Deployment Plan

The Contractor shall develop a Deployment Plan that defines all tasks required to release System changes to each environment. Each plan includes the steps and required tools to "roll out" a specific change set. In addition, each deployment plan includes a "roll back" plan to entirely reverse any deployment that was unsuccessful. An Implementation Plan will also be created for each major release focusing on just the tasks associated with the release scope. Post-implementation performance monitoring will be conducted to determine if each implementation is successful.

The Contractor shall produce a plan for deployment of new functionality. Moreover, the Contractor shall provide a Deployment Plan that documents the activities that need to be accomplished to successfully migrate the DocSite Solution from the testing environment to the production environment. The Plan shall provide a detailed schedule of activities with key "go" / "no-go" decision points identified throughout the deployment process. In addition, the plan shall detail a back out and recovery process to be triggered in the event the turnover to production fails.

Contractor's Responsibilities	• Deployment schedule • Deployment environment and configuration • Release notes • Rollback plan
Blueprint's Responsibilities	• Verify, validate and sign-off post deployment
Location	Target environment: • Development • Test • Production

Deliverable AII-4B – Completed Detailed Functional and Technical Specifications

The Contractor will author a document detailing the System's requirements for added functionality post go-live with columns representing the functional and technical specifications completeness.

After completion of each release, the Contractor shall update, and provide an updated System Design, Requirements, and Specifications document for the component of the System that was modified. The document components shall include:

1. Updated Functional Requirements
2. Updated Technical Specifications

Contractor's Responsibilities	• Updated Functional Requirements with each release • Updated Technical Specifications with each release
Blueprint's Responsibilities	N/A
Location	N/A

Deliverable AII-4C – System Source Code and Documentation

The Contractor' system shall manage all aspects of the System development process includes web-based source code and documentation repositories. The System source code repository provides historical versioning and merge capabilities. The document repository can be accessed from the web for those approved by the Blueprint Executive Director.

At the completion of the Project, the Contractor shall conduct a review with the Blueprint and identify any documentation that must be updated as a result of changes during the contract period. The Contractor will be required to update the documentation and provide it to the Blueprint for review and Final Acceptance.

The following shall be updated and provided to the Blueprint Executive Director at the completion of the Project:

1. Artifacts of Covisint Technical and System Documentation
2. Specifications for newly added features
3. System Architecture updates
4. Technical Design Documentation updates
5. Final versions of the System software files

The Contractor shall also transfer all finalized required documentation to the State. The format and the medium of transfer will be at the discretion of the State.

Contractor's Responsibilities	Update all artifacts associated with DocSite system throughout project: • Functional specification and design • System architecture • Technical design documentation • Training manual, User guides and materials • Final versions of the system software files (code)
Blueprint's Responsibilities	N/A
Location	State Hosting Environment

Deliverable AII-5 – System M&O

Deliverable AII-5A – System Incident Reports – M&O

The Contractor will deliver System Incident Reports throughout the project as requested by the Blueprint Executive Director. This will be accomplished via web-based Service Desk ticketing system. Ad-hoc query functionality shall be available to authorized Users to answer specific questions related to incidents.

The Contractor must complete the following services. (The Contractor may propose additional deliverables as needed to achieve the task goals of System Maintenance and Operations):

System Incident Resolution – Maintenance and Operations of the System includes software faults for functions that were added after the system go-live. All incidents that occur as part of ongoing operations must be addressed and resolved within a reasonable time frame as per the SLAs.

Adaptive Maintenance – All changes and fixes will be implemented based on a mutually agreed upon schedule. All changes will go through all phases of testing by the Contractor. The test results must be documented and provided to the State for approval before a decision is made to put the new release into Production. All relevant Contractor's System documentation will be updated and provided to the State at the conclusion of any Contractor's System changes.

System Enhancements – If enhancements are requested, the Blueprint Executive Director will submit a request for those modifications to the Contractor. The Contractor will analyze the changes and provide a cost estimate for performing those changes if they have not already been pre-determined. These cost estimates will be negotiated based on rates proposed and agreed to. The Blueprint can then decide whether it wishes to move forward with the requested enhancements, which will be incorporated as a change order to the Contract. The System Incident Report should contain the severity of the incident, a description of the incident, incident resolution status, and the proposed course of action for remedying all open incidents.

Contractor's Responsibilities	• Prepare ongoing System's incident reports • Incident resolution status
Blueprint's Responsibilities	Review and comment
Location	N/A

Deliverable AII-5B – Operations and System Administration Procedures Manual

The Contractor is responsible for updating an Operations and System Administration Procedures Manual that includes the following components if provided by Covisint. This manual may contain:

Diagnostic procedures, backup and restore procedures, and disaster recovery procedures.

1. Information to aid in analyzing and debugging the software.
2. Maintenance and repair policies and procedures.
3. Updated System's architecture diagrams and inventory (systems, servers, etc.).

Deliverable AII-5C – Tier 2 Service Desk Plan

The Contractor's Tier 2 Service Desk Plan will describe the required System's processes and procedures necessary to effectively support Users of the System.

The Contractor is responsible for developing a Tier 2 Service Desk Plan that indicates how support will be provided and how escalated incidents are resolved.

Contractor's Responsibilities	• Contractor's System support structure and organization • Support tools (ticketing, voice mail etc.) • Hours of operation • Communication and escalation plan
Blueprint's Responsibilities	Review
Location	N/A

4.4 Project Phases, Milestones and Schedule

Provide a list of the major project phases, milestones and high level schedule. You may elect to include it as an attachment to the report instead of within the body.

The project contains both PROJECT MILESTONES as well as PAYMENT MILESTONES.

The chart below represents PROJECT MILESTONES:

Number	Major Project Milestones	Status / Completion Date
1	Build Project Team	**12/15/15**
2	PM Documentation Deliverables	**1/4/16**
3	Set Up Rackspace Environment	**7/1/15**
4	Build Operational Instance	**12/18/15**
5	Test and Accept Operational Instance	**12/18/15**
6	Source Code License Acceptance	**12/18/15**
7	Verification of Source Code	**1/8/16**
8	Kick off Meeting	**1/4/16**
9	Report validation and sign off	**3/21/16**
10	BAA Execution	**2/5/16**
11	Rhapsody Implementation	**4/1/16**
12	Production and Data Feeds	**4/15/16**
13	Open Help Desk	**4/15/16**
14	*Project/Program Management (LOE)*	*6/30/16*
15	*Technical Support (LOE)*	*6/30/16*
16	*User Support (LOE)*	*6/30/16*

Payments made through the date of the IR report submission on 5/2/2016:

Contractor Name:	Capitol Health Associates, LLC												Grant/Contract Number:	29244, Am#1	
Grantee's/Contractor's Contact Person:	Hans Kastenmilh												Reporting Period: July 1, 2015- June 30, 2016		
Grantee's/Contractor's Email Address:	hck@capitolhealthdc.com														
	TOTAL CONTRACT BUDGET	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Maroh	April	May	June	TOTAL EXPENDITURES TO DATE	BALANCE
Phase & Description															
Task 1a: Data Quality Program Management	$ 120,000.00	$ 10,000.00	$ 10,000.00	$ 10,000.00	$ 10,000.00	$ 10,000.00	$ 10,000.00	$ 10,000.00	$ 10,000.00	$ 10,000.00				$ 90,000.00	$ 30,000.00
Task 1b: Milestone payments for DocSite success criteria validation and remediation of Independent Review findings (if any)	$ 5,000.00													$ -	$ 5,000.00
Task 2a: Project Management of Statewide Blueprint Data Quality Initiatives	$ 48,000.00	$ 4,000.00	$ 4,000.00	$ 4,000.00	$ 4,000.00	$ 4,000.00	$ 4,000.00	$ 4,000.00	$ 4,000.00	$ 4,000.00				$ 36,000.00	$ 12,000.00
Task 2b: Milestone payments for Data Quality Initiatives	$ 30,000.00													$ -	$ 30,000.00
Task 3: Project Management for Onboarding New Blueprint Data Quality Initiatives	$ 60,000.00	$ 5,000.00	$ 5,000.00	$ 5,000.00	$ 5,000.00	$ 5,000.00	$ 5,000.00	$ 5,000.00	$ 5,000.00	$ 5,000.00				$ 45,000.00	$ 15,000.00
Task 4: Involvement in Projects Supporting Data Quality Work	$ 72,000.00	$ 6,000.00	$ 6,000.00	$ 6,000.00	$ 6,000.00	$ 6,000.00	$ 6,000.00	$ 6,000.00	$ 6,000.00	$ 6,000.00				$ 54,000.00	$ 18,000.00
Task 5a: DocSite Migration and Operations Project and Vendor Management	$ 73,750.00			$ 8,194.44	$ 8,194.44	$ 8,194.44	$ 8,194.44	$ 8,194.44	$ 8,194.44	$ 8,194.44				$ 57,361.08	$ 16,388.92
Task 5b: BPCR Program Management of Operations and Vendor Management	$ 65,101.00			$ 7,233.44	$ 7,233.44	$ 7,233.44	$ 7,233.44	$ 7,233.44	$ 7,233.44	$ 7,233.44				$ 50,634.08	$ 14,466.92
Task 6a: VITL project management services for hosting environment setup	$ 6,000.00					$ 6,000.00								$ 6,000.00	$ -
Task 6b: VITL hardware setup and support services for Rackspace® hosting environment	$ 27,500.00					$ 15,687.50	$ 1,062.50	$ 2,500.00	$ 2,375.00					$ 21,625.00	$ 5,875.00
Task 6c: Milestone payment for verification of complete hosting environment build for Blueprint Clinical Registry	$ 21,335.00					$ 21,335.00								$ 21,335.00	$ -
Task 6d: Software licenses to operate Blueprint Clinical Registry	$ 66,624.20						$ 45,390.10	$ -						$ 45,390.10	$ 21,234.10
Task 7: Build for Operational Instance of DocSite	$ 20,260.00					$ 3,000.00	$ 17,002.50	$ 247.50						$ 20,260.00	$ -
Task 8: DocSite Validation and Functional Testing and Transition Support	$ 16,666.00						$ 7,833.00	$ 3,300.00						$ 11,133.00	$ 4,533.00
Task 9a: Establish Message Processing Functionality for DocSite Software	$ 20,250.00							$ 11,055.00	$ 8,250.00					$ 19,305.00	$ 945.00
Task 9b: Interface Testing and Validation	$ 3,000.00													$ -	$ 3,000.00
Task 10a: Establish Reporting Services for DocSite Software	$ 12,000.00							$ 2,970.00	$ 5,940.00					$ 8,910.00	$ 3,090.00
Task 10b: Reporting Testing and Validation	$ 3,000.00									$ 2,250.00				$ 2,250.00	$ 750.00
Task 11a: Initial application and network penetration testing and vulnerability scan for Blueprint Clinical Registry	$ 93,930.00							$ 14,703.66	$ 12,185.91	$ 12,488.04				$ 39,377.61	$ 54,552.39
Task 11b: Milestone payments for security documentation and remediation of findings (if any)	$ 10,000.00													$ -	$ 10,000.00
Task 11c: Quarterly penetration tests (up to 1)	$ 5,940.00													$ -	$ 5,940.00
Task 12a: Verification of source code delivery from Covisint	$ 9,000.00						$ 3,300.00	$ 5,610.00						$ 8,910.00	$ 90.00
Task 12b: Milestone payment for rebuild of DocSite from source code in State's hosting environment (at VITL's Rackspace®) prior to expiration of Covisint's software warranty period	$ 15,000.00							$ 15,000.00						$ 15,000.00	$ -
Task 13: Replace Covisint Connection Functions with Rhapsody	$ 13,150.00							$ 5,500.00	$ 4,125.00	$ 3,437.50				$ 13,062.50	$ 87.50
Task 14: Transition and Connect Production Data Feeds to Blueprint Clinical Registry	$ 242,090.00								$ 20,395.00	$ 40,360.00				$ 60,755.00	$ 181,335.00
Task 15a: Actual hosting costs for Blueprint Clinical Registry	$ 86,204.53			$ 9,467.17	$ 9,467.17	$ 9,467.17	$ 9,467.17	$ 9,467.17	$ 9,467.17	$ 9,467.17				$ 66,270.19	$ 19,934.34
Task 15b: Network Assets Allocated to Blueprint Clinical Registry	$ 13,200.00	$ 1,200.00	$ 1,200.00	$ 1,200.00	$ 1,200.00	$ 1,200.00	$ 1,200.00	$ 1,200.00	$ 1,200.00	$ 1,200.00				$ 10,800.00	$ 2,400.00
Task 15c: VITL Hosting Support (Ongoing)	$ 16,000.00					$ 7,500.00	$ 375.00	$ 2,500.00	$ 2,593.75	$ 312.50				$ 13,281.25	$ 1,718.75
Task 16: Technical Support of Blueprint Clinical Registry	$ 58,960.00							$ 3,382.50	$ 10,395.00	$ 25,245.00				$ 39,022.50	$ 19,937.50
Task 17: Blueprint Registry User Support	$ 21,334.00								$ -					$ -	$ 21,334.00
Cyber Liability and Related Professional Liability Insurance	$ 28,577.00						$ 28,577.00							$ 28,577.00	$ -
Expenses and Travel	$ 18,000.00			$ 676.20	$ 721.53		$ 512.54	$ 1,433.96		$ 846.29				$ 4,590.52	$ 13,409.48
TOTAL CONTRACT AMOUNT	$ 1,298,861.73	$ 26,200.00	$ 26,200.00	$ 61,771.26	$ 61,816.66	$ 104,617.66	$ 166,647.69	$ 119,297.67	$ 117,344.71	$ 136,024.38	$ -	$ -	$ -	$ 786,819.83	$ 510,081.90

The chart below represents tasks and related payment amounts.

Some of these have related MILESTONE PAYMENTS. Those Milestone Payments highlighted in green are paid, those highlighted in yellow are open.

TASK	Payment Amount
Task 1a: Data Quality Program Management	$10,000 per month (for 12 months) up to $120,000
Task 1b: Milestone payments for DocSite success criteria validation and remediation of Independent Review findings (if any)	Two payments of $2,500 each (based on eligibility)
Task 2a: Project Management of Statewide Blueprint Data Quality	$4,000 per month (for 12 months) up to $48,000
Task 2b: Milestone payments for Data Quality Initiatives	$15,000 twice per year (based on eligibility)
Task 3: Project Management for Onboarding New Blueprint Data Quality Initiatives	$5,000 per month (for 12 months) up to $60,000
Task 4: Involvement in Projects Supporting Data Quality Work	$6,000 per month (for 12 months) up to $72,000
Task 5a:DocSite Migration and Operations Project and Vendor Management	$8,194.44 per month (for 9 months) up to $73,750
Task 5b: Blueprint Clinical Registry Program Management of Operations and Vendor Management	$7,233.44 per month (for 9 months) up to $65,101
Task 6a: VITL project management services for hosting environment setup	$125 per hour up to $6,000
Task 6b: VITL hardware setup and support services for Rackspace® hosting environment	$125 per hour up to $27,500
Task 6c: Milestone payment for verification of complete hosting environment build for Blueprint Clinical Registry	One payment of $21,335 (based on eligibility)
Task 7: Build for Operational Instance of DocSite	$150 per hour up to $20,250
Task 8: DocSite Validation and Functional Testing and Transition Support	$150 per hour up to $9,000
Task 9a: Establish Message Processing Functionality for DocSite Software	$150 per hour up to $20,250
Task 9b: Interface Testing and Validation	$150 per hour up to $3,000
Task 10a: Establish Reporting Services for DocSite Software	$150 per hour up to $12,000
Task 10b: Reporting Testing and Validation	$150 per hour up to $3,000
Task 11a: Initial application and network penetration testing and vulnerability scan for Blueprint Clinical Registry	$201.42 per hour up to $93,930
Task 11b: Milestone payments for security documentation and remediation of findings (if any):	Two payments of $5,000 each (based on eligibility)
Task 11c: Quarterly penetration tests (up to 1)	$5,940 per test (up to 1)
Task 12a: Verification of source code delivery from Covisint	$150 per hour up to $9,000
Task 12b: Milestone payment for rebuild of DocSite from source code in State's hosting environment (at VITL's Rackspace®) prior to expiration of Covisint's software warranty period	One payment of $15,000 (based on eligibility)
Task 13: Replace Covisint Connection Functions with Rhapsody	$125 per hour up to $13,150
Task 14: Transition and Connect Production Data Feeds to Blueprint Clinical Registry	$150 per hour up to $242,090
Task 15a: Actual hosting costs for Blueprint Clinical Registry	Up to $9467.17 per month (for 9 months) for $85,204.53
Task 15b: Network Assets Allocated to Blueprint Clinical Registry	$1,200 per month (for 11 months) up to $13,200
Task 15c: VITL Hosting Support (Ongoing)	$125 per hour up to $15,000
Task 16: Technical Support of Blueprint Clinical Registry	$150 per hour up to $58,950
Task 17: Blueprint Registry User Support	One-time $8,000 for set up; Monthly support cost of $3,333.00 (6 months) up to $28,000.
Other: Cyber Liability and Related Professional Liability Insurance	Documented, actual costs; $28,577.00
Other: Expenses and Travel; State of Vermont approved mileage and per-diem rates, and reasonable and necessary out-of-pocket expenses	$18,000.00
TOTAL (up to):	**$1,298,851.73**

5. Acquisition Cost Assessment

List all acquisition costs in the table below (i.e. the comprehensive list of the one-time costs to acquire the proposed system/service). Do not include any costs that reoccur during the system/service lifecycle. Add or delete lines as appropriate. Based on your assessment of Acquisition Costs, please answer the questions listed below in this section.

The following chart represents the Acquisition Costs for the stated project period. Detailed composition of these numbers are found in the attached project cost spreadsheet.

IT Activity Lifecycle:	1 Year
Total Lifecycle Costs:	**$ 2.5M**
PROJECT COSTS:	***$2M***
Software Costs:	***$1.06M***
Covisint	*$1.0M*
Other (SQL: $45K; Other: $20K)	*$65K*
CHA Implementation Services:	*$786K*
Contracted Program and Project Management Services:	*$94K*
DII PM/EA Costs:	*$69K*
OPERATING COSTS:	***$596K***
Internal Staffing Costs:	*$86K*
CHA:	***$510K***
CHA PM Services:	*$335K*
Insurance:	*$28.5K*
Registry Maintenance and User Support (MDM):	*$28K*
Hosting Costs (VITL):	*$113K*
Security Services (KeyW):	*$6K*
CURRENT OPERATING COSTS:	**$ 1.19M**
Difference Between Current and New Operating Costs:	**Decrease of $593K** (Go forward Operating Cost of $596K less $1.19M of Current operating cost)
Funding Source(s) and Percentage Breakdown if Multiple Sources:	See table below

Funding Source(s) and Percentage Breakdown if Multiple Sources:

STATE FUNDING: HIT Fund; Fund #GC 93.778; 15% State portion	15.00%	Implementation	5.61%	$143,220.69
STATE FUNDING: HIT Fund; Fund #GC 93.778; 44% State portion; A special fund collected in statute from .199% of each insurance claim and earmarked for projects that strengthen the State's health information infrastructure	44.00%	Operations	8.66%	$221,083.07
STATE FUNDING: MMIS State	10.00%	Funds Sandage/Brown	0.37%	$9,450.00
FEDERAL FUNDING: Federal Match of HIT Fund; 85% Federal portion	85.00%	Implementation	31.80%	$811,583.93
FEDERAL FUNDING: Federal Match of HIT Fund; 56% Federal portion	56.00%	Operations	11.03%	$281,378.46
FEDERAL FUNDING: MMIS Fed	90.00%	Funds Sandage/Brown	3.33%	$85,050.00
FEDERAL FUNDING: SIM purchase of Covisint DocSite source code license (State Innovation Model) (aka Vermont Healthcare Innovation Project or VHCIP); Fund #93.624			39.19%	$1,000,000
TOTAL:			**100.00%**	**$2,551,766**

5.1 Cost Validation

Describe how you validated the Acquisition Costs.

The Acquisition Costs were validated through the following methods:

1. Comparison of Hourly Rates of similar Services
2. Comparison with Projects of Similar Scope
3. Comparison with Other Bidders

1. <u>Comparison of Hourly Rates of similar Services:</u>

The proposed services are primarily fixed price to deliver a defined task. Some tasks have a defined hourly rate attached, while other tasks do not illustrate the underlying hourly rate.

For those tasks with a stated hourly rate, the hourly rate appears **competitive** considering the activities involved (see list below) in comparison to other recently reviewed projects, where those rates range from $150 - $200.

Tasks at $125/hour: Hosting-related and/or what appear to be VITL tasks:

- Task 6a: VITL project management services for hosting environment setup
- Task 6b: VITL hardware setup and support services for Rackspace® hosting environment
- Task 13: Replace Covisint Connection Functions with Rhapsody
- Task 15a: Actual hosting costs for Blueprint Clinical Registry
- Task 15c: VITL Hosting Support (Ongoing)

Tasks at $150/hour: Programming and testing-related and/or what appear to be MDM tasks:

- Task 7: Build for Operational Instance of DocSite
- Task 8: DocSite Validation and Functional Testing and Transition Support
- Task 9a: Establish Message Processing Functionality for DocSite Software
- Task 9b: Interface Testing and Validation
- Task 10a: Establish Reporting Services for DocSite Software
- Task 10b: Reporting Testing and Validation
- Task 12a: Verification of source code delivery from Covisint
- Task 14: Transition and Connect Production Data Feeds to Blueprint Clinical Registry
- Task 16: Technical Support of Blueprint Clinical Registry

Tasks at $201.25/hour: Security-related and/or what appear to be KeyW tasks:

- Task 11a: Initial application and network penetration testing and vulnerability scan for Blueprint Clinical Registry

For the tasks listed below, we were able to determine the underlying hourly rate based on the hours reported on submitted invoices.

- For the **Program** and **Project Management** tasks, understanding the number of hours applied may inform those items.
- For the **Milestone** payment tasks: If there are associated returns on those investments, the amounts paid would be valid, but we are not able to evaluate said value.
- For the **Penetration** test, the prices appear reasonable compared with other penetration tests quotes recently reviewed.
- For the **User Support** task, pricing depends on expected or actual number of incidents requiring support, and complexity of those incidents.

- Task 1a: Data Quality Program Management: $10,000 per month (for 12 months)
- Task 1b: Milestone payments for DocSite success criteria validation and remediation of Independent Review findings (if any): Two payments of $2,500 each (based on eligibility)
- Task 2a: Project Management of Statewide Blueprint Data Quality Initiatives: $4,000 per month (for 12 months)
- Task 2b: Milestone payments for Data Quality Initiatives: $15,000 twice per year (based on eligibility)
- Task 3: Project Management for Onboarding New Blueprint Data Quality Initiatives: $5,000 per month (for 12 months)
- Task 4: Involvement in Projects Supporting Data Quality Work: $6,000 per month (for 12 months)
- Task 5a:DocSite Migration and Operations Project and Vendor Management: $8,194.44 per month (for 9 months)
- Task 5b: Blueprint Clinical Registry Program Management of Operations and Vendor Management: $7,233.44 per month (for 9 months)
- Task 6c: Milestone payment for verification of complete hosting environment build for Blueprint Clinical Registry: One payment of $21,335 (based on eligibility)
- Task 11b: Milestone payments for security documentation and remediation of findings (if any): Two payments of $5,000 each (based on eligibility)
- Task 11c: Quarterly penetration tests (up to 1): $5,940 per test (up to 1)
- Task 12b: Task 12b: Milestone payment for rebuild of DocSite from source code in State's hosting environment (at VITL's Rackspace®) prior to expiration of Covisint's software warranty period: One payment of $15,000 (based on eligibility)
- Task 15b: Network Assets Allocated to Blueprint Clinical Registry: $1,200 per month (for 11 months)
- Task 17: Blueprint Registry User Support: One-time $8,000 for set up and then monthly cost of $3,333.00 for support (for 6 months).

For Tasks 1-4, the effective hourly rates range from $90 to $833, across tasks across invoices, for a blended hourly rate of $163. This effective hourly rate appears **competitive** considering the activities involved in comparison to other recently reviewed projects, where those rates range from $150 - $200.

However, there is insufficient data to assess all fixed priced tasks, specifically Tasks 5a and 5b, as there is no detailed hourly information included in the initial 4 months of invoicing (September – December, 2015).

Further, there may be an additional month anticipated to be invoiced for each of these tasks, as they each have a 9 month anticipated billing cycle, but the billing began in September vs. October, which would be expected for a 9 month billing cycle between October, 2015 through 6/30/2016.

2. Comparison with Projects of Similar Scope:

This project is unique. It is the first time DocSite has been purchased and implemented by a former Covisint client. **As such, there are no points of COST comparison**.

In terms of CHA's experience with similar projects, several projects are cited, including the following listed below. Given their similarity to the depth of breadth of the Vermont project, CHA appears qualified to undertake this project.

Hans Kastensmith as a Senior Consultant and SME to Northrop Grumman was involved at the executive level for, capture, planning, design and oversight of the projects listed below.

a. Capture - During the RFP phase of the projects Mr. Kastensmith was on the RFP "RED" team at NGIT. Duties were to review initial drafts of the NGIT RFP responses and give guidance to the capture team on technical and programmatic design aspects, identify and contribute to missing and under developed components, conduct final review and signoff of the submission
b. Planning - Once the contracts were awarded Mr. Kastensmith was a member of the executive planning team to establish oversee the project plan for development and implementation of the proposed solutions.
c. Design - As a HIT and population health management SME Mr. Kastensmith gathered requirements from the customer and supported the NGIT team for solutions design from an end user's perspective to ensure the design had the proper clinical and programmatic functionality
d. Oversight - As an SME Mr. Kastensmith worked directly with NGIT senior management on program oversight of the projects to ensure that projects were on target and budget as well as support NGIT in customer relations.

National Health Information Network - Total Contract Value -$6M
The Nationwide Health Information Network (NHIN) is a set of standards, services and policies that enable secure health information exchange (HIE) over the Internet. The initiative is sponsored by the Office of the National Coordinator (ONC) for Health Information Technology (HIT), which began developing the NHIN in 2004. The NHIN provides a common platform for nationwide health information exchange across diverse entities. NHIN standards and services will be used by federal agencies, health care providers, health information exchanges and consumers to securely exchange health information at both the national and local level. The NHIN is a fundamental requirement for achieving nationwide health information exchange, one of the primary goals of the Health Information Technology for Economic and Clinical Health (HITECH) Act. NGIT was one of four contractors to receive an award to bring the concept of the NHIN to the market.

The National Electronic Disease Surveillance System - Total Contract Value – $2.5M
The National Electronic Disease Surveillance System (NEDSS) facilitates electronically transferring public health surveillance data from the healthcare system to public health departments. It is a conduit for exchanging information that supports NNDSS. Today, when states and territories voluntarily submit notifiable disease surveillance data electronically to CDC, they use data standards and electronic disease information systems and resources supported in part by NEDSS. This ensures that state data shared with CDC are submitted quickly, securely and in an understandable form. NEDSS helps connect the healthcare system to public health departments and those health departments to CDC by providing leadership and resources to state and local health departments to adopt standards-based systems needed to support national disease surveillance strategy; enabling health agencies to use information technology more effectively by developing patient-centered systems that helps health departments identify issues such as co-morbidities (multiple disease or conditions) that occur in the same individual over time; defining the content (i.e., disease diagnosis, risk factor information, lab confirmation results, and patient demographics) of messages sent using the HL7 messaging standard; implementing content standards that the healthcare industry currently uses (e.g., LOINC as the standard for transmitting laboratory test names and SNOMED as

the standard for transmitting test results) for increased interoperability between states and the healthcare industry; and providing the NEDSS Base System

(NBS), a CDC-developed information system, to help reporting jurisdictions manage reportable disease data and send notifiable diseases data to CDC using Public Health Information Network (PHIN) standards.

Federal Health Information Exchange – Total Contract Value – $420M
The Federal Health Information Exchange (FHIE) Program is an interagency information technology initiative between the Departments of Veterans Affairs (VA) and Defense (DOD) that enables a secure, one-way transmission of protected electronic health information from DOD to VA. FHIE offers authorized VA clinicians, including those involved in claims adjudication, immediate access to DOD clinical data about service members who separate from the Armed Forces. FHIE supports DOD's and VA's goal of ensuring a smooth transition for Veterans from active military service to civilian life. See also Bidirectional Health Information Exchange (BHIE) Initiative.

3. Comparison with Other Bidders:

For the tasks listed below, there were other bids received, but we are unable to determine pricing comparison as the other bids were not provided.

- Task 1a: Data Quality Program Management: $10,000 per month (for 12 months)
- Task 1b: Milestone payments for DocSite success criteria validation and remediation of Independent Review findings (if any): Two payments of $2,500 each (based on eligibility)
- Task 2a: Project Management of Statewide Blueprint Data Quality Initiatives: $4,000 per month (for 12 months)
- Task 2b: Milestone payments for Data Quality Initiatives: $15,000 twice per year (based on eligibility)
- Task 3: Project Management for Onboarding New Blueprint Data Quality Initiatives: $5,000 per month (for 12 months)
- Task 4: Involvement in Projects Supporting Data Quality Work: $6,000 per month (for 12 months)

For the tasks listed below, as there were no other bids received, we are unable to determine if the fixed fee for services is competitive.

- Task 5a:DocSite Migration and Operations Project and Vendor Management: $8,194.44 per month (for 9 months)
- Task 5b: Blueprint Clinical Registry Program Management of Operations and Vendor Management: $7,233.44 per month (for 9 months)
- Task 6c: Milestone payment for verification of complete hosting environment build for Blueprint Clinical Registry: One payment of $21,335 (based on eligibility)
- Task 11b: Milestone payments for security documentation and remediation of findings (if any): Two payments of $5,000 each (based on eligibility)
- Task 11c: Quarterly penetration tests (up to 1): $5,940 per test (up to 1)
- Task 12b: Task 12b: Milestone payment for rebuild of DocSite from source code in State's hosting environment (at VITL's Rackspace®) prior to expiration of Covisint's software warranty period: One payment of $15,000 (based on eligibility)
- Task 15b: Network Assets Allocated to Blueprint Clinical Registry: $1,200 per month (for 11 months)
- Task 17: Blueprint Registry User Support: One-time $8,000 for set up and then monthly cost of $3,333.00 for support (for 6 months).

5.2 Cost Comparison

How do the above Acquisition Costs compare with others who have purchased similar solutions (i.e., is the State paying more, less or about the same)?

Point of Comparison	Measure
Hourly Rates:	Rates are **comparable** compared to market rates for the stated hourly rates as well as the effective rates determined from the fixed price items. However, not all billing detail is provided as per the contract.
Similarly Scoped Projects:	Cost data not available from other similarly scoped projects.
Comparison with other bidders:	Cost data not available from other bidders.

5.3 Cost Assessment

Are the Acquisition Costs valid and appropriate in your professional opinion? List any concerns or issues with the costs.

Rates for stated hourly rates and effective hourly rates are **comparable,** while comparisons to projects of similar scope and other bids are not able to be measured, as outlined in the Cost Comparison **Section 5.2**. Some data not available due to lack of actual hours reported as required per the contract.

Additional Comments on Acquisition Costs:

None.

6. Technology Architecture Review

After performing an independent technology architecture review of the proposed solution, please respond to the following.

SUMMARY:

1. Implementation Services related to design, development, testing of DocSite software by Capitol Health Associates (CHA) to support Blueprint Clinical Registry functionality
    a. Subcontractors:
        i. **MDM Technologies**: Programming Services
        ii. **KeyW**: Application and Hosting Security Services
        iii. **VITL**: Hosting services (see below)
    b. Specific 3rd party software licenses to support DocSite (see detail in cost spreadsheet)
2. Hosting environment provided by VITL via Rackspace
3. Message transit services supporting Health Information Exchange objectives provided by VITL
4. Internal staffing supporting the project
5. Contracted Program and Project Management staffing supporting the project

See **Appendix 4** for detailed technology specifications.

1. State's IT Strategic Plan: Describe how the proposed solution aligns with each of the State's IT Strategic Principles:

i. Leverage successes of others, learning best practices from outside Vermont.
ii. Leverage shared services and cloud-based IT, taking advantage of IT economies of scale.
iii. Adapt the Vermont workforce to the evolving needs of state government.
iv. Apply enterprise architecture principles to drive digital transformation based on business needs.
v. Couple IT with business process optimization, to improve overall productivity and customer service.
vi. Optimize IT investments via sound Project Management.
vii. Manage data commensurate with risk.
viii. Incorporate metrics to measure outcomes.

b. The following describes how this project exploits these principles:
    i. Leverage successes of others, learning best practices from outside Vermont.
        1. *The DocSite solution is proven and in place in many other organizations. However, there are no other known instances of an organization assuming ownership of the DocSite software and implementing it themselves.*

    ii. Leverage shared services and cloud-based IT, taking advantage of IT economies of scale.
        1. *This solution leverages cloud-based services in that the application will be hosted in Rackspace under support from VITL, a known vendor.*

    iii. Adapt the Vermont workforce to the evolving needs of state government.
        1. *The proposed solution will result in little day-to-day change, as the DocSite solution is in place currently.*

iv. Apply enterprise architecture principles to drive digital transformation based on business needs.
    1. *There are several concerns related to Enterprise Architecture. These concerns center on a product where the vendor is no longer supporting the product, and the future support vendor (MDM) is just learning the system. Additional concern is the underlying security position, and the lifecycle of the software development framework.*

v. Couple IT with business process optimization, to improve overall productivity and customer service.
    1. *The proposed solution will result in little day-to-day change, as the DocSite solution is in place currently, with no provision for improving processes identified as a goal of this project.*

vi. Optimize IT investments via sound Project Management.
    1. *Both the vendor and SOV are expecting to provide sound Project Management services on this initiative.*

vii. Manage data commensurate with risk.
    1. *Data management and security is of paramount importance for this project, as it involves transmission of Clinical Registry data from providers to the HIE. As this is in place now, it is expected to continue being of primary importance.*
    2. *Security-related issues have been identified through this project, and remedy is in-progress.*

viii. Incorporate metrics to measure outcomes.
    1. *There are specific outcome measures built into the contract, with incentive payments attached to some of those defined outcomes.*
    2. *There are other tasks where the ability to measure outcomes is less clear.*

2. **Service Level(s):** What is the desired service level for the proposed solution and is the technical architecture appropriate to meet it?

   The following **Service Levels** are defined the contract. The technical architecture is expected to meet these SLA requirements.

REQUIREMENT	APPROACH TO MEETING REQUIREMENT
Performance Requirements	Security and software updates will be regularly scheduled to insure the Systems remain secure, and compatible with the latest browsers that are supported by the System. Regular system updates will be communicated and scheduled in advance and will not be performed during peak usage times. The Contractor will monitor the performance of both the storage and virtual infrastructures. The Contractor will provide monitoring to address performance issues. The Contractor will capture Web page response times from the client end point down to the backend database calls.
Performance Monitoring and Management	The Contractor's Performance Monitoring and Management will include the methods for managing system resources such as servers, backup, archiving, databases and applications.
System Availability	The System shall be hosted in Tier 3 or higher data centers, and will be equipped with multipath burstable bandwidth from the hosting facilities. The Contractor will identify software bottlenecks, excessive calls to the database, and system responses falling outside acceptable standards. The Contractor will fix found issues to ensure issues do not make it into the production environment. The Contractor's will monitor the production environment to identify and resolve issues not detected during the stand-up of the DocSite System.
IT Component Capacity Planning	The Contractor will plan, size and control the system as IT Component Capacity needs change. The Contractor's plan will address, but not be limited to the following system areas: i. Database Storage Capacity ii. Audit Log Storage The Contractor will actively analyze the health of the storage systems at both the hardware and software layer. The Contractor will provision to grow logical drives for the databases, document repository or integrated knowledge bases. All storage area networks will be full fiber channel with redundant fiber channel switches.
System Administration and Support: *Account Administration*	The System shall include both authentication and authorization mechanisms. Authentication will follow industry best practices for password strength and reset frequency. The System shall also automatically log a User out if a period of inactivity is exceeded. Any given User's access will be limited to exactly what their role or responsibility entails. Each User's security profile will include roles. Given permission can be "denied" to exclude it from a given User's role.
System Administration and Support: *System Administration*	The Contractor will provide ongoing support and maintenance, including customization of the System computing ecosystem. The Contractor's overall management framework will include: 1. Application management and monitoring 2. Web services management 3. Systems management and monitoring 4. Identity and Access Management 5. Network management and monitoring 6. Performance monitoring The System shall capture Web page response times from the User end-point down to the backend database calls to ensure Web pages meet acceptable standards.

	The Contractor will provide active and passive monitoring of items such as CPU, disk and memory utilization, device up time and custom monitors for production related services such as SQL processes and anti-virus. The Contractor will monitor health, availability and status of all network and system devices in the infrastructure via SNMP traps and Syslogs. The Contractor will give each account access levels that are in direct relation to job functions using the Least Privilege Rule. The Contractor will use bandwidth monitoring on all firewall interfaces which includes VPN tunnels. The Contractor will monitor performance of both storage and virtual infrastructures analytics based IT management software solution designed to isolate and optimize performance and utilization of virtual machines, physical servers and storage resources. The Contractor will manage the performance of the virtual infrastructure. Performance data will be abstracted to health, risk and efficiency measures based off key performance indicators and will be displayed in a roles-based access dashboard.
System Administration and Support: *Audit Trail*	Contractor shall track infrastructure and applications across all tiers and capture all transactions, end-to-end, from a User click, to the database record and back. The Contractor will provide accurate and timely reporting as requested.
System Administration and Support: *Data Backup*	The Contractor will use offsite storage. Data backup must be stored offsite in the event of a physical disaster. Full online scheduled file level backups are snapped locally and replicated to disparate DR data center. Database and application backup procedures must be updated to include backups for the System. Full online data backups must occur, as well as offline backups using disconnected storage.
System Administration and Support: *Data Archival*	The Contractor's following data retention policies will dictate the timeframe at which operational databases will be truncated and archived: 1. The Contractor will maintain seven (7) years of manually entered Program data at the highest performing tier of storage and archive the expiring longitudinal dataset on a bi-annual basis to lower tiers. 2. The Contractor's archived data will remain retrievable upon demand via a database management system. This data can be restored to the production tier of storage by archiving utilities if necessary.
System Administration and Support: *Disaster Recovery*	The Contractor will develop a Disaster Recovery Plan for the System. The Contractor will have a tested Disaster Recovery Plan and Business Continuity Plan on file that can be executed in the event of an unforeseen emergency/disaster. The Contractor will conduct annual testing of the above mentioned plans to determine their validity, and determine any need for revision to meet the current situation of IT resources and personnel. The Contractor will ensure that data is protected and operations will resume as soon as possible.
Technical Documentation	The Contractor will place into the States SharePoint Archive all documentation received by Covisint on the system purchased by the State. The Contractor will provide update to existing technical documentation consisting of functionality, architecture, and code sections for any new business function added by the Contractor after the go-live. The functionality section will describe the intent of the module to be added. The architecture section will document the overall structure of the software including components and application interfaces where applicable. The code section will list file names and the database schema structure. Each iterative production release will include the associated technical documentation along with the release notes.
Production Support and Transition	The Contractor shall provide support for the System that is being migrated from Covisint. These activities will include: a. Integrated Support Model The Contractor's services will include ticket logging, management, monitoring, and maintenance. Inherent components are: i. Tiered Support ii. Service performance at each tier base-lined, monitored, measured and reported (See TECH SUPPORT - SERVICE LEVEL AGREEMENT section below) b. Transition

	The Contractor is responsible for planning and coordinating resources to ensure milestones for the redeployment of the DocSite System are realized and to identify, manage, and limit risks. The Contractor will fully coordinate resources required to successfully redeploy and operate the System. c. Pre Transition Planning The Contractor will engage the Blueprint Executive Director to develop an approved project transition plan. The Contractor will make available all artifacts documented by Covisint for the stand-up of the DocSite system. The Contractor will align resources to generate the targeted outcomes of the redeployment of the DocSite system. The Contractor will identify all known changes, including adjustments to the authentication system. d. System Transition Information regarding usability, supportability and operational requirements with both redeployment event and aftermath will be coordinated with the Blueprint Executive Director by the Contractor. A combination of scheduled and information delivery regarding the service deployment will be established and maintained. The knowledgebase (KB) will be updated during the Transition phase.

3. **Sustainability:** Comment on the sustainability of the solution's technical architecture (i.e., is it sustainable?).

   The hosting platform upon which the solution will run, Rackspace, is highly sustainable.

   It is yet unclear whether DocSite is sustainable over the long haul, given the vendor abandoned the solution and the fact that the solution is founded on older technology.

4. **License Model:** What is the license model (e.g., perpetual license, etc.)?

   The proposed solution consists of the following components:

   1. **DocSite Software**: Purchased from Covisint, as a perpetual, unlimited user license, for a one time licensing fee. No support or maintenance is included.
   2. **SQL Server**: 14 CPU license is anticipated.
   3. **Miscellaneous 3rd party software**:
      a. Application - Telerik RadControls for ASP.net /MVC
      b. Application - ActiveReports
      c. Database - RxNorm
      d. Database - Loinc
      e. Database - NDC
      f. Medispan - (for Allergy)

5. **Security:** Does the proposed solution have the appropriate level of security for the proposed activity it will perform (including any applicable State or Federal standards)? Please describe.

   NuHarbor was asked to conduct a static code review of the DocSite software, and per Jack Green, several issues were discovered.

   Additionally, per the contract, KeyW has performed network and penetration tests, and x issues were found.

Static Code Review Findings:

The following summarizes the status of those items as of the time this report was written:

1. The status of the code issue remediation:
    a. MDM indicates that only 6 of the x (*x is not defined in this report for security protection purposes*) high or very high issues required remediation, which they have completed.
        i. It does not appear that anybody has confirmed those 6 have been remediated.
        ii. It does not appear that anybody has confirmed that only 6 of the x issues require remediation.
    b. x (*x is not defined in this report for security protection purposes*) medium flaws remain, to which MDM imply those do not require remediation.
        i. It does not appear that anybody has confirmed those need no remediation.
    c. It does not appear that anybody has accepted the deferred status of #32 which states that the password hashing algorithm is acceptable.

Given the items highlighted in yellow above, it is not clear that those items have been confirmed to be resolved.

It is recommended that NuHarbor conduct a follow up static code review to confirm the resulting fixes from their original static code review adequately address identified security risks.

Further, It is recommended security-related work be separated contractually from implementation work. Specifically, in this case, KeyW, who are providing security services, and MDM, who are performing the fixes to the security findings of KeyW, are subcontracted to CHA. In order to establish proper check and balance between security findings and security-related fixes, an entity other than CHA should be responsible for one or the other of those tasks, but not both of those tasks.

Penetration Test Findings:
The results of the penetration test conducted by KeyW resulted in x findings. Jack Green met during the week of 4/25/16 with CHA, KeyW, MDM, and AHS BPCR Staff. MDM indicated they would have these items resolved by mid-May.

Security Architecture and Design: Describe the Vendor's proposed approach to support technical controls and technology solutions that must be secured to ensure the overall security of the System:

The contract calls for the following:
The Contractor shall maintain and will provide the State with the Subcontractor's current Security Plan which will include results of the most recent risk assessments, the incident/response plan, and the Plan of Action and Milestone (POAM) report. The Sub-recipient will implement a plan for compliance with relevant National Institute of Standards and Technology (NIST) guidelines and 45 CFR 95.621. VITL and its Sub-contractors will be required to comply with all applicable laws, regulations, policies, standards, and guidelines affecting information technology projects, which may be created or changed periodically. It is the responsibility of VITL and its Sub-contractors to insure adherence to and to remain abreast of new or revised laws, regulations, policies, standards, and guidelines affecting project execution. Agency-specific confidentiality and privacy policies, such as Health Insurance Portability and Accountability Act (HIPAA), may apply.

It appears the work being done by KeyW fulfills this objective.

Application Security Model:

1. Application role and function based
2. Authentication
3. SSL

Data Security Model:

1. Authenticate
2. Transfer (SSL)
3. Encrypt data at rest

6. **Hosting Environment**
    a. The solution is expected to be hosted by Rackspace in the East Region.
    b. See the **HOSTING** section in **Appendix 4** for details.

7. **Compliance with the Section 508 Amendment to the Rehabilitation Act of 1973, as amended in 1998:** Comment on the solution's compliance with accessibility standards as outlined in this amendment. Reference: http://www.section508.gov/content/learn

   This is a legacy system which was designed and build by Covisint over 7 years ago. CHA is taking over the management of system and indicates they have no insight into whether it meets these requirements.

8. **Disaster Recovery:** What is your assessment of the proposed solution's disaster recovery plan; do you think it is adequate? How might it be improved? Are there specific actions that you would recommend to improve the plan?

   It is mostly adequate. There is an open question on RTO. Please see DR/BC section described in **Appendix 4**.

9. **Data Retention:** Describe the relevant data retention needs and how they will be satisfied for or by the proposed solution.

   Yes. It is adequate. Please see DR/BC section and specific Backup section described in **Appendix 4**.

10. **Service Level Agreement:** What is your assessment of the service level agreement provisions that the proposed vendor will provide? Are they appropriate and adequate in your judgment?

    The contract spelled out the following required Service Levels/Service Level Agreements, and appear adequate.

SLR Number and Name	Service Level Requirement (SLR) After deployment of the State-owned Blueprint Clinical Registry Release 1, Contractor shall monitor and report monthly on the following SLRs	Contractor Remediation Action Required
SLR 1 **Online Availability**	The components of the Solution under Contractor control as delivered into production shall be available online to receive data inputs at least 90% of the time, with no single downtime exceeding 14 consecutive days.	Contractor shall report failures to the State and its users. Contractor shall provide initial analysis of issues within 1 day, provide work plan for resolution within 3 days, provide daily updates to Blueprint, and provide user updates as determined by the Blueprint. Once system functionality is restored, Contractor shall obtain and load all available data input files that were lost, blocked, or missed during system downtimes.
SLR 2 **Data Storage and Data Aggregation Functionality**	The System shall securely and reliably store and aggregate data inputs at industry-standard levels of performance for enterprise relational database systems.	Contractor shall report failures to the State and its users. Contractor shall provide initial analysis of issues within 1 day, provide work plan for resolution within 3 days, provide daily updates to Blueprint, and provide user updates as determined by the Blueprint. Additional layers of backup data storage shall be developed and implemented as deemed necessary to eliminate any issues of data loss, in particular due to software design deficiencies.
SLR 3 **Dashboard Report Availability**	The System shall make available any previously-developed DocSite Program-based dashboards with drilldown capability.	Contractor shall identify missing dashboard and or drilldown features; prioritize with Blueprint; identify key super users; provide work plan and timeline to Blueprint and super users; and provide updates as determined by Blueprint.
SLR 4a **Data Extracts**	The Contractor shall provide a minimum of 4 data extracts per year, as requested by the Blueprint Executive Director, on roughly a calendar-quarter schedule. Extracts shall be based on the criteria defined by the	Contractor shall report failures and/or delays to Blueprint immediately; provide initial analysis within 1 day; provide work plan for resolution within 3 days; provide daily updates to Blueprint.
SLR 4b **Send Data Extracts to Vendor**	The Contractor shall encrypt and send data extracts to the Blueprint's analytic provider as requested by the Blueprint Executive Director	Contractor shall report failures and/or delays to Blueprint immediately; provide initial analysis within 1 day; coordinate with analytics vendor; provide work plan for resolution within 3 days; provide daily updates to Blueprint.
SLR 5 **Parameter-Based Reports**	The System shall make available any previously-developed DocSite Filter Wizard reporting capabilities to all Programs. The results of these reports can be exported to Microsoft Excel and/or .csv files.	Contractor shall identify missing Filter Wizard reporting capabilities; prioritize with Blueprint; identify key super users; provide work plan and timeline to Blueprint and super users; and provide updates as determined by Blueprint.

SLR 6 **Disaster Recovery RTO**	The System's Recovery Time Objective (RTO) for hosting services shall be within 3 days. In case of a disaster that affects the Blueprint Clinical Registry operations, the entire service shall be restored within 10 days.	A copy of all relevant hosting Service Level Agreements (SLAs) with subcontractors shall be provided to the State. All relevant Service Credits (SCs) received from subcontractors shall be credited to the State on Contractor's monthly invoices to the State. Contractor shall report RTO failures to the State and its users. Contractor shall provide initial analysis of issues within 1 day, provide work plan for resolution within 3 days, provide daily updates to Blueprint, and provide user updates as determined by the Blueprint. Once system functionality is restored, Contractor shall obtain and load all available data input files that were lost, blocked, or missed during system downtimes.
SLR 7 **Disaster Recovery RPO**	The System's Recovery Point Objective (RPO) for hosting services shall be no more than 1 day of data loss. In case of a disaster that affects the DocSite operations, the System's Recovery Point Objective (RPO) shall be no more than 1 week of data loss.	A copy of all relevant hosting Service Level Agreements (SLAs) with subcontractors shall be provided to the State. All relevant Service Credits (SCs) received from subcontractors shall be credited to the State on Contractor's monthly invoices to the State. Contractor shall report RPO failures to the State and its users. Contractor shall provide initial analysis of issues within 1 day, provide work plan for resolution within 3 days, provide daily updates to Blueprint, and provide user updates as determined by the Blueprint. Once system functionality is restored, Contractor shall obtain and load all available data input files that were lost, blocked, or missed during system downtimes.
SLR 8 **Quality of Code Delivered to UAT**	All priority 3 or higher defects (testing defects) resulting from software development activities for newly added features post go-live shall be resolved by the Contractor prior to the software being delivered for User Acceptance Testing (UAT) and prior to deployment to production.	Contractor remediation actions required by other SLRs as a result of failure to resolve such testing defects prior to UAT and/or prior to deployment to production will be provided by Contractor at no additional cost to State.
SLR 9a **Software Maintenance Request Resolution Times:** ***Severity 1 - Emergency**	For original Covisint DocSite functionality: See specific SLR Remediation Actions for SLRs 1 through 8. For new business functions added by Contractor at the request of Blueprint Executive Director: the Contractor must resolve Severity 1 Maintenance requests within 3 days.	Contractor shall report resolution deadline failures to the State and its users. Contractor shall provide initial analysis of issues within 1 day, provide work plan for new resolution within 3 days, provide daily updates to Blueprint, and provide user updates as determined by the Blueprint. Once system functionality is restored, Contractor will obtain and load all available data input files that were lost, blocked, or missed during system downtimes.

SLR 9b **Software Maintenance Request Resolution Times: *Severity 2 - Urgent**	For original Covisint DocSite functionality: See specific SLR Remediation Actions for SLRs 1 through 8. For new business functions added by Contractor at the request of Blueprint Executive Director: the Contractor must resolve Severity 2 Maintenance requests within 2 weeks.	Contractor shall report resolution deadline failures to the State and its users. Contractor shall provide initial analysis of issues within 1 day, provide work plan for new resolution within 3 days, provide daily updates to Blueprint, and provide user updates as determined by the Blueprint. Once system functionality is restored, Contractor will obtain and load all available data input files that were lost, blocked, or missed during system downtimes.
SLR 9c **Software Maintenance Request Resolution Times: *Severity 3 - Important**	For original Covisint DocSite functionality: See specific SLR Remediation Actions for SLRs 1 through 8. For new business functions added by Contractor at the request of Blueprint Executive Director: the Contractor must resolve Severity 3 Maintenance requests within 4 weeks as directed by the Blueprint Executive Director.	Contractor shall report resolution deadline failures to the State and its users. Contractor shall provide status reports as directed by the Blueprint Executive Director.

Specific SLAs are described below:

TECH SUPPORT - SERVICE LEVEL AGREEMENT

1. Tiered Support
2. Service performance at each tier base-lined, monitored, measured and reported

Level 1	Shall provide 8x5 coverage and perform repetitive Standards of Practice (SOP)-based activities, resolution of known errors [leveraging Knowledge Base (KB) - Database (DB)], and standard request fulfillment. For more complex requests, the L1 teams shall defer to L2/L3 teams
Level 2	Service restoration through temporary fixes/workarounds, root cause analysis, KBs /SOP creation for repetitive incidents and enhancement of Knowledge Management artifacts; Staffed with specialists with knowledge of applications and associated business processes
Level 3	Staffed with application developers and technical analysts; Permanent fixes

USER ACCEPTANCE TESTING (UAT) - SERVICE LEVEL AGREEMENT

Defects uncovered during User Acceptance Testing (UAT) will be categorized due to Priority. Defects encountered during the Production Phase will be distinguished by Severity. Severity is determined by the relative importance and response time requirements for the type of defect encountered.

SYSTEM RESPONSE TIME - SERVICE LEVEL AGREEMENT

See **#2: SERVICE LEVEL** above for detail.

SYSTEM AVAILABILITY - SERVICE LEVEL AGREEMENT (3 9s, 4 9s?)

See **#2: SERVICE LEVEL** above for detail, although no specific percentages defined.

BUG FIX – SERVICE LEVEL AGREEMENT

There are two SLAs considered in this section:

1. Normal bug fixes
2. Those that cover he following covers new business functions added by Contractor at the request of Blueprint Executive Director

Normal Bug Fixes:

The Contractor's defect tracking and resolution management will assess and prioritize defects.

The following table provides guidelines for ranking of the ***Scope*** of a defect:

5	Affects most or all Users and/or a very larger range of system functionality
4	Affects a large set of Users and/or large range of system functionality
3	Affects a moderate set of Users and/or moderate range of system functionality
2	Affects a small set of Users and/or a small range of system functionality
1	Affects a minimal set of Users and/or a very small range of system functionality

The following table provides guidelines for ranking of the ***Severity*** of a defect:

5	Data loss, data corruption or system unavailable
4	Important functionality is unavailable with no workaround
3	Important functionality is unavailable but has a reasonable workaround
2	Secondary functionality is unavailable but has a reasonable workaround
1	Cosmetic issues or some functionality unavailable but has a simple workaround

Priority is the product of Scope and Severity:

Scope \ Severity	1	2	3	4	5
5	5	10	15	20	25
4	4	8	12	16	20
3	3	6	9	12	15
2	2	4	6	8	10
1	1	2	3	4	5

Actions:

The Contractor will have an established set of action requirements for each range of calculated priority value.

The Contractor will follow a process for defect resolution and acceptance:

Defect Discovery – Identification and reporting of potential defects. The information captured here will be enough to reproduce the defect and allow development to determine root cause and impact.

Defect Analysis & Prioritization – The development team will determine if the defect report corresponds to an actual defect, if the defect has already been reported, and what the impact and

priority of the defect is. Prioritization using the previously described scoring approach and scheduling of the defect resolution will then managed by the overall change management process for the software development organization.

Defect Resolution – The Contractor's development team will determine the root cause, implement the changes needed to fix the defect, and document the details of the resolution in the Team Foundation Server defect management software, and will include suggestions on how to verify the defect is fixed.

Defect Verification – The build containing the resolution to the defect will be identified, and testing of the build is performed to ensure the defect truly has been resolved, and that the resolution has not introduced side effects or regressions. Once all affected branches of development have been verified as resolved, the defect can be closed.

Defect Communication – This encompasses automatic generation of defect metrics for management reporting and process improvement purposes, as well as visibility into the presence and status of defects across all disciplines of the software development team. The defect log captures and reports all attributes of a defect for transparency to all stakeholders.

System Acceptance –The defect is thoroughly validated. This is first facilitated by a revised/improved test that encompasses the identified defect and passes as well as a subsequent successful User Acceptance Test. Any related documentation is updated and the item is then released to production.

The following covers new business functions added by Contractor at the request of Blueprint Executive Director:

Defect Severity Definitions:

- **Severity 1** – The System no longer functions at all, or a System component is unavailable to more than 20% of active production Users.
- **Severity 2** – Any defect that affects less than 20% of the System functionality or less than 20% of active production Users.
- **Severity 3** – The System is able to function with a temporary work-around.

Severity 1	3 days
Severity 2	2 weeks
Severity 3	4 weeks

HOSTING SERVICE LEVEL AGREEMENT

See **#2: SERVICE LEVEL** above for detail, although no specific response times defined.

DR/BC DESCRIPTION AND SERVICE LEVEL AGREEMENT

There is an open question on RTO. Please see DR/BC section described in **Appendix 4**.

11. **System Integration:** Is the data export/reporting capability of the proposed solution consumable by the State? What data is exchanged and what systems will the solution integrate/interface with*?* ***Please create a visual depiction*** and include as **Appendix 1** of this report. Will the solution be able to integrate with the State's Vision and financial systems (if applicable)?

Using standard HL7 and flat file integration connectivity between VITL Rhapsody Integration Engine and the Blueprint Clinical Registry Feed Server, but exact integration methods will be determined on a case-by-case basis.

Integration with State's VISION and Financial Systems is not applicable.

Additional Comments on Architecture:

None.

7. Assessment of Implementation Plan

7.1 Implementation Readiness

After assessing the Implementation Plan, please comment on each of the following.

1. **The reality of the implementation timetable**
    a. The contract with CHA contemplates a 12 month period, 7/1/2015 through 6/30/2016.
    b. The original contract #29244 was amended, expanding scope and budget, but keeping the 12 month schedule.
    c. See **Section 4.3** for Deliverables.
    d. See **Section 4.4** for Milestones.
    e. This is an aggressive schedule given the amount of work to be completed.
    f. It is anticipated that the contract is extended to support operations and any remaining implementation tasks not completed.

2. **Training of users in preparation for the implementation**

The training plan used by the vendor is described below.

Specific Tasks in the Contract call for Training, as described below:

1. Task 8: DocSite Validation and Functional Testing and Transition Support
    - The creation of training materials for new login processes and changes to the system.

2. There is a Section in the contract titled "Blueprint Clinical Registry End-User Training and Support", which includes Task 17: Blueprint Registry User Support. However, the Deliverables included in that task do not include anything related to training, and focus only on end-user support. As MDM working under CHA is expected to manage the application, this is not a concern.

3. The contract has defined in Deliverable "AII-4C – System Source Code and Documentation", vendor responsibility to turn over any project artifacts to include "Training manual, User guides and materials".

There is expected to be no change in how end-users see and use DocSite. Further, MDM is expected to provide System Administration of the DocSite application, so no System Administration training is necessary. As such, the training plan is adequate.

3. **Do the milestones and deliverables proposed by the vendor provide enough detail to hold them accountable for meeting the Business needs in these areas:**

    A. Project Management
    B. Training
    C. Testing
    D. Design
    E. Conversion (if applicable)
    F. Implementation planning
    G. Implementation

The short answer is yes.

The Milestones and associated timeline are outlined in the Milestones Section (**Section 4.4**).

The Deliverables are outlined in Deliverables Section (**Section 4.3**).

4. **Does the State have a resource lined up to be the Project Manager on the project? If so, does this person possess the skills and experience to be successful in this role in your judgement? Please explain.**

    a. State of VT is well positioned regarding Project Management, both in terms of skill set as well as time allocation to this project:

        i. Contracted Project Manager, Jon Brown, who has worked on HIE-related projects since at least 2014. Mr. Brown is anticipated to allocate at least 25% of his time to this project.

        ii. Contracted Program Manager, Larry Sandage, who has worked on HIE-related projects since at least 2011. Mr. Sandage is anticipated to allocate up to 10% of his time to this project.

    b. In summary, Project Management resources, both time allocation and skill set, are adequate.

5. **Readiness of impacted divisions/departments to participate in this solution/project**

    a. AHS/DVHA staff all appear ready and able to take this project on from a skill set and time availability standpoint.

6. **Adequacy of design, development, migration/conversion, and implementation plans**

This section describes vendor's approach to **design and development**.

Unable to assess. No material provided.

This section describes vendor's approach to **Conversion/Migration**.

There is no expected data Conversion/Migration outside of "converting" data through the Data/System Integration outlined in **Appendix 1**.

This section describes vendor's approach to **Implementation**.

In summary, the **Implementation** approach appears sound and adequate.

The implementation of this project is summarized as follows:

1. CHA provides oversight and manages the component parts of this project to include all of the following items.
2. MDM carries out code upgrades/modifications to DocSite to get the system ready for use, including addressing security issues, updating code functionality required to make it "Vermont ready", and functions as DocSite System Administrator.
3. KeyW conducts security services, including penetration tests.
4. NuHarbor conducts Static Code Review.
5. VITL stands up the hosting environment where DocSite is hosted.

CHA provides sound Project Management of these activities, using MS Project to track tasks and progress. A sample is provided in the graphic below:

ID		Task Mode	Task Name	Duration	Start	Finish	Predec	Resource Names	% Work Complete
1			**Task 5a PM and Vendor Mgmt**	**0 days**	**Tue 9/1/15**	**Tue 9/1/15**		**2CHA**	**72%**
6			**Task 5b Program & Vendor Mgmt**	**0 days**	**Tue 9/1/15**	**Tue 9/1/15**	**1**	**1CHA**	**70%**
10			**Task 6 VITL Hosting and Support Service**	**174.67 days**	**Wed 7/1/15**	**Thu 6/30/16**			**80%**
25	✓		**Task 7 Build Operational Instance (5 day**	**6.67 days**	**Mon 12/14/15**	**Mon 12/14/15**		**MDM**	**100%**
28			**Task 8 Functional Testing (5 Day)**	**0 days**	**Mon 12/14/15**	**Mon 12/14/15**	**25**	**2CHA**	**100%**
33			**Task 9a Rhapsody Investigation**	**0 days**	**Mon 1/25/16**	**Mon 1/25/16**		**MDM**	**93%**
41			**Task 10a Establish Reporting Services (Dashboard/RO)**	**24 days**	**Mon 1/11/16**	**Mon 2/29/16**		**MDM,1CH**	**30%**
45			**Task 10b Report Testing (dashboard/data/fw)**	**0 days**	**Mon 2/1/16**	**Mon 2/1/16**	**41**	**2CHA**	**43%**
54	✓		**Task 12 Verify Source Code**	**20 days**	**Mon 12/21/15**	**Mon 12/21/15**		**MDM**	**100%**
62			**Task 11 Penatration and Security Docs**	**44 days**	**Tue 3/1/16**	**Wed 6/1/16**			**0%**
65			**Task 11a Security Overview**	**0 days**	**Mon 3/7/16**	**Mon 3/7/16**		**KeyW**	**38%**
79	✓		**Task 13 Rhapsody Planning**	**0 days**	**Mon 1/25/16**	**Mon 1/25/16**		**VITL,MDM**	**100%**
80	✓		Provide time estimate for Rhapsody Development	2 days	Thu 1/21/16	Mon 1/25/16	35	VITL/MDM	100%
81	✓		Develop Specs and BR for Rhapsody	17.33 days	Mon 1/25/16	Mon 2/29/16	80	VITL/MDM	100%
82	✓		Establish Test Plan for Rhapsody (assist in testing)	4.67 days	Mon 2/22/16	Tue 3/1/16	81	2CHA,MDM	100%
83	✓		Rhapsody Spec Delivered	0 days	Mon 2/8/16	Mon 3/14/16	82	VITL	100%
84			**Task 14 Rhaspody build and Production Processing of messages**	**0 days**	**Mon 2/15/16**	**Mon 2/15/16**		**2CHA,VITL,**	**74%**
85			Develop Rhapsody Interface Engine	17.33 days	Mon 2/8/16	Mon 3/14/16		MDM3,VIT	95%
86	✓		Establish sFTP site	3.33 days	Wed 3/16/16	Tue 3/22/16	85	VITL2	100%
87	✓		Test Flat Files	7 days	Tue 3/15/16	Tue 3/29/16		MDM	100%
88	✓		Test and Promote Production	9.33 days	Mon 3/7/16	Thu 3/24/16	86	VITL	100%

7. **Adequacy of support for design, development, conversion/migration, and implementation activities**

    a. **DESIGN/DEVELOPMENT:**
        i. There is adequate vendor support for design and development, but as noted elsewhere in this report, the amount of work is high for the given timeframe and there is no formal development methodology available.

    b. **CONVERSION/MIGRATION:**
        i. Not applicable.

    c. **IMPLEMENTATION:**
        i. There is adequate vendor support for implementation.

8. **Adequacy of agency and partner staff resources to provide management of the project and related contracts (i.e. vendor management capabilities)**
    a. AHS has assigned 25% of Jon Brown's time as Project Manager.
    b. AHS has assigned up to 10% of Larry Sandage's time as Program Manager.
    c. In summary, Project Management resources, both time allocation and skill set, are adequate.

9. **Adequacy of testing plan/approach**

    Test plans and test cases will be developed by CHA.

    The test plans utilize MS Excel, and track Date, Tester Name, Program, Test#, Test Case Description, Test Action Performed, and Test Result.

    Sample test plans/test cases have been reviewed by the Independent Reviewer, and they appear adequate.

10. **General acceptance/readiness of staff**
    AHS staff assigned to this project all appear ready and able to take this project on from a time availability standpoint to address the "readiness" question, and are eager to use the new solution, addressing the "acceptance" question.

Additional Comments on Implementation Plan:

None.

7.2 Risk Assessment & Risk Register

*After performing a Risk assessment in conjunction with the Business, please create a **Risk Register** as an **Appendix 2** to this report that includes the following:*

1. ***Source of Risk**: Project, Proposed Solution, Vendor or Other*
2. ***Risk Description**: Provide a description of what the risk entails*
3. ***Risk ratings to indicate**: Likelihood and probability of risk occurrence; Impact should risk occur; and Overall risk rating (high, medium or low priority)*
4. ***State's Planned Risk Strategy**: Avoid, Mitigate, Transfer or Accept*
5. ***State's Planned Risk Response**: Describe what the State plans to do (if anything) to address the risk*
6. ***Timing of Risk Response**: Describe the planned timing for carrying out the risk response (e.g. prior to the start of the project, during the Planning Phase, prior to implementation, etc.)*
7. ***Reviewer's Assessment of State's Planned Response**: Indicate if the planned response is adequate/appropriate in your judgment and if not what would you recommend.*

See **Appendix 2.**

Additional Comments on Risks:

None.

8. Cost Benefit Analysis

This section involves four tasks:

1) *Perform an independent Cost Benefit Analysis.*

2) ***Create a Lifecycle Cost Benefit Analysis spreadsheet*** *as an* ***Appendix 3*** *to this report. A sample format is provided.*

a) The cost component of the cost/benefit analysis will include all one-time acquisition costs, on-going operational costs (licensing, maintenance, refresh, etc.) plus internal costs of staffing and "other costs". "Other costs" include the cost of personnel or contractors required for this solution, enhancements/upgrades planned for the lifecycle, consumables, costs associated with system interfaces, and any costs of upgrading the current environment to accept the proposed solution (new facilities, etc.).

b) The benefit side of the cost/benefit will include: 1. Intangible items for which an actual cost cannot be attributed. 2. Tangible savings/benefit such as actual savings in personnel, contractors or operating expense associated with existing methods of accomplishing the work which will be performed by the proposed solution. Tangible benefits also include additional revenue which may result from the proposed solution

c) The cost benefit analysis will be for the IT activity's lifecycle.

d) The format will be a column spreadsheet with one column for each year in the lifecycle. The rows will contain the itemized costs with totals followed by the itemized benefits with totals.

e) Identify the source of funds (federal, state, one-time vs. ongoing). For example, implementation may be covered by federal dollars but operations will be paid by State funds.

3) *Perform an analysis of the IT ABC form (Business Case/Cost Analysis) completed by the Business.*

4) *Respond to the questions/items listed below.*

1. **Analysis Description:** Provide a narrative summary of the cost benefit analysis conducted: The approach used was to gather all costs associated with project for a 10 year period, identify revenue sources for the project, and identify tangible and intangible benefits that might also be used as revenue sources or expense reductions.

    a. COST COMPONENT: See the attached spreadsheet referenced in **Appendix 3** to gain an understanding of:
        i. Source of Funds
        ii. Use of Funds
        iii. Change in Operating Costs

    b. BENEFIT COMPONENT:
        i. See the Tangible and Intangible Benefits described below.

2. **Assumptions:** List any assumptions made in your analysis.
    a. Staff reductions are not expected or contemplated through the implementation of this solution.
    b. There is no revenue recovery anticipated.
    c. Costs are segmented into **Project Cost** and **Operational Costs**

3. **Funding:** Provide the funding source(s). If multiple sources, indicate the percentage of each source for both Acquisition Costs and on-going Operational costs over the duration of the system/service lifecycle.
    a. The primary source of funds include, the following, the detailed amount from which are specified in the attached Project Cost spreadsheet referenced in **Appendix 3**:
        i. STATE FUNDING: HIT Fund; Fund #GC 93.778; 45% State portion; A special fund collected in statute from .199% of each insurance claim and earmarked for projects that strengthen the State's health information infrastructure
        ii. STATE FUNDING: MMIS State
        iii. FEDERAL FUNDING: MMIS Fed
        iv. FEDERAL FUNDING: Federal Match of HIT Fund; 55% Federal portion
        v. FEDERAL FUNDING: SIM purchase of Covisint DocSite source code license (State Innovation Model) (aka Vermont Healthcare Innovation Project or VHCIP); Fund #93.624
    b. See the detailed spreadsheet referenced in **Appendix 3** for actual dollar amounts**.**

4. **Tangible Benefits:** Provide a list and description of the tangible benefits of this project. Tangible benefits include specific dollar value that can be measured (examples include a reduction in expenses or reducing inventory, with supporting details).
    a. Annual Operating Costs are expected to decrease from $1.2M to $596K, saving ~$600K annually. The larger impact items that comprise those savings are identified in the table below.

	Covisint	CHA	Cost Increase/(Decrease)
Annual Software Maintenance	$485,004	$241,860	($243,144)
Software Licenses	$121,992	$20,000	($101,992)
Hosting	$128,006	$168,000	$39,994
Other (Consulting, Program Costs, etc.)	$400,000	$130,550	($269,450)
Net Increase/(Decrease)			**($574,592)**

5. **Intangible Benefits:** Provide a list and description of the intangible benefits of this project. Intangible benefits include cost avoidance, the value of benefits provided to other programs, the value of improved decision making, public benefit, and other factors that become known during the process of analysis. Intangible benefits must include a statement of the methodology or justification used to determine the value of the intangible benefit.
    a. Promote healthcare reform and whole-population health improvement, consistent with the larger goals of the Blueprint for Health program.
    b. Continued use of a solution that is in place and would be impossible to replace in the given timeframe, allowing continued support of the Blueprint Clinical Registry. Even with this solution, data sharing from providers to the registry has been on hold for several months during the transition from Covisint to State of Vermont managing the application. While there is risk with "older technology" and the potential for that technology to become obsolete, the "devil you know" is in play here, and some risk is mitigated by a capable technical staff managing the application vs. having the solution managed by a vendor who had abandoned this market space.

6. **Costs vs. Benefits:** Do the benefits of this project (consider both tangible and intangible) outweigh the costs in your opinion? Please elaborate on your response.
    a. Yes, the tangible benefits outweigh the costs:
    b. Further, given an expected implementation cost of $1.9M, and annual operating costs of $600K,and a savings of $600K annually, we can recover the current $1.2M annual cost between Years 3 and 4:

	Current Cost Cumulative	New Cost Cumulative
Year 1	$1,200,000	$2,550,000 (impl and ops)
Year 2	$2,400,000	$3,148,728
Year 3	$3,600,000	$3,745,689
Year 4	$4,800,000	$4,342,651

    c. There is no monetary value assigned to the intangible benefits.

7. **IT ABC Form Review:** Review the IT ABC form (Business Case/Cost Analysis) created by the Business for this project. Is the information consistent with your independent review and analysis? If not, please describe.
    a. Reviewed the IT ABC Form (HIE Blueprint Clinical Registry Migration - IT ABC.pdf) dated 5/5/2015.
    b. It is a comprehensive and fairly detailed cost analysis. Comparison of key items are in the table below and track closely.

	IT ABC Form	**Indep. Review**
Implementation	$1,572,328	$1,954,80
Operations	$534,456	$596,962

Additional Comments on the Cost Benefit Analysis:

No additional comments.

9. Impact Analysis on Net Operating Costs

1.) Perform a lifecycle cost impact analysis on net operating costs for the agency carrying out the activity, minimally including the following:
a) Estimated future-state ongoing annual operating costs, and estimated lifecycle operating costs. Consider also if the project will yield additional revenue generation that may offset any increase in operating costs.
b) Current-state annual operating costs; assess total current costs over span of new IT activity lifecycle
c) Provide a breakdown of funding sources (federal, state, one-time vs. ongoing)
2.) Create a table to illustrate the net operating cost impact.
3.) Respond to the items below.

As noted in **Section 1.1** above, the Cost Summary for this project is:

IT Activity Lifecycle:	1 Year
Total Lifecycle Costs:	**$ 2.5M**
PROJECT COSTS:	***$2M***
Software Costs:	***$1.06M***
Covisint	*$1.0M*
Other (SQL: $45K; Other: $20K)	*$65K*
CHA Implementation Services:	*$786K*
Contracted Program and Project Management Services:	*$94K*
DII PM/EA Costs:	*$69K*
OPERATING COSTS:	***$596K***
Internal Staffing Costs:	*$86K*
CHA:	***$510K***
CHA PM Services:	*$335K*
Insurance:	*$28.5K*
Registry Maintenance and User Support (MDM):	*$28K*
Hosting Costs (VITL):	*$113K*
Security Services (KeyW):	*$6K*
CURRENT OPERATING COSTS:	**$ 1.19M**
Difference Between Current and New Operating Costs:	**Decrease of $593K** (Go forward Operating Cost of $596K less $1.19M of Current operating cost)
Funding Source(s) and Percentage Breakdown if Multiple Sources:	See table below

Funding Source(s) and Percentage Breakdown if Multiple Sources:

STATE FUNDING: HIT Fund; Fund #GC 93.778; 15% State portion	15.00%	Implementation	5.61%	$143,220.69
STATE FUNDING: HIT Fund; Fund #GC 93.778; 44% State portion; A special fund collected in statute from .199% of each insurance claim and earmarked for projects that strengthen the State's health information infrastructure	44.00%	Operations	8.66%	$221,083.07
STATE FUNDING: MMIS State	10.00%	Funds Sandage/Brown	0.37%	$9,450.00
FEDERAL FUNDING: Federal Match of HIT Fund; 85% Federal portion	85.00%	Implementation	31.80%	$811,583.93
FEDERAL FUNDING: Federal Match of HIT Fund; 56% Federal portion	56.00%	Operations	11.03%	$281,378.46
FEDERAL FUNDING: MMIS Fed	90.00%	Funds Sandage/Brown	3.33%	$85,050.00
FEDERAL FUNDING: SIM purchase of Covisint DocSite source code license (State Innovation Model) (aka Vermont Healthcare Innovation Project or VHCIP); Fund #93.624			39.19%	$1,000,000
TOTAL:			**100.00%**	**$2,551,766**

1. See the spreadsheet attached in **Appendix 3** to review impact to Operating Costs.

2. Provide a narrative summary of the analysis conducted and include a list of any assumptions.
    a. The detailed spreadsheet provided with this analysis breaks out costs as follows:
        i. Implementation (Project) Costs: Costs tied specifically to the Vendor. In other words, those costs that are incurred because we are undertaking the project.
        ii. Operating Costs: Internal costs, consisting of staffing and telecommunication costs, and external costs consisting of contracted services and on-going use of the software and related hosting.
        iii. Total Costs: Project Costs plus Operating Costs.
    b. The TOTAL COSTS are broken out as **IMPLEMENTATION (Project) COSTS** and **OPERATING COSTS**.

3. Explain any net operating increases that will be covered by federal funding. Will this funding cover the entire lifecycle? If not, please provide the breakouts by year.
    a. There is a Net Decrease in Operating Costs as outlined in the project costing spreadsheet.

4. What is the break-even point for this IT Activity (considering implementation and on-going operating costs)?
    a. Given an expected implementation cost of $1.9M, and annual operating costs of $600K,and a savings of $600K annually, we can recover the current $1.2M annual cost between Years 3 and 4:

	Current Cost Cumulative	**New Cost Cumulative**
Year 1	$1,200,000	$2,550,000 (impl and ops)
Year 2	$2,400,000	$3,148,728
Year 3	$3,600,000	$3,745,689
Year 4	$4,800,000	$4,342,651

Appendix 1 - Illustration of System Integration

SYSTEM INTEGRATION/INTERFACES

There are two systems involved here: VITL Rhapsody Integration Engine and the Blueprint Clinical Registry Feed Server.

The interconnection between Orion Health™ Rhapsody® Integration Engine, owned by the Vermont Information Technology Leaders, Inc. (VITL) and the Blueprint Clinical Registry (BPCR), owned by Vermont Department of Health Access, is one-way, near-real time. The purpose of the interconnection is to deliver demographics and clinical data, contributed to the VITL by the Vermont Blueprint for Health participating healthcare organizations, using Orion Health™ Rhapsody® Integration Engine to the BPCR. VITL will provide sFTP server and associated services for the secure transfer of clinical data between the Blueprint for Health participants and the Blueprint Clinical Registry.

VITL will deliver the demographic and clinical data using a secure server-to-server connection. Some Blueprint for Health participating organization will use VITL's sFTP server to send clinical files directly to the BPCR.

Data includes PHI/ HIPAA – Personal Health Information/ Health Insurance Portability & Accountability Act.

The security of the information being passed on this two-way connection is protected through the use of FIPS 140-2 approved encryption mechanisms. The connections at each end are located within controlled access facilities, guarded 24 hours a day. Individual users will not have access to the data except through their systems security software inherent to the operating system. All access is controlled by authentication methods to validate the approved users. Using standard HL7 and flat file integration (not API nor web services).

Appendix 2 - Risk Register

See attached document: FINAL-REVIEW-SOV-AHS-DVHA_HIE_BlueprintClinicalRegistry-STS_Cost_Detail_FINAL.xlsx

Appendix 3 – Lifecycle Costs and Change in Operating Costs

See attached document: FINAL-REVIEW-SOV-AHS-DVHA_HIE_BlueprintClinicalRegistry-STS_Risk_Register_FINAL.pdf

Appendix 4 – Technology Infrastructure

SERVER ARCHITECTURE

Summary:

- 3 physical servers; Test running 4 VMs (Win Server 2008R2 Standard); Prod running 3 VMs (Win Server 2008R2 Standard); Prod DB (Win Server 2008 Enterprise)

Application Server:

- Windows Server 2012 R2 Datacenter Edition (VMs Running Win Server 2008R2 Standard)

Web Server:

- Windows Server 2012 R2 Datacenter Edition (VMs Running Win Server 2008R2 Standard)
- IIS

DATABASE

- Microsoft Windows Server 2008 Enterprise; Windows SQL Server 2008 R2

CLIENT

- Client workstation running a browser (IE, Chrome, Firefox all supported, operates best in Chrome and Firefox)

SOFTWARE DEVELOPMENT

- Windows based development environment – Team Foundation Server 2015 (TFS) source control; uncertain on the SDLC utilized by Covisint for building DocSite; expect to utilize some form of Rapid Application Development (RAD) for future updates
- Programming language: ASP.NET using C#
- Architecture: Web-based application; service-oriented architecture (SOA)

CHANGE MANAGEMENT

- Quasi Deming cycle approach (Plan-Do-Check-Act)

HOSTING

A document was provided by Rackspace, requiring an NDA signature. The data center specs were reviewed and confirmed adequate for the intended purpose of supporting the application. Items reviewed include:

1. Square footage
2. Security facility monitoring
3. Power, UPS, Heating, Cooling, Generators
4. Fire protection
5. Customer access
6. Backup/recovery
7. Network infrastructure
8. Physical connectivity
9. Transit
10. Routing and Switching

MONITORING TOOLS and METHODS

Rackspace uses their Rackspace Monitoring, which offers port and URL monitoring. Please note that the level of alerting and monitoring depends on the service and segment selected by the customer. (Reviewer has asked what that level of alerting and monitoring is for VITL.)

On 5/3/16, Rackspace provided the following:

In regards to the Ping monitoring:

Ping is always configured for the device. By default the monitoring is set up to poll every 60 seconds from three of our monitoring zones. The monitoring for the individual ports operates as follows:

The service is considered down if the poll was unsuccessful for the number of retries (by default 3) for any of the following:

- A route to the IP address is not available.
- The connection is refused.
- The connection times out (by default 10 seconds unless otherwise specified).
- As long as the service is up, the service will be polled every 5 minutes.
- Once a service is down, it will poll every 30 seconds until either the service comes back up or 5 minutes have elapsed at which point it will go back to the default polling interval.
- If a service is down for longer than 12 hours, then it will be polled every 10 minutes until the service comes back up.

Ping
An ICMP ping request is issued to the IP address of the server.
Checks configured prior to Nov 7th, send 5 pings. Checks configured after this date send 6 (with 15s timeout). All checks will be updated in the near future to use 6.
A Critical Alarm Status will result if the Packet Loss > 20%

Regarding URL Monitoring:

A URL check is configured based on these defaults:
Polling interval = 60 second (default setting)
Time Out = 30 seconds (default setting)
Monitoring Zones = 3 polling locations (default setting)
Consistency setting = ALL (default value setting)
Consecutive counts = 3 polling intervals (default setting)
Example: A Critical Status is returned for the check when ALL of the monitoring zones enabled return a Critical alarm status for 3 consecutive polling intervals.

As part of your service, we will be monitoring available URLs of your choosing for availability and content. Your service includes one (1) free URL monitor

HOW IT WORKS: Your custom monitor will retrieve a selected URL, checking for a string of text within the page source of said URL.

The given content cannot span over a line break and cannot be more than 5 consecutive words. We ask that you please provide us with static content, as dynamic content cannot be used for this type of monitor. Also, the monitoring device will search for the given content in all parts of the source code; header, footer and body. Please keep this in mind when specifying a content check. We strongly recommend NOT searching for the content “OK” with this type of monitor.

NOTE: The content check is not a requirement for URL monitoring and can be omitted if a simple URL check is preferred.

EXAMPLE:
URL with content check
http://example.com and check for availability + content “Welcome to the example login”

URL without content check
http://example.com and check for availability.

Due to the unique nature of each individual customer's applications and sensitivity levels, Rackspace encourages customers to develop an incident response plan appropriate for their particular needs that they wish Rackspace to employ in their Incident Management process. (Reviewer has asked VITL what their incident response plan is, and VITL pointed me to their policies site (https://www.vitl.net/about/vitl-policies). There are security-related response plans, but reviewer found no infrastructure-related response plans.

DISASTER RECOVERY/BUSINESS CONTINUITY

Rackspace will repair or replace the following failed hardware components provided by Rackspace at no additional cost within one (1) hour of problem identification by Rackspace for dedicated server hardware, firewalls, and load balancers, in each case excluding failed replication appliances and storage devices. This guaranty does not include the time required to rebuild your system, such as the time required to configure a replacement device, rebuild a RAID array, reload the operating system, reload and configure applications, and/or restore from backup (if necessary). If Rackspace fails to meet the guaranties and the failure adversely affects your Hosted System, you are entitled to a credit in the amount of 5% of the monthly fee per hour of downtime (after the initial one (1) hour from problem identification), up to 100% of your monthly fee for the affected components of your Hosted System.

In regards to the RTO and RPO, Rackspace has RPOs for their own infrastructure. There are no RPOs or RTOs in regards to customers' environments, as the recovery process/time frame varies per customer due to the size of each environment. The customer has the responsibility of having off-site backups or a fail over environment to another data center.

As such, the Recovery Time Objective cannot be defined as VITL has no fail over data center.

DATA BACKUP/RESTORE

1. Rackspace Onsite managed backup: Backup to centralized storage, on site in same facility with data streamed to Rackspace Managed Backup infrastructure across a dedicated network interface in each server, eliminating the possibility of backups causing network congestion on publicly accessible interfaces.
2. Due to the lack of backup encryption for data at rest, encryption by customers is strongly advised.

Specific details include:

1. Weekly Full Backups

2. Daily differential back ups
3. 2 week retention
4. Recovery Point Objective (RPO): 24 hours
5. Recovery Time Objective (RTO): Per the contract, the System's Recovery Time Objective (RTO) for hosting services shall be within 3 days. In case of a disaster that affects the Blueprint Clinical Registry operations, the entire service shall be restored within 10 days. However, given the fact that there is not an in-place fail-over site nor equipment provisioned, this is at risk.

AHS DHVA Blueprint Clinical Registry Project
RISK REGISTER DESCRIPTION:

1. Risk Description: Provide a description of what the risk entails
2. Source of Risk: Project, Proposed Solution, Vendor or Other
3. Risk Rating: Risk ratings to indicate: Likelihood and probability of risk occurrence; Impact should risk occur; and Overall risk rating (high, medium or low priority)
4. Risk Strategy: State's Planned Risk Strategy: **Avoid, Mitigate, Transfer or Accept**
    a. Avoid: Avoid the activity; activities with a high likelihood of loss and large impact.
    b. Mitigate: Develop a plan to reduce risk to reduce the risk of potential loss; activities with a high likelihood of occurring, but impact is small.
    c. Transfer: Outsource risk (or a portion of the risk - Share risk) to third party or parties that can manage the outcome; activities with low probability of occurring, but with a large impact. Often times this is transferred back to vendor.
    d. Accept: Take the chance of negative impact, eventually budget the cost (i.e. a contingency budget line); activities where cost-benefit analysis determines the cost to mitigate risk is higher than cost to bear the risk, then the best response is to accept and continually monitor the risk.
5. Timing of Risk Response: Describes the suggested timing for carrying out the risk response (e.g. prior to the start of the project, during the Planning Phase, prior to implementation, etc.)
6. State's Planned Risk Response: Describe what the State plans to do (if anything) to address the risk (See Risk Response table)
7. Reviewer's Assessment of State's Planned Response: Indicate if the planned response is adequate/appropriate in your judgment and if not what would you recommend.

Department Action Step: Respond to the sections highlighted in yellow (Risk Strategy, State's Planned Risk Response) and send copy back to David Gadway for review

NOTE: Hyperlinks are used on the Risk ID. From the Risk Register, CTL-CLICK on a link to see the Risk Response, or from the Risk Response, CTL-CLICK on a link to go back to the Risk Register.

RISK REGISTER:

Risk #:	Risk Description	Source of Risk	Risk Rating: Impact	Risk Rating: Probability	Risk Rating: Overall Risk	State Risk Strategy Summary (Avoid, Mitigate, Transfer, Accept)	Timing of Response	Reviewer Assessment of Response
1a	Budget/Funding: No risk noted.							
2a	Contract Item: See **Appendix A** and **Appendix B**. There are several contract-related gaps to address.	Project	Medium	High	Medium	Accept, mitigate this risk by using the Covisint documentation	Prior to contract term completion.	Most of the items found in Appendix B are addressed by the response. However, the items in Appendix A remain a risk
2b	Contract Item: There is no clearly defined acceptance criteria for all items. This creates a potential impact to budget and scope.	Project	Medium	Medium	Medium	Accept and fix in next contract cycle	Consider for next contract cycle.	This remains a risk to be managed and is to be addressed in the next contract.
2c	Contract Item: See **Appendix C**. How does CHA plan to demonstrate meeting performance standards of the SLAs defined in the contract?	Project	Medium	Medium	Medium	Accept, work to 'avoid' this becoming an issue	Consider for next contract cycle.	Risk strategy accepted.
3a	Vendor Risk: No risk noted.							
4a	SOV Service Level/Staffing: Given the volume of work in the given schedule, at least .5 FTE additional testing resource would be of use.	Project	Medium	Medium	Medium	Accept	Consider for next contract cycle.	Risk strategy accepted.
5a	Project Management Staffing: No risk noted. It is expected that between CHA Project Management and SOV part time PM, this area is covered.							

6a	Project Schedule: The volume of work for the given timeframe is very aggressive. Expect either the scope of work to be reduced or the schedule to be extended. Please confirm which path is expected.	Project	Medium	Medium	Medium	Accept.	ASAP	Risk strategy accepted.
7a	Infrastructure: Hardware Platform: No risk noted.							

7b	Infrastructure: Data Encryption: Data at Rest in Production, Data at Rest in Backup Environment and Data In-Flight: **Data at Rest in Production**: Section 2.3 of the contract states: "*(4) measures to store in a secure fashion all State Data which shall include multiple levels of authentication".* Page 25 of the contract states: "**Encryption:** VITL will address encryption requirements as follows: 1. All personally identifiable information (PII) data must be encrypted and must not impact program functionality, to include data at rest and data in motion, particularly when the State is not in physical control of the data. 2. Additional program data, as determined by the data owner, may be encrypted. 3. Data encryption methods may encompass cell-level, table-level, database-level, or file-level encryption, as long as objectives 1 and 2 are met. Additionally, all applications, Application Programming Interfaces (API), and services must be able to consume the data successfully using the selected method of encryption. 4. Encryption must use cryptographic key hierarchy conventions or its equivalent. 5. For encryption level, no encryption and simple encryption are unacceptable. Advanced Encryption Standard (AES) with keys of at least 128 bit blocks shall be used whenever it is feasible to do so. **Data at Rest in Backup Environment**: Backup data at Rackspace is not encrypted at rest. It is not yet clear whether data in transit between production and backup is encrypted, and if not, whether it needs to due to the wording of Contract Section 2.3, which states: "*(3) encryption of electronic State Data while in transit from the Contractor networks to external networks*". We were unable to get clarity from VITL/Rackspace in the point of time of this report as to whether backup data is considered an "external network"). Per Rackspace documentation: "Due to the lack of backup encryption for data at rest at Rackspace, encryption of backed up data is strongly advised." **Data In-Flight:** During the IR Report presentation on 5/13, Jack Green said he would follow up with the stated	Project	High	High	High	Accept	Prior to placing solution into production.	This remains a risk to be managed and is to be addressed before putting system into production as well as in the next contract.

	specific requirements for data at rest and data in flight. On 5/17, Mr. Green provided the following per NIST 800-53: "*SC-28 PROTECTION OF INFORMATION AT REST Control: The information system protects the confidentiality and integrity of information at rest. Implementation Standards: Sensitive information such as PII should be encrypted while at rest. If information in the service provider environment cannot be encrypted, appropriate data isolation is a potential compensating control. All mechanisms used to encrypt data must be FIPS 140-2 compliant and operate using the FIPS 140-2 compliant module.*" At the IR Report presentation on 5/13, it was noted that as of 5/13, BitLocker was deployed on Rackspace servers, but no further information was made available. Clarity on encryption requirements and VITL/Rackspace capabilities for data at rest in the production environment, data at rest in the backup environment, and data in flight are warranted.							
7c	Infrastructure: Business Continuity/Disaster Recovery: In regards to the RTO and RPO, Rackspace has RPOs for their own infrastructure. There are no RPOs or RTOs in regards to customers' environments, as the recovery process/time frame varies per customer due to the size of each environment. The customer has the responsibility of having off-site backups or a fail over environment to another data center. As such, the Recovery Time Objective cannot be defined as VITL has no fail over data center.	Project	High	High	High	Accept	Prior to placing solution into production.	This remains a risk to be managed and is to be addressed in the next contract.

8a	Functionality: The ability to leverage Rhapsody functionality into the DocSite solution is proving difficult. It is not yet clear if this leg of the stool will stand up. This creates a potential impact to budget and scope.	Project	Low	Low	Low	We don't understand David's assessment . Rhapsody is installed and loading ADTs, etc. on schedule. Yes it was difficult, but not impossible and it's working.	Prior to placing solution into production.	Risk Mitigated in the time between Risk initially identified and response to risk by DVHA.
9a	Interoperability: No risk noted.							
10a	Compliance/Regulatory: No risk noted.							
11a	Security: It is not yet clear if all security items identified have been addressed. The following summarizes the status of those items as of the time this report was written: 1. The status of the code issue remediation: a. MDM indicates that only 6 of the x high or very high issues required remediation, which they have completed. i. It does appear that anybody has confirmed those 6 have been remediated. ii. It does appear that anybody has confirmed that only 6 of the x issues require remediation. b. x medium flaws remain, to which MDM imply those do not require remediation. i. It does appear that anybody has confirmed those need no remediation. c. It does appear that anybody has accepted the deferred status of #32 which states that the password hashing algorithm is acceptable.	Project	High	High	High	Accept and fix	Prior to placing solution into production.	This remains a risk to be managed and is to be addressed before system put into production
12a	Other: No risk noted.							

RISK RESPONSE:

Risk #:	State's Planned Risk Response and Reviewer's Assessment of State's Risk Response
1a	**STATE'S RISK RESPONSE:** N/A. No risk noted **REVIEWER'S ASSESSMENT:**
2a	**STATE'S RISK RESPONSE:** Disagree this is a risk – All PM deliverables provided on time and are routinely updated. Deliverables AII – 1A, 3A, 4A, 5A, and 5B are all in process and on schedule for 6/30 delivery (As told to the IR vendor). Provided deliverables are on the Sharepoint Site. **Response #2**: The State of Vermont is in possession of the Covisint design documents. Recall this contract 'lifts' the DocSite solution and re-hosts it in a new environment here in Vermont. Fortunately, this isn't new build or we would agree the foundational documentation for the system would have to be complete up front before implementing the system. As it is, CHA will update the documentation for the Vermont installation. Therefore, we'd say we are mitigating this risk by using the Covisint documentation. **REVIEWER'S ASSESSMENT:** The specific language in the contract does not define a specific delivery date for many of these. However, given a traditional Software Development Life Cycle, Design occurs before Development, which occurs before Testing, it is reasonable to expect that these deliverables are produced prior to the succeeding step in the process, and not just as project artifacts at the end of the project. Using 1A-Interface Design Document and 1B-System Architecture as examples: 1A calls for delivery of a Design Document to include data flow diagrams, data dictionary, and data test plans. 1B calls for delivery of a System Architecture document including Conceptual architecture, Logical architecture layers, Environment definitions, Security, privacy and consent management plan. It is suggested in **Appendix B** that these are to be delivered by 6/30/2016 which is very last date of the contract. The risk is only somewhat that these never get delivered, but more so that the foundation upon which the solution is built has not had its underlying design/architecture reviewed and accepted by State of VT. Further, there has been no specific response to the missing deliverables as identified in **Appendix A**. **Review Response #2**: Response #2 above addresses many if not most of the items found in Appendix B. However, the items in Appendix A remain a risk.
2b	**STATE'S RISK RESPONSE:** Disagree this is a risk. Acceptance criteria is in line or better than many other state contracts. Clear acceptance paperwork is required for deliverables **Response #2**: While not every deliverable will require extensive acceptance criteria, David's point is well taken in light of the first four tasks of the contract. We will fix this risk in the next contract by requiring explicit criteria for each deliverable. For the purposes of this IR, however, Tasks 1-4 are out of scope. The State will 'Accept' this risk. **REVIEWER'S ASSESSMENT:**

	Agree that there is acceptance PAPERWORK. However, I have not found acceptance CRITERIA. Specifically, there are no measurable results that can be evaluated for completeness for many deliverables. **Response #2**: Are Tasks 1-4 out of scope?
2c	**STATE'S RISK RESPONSE:** Each SLA has the steps required in case of failure and the action steps from event to restoration. What 'evidence' would satisfy the IR vendor? We need more information on what you're looking for here. We're not in a place to lay an undue burden on CHA to produce artifacts at this moment due to the schedule constraints of finishing the project by the end of June. **Response #2**: The State will "Accept" this risk and work to 'avoid' this becoming an issue. **REVIEWER'S ASSESSMENT:** Reviewer has acknowledged in the Independent Review Report itself the amount of work to be done given the tight schedule. However, that does not mean the Independent Reviewer is given license to ignore the facts as presented. For this specific item, the risk as stated is seeking how the vendor plans to demonstrate meeting performance standards of the SLAs defined in the contract. To answer the question regarding what 'evidence' the Reviewer would need to satisfy the risk: At a minimum, DHVA accepting the risk as is, and being comfortable that the vendor is going to deliver as contracted. Response #2: So long as AHS works to manage SLA agreements through the remainder of this contract, and adds teeth to the next contract, risk strategy accepted.
3a	**STATE'S RISK RESPONSE:** N/A. No risk noted **REVIEWER'S ASSESSMENT:**
4a	**STATE'S RISK RESPONSE:** This is the IR vendor's opinion. The state will 'accept' this risk. **REVIEWER'S ASSESSMENT:** Risk strategy accepted.
5a	**STATE'S RISK RESPONSE:** N/A. No risk noted **REVIEWER'S ASSESSMENT:**
6a	**STATE'S RISK RESPONSE:** The schedule has been the number one risk on this project since it began. CHA has worked miracles to date and the system is running better than expected at this date **Response #2:** At this time, it's highly probable the schedule will be met, on time. We're ahead of schedule for the first data extract! The state will 'Accept' this risk as we consider it mitigated by a lot of hard work. **REVIEWER'S ASSESSMENT:**

	As noted in the risk, expect either the scope of work to be reduced or the schedule to be extended. Please confirm which path is expected, or please indicate if you feel that the entire scope will be completed in the given schedule. **Response #2:** AHS is indicating that neither the scope will be reduced nor the schedule extended. Risk strategy accepted.
7a	**STATE'S RISK RESPONSE:** N/A. No risk noted **REVIEWER'S ASSESSMENT:**
7b	**STATE'S RISK RESPONSE:** TBD. We'll have to get back to you on this front. **Response #2:** Still TBD. We'll definitely have to work this offline and moving forward. Our understanding is there is some back-up capability, but we need input from VITL and CHA going forward. This will be reviewed as part of the next contract. This is a valid risk that the State will have to 'Accept' for now and try to 'avoid' in the future. **REVIEWER'S ASSESSMENT:** This remains a risk to be managed and is to be addressed prior to GO LIVE and/or in the next contract.
7c	**STATE'S RISK RESPONSE:** This is not mission critical, 24 hour turn around, data we're talking about here. If the system goes dark for 2 weeks, while inconvenient, it doesn't stop the work. **Response #2**: There are SLRs within the contract starting on page 62. Most SLRs have RTOs associated with them. Yes, SLR 1 says, "The components of the Solution under Contractor control as delivered into production shall be available online to receive data inputs at least 90% of the time, with no single downtime exceeding 14 consecutive days." There is a remediation action associated with this SLR. All SLRs will be reviewed going forward to see if there are things we want to tighten up. The State will 'Accept' this risk. **REVIEWER'S ASSESSMENT:** Are you saying the system can be down for two weeks without impacting the business, and VITL can stand up a new environment within 2 weeks? If so, at what location, Rackspace? Where in the contract is this RTO defined? **Response #2**: This remains a risk to be managed and is to be addressed in the next contract.
8a	**STATE'S RISK RESPONSE:** Rhapsody is installed and working properly. All the Aug 15 – Dec 2015 data has been uploaded using Rhapsody. All ADT messages Jan – Mar have been successfully invested into the registry using Rhapsody. **REVIEWER'S ASSESSMENT:** As the Independent Review is a point in time review, and at the point in time this Risk was created, this risk existed (see 3/7/2016 Project Status report: "*Rhapsody was not capable of all the functionality that VITL had expected so MDM rewrote the feed server to support debugging and connectivity efforts*". Now, on 5/2/16, the issue is resolved, thereby mitigating this risk. Risk mitigated.
9a	**STATE'S RISK RESPONSE:** N/A. No risk noted

	REVIEWER'S ASSESSMENT:
10a	**STATE'S RISK RESPONSE:** N/A. No risk noted **REVIEWER'S ASSESSMENT:**
11a	**STATE'S RISK RESPONSE:** All security items have been provided to and approved by the AHS Security officer, Jack Green. All very high, or high risk items have been mitigated. Jack approved go-live and stated last week that the penetration test recently conducted by MDM was one of the best he's ever seen. This risk has been accepted, fixed, approved, and retired. There is still some security work to do in the next iteration of the contract, but the state is very pleased with how CHA responded to Jack's request for testing, etc. From Independent Reviewer: One mitigation strategy is to consider having NuHarbor conduct another Static Code Review. **Response #2**: Agreed. Will discuss with the program team the strategy of a follow-up code review similar to the first one as part of the next contract. That's our mitigation strategy going forward. **REVIEWER'S ASSESSMENT:** The risk as highlighted does not focus on the **Penetration Test** conducted by KeyW. In following up with Mr. Green, he agrees that the **Penetration Test** results are accepted. This risk focuses on the **Static Code Review** completed by NuHarbor. One mitigation strategy is to consider having NuHarbor conduct a follow up Static Code Review to confirm the assertion by MDM that the risks identified in the initial Static Code review are in fact resolved. **Response #2**: This remains a risk to be managed. It is recommended NuHarbor conduct a follow up Static Code Review to confirm the remediation findings stated above are in fact accurate prior to Go Live.
12a	**STATE'S RISK RESPONSE:** N/A. No risk noted. **REVIEWER'S ASSESSMENT:**

APPENDIX A

1. Remedy the following gaps between the contract and actual performance prior to the end of the contract term and final payment, and manage more closely going forward, both for the remainder of the current contract as well as for future contracts:
    i. The Project Status Reports or Monthly Progress Reports submitted by CHA are lacking some of the detail specified in the contract. Examples of missing information include the following:
        1. Task 1: Program Management*
            a. Deliverable 4c: "*Actual hours spent on each program/initiative included in the report.*" Only summary of hours per month is provided. No detail on hours per task or activity is provided.
            b. Deliverable 4e: "*Dates and times of meetings attended.*" No such detail provided.
        2. Task 2: Project Management of Statewide Blueprint Data Quality Initiatives Performance Measures*
            a. Deliverable 5: Performance Measures: "*Metrics-Based Management: The Contractor shall use metrics on schedule and deliverable acceptance throughout the project.*" No such activity appears to have been completed.
        3. Task 4: Involvement in Projects Supporting Data Quality Work*
            a. Deliverable 2a: "…*time spent on the project, meetings attended, stakeholders involved, etc*." No such detail provided.
        4. Task 16:
            a. Deliverable 5d: "*Time spent on each project, including meetings attended, etc.*" No such detail provided.
        5. Task 15a (*Actual Hosting Costs)* indicates State may be billed "up to" $9,467.17 for <u>actual</u> costs. No detail of <u>actual</u> costs provided.
        6. Confirm status/receipt of many of the deliverables defined on Pages 71-79 of the contract titled "Contractor's Responsibilities" within each Deliverable section.

2. There is inconsistency in the contract language in terms of the detailed reporting deliverables required of the Vendor. As noted above, for example, Task 1 (Program Management) seeks detailed "*actual hours spent*" and "*dates and time of meetings attended*" whereas tasks with similar activities do not seek that same level of detail (i.e. Task 5 (Program Management of DocSite Migration). Ensure any future contract seeks the same level of detail across tasks with a "*time spent*" and/or "*date of activity*" type of service. Specific references are listed below:
    i. Task 5: Program, Project and Vendor Management
        1. Task 5a Project and Vendor Management
        2. Task 5b: Program Management
    ii. Task 6: Hosting Setup Services and Support for the DocSite Migration Project
        1. Task 6a: The Contractor may invoice the State up to a maximum of $6,000 within the contract term for project management services
        2. Task 6b: The Contractor may invoice the State up to a maximum of $27,500 within the contract term for hardware setup services within Rackspace for the Blueprint Clinical Registry provided by Contractor through its subcontractor VITL at a rate of $125 per hour

iii. Task 7: Completion of Build for Operational Instance of DocSite
iv. Task 8: DocSite Validation and Functional Testing and Transition Support
v. Task 12: Verification of Source Code Delivery from Covisint
    1. Task 12a: The Contractor may invoice the State at the rate of $150 per hour up to a maximum of $9,000 for technical services
vi. Task 13: Replace Covisint Connect Functions with Rhapsody
vii. Task 15: Ongoing Hosting of Blueprint Clinical Registry
    1. Task 15c: The contractor may invoice the state for up to 120 hours for VITL hosting support at $125.00 per hour
viii. Task 17: Blueprint Registry User Support

3. Validate number of months billing is and will remain accurate for Tasks 5a (up to 9 months), 5b (up to 9 months), 15a (up to 9 months), and 15b (up to 11 months) prior to the end of the contract term and final payment. It appears that those may be billed at least one month early if they end up being billed through June, 2016. See invoices 2347 and 2348. For example, there are 10 months between September through June but some Tasks are to be billed only for 9 months.

4. During the IR fact gathering, Katie McGee indicated she has her own consulting firm called MKM Consulting ("*…Ms. McGee is the Principal of MKM consulting located in the Philadelphia area. Through MKM and CHA she works on various Technology Healthcare projects…*"). However, it was also noted during the IR fact gathering that Ms. McGee is a Partner in CHA. The contract does not currently have Ms. McGee listed as a subcontractor, whereas KeyW, VITL and MDM are listed as subcontractor. It is recommended that AHS work with CHA to determine Ms. McGee's employment status with CHA (i.e. employee with income taxes, Social Security and Medicare taxes withheld, unemployment tax on wages paid to an employee, etc., or independent contractor) and as required, list Ms. McGee as a subcontractor if it is determined Ms. McGee is not a CHA employee.
    i. *On 5/16/16, AHS followed up on this item, indicating McGee is a Partner in CHA, an LLC organization, and as such, this is no longer a concern. The Independent Reviewer suggests the AG's office or some other official responsible for contracting confirm one way or the other, whether Ms. McGee needs to be named as a subcontractor.*

5. There is no evidence of receipt of many of the Deliverables noted in **Appendix B** as one might expect at this point of the project (2.5 months from project term end date).

APPENDIX B

There is no evidence regarding the receipt of and approval of those items to date highlighted in yellow in the table immediately below.

Deliverable	Description	Response from BPCR Staff
Deliverable AII-1A	Interface Design Document	Jon Brown: In process – Jun 30 Delivery of initial doc
Deliverable AII-1B	System Architecture	Jon Brown: In process – Jun 30 Delivery of initial doc
Deliverable AII-2	System Maintenance and Support	
Deliverable AII-3	Testing	
Deliverable AII-4A	Deployment Plan	Jon Brown: In process – Jun 30 Delivery of initial doc
Deliverable AII-4B	Completed Detailed Functional and Technical Specifications	
Deliverable AII-4C	System Source Code and Documentation	
Deliverable AII-5A	System Incident Reports – M&O	
Deliverable AII-5B	Operations and System Administration Procedures Manual	Jon Brown: In process – Jun 30 Delivery of initial doc
Deliverable AII-5C	Tier 2 Service Desk Plan	
Roles & Responsibilities RACI Matrix	A chart or list of the project participants' roles and level of responsibility (R-Responsible, A-Accountable, C-Consulted, I-	
Communication Management Plan	Describes the types, modes, frequency, recipients, location of meetings, and archive (i.e. links to communications published)	
Project Status Reports	Provides State PM with a weekly report on the project health, accomplishments, upcoming tasks, risks and significant issues.	
Project Schedule	An ongoing schedule to be updated and sent to the State PM, for anticipating and tracking changes to project tasks, deliverables and milestones.	
Milestones	Finalized list of Milestone of deliverables.	

Project Management Plan	In collaboration with the State PM and at the direction of the Blueprint Executive Director, develop a plan for the approach to managing the project, including sub sections that include the standup of the DocSite system and the planned modifications including the messaging engine deployment and extract development.	
Meeting Agenda/ Minutes	All scheduled meetings will have an agenda provided prior to the meeting, and minutes of meeting highlights, decisions made, and action items assigned published within 3 business days after the meeting.	
Risk Log	Tracks the project risks (current and past). Responsible for reporting new risks identified to State PM (and State VM when applicable). This includes such information as likelihood, impact, and mitigation strategy.	
Issue/Action Items/Decisions Log	A Log of open and resolved/completed Action items, Issues and Decisions.	
Formal Acceptance	Contractor PM obtains sign-off from the Blueprint Executive Director for each completed deliverable or set of deliverables signifying acceptance.	

Note in each **Deliverable Item** below, there is an associated "Responsibilities" each of which include a line titled "CONTRACTOR RESPONSIBILITIES" highlighted in yellow. It specifies the tangible items CHA is to deliver. Please provide either a status of each deliverable or where on SharePoint it is located.

Deliverable AII-1 – Requirements Analysis and System Design

Deliverable AII-1A–Interface Design Document

Contractor will develop Interface Design Documents for each identified integration point. A diagram or conceptual model will create for each integration detailing the source and target systems.

Building on the documentation provided by Covisint this document will detail the requirements outlined by the Blueprint. The Interface Design Document must include updated documents including the following components:

1. Data Flow Diagrams
2. Data Dictionary
3. Data Test plans
4. Interconnection Security Agreement

Contractor's Responsibilities	• Contractor will develop a Design Document to include data flow diagrams, data dictionary, and data test plans
Blueprint's Responsibilities	Review and approve the document
Location	N/A

Deliverable AII-1B – System Architecture

The Contractor will update the delivered DocSite System Architecture document, which includes a conceptual model or diagram that is a representation of the components that make up the System. This deliverable will be maintained throughout the project as system components are added or changed to reflect the most current state.

The Contractor shall provide the System Architecture deliverable that are part of the Solution. This System Architecture shall define and document:

1. A conceptual architecture
2. A detailed list of all the proposed production environment platforms, including Hardware, OS, Networking, and all COTS and third party systems/tools/ utilities, etc.
3. The details of Security, Privacy and Consent Management Plan for DocSite.

4. The Security Plan will provide the technical approach to satisfy the following where applicable:
    a. Network segmentation
    b. Perimeter security
    c. Contractor's System security and data sensitivity classification
    d. Intrusion management
    e. Monitoring and reporting
    f. Remote access
    g. Encryption
    h. State -wide active directory services for authentication
    i. Interface security
    j. Security test procedures
    k. Managing network security devices
    l. Security patch management
    m. Secure communications over the Internet
5. Detailed diagrams depicting all security-related devices and subsystems and their relationships with other systems for which they provide controls will be within the Security Plan.

Contractor's Responsibilities	System Architecture document will include: • Conceptual architecture • Logical architecture layers • Environment definitions • Security, privacy and consent management plan
Blueprint's Responsibilities	Review, comment and provide feedback
Location	N/A

Deliverable AII-2 – System Maintenance and Support

The System's Maintenance and Support Plan deliverable will include the processes, policies and responsibilities of the product support services team.

The Contractor shall provide a written plan for the Maintenance and Operations Support of the Blueprint Clinical Registry prior to any new functionality is added to the system. The following documentation shall be prepared by the Contractor and included in the System Maintenance and Support Plan provided to the State:

1. Development of the System's support structure and organization, including estimates of manpower requirements to support operation and maintenance of the System.
2. Completed Code, where applicable.
3. Maintenance and repair policies and procedures.
4. Updated system architecture diagrams and inventory (systems, servers, etc.)
5. Data Dictionary/VT measure sets.

The Contractor shall provide a System Maintenance and Support Plan to include the elements defined above.

Contractor's Responsibilities	• Development of system support structure and organization • Operating procedures manual • Maintenance manual
Blueprint's Responsibilities	Review and comment
Location	N/A

Deliverable AII-3 – TESTING

Deliverable AII-3A – Test Plan

The Contractor's Test Plan will detail the approach to thoroughly testing all additional business functions added to the system post go-live. The three major components of the plan include:

1. Test coverage
2. Test methods
3. Test responsibilities

The Contractor will be responsible for the development of a Test Plans for all new functionality added to the system post go-live, which includes the following testing events:

1. Unit and Integration Testing – The Contractor shall perform Unit and Integration testing as necessary.
2. System Testing – The System testing is aimed at proving that the System meets the stated requirements by validating the total system in a real world scenario. The System's testing will be combined into a single test phase to provide streamlined testing without compromising the testing objectives.
3. System Test Execution – The System's test shall utilize "real" data, and shall be performed by the Contractor. The System's test shall be intended to demonstrate the critical business functions that is being added to the system at the request of the Blueprint Executive Director. The Contractor shall provide and the BP Executive Director shall accept the System Test Plan before it is executed. The Contractor shall incorporate the following activities during System Testing:
    a. Demonstrate Critical Business Function Scenarios (as defined by and approved by the State)
    b. End-to-end business process testing (as defined and approved by the State).
    c. Interface Testing (if applicable).
    d. Performance Testing (stress, load testing if applicable).
    e. Security Testing.
    f. Regression Testing.
4. User Acceptance Testing – The purpose of User Acceptance Testing is to confirm that the System enhancements are developed according to industry standard business development best practices and that it is ready for enterprise deployment and operational use. During UAT, selected end-Users will compare the System's functionality, features, and performance to the Requirements Documents and Design documents.
5. Performance Testing – The Contractor shall perform Performance Testing as deemed applicable by the Blueprint Executive Director. Performance Testing shall include both Stress and Load Testing to verify Contractor's System performance in accordance with the SLRs.
6. System Regression Testing – The Contractor shall perform Regression Testing on any new functionality added to the system post go-live to verify the System's integrity after functional improvements or fixes have been made as a result of the System's Integration and User Acceptance test activities. Regression testing shall be designed to confirm that fixes have not created any new problems and that the results are as planned. The Contractor team shall document all tests performed. The Contractor shall provide a Test Plan that includes the elements outlined above and a detailed schedule for each of the activities to be completed within the test phase, including the individuals (named and role) responsible for the completion and/or approval of each activity.

Contractor's Responsibilities	• Unit and integration testing • System testing • User acceptance testing protocols • Evaluation of UAT test results • Regression testing • Performance testing • Release test schedule
Blueprint's Responsibilities	• Identify End User to do UAT • Sign-off on release to production
Location	UAT testing will be conducted online in System's provided Test environment.

Deliverable AII-3B – Documented System Results

The Contractor will capture all testing results via a tracking system. Complete traceability from the requirement to the development and eventual test result is available real-time electronically.

Contractor's Responsibilities	• System results document • Reporting (defects and corrective actions)
Blueprint's Responsibilities	Review
Location	N/A

Deliverable AII-4 – DEPLOYMENT

Deliverable AII-4A – Deployment Plan

The Contractor shall develop a Deployment Plan that defines all tasks required to release System changes to each environment. Each plan includes the steps and required tools to "roll out" a specific change set. In addition, each deployment plan includes a "roll back" plan to entirely reverse any deployment that was unsuccessful. An Implementation Plan will also be created for each major release focusing on just the tasks associated with the release scope. Post-implementation performance monitoring will be conducted to determine if each implementation is successful.

The Contractor shall produce a plan for deployment of new functionality. Moreover, the Contractor shall provide a Deployment Plan that documents the activities that need to be accomplished to successfully migrate the DocSite Solution from the testing environment to the production environment. The Plan shall provide a detailed schedule of activities with key "go" / "no-go" decision points identified throughout the deployment process. In addition, the plan shall detail a back out and recovery process to be triggered in the event the turnover to production fails.

Contractor's Responsibilities	• Deployment schedule • Deployment environment and configuration • Release notes • Rollback plan
Blueprint's Responsibilities	• Verify, validate and sign-off post deployment
Location	Target environment: • Development • Test • Production

Deliverable AII-4B – Completed Detailed Functional and Technical Specifications

The Contractor will author a document detailing the System's requirements for added functionality post go-live with columns representing the functional and technical specifications completeness.

After completion of each release, the Contractor shall update, and provide an updated System Design, Requirements, and Specifications document for the component of the System that was modified. The document components shall include:

1. Updated Functional Requirements
2. Updated Technical Specifications

Contractor's Responsibilities	• Updated Functional Requirements with each release • Updated Technical Specifications with each release
Blueprint's Responsibilities	N/A

Location	N/A

Deliverable AII-4C – System Source Code and Documentation

The Contractor' system shall manage all aspects of the System development process includes web-based source code and documentation repositories. The System source code repository provides historical versioning and merge capabilities. The document repository can be accessed from the web for those approved by the Blueprint Executive Director.

At the completion of the Project, the Contractor shall conduct a review with the Blueprint and identify any documentation that must be updated as a result of changes during the contract period. The Contractor will be required to update the documentation and provide it to the Blueprint for review and Final Acceptance.

The following shall be updated and provided to the Blueprint Executive Director at the completion of the Project:

1. Artifacts of Covisint Technical and System Documentation
2. Specifications for newly added features
3. System Architecture updates
4. Technical Design Documentation updates
5. Final versions of the System software files

The Contractor shall also transfer all finalized required documentation to the State. The format and the medium of transfer will be at the discretion of the State.

Contractor's Responsibilities	Update all artifacts associated with DocSite system throughout project: • Functional specification and design • System architecture • Technical design documentation • Training manual, User guides and materials • Final versions of the system software files (code)
Blueprint's Responsibilities	N/A
Location	State Hosting Environment

Deliverable AII-5 – System M&O

Deliverable AII-5A – System Incident Reports – M&O

The Contractor will deliver System Incident Reports throughout the project as requested by the Blueprint Executive Director. This will be accomplished via web-based Service Desk ticketing system. Ad-hoc query functionality shall be available to authorized Users to answer specific questions related to incidents.

The Contractor must complete the following services. (The Contractor may propose additional deliverables as needed to achieve the task goals of System Maintenance and Operations):

System Incident Resolution – Maintenance and Operations of the System includes software faults for functions that were added after the system go-live. All incidents that occur as part of ongoing operations must be addressed and resolved within a reasonable time frame as per the SLAs.

Adaptive Maintenance – All changes and fixes will be implemented based on a mutually agreed upon schedule. All changes will go through all phases of testing by the Contractor. The test results must be documented and provided to the State for approval before a decision is made to put the new release into Production. All relevant Contractor's System documentation will be updated and provided to the State at the conclusion of any Contractor's System changes.

System Enhancements – If enhancements are requested, the Blueprint Executive Director will submit a request for those modifications to the Contractor. The Contractor will analyze the changes and provide a cost estimate for performing those changes if they have not already been pre-determined. These cost estimates will be negotiated based on rates proposed and agreed to. The Blueprint can then decide whether it wishes to move forward with the requested enhancements, which will be incorporated as a change order to the Contract. The System Incident Report should contain the severity of the incident, a description of the incident, incident resolution status, and the proposed course of action for remedying all open incidents.

Contractor's Responsibilities	• Prepare ongoing System's incident reports • Incident resolution status
Blueprint's Responsibilities	Review and comment
Location	N/A

Deliverable AII-5B – Operations and System Administration Procedures Manual

The Contractor is responsible for updating an Operations and System Administration Procedures Manual that includes the following components if provided by Covisint. This manual may contain:

Diagnostic procedures, backup and restore procedures, and disaster recovery procedures.

1. Information to aid in analyzing and debugging the software.
2. Maintenance and repair policies and procedures.

3. Updated System's architecture diagrams and inventory (systems, servers, etc.).

Deliverable AII-5C – Tier 2 Service Desk Plan

The Contractor's Tier 2 Service Desk Plan will describe the required System's processes and procedures necessary to effectively support Users of the System.

The Contractor is responsible for developing a Tier 2 Service Desk Plan that indicates how support will be provided and how escalated incidents are resolved.

Contractor's Responsibilities	• Contractor's System support structure and organization • Support tools (ticketing, voice mail etc.) • Hours of operation • Communication and escalation plan
Blueprint's Responsibilities	Review
Location	N/A

APPENDIX C

How does CHA plan to demonstrate meeting performance standards on the SLAs defined in the contract?

REQUIREMENT	APPROACH TO MEETING REQUIREMENT
Performance Requirements	Security and software updates will be regularly scheduled to insure the Systems remain secure, and compatible with the latest browsers that are supported by the System. Regular system updates will be communicated and scheduled in advance and will not be performed during peak usage times. The Contractor will monitor the performance of both the storage and virtual infrastructures. The Contractor will provide monitoring to address performance issues. The Contractor will capture Web page response times from the client end point down to the backend database calls.
Performance Monitoring and Management	The Contractor's Performance Monitoring and Management will include the methods for managing system resources such as servers, backup, archiving, databases and applications.
System Availability	The System shall be hosted in Tier 3 or higher data centers, and will be equipped with multipath burstable bandwidth from the hosting facilities. The Contractor will identify software bottlenecks, excessive calls to the database, and system responses falling outside acceptable standards. The Contractor will fix found issues to ensure issues do not make it into the production environment. The Contractor's will monitor the production environment to identify and resolve issues not detected during the stand-up of the DocSite System.
IT Component Capacity Planning	The Contractor will plan, size and control the system as IT Component Capacity needs change. The Contractor's plan will address, but not be limited to the following system areas: i. Database Storage Capacity ii. Audit Log Storage The Contractor will actively analyze the health of the storage systems at both the hardware and software layer. The Contractor will provision to grow logical drives for the databases, document repository or integrated knowledge bases. All storage area networks will be full fiber channel with redundant fiber channel switches.
System Administration and Support: *Account Administration*	The System shall include both authentication and authorization mechanisms. Authentication will follow industry best practices for password strength and reset frequency. The System shall also automatically log a User out if a period of inactivity is exceeded. Any given User's access will be limited to exactly what their role or responsibility entails. Each User's security profile will include roles. Given permission can be "denied" to exclude it from a given User's role.
System Administration and Support: *System Administration*	The Contractor will provide ongoing support and maintenance, including customization of the System computing ecosystem. The Contractor's overall management framework will include: 1. Application management and monitoring

	2. Web services management 3. Systems management and monitoring 4. Identity and Access Management 5. Network management and monitoring 6. Performance monitoring The System shall capture Web page response times from the User end-point down to the backend database calls to ensure Web pages meet acceptable standards. The Contractor will provide active and passive monitoring of items such as CPU, disk and memory utilization, device up time and custom monitors for production related services such as SQL processes and anti-virus. The Contractor will monitor health, availability and status of all network and system devices in the infrastructure via SNMP traps and Syslogs. The Contractor will give each account access levels that are in direct relation to job functions using the Least Privilege Rule. The Contractor will use bandwidth monitoring on all firewall interfaces which includes VPN tunnels. The Contractor will monitor performance of both storage and virtual infrastructures analytics based IT management software solution designed to isolate and optimize performance and utilization of virtual machines, physical servers and storage resources. The Contractor will manage the performance of the virtual infrastructure. Performance data will be abstracted to health, risk and efficiency measures based off key performance indicators and will be displayed in a roles-based access dashboard.
System Administration and Support: *Audit Trail*	Contractor shall track infrastructure and applications across all tiers and capture all transactions, end-to-end, from a User click, to the database record and back. The Contractor will provide accurate and timely reporting as requested.
System Administration and Support: *Data Backup*	The Contractor will use offsite storage. Data backup must be stored offsite in the event of a physical disaster. Full online scheduled file level backups are snapped locally and replicated to disparate DR data center. Database and application backup procedures must be updated to include backups for the System. Full online data backups must occur, as well as offline backups using disconnected storage.
System Administration and Support: *Data Archival*	The Contractor's following data retention policies will dictate the timeframe at which operational databases will be truncated and archived: 1. The Contractor will maintain seven (7) years of manually entered Program data at the highest performing tier of storage and archive the expiring longitudinal dataset on a bi-annual basis to lower tiers. 2. The Contractor's archived data will remain retrievable upon demand via a database management system. This data can be restored to the production tier of storage by archiving utilities if necessary.
System Administration and Support: *Disaster Recovery*	The Contractor will develop a Disaster Recovery Plan for the System. The Contractor will have a tested Disaster Recovery Plan and Business Continuity Plan on file that can be executed in the event of an unforeseen emergency/disaster. The Contractor will conduct annual testing of the above mentioned plans to determine their validity, and determine any need for revision to meet the current situation of IT resources

	and personnel. The Contractor will ensure that data is protected and operations will resume as soon as possible.
Technical Documentation	The Contractor will place into the States SharePoint Archive all documentation received by Covisint on the system purchased by the State. The Contractor will provide update to existing technical documentation consisting of functionality, architecture, and code sections for any new business function added by the Contractor after the go-live. The functionality section will describe the intent of the module to be added. The architecture section will document the overall structure of the software including components and application interfaces where applicable. The code section will list file names and the database schema structure. Each iterative production release will include the associated technical documentation along with the release notes.
Production Support and Transition	The Contractor shall provide support for the System that is being migrated from Covisint. These activities will include: a. Integrated Support Model The Contractor's services will include ticket logging, management, monitoring, and maintenance. Inherent components are: i. Tiered Support ii. Service performance at each tier base-lined, monitored, measured and reported (See TECH SUPPORT - SERVICE LEVEL AGREEMENT section below) b. Transition The Contractor is responsible for planning and coordinating resources to ensure milestones for the redeployment of the DocSite System are realized and to identify, manage, and limit risks. The Contractor will fully coordinate resources required to successfully redeploy and operate the System. c. Pre Transition Planning The Contractor will engage the Blueprint Executive Director to develop an approved project transition plan. The Contractor will make available all artifacts documented by Covisint for the stand-up of the DocSite system. The Contractor will align resources to generate the targeted outcomes of the redeployment of the DocSite system. The Contractor will identify all known changes, including adjustments to the authentication system. d. System Transition Information regarding usability, supportability and operational requirements with both redeployment event and aftermath will be coordinated with the Blueprint Executive Director by the Contractor. A combination of scheduled and information delivery regarding the service deployment will be established and maintained. The knowledgebase (KB) will be updated during the Transition phase.

AHS DHVA Blueprint Clinical Registry Project

STATEMENT OF: Use of Funds (Expenses), Source of Funds (Revenue), Cash Flow, and Net Change in Operating Cost

Click on the links to the left to go to that data

CASH FLOW ANALYSIS: Click Here

SUMMARY:		IMPLEMENTATION and OPERATING COSTS:			
Total Cost:	$2,551,764	**Implementation Costs:**	$1,954,805		
Total Funding:	$1,502,460	**New Operating Costs:**	$596,960		
State Funding:	$221,082	**Current Operating Costs:**	$1,190,308		
Federal Funding:	$1,281,377			**$**	**%**
Potential Revenue Recovery:	$0	**NET CHANGE IN OPERATING COSTS-Decrease/(Increase):**		$593,348	
Funding Excess/(Shortage):	($1,049,305)		State Decrease/(Increase):	$593,348	49.85%
			Federal Decrease/(Increase):	($1,281,377)	0.00%

USE OF FUNDS - START

Description	Note	Unit Price	# of Units	Total	State Funded	Fed Funded	Implementation Year 1 (FY16)	Implementation Year 2 (FY17)	Maint and Ops Year 3 (FY18)	Maint and Ops Year 4 (FY19)	Maint and Ops Year 5 (FY20)	Maint and Ops Year 6 (FY21)	Maint and Ops Year 7 (FY22)	Maint and Ops Year 8 (FY23)	Maint and Ops Year 9 (FY24)	Maint and Ops Year 10 (FY25)	Software Total
EXTERNAL-RELATED COSTS																	
VENDOR COSTS																	
SOFTWARE AND SERVICES																	
SOFTWARE ❶																	
Software Being Licensed:	Included as SaaS Pricing																$0
1. Covisint DocSite		$1,000,000	1	$1,000,000			$1,000,000	$0	$0	$0	$0	$0	$0	$0	$0	$0	$1,000,000
2. Other:																	
SQL Server	Per Inv# 2354A	$3,242	14	$45,390			$45,390.10										
Misc 3rd Party Software:		$20,000	1	$20,000			$20,000.00										
Application - Telerik RadControls for ASP.net /MVC			1	$0			$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Application - ActiveReports			1	$0			$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Database- RxNorm			1	$0			$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Database- Loinc			3	$0			$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Database- NDC			1	$0			$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Medispan- (for Allergy)			1	$0			$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
SOFTWARE TOTAL			I				**$1,065,390**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$1,065,390**
SERVICES																	
CHA IMPLEMENTATION SERVICES																	
			I=Impl; O=Ops														
Task 1a	Data Quality Program Management	$10,000 per month (for 12 months)	O	CHA			$120,000	$0	$0	$0	$0	$0	$0	$0	$0	$0	$120,000
Task 1b	Milestone payments for DocSite success criteria validation and remediation of Independent Review findings (if any)	Two payments of $2,500 each (based on eligibility)	O	CHA			$5,000	$0	$0	$0	$0	$0	$0	$0	$0	$0	$5,000
Task 2a	Project Management of Statewide Blueprint Data Quality Initiatives	$4,000 per month (for 12 months)	O	CHA			$48,000	$0	$0	$0	$0	$0	$0	$0	$0	$0	$48,000
Task 2b	Milestone payments for Data Quality Initiatives	$15,000 twice per year (based on eligibility)	O	CHA			$30,000	$0	$0	$0	$0	$0	$0	$0	$0	$0	$30,000
Task 3	Project Management for Onboarding New Blueprint Data Quality Initiatives	$5,000 per month (for 12 months)	O	CHA			$60,000	$0	$0	$0	$0	$0	$0	$0	$0	$0	$60,000
Task 4	Involvement in Projects Supporting Data Quality Work	$6,000 per month (for 12 months)	O	CHA			$72,000	$0	$0	$0	$0	$0	$0	$0	$0	$0	$72,000
Task 5a	DocSite Migration and Operations Project and Vendor Management	$8,194.44 per month (for 9 months)	I	CHA			$73,750	$0	$0	$0	$0	$0	$0	$0	$0	$0	$73,750
Task 5b	Blueprint Clinical Registry Program Management of Operations and Vendor Management	$7,233.44 per month (for 9 months)	I	CHA			$65,101	$0	$0	$0	$0	$0	$0	$0	$0	$0	$65,101
Task 6a - ***See Hosting below***	VITL project management services for hosting environment setup	$125 per hour	I	VITL				$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Task 6b - ***See Hosting below***	VITL hardware setup and support services for Rackspace® hosting environment	$125 per hour	I	VITL				$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Task 6c	Milestone payment for verification of complete hosting environment build for Blueprint Clinical Registry	One payment of $21,335 (based on eligibility)	I	CHA			$21,335	$0	$0	$0	$0	$0	$0	$0	$0	$0	$21,335
Task 6d - ***See OTHER Software listed above***	Software licenses to operate Blueprint Clinical Registry	Up to $66,624.20,based on documented, actual costs	I	CHA			$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Task 7	Build for Operational Instance of DocSite	$150 per hour	I	MDM			$20,250	$0	$0	$0	$0	$0	$0	$0	$0	$0	$20,250
Task 8	DocSite Validation and Functional Testing and Transition Support	$150 per hour	I	MDM			$9,000	$0	$0	$0	$0	$0	$0	$0	$0	$0	$9,000
Task 9a	Establish Message Processing Functionality for DocSite Software	$150 per hour	I	MDM			$20,250	$0	$0	$0	$0	$0	$0	$0	$0	$0	$20,250
Task 9b	Interface Testing and Validation	$150 per hour	I	MDM			$3,000	$0	$0	$0	$0	$0	$0	$0	$0	$0	$3,000
Task 10a	Establish Reporting Services for DocSite Software	$150 per hour	I	MDM			$12,000	$0	$0	$0	$0	$0	$0	$0	$0	$0	$12,000
Task 10b	Reporting Testing and Validation	$150 per hour	I	MDM			$3,000	$0	$0	$0	$0	$0	$0	$0	$0	$0	$3,000
Task 11a	Initial application and network penetration testing and vulnerability scan for Blueprint Clinical Registry	$201.42 per hour	I	KeyW			$93,930	$0	$0	$0	$0	$0	$0	$0	$0	$0	$93,930

Task 11b	Milestone payments for security documentation and remediation of findings (if any)	Two payments of $5,000 each (based on eligibility)	I	KeyW	$10,000	$0	$0	$0	$0	$0	$0	$0	$0	$0	$10,000
Task 11c	Quarterly penetration tests (up to 1)	$5,940 per test (up to 1)	O	KeyW	$5,940	$0	$0	$0	$0	$0	$0	$0	$0	$0	$5,940
Task 12a	Verification of source code delivery from Covisint	$150 per hour	I	MDM	$9,000	$0	$0	$0	$0	$0	$0	$0	$0	$0	$9,000
Task 12b	Milestone payment for rebuild of DocSite from source code in State's hosting environment (at VITL's Rackspace®) prior to expiration of Covisint's software warranty period	One payment of $15,000 (based on eligibility)	I	MDM	$15,000	$0	$0	$0	$0	$0	$0	$0	$0	$0	$15,000
Task 13	Replace Covisint Connection Functions with Rhapsody	$125 per hour	I	VITL	$13,150	$0	$0	$0	$0	$0	$0	$0	$0	$0	$13,150
Task 14	Transition and Connect Production Data Feeds to Blueprint Clinical Registry	$150 per hour	I	MDM	$242,090	$0	$0	$0	$0	$0	$0	$0	$0	$0	$242,090
Task 15a - ***See Hosting below***	Actual hosting costs for Blueprint Clinical Registry	Up to $9467.17 per month (for 9 months)	O	VITL	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Task 15b	Network Assets Allocated to Blueprint Clinical Registry	$1,200 per month (for 11 months)	O	VITL	$13,200	$0	$0	$0	$0	$0	$0	$0	$0	$0	$13,200
Task 15c - ***See Hosting below***	VITL Hosting Support (Ongoing)	$125 per hour	O	VITL	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Task 16	Technical Support of Blueprint Clinical Registry	$150 per hour	I	MDM	$58,950	$0	$0	$0	$0	$0	$0	$0	$0	$0	$58,950
Task 17	Blueprint Registry User Support	One-time $8,000 for set up and then monthly cost of $3,333.00 for support (for 6 months).	O	MDM	$27,998	$0	$0	$0	$0	$0	$0	$0	$0	$0	$27,998
N/A	Cyber Liability and Related Professional Liability Insurance	Documented, actual costs	O	CHA	$28,577	$0	$0	$0	$0	$0	$0	$0	$0	$0	$28,577
N/A	Expenses and Travel	State of Vermont approved mileage and per-diem rates, and reasonable and necessary out-of-pocket expenses	I	Various	$18,000	$0	$0	$0	$0	$0	$0	$0	$0	$0	$18,000
Other					$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
TOTAL: CHA IMPLEMENTATION SERVICES					**$1,098,521**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$1,098,521**
Other Services:															
					$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Other Services Total:					**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**
SERVICES TOTAL					**$1,098,521**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$1,098,521**
SOFTWARE AND SERVICES TOTAL					**$2,163,911**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$2,163,911**
MAINTENANCE AND OPERATIONS SUPPORT															
All service costs are considered Implementation or Ops Services as Noted					$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
															$0
MAINTENANCE AND OPERATIONS SUPPORT TOTAL		**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**
HARDWARE															
No hardware costs are anticipated		$0			$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
HARDWARE TOTAL		**$0**			**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**
		$0			$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
HOSTING FEES	**I=Impl; O=Ops**														
See tasks above: 6a, 6b, 15a, 15c						$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
See task 6a above	I	VITL			$6,000	$0	$0	$0	$0	$0	$0	$0	$0	$0	$6,000
See task 6b above	I	VITL			$27,500	$0	$0	$0	$0	$0	$0	$0	$0	$0	$27,500
See task 15a above	O	VITL			$85,205	$0	$0	$0	$0	$0	$0	$0	$0	$0	$85,205
See task 15c above	O	VITL			$15,000	$0	$0	$0	$0	$0	$0	$0	$0	$0	$15,000
															$0
HOSTING TOTAL					**$133,705**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$133,705**
OTHER FEES															
No other fees anticipated					$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
															$0
OTHER TOTAL		**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**
TOTAL VENDOR COSTS		**$0**			**$2,297,616**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$2,297,616**
DII FEES															
3% Charge for DII PMO/EA Services based on total Project and Operations Costs:	I	$0			**$68,928**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$68,928**
DII FEES TOTAL					**$68,928**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$68,928**
TOTAL EXTERNAL-RELATED COSTS					**$2,366,544**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$2,366,544**
INTERNAL COSTS															
DEPARTMENTAL INTERNAL COSTS		**I=Impl; O=Ops**													
Staff Development/Training		I			$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Travel and Expenses	Any travel to training?	I			$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
WAN Costs	Any additional or incremental WAN impact?	O			$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Staffing Costs: ❷															
Implementation	Existing staff, but now allocated to this project; Directly from IT ABC Form: II.2.D: Other State Labor Hours	I 130 hours, $36/hour			$4,680	$0	$0	$0	$0	$0	$0	$0	$0	$0	$4,680

Operations	Existing staff, but now allocated to this project; Directly from IT ABC Form: II.3.A: State Labor Hours	390 hours, $36/hour	O		$14,040	$0	$0	$0	$0	$0	$0	$0	$0	$0	$14,040
Data Analyst	Existing staff, but now allocated to this project; Tim Tremblay	1 FTE, 2,000 hours, $36/hour	O		$72,000	$0	$0	$0	$0	$0	$0	$0	$0	$0	$72,000
Project Management	Contracted position-Jon Brown	.25 FTE, 500 hours, $135/hour	I		$67,500	$0	$0	$0	$0	$0	$0	$0	$0	$0	$67,500
Program Manager	Contracted position-Larry Sandage	.1 FTE, 200 hours, $135/hour	I		$27,000	$0	$0	$0	$0	$0	$0	$0	$0	$0	$27,000
Other?						$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
DEPARTMENTAL INTERNAL COSTS TOTAL					**$185,220**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$185,220**
TOTAL INTERNAL COSTS					$185,220	$0	$0	$0	$0	$0	$0	$0	$0	$0	$185,220
TOTAL COSTS (IMPLEMENTATION and OPERATIONS)					**$2,551,764**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$2,551,764**

COST BREAKOUT (IMPLEMENTATION and OPERATIONS)

Implementation	**$1,954,805**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$1,954,805**
Operations	**$596,960**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$596,960**
COST BREAKOUT TOTALS (IMPLEMENTATION and OPERATIONS)	**$2,551,764**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$2,551,764**

USE OF FUNDS - END

SOURCE OF FUNDS - START

Revenue Source:					**Year 1 (FY16)**	**Year 2 (FY17)**	**Year 3 (FY18)**	**Year 4 (FY19)**	**Year 5 (FY20)**	**Year 6 (FY21)**	**Year 7 (FY22)**	**Year 8 (FY23)**	**Year 9 (FY24)**	**Year 10 (FY25)**	**TOTAL**
															$0
Assume Year 1 and 2 are Implementation related, Years 3-x are Operations related															
STATE FUNDING: HIT Fund; Fund #GC 93.778; 15% State portion	15.00%	Implementation	5.61%		$143,220.69	$0	$0	$0	$0	$0	$0	$0	$0	$0	$143,221
STATE FUNDING: HIT Fund; Fund #GC 93.778; 44% State portion; A special fund collected in statute from .199% of each insurance claim and earmarked for projects that strengthen the State's health information infrastructure	44.00%	Operations	8.66%		$221,082.19	$0	$0	$0	$0	$0	$0	$0	$0	$0	$221,082
STATE FUNDING: MMIS State	10.00%	Funds Sandage/Brown	0.37%		$9,450.00										
FEDERAL FUNDING: Federal Match of HIT Fund; 85% Federal portion	85.00%	Implementation	31.80%		$811,583.88	$0	$0	$0	$0	$0	$0	$0	$0	$0	$811,584
FEDERAL FUNDING: Federal Match of HIT Fund; 56% Federal portion	56.00%	Operations	11.03%		$281,377.34	$0	$0	$0	$0	$0	$0	$0	$0	$0	$281,377
FEDERAL FUNDING: MMIS Fed	90.00%	Funds Sandage/Brown	3.33%		$85,050.00										
FEDERAL FUNDING: SIM purchase of Covisint DocSite source code license (State Innovation Model) (aka Vermont Healthcare Innovation Project or VHCIP); Fund #93.624			39.19%		$1,000,000	$0	$0	$0	$0	$0	$0	$0	$0	$0	$1,000,000
TOTAL:			**100.00%**		**$2,551,764**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$281,377**

Summary by State and Federal:

State Funding:	**$221,082**	$221,082	$0	$0	$0	$0	$0	$0	$0	$0	$0
Federal Funding:	**$1,281,377**	$1,281,377.34	$0	$0	$0	$0	$0	$0	$0	$0	$0

SOURCE OF FUNDS - END

PROJECT CASH FLOW - START

	Year 1 (FY16)	**Year 2 (FY17)**	**Year 3 (FY18)**	**Year 4 (FY19)**	**Year 5 (FY20)**	**Year 6 (FY21)**	**Year 7 (FY22)**	**Year 8 (FY23)**	**Year 9 (FY24)**	**Year 10 (FY25)**	**TOTAL**
Use	$2,551,764	$0	$0	$0	$0	$0	$0	$0	$0	$0	$2,551,764
Source	$2,551,764	$0	$0	$0	$0	$0	$0	$0	$0	$0	$2,551,764
Net Cash by Fiscal Year:	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Cash Flow:	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**

Potential Revenue Recovery:												
		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Net Cash by Fiscal Year:		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Cash Flow:		**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**

CASH FLOW - END

NET CHANGE IN OPERATING COSTS - START

		Year 1 (FY16)	Year 2 (FY17)	Year 3 (FY18)	Year 4 (FY19)	Year 5 (FY20)	Year 6 (FY21)	Year 7 (FY22)	Year 8 (FY23)	Year 9 (FY24)	Year 10 (FY25)	TOTAL	
Proposed Operating Costs:													
Total Operating Costs	*Per Cell H141*	$596,960	$0	$0	$0	$0	$0	$0	$0	$0	$0	$596,960	
Total: Proposed Operating Costs:		**$596,960**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$596,960**	
Current Operating Costs:													
Staffing:		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	
Operations	Existing staff, but now allocated to this project	$17,712										$17,712	492 hours, $36/hour
Annual Maintenance of Current Solution:													
Operations Support	Per IT ABC Form; $20,217/month	$242,604	$0	$0	$0	$0	$0	$0	$0	$0	$0	$242,604	
Onboarding New Sites	Per IT ABC Form; $20K/month	$240,000	$0	$0	$0	$0	$0	$0	$0	$0	$0	$240,000	
Software Licensing	Per IT ABC Form; $10,166/month	$121,992	$0	$0	$0	$0	$0	$0	$0	$0	$0	$121,992	
Hosting	Per IT ABC Form; $14K/month	$168,000	$0	$0	$0	$0	$0	$0	$0	$0	$0	$168,000	
Ad-Hoc Custom Development	Per IT ABC Form;$400K annually	$400,000	$0	$0	$0	$0	$0	$0	$0	$0	$0	$400,000	
		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	
Total: Current Operating Costs:		***$1,190,308***	***$0***	***$0***	***$0***	***$0***	***$0***	***$0***	***$0***	***$0***	***$0***	***$1,190,308***	
Net Operating Cost Decrease/(Increase)		**$593,348**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$593,348**	**49.85%**

Summary of Net Change in Operating Costs among Funding Sources: ❸

STATE:													
Proposed State Funding Source		$596,960	$0	$0	$0	$0	$0	$0	$0	$0	$0	$596,960	
Current State Funding Source	*100% of current operating costs*	$1,190,308	$0	$0	$0	$0	$0	$0	$0	$0	$0	$1,190,308	
STATE Net Operating Cost Decrease/(Increase)		***$593,348***	***$0***	***$0***	***$0***	***$0***	***$0***	***$0***	***$0***	***$0***	***$0***	***$593,348***	**49.85%**
FEDERAL:													
Proposed Federal Funding Source		$1,281,377	$0	$0	$0	$0	$0	$0	$0	$0	$0	$1,281,377	
Current Federal Funding Source	*0% of current operating costs*	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	
FEDERAL Net Operating Cost Decrease/(Increase)		***($1,281,377)***	***$0***	***$0***	***$0***	***$0***	***$0***	***$0***	***$0***	***$0***	***$0***	***($1,281,377)***	**0.00%**

NET CHANGE IN OPERATING COSTS - END

NOTES / ASSUMPTIONS:

❶ Perpetual License of Covisint; Unlimited users

❷ Current and anticipate staffing levels anticipated through this project

❸ Need current State and Federal Funding sources and $ amounts

Funding Shortage: **$0**

AHS DHVA Blueprint Clinical Registry Project
RISK REGISTER DESCRIPTION:

1. Risk Description: Provide a description of what the risk entails
2. Source of Risk: Project, Proposed Solution, Vendor or Other
3. Risk Rating: Risk ratings to indicate: Likelihood and probability of risk occurrence; Impact should risk occur; and Overall risk rating (high, medium or low priority)
4. Risk Strategy: State's Planned Risk Strategy: **Avoid, Mitigate, Transfer or Accept**
    a. Avoid: Avoid the activity; activities with a high likelihood of loss and large impact.
    b. Mitigate: Develop a plan to reduce risk to reduce the risk of potential loss; activities with a high likelihood of occurring, but impact is small.
    c. Transfer: Outsource risk (or a portion of the risk - Share risk) to third party or parties that can manage the outcome; activities with low probability of occurring, but with a large impact. Often times this is transferred back to vendor.
    d. Accept: Take the chance of negative impact, eventually budget the cost (i.e. a contingency budget line); activities where cost-benefit analysis determines the cost to mitigate risk is higher than cost to bear the risk, then the best response is to accept and continually monitor the risk.
5. Timing of Risk Response: Describes the suggested timing for carrying out the risk response (e.g. prior to the start of the project, during the Planning Phase, prior to implementation, etc.)
6. State's Planned Risk Response: Describe what the State plans to do (if anything) to address the risk (See Risk Response table)
7. Reviewer's Assessment of State's Planned Response: Indicate if the planned response is adequate/appropriate in your judgment and if not what would you recommend.

Department Action Step: Respond to the sections highlighted in yellow (Risk Strategy, State's Planned Risk Response) and send copy back to David Gadway for review

NOTE: Hyperlinks are used on the Risk ID. From the Risk Register, CTL-CLICK on a link to see the Risk Response, or from the Risk Response, CTL-CLICK on a link to go back to the Risk Register.

RISK REGISTER:

Risk #:	Risk Description	Source of Risk	Risk Rating: Impact	Risk Rating: Probability	Risk Rating: Overall Risk	**State Risk Strategy Summary** (Avoid, Mitigate, Transfer, Accept)	Timing of Response	Reviewer Assessment of Response
1a	Budget/Funding: No risk noted.							
2a	Contract Item: See **Appendix A** and **Appendix B**. There are several contract-related gaps to address.	Project	Medium	High	Medium	Accept, mitigate this risk by using the Covisint documentation	Prior to contract term completion.	Most of the items found in Appendix B are addressed by the response. However, the items in Appendix A remain a risk
2b	Contract Item: There is no clearly defined acceptance criteria for all items. This creates a potential impact to budget and scope.	Project	Medium	Medium	Medium	Accept and fix in next contract cycle	Consider for next contract cycle.	This remains a risk to be managed and is to be addressed in the next contract.
2c	Contract Item: See **Appendix C**. How does CHA plan to demonstrate meeting performance standards of the SLAs defined in the contract?	Project	Medium	Medium	Medium	Accept, work to 'avoid' this becoming an issue	Consider for next contract cycle.	Risk strategy accepted.

2d	Contract Item: Both Application Development-related work and Security-related work, including verifying the applications are secure, are currently part of the same CHA contract (MDM does the coding, KeyW does the security work). This creates a risk, in that, the same vendor has responsibility for developing the software *as well as* representing that the software meets security standards. This risk is further exacerbated by the contract containing a $10K milestone payment for completion of security-related tasks, so the vendor could say they have completed the security tasks, and there is no provision for validating that claim. Consider having DII or AHS procure and manage a separate contract for security-related services, including those services related to ensuring the application software is secure.	Project	High	High	High	Accept, and address through hiring another security vendor to validate security sub-contractor represent-ations	Consider for next contract cycle.	This remains a risk to be managed and is to be addressed in the next contract.
3a	Vendor Risk: No risk noted.							
4a	SOV Service Level/Staffing: Given the volume of work in the given schedule, at least .5 FTE additional testing resource would be of use.	Project	Medium	Medium	Medium	Accept	Consider for next contract cycle.	Risk strategy accepted.
5a	Project Management Staffing: No risk noted. It is expected that between CHA Project Management and SOV part time PM, this area is covered.							
6a	Project Schedule: The volume of work for the given timeframe is very aggressive. Expect either the scope of work to be reduced or the schedule to be extended. Please confirm which path is expected.	Project	Medium	Medium	Medium	Accept.	ASAP	Risk strategy accepted.
7a	Infrastructure: Hardware Platform: No risk noted.							

7b	Infrastructure: Data Encryption: Data at Rest in Production, Data at Rest in Backup Environment and Data In-Flight: **Data at Rest in Production**: Section 2.3 of the contract states: "*(4) measures to store in a secure fashion all State Data which shall include multiple levels of authentication".* Page 25 of the contract states: "**Encryption:** VITL will address encryption requirements as follows: 1. All personally identifiable information (PII) data must be encrypted and must not impact program functionality, to include data at rest and data in motion, particularly when the State is not in physical control of the data. 2. Additional program data, as determined by the data owner, may be encrypted. 3. Data encryption methods may encompass cell-level, table-level, database-level, or file-level encryption, as long as objectives 1 and 2 are met. Additionally, all applications, Application Programming Interfaces (API), and services must be able to consume the data successfully using the selected method of encryption. 4. Encryption must use cryptographic key hierarchy conventions or its equivalent. 5. For encryption level, no encryption and simple encryption are unacceptable. Advanced Encryption Standard (AES) with keys of at least 128 bit blocks shall be used whenever it is feasible to do so. **Data at Rest in Backup Environment**: Backup data at Rackspace is not encrypted at rest. It is not yet clear whether data in transit between production and backup is encrypted, and if not, whether it needs to due to the wording of Contract Section 2.3, which states: "*(3) encryption of electronic State Data while in transit from the Contractor networks to external networks*". We were unable to get clarity from VITL/Rackspace in the point of time of this report as to whether backup data is considered an "external network"). Per Rackspace documentation: "Due to the lack of backup encryption for data at rest at Rackspace, encryption of backed up data is strongly advised." **Data In-Flight:** During the IR Report presentation on 5/13, Jack Green said he would follow up with the stated specific requirements for data at rest and data in flight.	Project	High	High	High	Accept	Prior to placing solution into production.	This remains a risk to be managed and is to be addressed before putting system into production as well as in the next contract.

	On 5/17, Mr. Green provided the following per NIST 800-53: "*SC-28 PROTECTION OF INFORMATION AT REST Control: The information system protects the confidentiality and integrity of information at rest. Implementation Standards: Sensitive information such as PII should be encrypted while at rest. If information in the service provider environment cannot be encrypted, appropriate data isolation is a potential compensating control. All mechanisms used to encrypt data must be FIPS 140-2 compliant and operate using the FIPS 140-2 compliant module."* At the IR Report presentation on 5/13, it was noted that as of 5/13, BitLocker was deployed on Rackspace servers, but no further information was made available. Clarity on encryption requirements and VITL/Rackspace capabilities for data at rest in the production environment, data at rest in the backup environment, and data in flight are warranted.							
7c	Infrastructure: Business Continuity/Disaster Recovery: In regards to the RTO and RPO, Rackspace has RPOs for their own infrastructure. There are no RPOs or RTOs in regards to customers' environments, as the recovery process/time frame varies per customer due to the size of each environment. The customer has the responsibility of having off-site backups or a fail over environment to another data center. As such, the Recovery Time Objective cannot be defined as VITL has no fail over data center.	Project	High	High	High	Accept	Prior to placing solution into production.	This remains a risk to be managed and is to be addressed in the next contract.

8a	Functionality: The ability to leverage Rhapsody functionality into the DocSite solution is proving difficult. It is not yet clear if this leg of the stool will stand up. This creates a potential impact to budget and scope.	Project	Low	Low	Low	We don't understand David's assessment . Rhapsody is installed and loading ADTs, etc. on schedule. Yes it was difficult, but not impossible and it's working.	Prior to placing solution into production.	Risk Mitigated in the time between Risk initially identified and response to risk by DVHA.
9a	Interoperability: No risk noted.							
10a	Compliance/Regulatory: No risk noted.							
11a	Security: It is not yet clear if all security items identified have been addressed. The following summarizes the status of those items as of the time this report was written: 1. The status of the code issue remediation: a. MDM indicates that only 6 of the x high or very high issues required remediation, which they have completed. i. It does not appear that anybody has confirmed those 6 have been remediated. ii. It does not appear that anybody has confirmed that only 6 of the x issues require remediation. b. x medium flaws remain, to which MDM imply those do not require remediation. i. It does not appear that anybody has confirmed those need no remediation. c. It does not appear that anybody has accepted the deferred status of #32 which states that the password hashing algorithm is acceptable.	Project	High	High	High	Accept and fix	Prior to placing solution into production.	This remains a risk to be managed and is to be addressed before system put into production

11b	Security: It is not yet clear if all security items identified have been addressed. The following summarizes the status of those items as of the time this report was written: 1. The status of the code issue remediation: a. MDM indicates that only 6 of the x high or very high issues required remediation, which they have completed. i. It does not appear that anybody has confirmed those 6 have been remediated. ii. It does not appear that anybody has confirmed that only 6 of the x issues require remediation. b. x medium flaws remain, to which MDM imply those do not require remediation. i. It does not appear that anybody has confirmed those need no remediation. c. It does not appear that anybody has accepted the deferred status of #32 which states that the password hashing algorithm is acceptable.	Project	High	High	High	Accept and fix	Prior to placing solution into production.	This remains a risk to be managed and is to be addressed before system put into production
12a	Other: No risk noted.							

RISK RESPONSE:

Risk #:	State's Planned Risk Response and Reviewer's Assessment of State's Risk Response
1a	**STATE'S RISK RESPONSE:** N/A. No risk noted
2a	**STATE'S RISK RESPONSE:** Disagree this is a risk – All PM deliverables provided on time and are routinely updated. Deliverables AII – 1A, 3A, 4A, 5A, and 5B are all in process and on schedule for 6/30 delivery (As told to the IR vendor). Provided deliverables are on the Sharepoint Site. **Response #2**: The State of Vermont is in possession of the Covisint design documents. Recall this contract 'lifts' the DocSite solution and re-hosts it in a new environment here in Vermont. Fortunately, this isn't new build or we would agree the foundational documentation for the system would have to be complete up front before implementing the system. As it is, CHA will update the documentation for the Vermont installation. Therefore, we'd say we are mitigating this risk by using the Covisint documentation. **REVIEWER'S ASSESSMENT:** The specific language in the contract does not define a specific delivery date for many of these. However, given a traditional Software Development Life Cycle, Design occurs before Development, which occurs before Testing, it is reasonable to expect that these deliverables are produced prior to the succeeding step in the process, and not just as project artifacts at the end of the project. Using 1A-Interface Design Document and 1B-System Architecture as examples: 1A calls for delivery of a Design Document to include data flow diagrams, data dictionary, and data test plans. 1B calls for delivery of a System Architecture document including Conceptual architecture, Logical architecture layers, Environment definitions, Security, privacy and consent management plan. It is suggested in **Appendix B** that these are to be delivered by 6/30/2016 which is very last date of the contract. The risk is only somewhat that these never get delivered, but more so that the foundation upon which the solution is built has not had its underlying design/architecture reviewed and accepted by State of VT. Further, there has been no specific response to the missing deliverables as identified in **Appendix A**. **Response #2**: Response #2 above addresses many if not most of the items found in Appendix B. However, the items in Appendix A remain a risk.
2b	**STATE'S RISK RESPONSE:** Disagree this is a risk. Acceptance criteria is in line or better than many other state contracts. Clear acceptance paperwork is required for deliverables **Response #2**: While not every deliverable will require extensive acceptance criteria, David's point is well taken in light of the first four tasks of the contract. We will fix this risk in the next contract by requiring explicit criteria for each deliverable. For the purposes of this IR, however, Tasks 1-4 are out of scope. The State will 'Accept' this risk. **REVIEWER'S ASSESSMENT:** Agree that there is acceptance PAPERWORK. However, I have not found acceptance CRITERIA. Specifically, there are no measurable results that can be evaluated for completeness for many deliverables.

	Response #2: Are Tasks 1-4 out of scope?
2c	**STATE'S RISK RESPONSE:** Each SLA has the steps required in case of failure and the action steps from event to restoration. What 'evidence' would satisfy the IR vendor? We need more information on what you're looking for here. We're not in a place to lay an undue burden on CHA to produce artifacts at this moment due to the schedule constraints of finishing the project by the end of June. **Response #2**: The State will "Accept" this risk and work to 'avoid' this becoming an issue. **REVIEWER'S ASSESSMENT:** Reviewer has acknowledged in the Independent Review Report itself the amount of work to be done given the tight schedule. However, that does not mean the Independent Reviewer is given license to ignore the facts as presented. For this specific item, the risk as stated is seeking how the vendor plans to demonstrate meeting performance standards of the SLAs defined in the contract. To answer the question regarding what 'evidence' the Reviewer would need to satisfy the risk: At a minimum, DHVA accepting the risk as is, and being comfortable that the vendor is going to deliver as contracted. **Response #2**: So long as AHS works to manage SLA agreements through the remainder of this contract, and adds teeth to the next contract, risk strategy accepted.
2d	**STATE'S RISK RESPONSE:** **State Response:** With reference to a "trust but verify" philosophy, we believe that CHA should be able chose whoever they want, to do the security work necessary to meet the requirements of the contract. They have a responsibility to comply with the standards and expectations that the State of Vermont has with regards to performing the security related work; however, the State of Vermont should maintain the right to verify any and all claims that CHA makes with respect to security related fixes. The State would normally engage an independent 3rd party to assess to quality of the security work CHA claims to have done. Our recommendation is that we not specify a prohibition against CHA subcontracting the work to KeyW, but that we separately engage a security vendor whom we trust, to verify the work, with oversight from my office. This will give us the proper check and balance. **Response #2**: The State of Vermont is hiring CHA to deliver an end product, in this case secure code. They can't do that unless they test the code as part of their normal development process and they should be able to choose how they do the testing. Normal software development is often divided functionally where the developers write the code to a specification, then once it's running correctly they hand it off to a separate group for testing (both functional and security). This is how most software development companies work (Microsoft is an example). I can provide you with reference to the Software Development Lifecycle process if you would like. We should not care how they get the point of delivering the solution, but we should be able to verify the product in our acceptance testing. Any time we contract with a vendor for delivery of a software product we should be doing acceptance testing to confirm functionality and security. We don't have to contract for that as we have existing contracts with vendors who are capable to to this type of verification for the state, so it is simply a matter of us issuing a task order **REVIEWER'S ASSESSMENT:** The suggested "trust but verify" approach would be an acceptable "plan b". Here is why I think "plan a" – as recommended in the IR, is much preferred: 1. Tim Holland explained to the Independent Reviewer, that in a phone call with the business area stakeholders (Craig, Tim T, Larry) subsequent to the IR being presented and delivered by Independent Reviewer to DII, that CHA claimed to the business area that as the terms of the contract with the State held CHA responsible for security, CHA wanted control of the vendor assessing said security. The Independent Reviewer contends that State of VT hired CHA PRIMARILY to deliver secure code (through MDM). The related confirmation of code being secure is a requirement, but not necessarily a requirement that the code be deemed/ confirmed to be secure by the same vendor. How that code (and network) are validated as secure does not also mean that CHA must be the judge and jury of the security status. In fact, that is where the conflict lies. CHA is responsible for delivering secure code (through subbing with MDM), but the entity determining such security must not also report to CHA. 2. The security vendor hired by CHA is essentially reporting to two masters: CHA and State of VT. As they get paid by CHA, State of VT is not in a position of being a priority of the security vendor.

	3. Plan b would require hiring yet another security vendor to validate the work of the original security vendor. That would not be needed if State hired a security vendor directly reporting to DII or AHS. 4. State already has a "lessons learned" through working with CGI what happens when the same vendor conducts security assessment and coding/implementation. 5. There is no guarantee that security work gets done when the primary vendor owns the responsibility for both coding and delivering secure code, but it will surely get done if it is a task on the Project Plan assigned to DII or AHS. 6. Finally, the only reason this issue became visible is by chance: The IR was done after the project started, AND, Jack Green pushed hard to have a static code review done. The chance of those two things happening in the future is slim. As such, it would be best to set up the contract in the first place where those two tasks (security and coding) are separated from the outset. **Response #2**: Security-related fees are $94K plus a $10K milestone payment, totaling $104K. It is the expectation of the Independent Reviewer that one vendor could do that work for less money by reporting directly to DII or AHS. There is no apparent value proposition by having one vendor do security work and hiring another vendor to validate the security work. As a further illustration, State is not hiring one vendor to write code and another vendor to validate proper coding techniques (i.e. variable naming conventions are used). The Independent Reviewer understands that it is within the State's discretion to implement recommendations as stated in the IR, or not. For example, if State wishes to implement "plan b", it is within the State's right to do so. In summary, this remains a risk to be managed and is to be addressed in the next contract.
3a	**STATE'S RISK RESPONSE:** N/A. No risk noted
4a	**STATE'S RISK RESPONSE:** This is the IR vendor's opinion. The state will 'accept' this risk. **REVIEWER'S ASSESSMENT:** Risk strategy accepted.
5a	**STATE'S RISK RESPONSE:** N/A. No risk noted
6a	**STATE'S RISK RESPONSE:** The schedule has been the number one risk on this project since it began. CHA has worked miracles to date and the system is running better than expected at this date **Response #2:** At this time, it's highly probable the schedule will be met, on time. We're ahead of schedule for the first data extract! The state will 'Accept' this risk as we consider it mitigated by a lot of hard work. **REVIEWER'S ASSESSMENT:** As noted in the risk, expect either the scope of work to be reduced or the schedule to be extended. Please confirm which path is expected, or please indicate if you feel that the entire scope will be completed in the given schedule. **Response #2:** AHS is indicating that neither the scope will be reduced nor the schedule extended. Risk strategy accepted.

7a	**STATE'S RISK RESPONSE:** N/A. No risk noted
7b	**STATE'S RISK RESPONSE:** TBD. We'll have to get back to you on this front. **Response #2:** Still TBD. We'll definitely have to work this offline and moving forward. Our understanding is there is some back-up capability, but we need input from VITL and CHA going forward. This will be reviewed as part of the next contract. This is a valid risk that the State will have to 'Accept' for now and try to 'avoid' in the future. **REVIEWER'S ASSESSMENT:** This remains a risk to be managed and is to be addressed prior to GO LIVE and/or in the next contract.
7c	**STATE'S RISK RESPONSE:** This is not mission critical, 24 hour turn around, data we're talking about here. If the system goes dark for 2 weeks, while inconvenient, it doesn't stop the work. **Response #2**: There are SLRs within the contract starting on page 62. Most SLRs have RTOs associated with them. Yes, SLR 1 says, "The components of the Solution under Contractor control as delivered into production shall be available online to receive data inputs at least 90% of the time, with no single downtime exceeding 14 consecutive days." There is a remediation action associated with this SLR. All SLRs will be reviewed going forward to see if there are things we want to tighten up. The State will 'Accept' this risk. **REVIEWER'S ASSESSMENT:** Are you saying the system can be down for two weeks without impacting the business, and VITL can stand up a new environment within 2 weeks? If so, at what location, Rackspace? Where in the contract is this RTO defined? **Response #2**: This remains a risk to be managed and is to be addressed in the next contract.
8a	**STATE'S RISK RESPONSE:** Rhapsody is installed and working properly. All the Aug 15 – Dec 2015 data has been uploaded using Rhapsody. All ADT messages Jan – Mar have been successfully invested into the registry using Rhapsody. **REVIEWER'S ASSESSMENT:** As the Independent Review is a point in time review, and at the point in time this Risk was created, this risk existed (see 3/7/2016 Project Status report: "*Rhapsody was not capable of all the functionality that VITL had expected so MDM rewrote the feed server to support debugging and connectivity efforts*". Now, on 5/2/16, the issue is resolved, thereby mitigating this risk. Risk mitigated.
9a	**STATE'S RISK RESPONSE:** N/A. No risk noted
10a	**STATE'S RISK RESPONSE:** N/A. No risk noted

11a	**STATE'S RISK RESPONSE:** All security items have been provided to and approved by the AHS Security officer, Jack Green. All very high, or high risk items have been mitigated. Jack approved go-live and stated last week that the penetration test recently conducted by MDM was one of the best he's ever seen. This risk has been accepted, fixed, approved, and retired. There is still some security work to do in the next iteration of the contract, but the state is very pleased with how CHA responded to Jack's request for testing, etc. From Independent Reviewer: One mitigation strategy is to consider having NuHarbor conduct another Static Code Review. **Response #2**: Agreed. Will discuss with the program team the strategy of a follow-up code review similar to the first one as part of the next contract. That's our mitigation strategy going forward. **REVIEWER'S ASSESSMENT:** The risk as highlighted does not focus on the **Penetration Test** conducted by KeyW. In following up with Mr. Green, he agrees that the **Penetration Test** results are accepted. This risk focuses on the **Static Code Review** completed by NuHarbor. One mitigation strategy is to consider having NuHarbor conduct a follow up Static Code Review to confirm the assertion by MDM that the risks identified in the initial Static Code review are in fact resolved. **Response #2**: This remains a risk to be managed. It is recommended NuHarbor conduct a follow up Static Code Review to confirm the remediation findings stated above are in fact accurate prior to Go Live.
12a	**STATE'S RISK RESPONSE:** N/A. No risk noted.

APPENDIX A

1. Remedy the following gaps between the contract and actual performance prior to the end of the contract term and final payment, and manage more closely going forward, both for the remainder of the current contract as well as for future contracts:
    i. The Project Status Reports or Monthly Progress Reports submitted by CHA are lacking some of the detail specified in the contract. Examples of missing information include the following:
        1. Task 1: Program Management*
            a. Deliverable 4c: "*Actual hours spent on each program/initiative included in the report.*" Only summary of hours per month is provided. No detail on hours per task or activity is provided.
            b. Deliverable 4e: "*Dates and times of meetings attended.*" No such detail provided.
        2. Task 2: Project Management of Statewide Blueprint Data Quality Initiatives Performance Measures*
            a. Deliverable 5: Performance Measures: "*Metrics-Based Management: The Contractor shall use metrics on schedule and deliverable acceptance throughout the project.*" No such activity appears to have been completed.
        3. Task 4: Involvement in Projects Supporting Data Quality Work*
            a. Deliverable 2a: "…*time spent on the project, meetings attended, stakeholders involved, etc*." No such detail provided.
        4. Task 16:
            a. Deliverable 5d: "*Time spent on each project, including meetings attended, etc.*" No such detail provided.
        5. Task 15a (*Actual Hosting Costs)* indicates State may be billed "up to" $9,467.17 for <u>actual</u> costs. No detail of <u>actual</u> costs provided.
        6. Confirm status/receipt of many of the deliverables defined on Pages 71-79 of the contract titled "Contractor's Responsibilities" within each Deliverable section.

2. There is inconsistency in the contract language in terms of the detailed reporting deliverables required of the Vendor. As noted above, for example, Task 1 (Program Management) seeks detailed "*actual hours spent*" and "*dates and time of meetings attended*" whereas tasks with similar activities do not seek that same level of detail (i.e. Task 5 (Program Management of DocSite Migration). Ensure any future contract seeks the same level of detail across tasks with a "*time spent*" and/or "*date of activity*" type of service. Specific references are listed below:
    i. Task 5: Program, Project and Vendor Management
        1. Task 5a Project and Vendor Management
        2. Task 5b: Program Management
    ii. Task 6: Hosting Setup Services and Support for the DocSite Migration Project
        1. Task 6a: The Contractor may invoice the State up to a maximum of $6,000 within the contract term for project management services
        2. Task 6b: The Contractor may invoice the State up to a maximum of $27,500 within the contract term for hardware setup services within Rackspace for the Blueprint Clinical Registry provided by Contractor through its subcontractor VITL at a rate of $125 per hour

iii. Task 7: Completion of Build for Operational Instance of DocSite
iv. Task 8: DocSite Validation and Functional Testing and Transition Support
v. Task 12: Verification of Source Code Delivery from Covisint
    1. Task 12a: The Contractor may invoice the State at the rate of $150 per hour up to a maximum of $9,000 for technical services
vi. Task 13: Replace Covisint Connect Functions with Rhapsody
vii. Task 15: Ongoing Hosting of Blueprint Clinical Registry
    1. Task 15c: The contractor may invoice the state for up to 120 hours for VITL hosting support at $125.00 per hour
viii. Task 17: Blueprint Registry User Support

3. Validate number of months billing is and will remain accurate for Tasks 5a (up to 9 months), 5b (up to 9 months), 15a (up to 9 months), and 15b (up to 11 months) prior to the end of the contract term and final payment. It appears that those may be billed at least one month early if they end up being billed through June, 2016. See invoices 2347 and 2348. For example, there are 10 months between September through June but some Tasks are to be billed only for 9 months.

4. During the IR fact gathering, Katie McGee indicated she has her own consulting firm called MKM Consulting ("*…Ms. McGee is the Principal of MKM consulting located in the Philadelphia area. Through MKM and CHA she works on various Technology Healthcare projects…*"). However, it was also noted during the IR fact gathering that Ms. McGee is a Partner in CHA. The contract does not currently have Ms. McGee listed as a subcontractor, whereas KeyW, VITL and MDM are listed as subcontractor. It is recommended that AHS work with CHA to determine Ms. McGee's employment status with CHA (i.e. employee with income taxes, Social Security and Medicare taxes withheld, unemployment tax on wages paid to an employee, etc., or independent contractor) and as required, list Ms. McGee as a subcontractor if it is determined Ms. McGee is not a CHA employee.
    i. *On 5/16/16, AHS followed up on this item, indicating McGee is a Partner in CHA, an LLC organization, and as such, this is no longer a concern. The Independent Reviewer suggests the AG's office or some other official responsible for contracting confirm one way or the other, whether Ms. McGee needs to be named as a subcontractor.*

5. There is no evidence of receipt of many of the Deliverables noted in **Appendix B** as one might expect at this point of the project (2.5 months from project term end date).

APPENDIX B

There is no evidence regarding the receipt of and approval of those items to date highlighted in yellow in the table immediately below.

Deliverable	Description	Response from BPCR Staff
Deliverable AII-1A	Interface Design Document	Jon Brown: In process – Jun 30 Delivery of initial doc
Deliverable AII-1B	System Architecture	Jon Brown: In process – Jun 30 Delivery of initial doc
Deliverable AII-2	System Maintenance and Support	
Deliverable AII-3	Testing	
Deliverable AII-4A	Deployment Plan	Jon Brown: In process – Jun 30 Delivery of initial doc
Deliverable AII-4B	Completed Detailed Functional and Technical Specifications	
Deliverable AII-4C	System Source Code and Documentation	
Deliverable AII-5A	System Incident Reports – M&O	
Deliverable AII-5B	Operations and System Administration Procedures Manual	Jon Brown: In process – Jun 30 Delivery of initial doc
Deliverable AII-5C	Tier 2 Service Desk Plan	
Roles & Responsibilities RACI Matrix	A chart or list of the project participants' roles and level of responsibility (R-Responsible, A-Accountable, C-Consulted, I-	
Communication Management Plan	Describes the types, modes, frequency, recipients, location of meetings, and archive (i.e. links to communications published)	
Project Status Reports	Provides State PM with a weekly report on the project health, accomplishments, upcoming tasks, risks and significant issues.	
Project Schedule	An ongoing schedule to be updated and sent to the State PM, for anticipating and tracking changes to project tasks, deliverables and milestones.	
Milestones	Finalized list of Milestone of deliverables.	

Project Management Plan	In collaboration with the State PM and at the direction of the Blueprint Executive Director, develop a plan for the approach to managing the project, including sub sections that include the standup of the DocSite system and the planned modifications including the messaging engine deployment and extract development.	
Meeting Agenda/ Minutes	All scheduled meetings will have an agenda provided prior to the meeting, and minutes of meeting highlights, decisions made, and action items assigned published within 3 business days after the meeting.	
Risk Log	Tracks the project risks (current and past). Responsible for reporting new risks identified to State PM (and State VM when applicable). This includes such information as likelihood, impact, and mitigation strategy.	
Issue/Action Items/Decisions Log	A Log of open and resolved/completed Action items, Issues and Decisions.	
Formal Acceptance	Contractor PM obtains sign-off from the Blueprint Executive Director for each completed deliverable or set of deliverables signifying acceptance.	

Note in each **Deliverable Item** below, there is an associated "Responsibilities" each of which include a line titled "CONTRACTOR RESPONSIBILITIES" highlighted in yellow. It specifies the tangible items CHA is to deliver. Please provide either a status of each deliverable or where on SharePoint it is located.

Deliverable AII-1 – Requirements Analysis and System Design

Deliverable AII-1A–Interface Design Document

Contractor will develop Interface Design Documents for each identified integration point. A diagram or conceptual model will create for each integration detailing the source and target systems.

Building on the documentation provided by Covisint this document will detail the requirements outlined by the Blueprint. The Interface Design Document must include updated documents including the following components:

1. Data Flow Diagrams
2. Data Dictionary
3. Data Test plans
4. Interconnection Security Agreement

Contractor's Responsibilities	• Contractor will develop a Design Document to include data flow diagrams, data dictionary, and data test plans
Blueprint's Responsibilities	Review and approve the document
Location	N/A

Deliverable AII-1B – System Architecture

The Contractor will update the delivered DocSite System Architecture document, which includes a conceptual model or diagram that is a representation of the components that make up the System. This deliverable will be maintained throughout the project as system components are added or changed to reflect the most current state.

The Contractor shall provide the System Architecture deliverable that are part of the Solution. This System Architecture shall define and document:

1. A conceptual architecture
2. A detailed list of all the proposed production environment platforms, including Hardware, OS, Networking, and all COTS and third party systems/tools/ utilities, etc.
3. The details of Security, Privacy and Consent Management Plan for DocSite.
4. The Security Plan will provide the technical approach to satisfy the following where applicable:

a. Network segmentation
b. Perimeter security
c. Contractor's System security and data sensitivity classification
d. Intrusion management
e. Monitoring and reporting
f. Remote access
g. Encryption
h. State -wide active directory services for authentication
i. Interface security
j. Security test procedures
k. Managing network security devices
l. Security patch management
m. Secure communications over the Internet

5. Detailed diagrams depicting all security-related devices and subsystems and their relationships with other systems for which they provide controls will be within the Security Plan.

Contractor's Responsibilities	System Architecture document will include: • Conceptual architecture • Logical architecture layers • Environment definitions • Security, privacy and consent management plan
Blueprint's Responsibilities	Review, comment and provide feedback
Location	N/A

Deliverable AII-2 – System Maintenance and Support

The System's Maintenance and Support Plan deliverable will include the processes, policies and responsibilities of the product support services team.

The Contractor shall provide a written plan for the Maintenance and Operations Support of the Blueprint Clinical Registry prior to any new functionality is added to the system. The following documentation shall be prepared by the Contractor and included in the System Maintenance and Support Plan provided to the State:

1. Development of the System's support structure and organization, including estimates of manpower requirements to support operation and maintenance of the System.
2. Completed Code, where applicable.
3. Maintenance and repair policies and procedures.
4. Updated system architecture diagrams and inventory (systems, servers, etc.)
5. Data Dictionary/VT measure sets.

The Contractor shall provide a System Maintenance and Support Plan to include the elements defined above.

Contractor's Responsibilities	• Development of system support structure and organization • Operating procedures manual • Maintenance manual
Blueprint's Responsibilities	Review and comment
Location	N/A

Deliverable AII-3 – TESTING

Deliverable AII-3A – Test Plan

The Contractor's Test Plan will detail the approach to thoroughly testing all additional business functions added to the system post go-live. The three major components of the plan include:

1. Test coverage
2. Test methods
3. Test responsibilities

The Contractor will be responsible for the development of a Test Plans for all new functionality added to the system post go-live, which includes the following testing events:

1. Unit and Integration Testing – The Contractor shall perform Unit and Integration testing as necessary.
2. System Testing – The System testing is aimed at proving that the System meets the stated requirements by validating the total system in a real world scenario. The System's testing will be combined into a single test phase to provide streamlined testing without compromising the testing objectives.
3. System Test Execution – The System's test shall utilize "real" data, and shall be performed by the Contractor. The System's test shall be intended to demonstrate the critical business functions that is being added to the system at the request of the Blueprint Executive Director. The Contractor shall provide and the BP Executive Director shall accept the System Test Plan before it is executed. The Contractor shall incorporate the following activities during System Testing:
    a. Demonstrate Critical Business Function Scenarios (as defined by and approved by the State)
    b. End-to-end business process testing (as defined and approved by the State).
    c. Interface Testing (if applicable).
    d. Performance Testing (stress, load testing if applicable).
    e. Security Testing.
    f. Regression Testing.
4. User Acceptance Testing – The purpose of User Acceptance Testing is to confirm that the System enhancements are developed according to industry standard business development best practices and that it is ready for enterprise deployment and operational use. During UAT, selected end-Users will compare the System's functionality, features, and performance to the Requirements Documents and Design documents.
5. Performance Testing – The Contractor shall perform Performance Testing as deemed applicable by the Blueprint Executive Director. Performance Testing shall include both Stress and Load Testing to verify Contractor's System performance in accordance with the SLRs.
6. System Regression Testing – The Contractor shall perform Regression Testing on any new functionality added to the system post go-live to verify the System's integrity after functional improvements or fixes have been made as a result of the System's Integration and User Acceptance test activities. Regression testing shall be designed to confirm that fixes have not created any new problems and that the results are as planned. The Contractor team shall document all tests performed. The Contractor shall provide a Test Plan that includes the elements outlined above and a detailed schedule for each of the activities to be completed within the test phase, including the individuals (named and role) responsible for the completion and/or approval of each activity.

Contractor's Responsibilities	• Unit and integration testing • System testing • User acceptance testing protocols • Evaluation of UAT test results • Regression testing • Performance testing • Release test schedule
Blueprint's Responsibilities	• Identify End User to do UAT • Sign-off on release to production
Location	UAT testing will be conducted online in System's provided Test environment.

Deliverable AII-3B – Documented System Results

The Contractor will capture all testing results via a tracking system. Complete traceability from the requirement to the development and eventual test result is available real-time electronically.

Contractor's Responsibilities	• System results document • Reporting (defects and corrective actions)
Blueprint's Responsibilities	Review
Location	N/A

Deliverable AII-4 – DEPLOYMENT

Deliverable AII-4A – Deployment Plan

The Contractor shall develop a Deployment Plan that defines all tasks required to release System changes to each environment. Each plan includes the steps and required tools to "roll out" a specific change set. In addition, each deployment plan includes a "roll back" plan to entirely reverse any deployment that was unsuccessful. An Implementation Plan will also be created for each major release focusing on just the tasks associated with the release scope. Post-implementation performance monitoring will be conducted to determine if each implementation is successful.

The Contractor shall produce a plan for deployment of new functionality. Moreover, the Contractor shall provide a Deployment Plan that documents the activities that need to be accomplished to successfully migrate the DocSite Solution from the testing environment to the production environment. The Plan shall provide a detailed schedule of activities with key "go" / "no-go" decision points identified throughout the deployment process. In addition, the plan shall detail a back out and recovery process to be triggered in the event the turnover to production fails.

Contractor's Responsibilities	• Deployment schedule • Deployment environment and configuration • Release notes • Rollback plan
Blueprint's Responsibilities	• Verify, validate and sign-off post deployment
Location	Target environment: • Development • Test • Production

Deliverable AII-4B – Completed Detailed Functional and Technical Specifications

The Contractor will author a document detailing the System's requirements for added functionality post go-live with columns representing the functional and technical specifications completeness.

After completion of each release, the Contractor shall update, and provide an updated System Design, Requirements, and Specifications document for the component of the System that was modified. The document components shall include:

1. Updated Functional Requirements
2. Updated Technical Specifications

Contractor's Responsibilities	• Updated Functional Requirements with each release • Updated Technical Specifications with each release
Blueprint's Responsibilities	N/A

Location	N/A

Deliverable AII-4C – System Source Code and Documentation

The Contractor' system shall manage all aspects of the System development process includes web-based source code and documentation repositories. The System source code repository provides historical versioning and merge capabilities. The document repository can be accessed from the web for those approved by the Blueprint Executive Director.

At the completion of the Project, the Contractor shall conduct a review with the Blueprint and identify any documentation that must be updated as a result of changes during the contract period. The Contractor will be required to update the documentation and provide it to the Blueprint for review and Final Acceptance.

The following shall be updated and provided to the Blueprint Executive Director at the completion of the Project:

1. Artifacts of Covisint Technical and System Documentation
2. Specifications for newly added features
3. System Architecture updates
4. Technical Design Documentation updates
5. Final versions of the System software files

The Contractor shall also transfer all finalized required documentation to the State. The format and the medium of transfer will be at the discretion of the State.

Contractor's Responsibilities	Update all artifacts associated with DocSite system throughout project: • Functional specification and design • System architecture • Technical design documentation • Training manual, User guides and materials • Final versions of the system software files (code)
Blueprint's Responsibilities	N/A
Location	State Hosting Environment

Deliverable AII-5 – System M&O

Deliverable AII-5A – System Incident Reports – M&O

The Contractor will deliver System Incident Reports throughout the project as requested by the Blueprint Executive Director. This will be accomplished via web-based Service Desk ticketing system. Ad-hoc query functionality shall be available to authorized Users to answer specific questions related to incidents.

The Contractor must complete the following services. (The Contractor may propose additional deliverables as needed to achieve the task goals of System Maintenance and Operations):

System Incident Resolution – Maintenance and Operations of the System includes software faults for functions that were added after the system go-live. All incidents that occur as part of ongoing operations must be addressed and resolved within a reasonable time frame as per the SLAs.

Adaptive Maintenance – All changes and fixes will be implemented based on a mutually agreed upon schedule. All changes will go through all phases of testing by the Contractor. The test results must be documented and provided to the State for approval before a decision is made to put the new release into Production. All relevant Contractor's System documentation will be updated and provided to the State at the conclusion of any Contractor's System changes.

System Enhancements – If enhancements are requested, the Blueprint Executive Director will submit a request for those modifications to the Contractor. The Contractor will analyze the changes and provide a cost estimate for performing those changes if they have not already been pre-determined. These cost estimates will be negotiated based on rates proposed and agreed to. The Blueprint can then decide whether it wishes to move forward with the requested enhancements, which will be incorporated as a change order to the Contract. The System Incident Report should contain the severity of the incident, a description of the incident, incident resolution status, and the proposed course of action for remedying all open incidents.

Contractor's Responsibilities	• Prepare ongoing System's incident reports • Incident resolution status
Blueprint's Responsibilities	Review and comment
Location	N/A

Deliverable AII-5B – Operations and System Administration Procedures Manual

The Contractor is responsible for updating an Operations and System Administration Procedures Manual that includes the following components if provided by Covisint. This manual may contain:

Diagnostic procedures, backup and restore procedures, and disaster recovery procedures.

1. Information to aid in analyzing and debugging the software.
2. Maintenance and repair policies and procedures.
3. Updated System's architecture diagrams and inventory (systems, servers, etc.).

Deliverable AII-5C – Tier 2 Service Desk Plan

The Contractor's Tier 2 Service Desk Plan will describe the required System's processes and procedures necessary to effectively support Users of the System.

The Contractor is responsible for developing a Tier 2 Service Desk Plan that indicates how support will be provided and how escalated incidents are resolved.

Contractor's Responsibilities	• Contractor's System support structure and organization • Support tools (ticketing, voice mail etc.) • Hours of operation • Communication and escalation plan
Blueprint's Responsibilities	Review
Location	N/A

APPENDIX C

How does CHA plan to demonstrate meeting performance standards on the SLAs defined in the contract?

REQUIREMENT	APPROACH TO MEETING REQUIREMENT
Performance Requirements	Security and software updates will be regularly scheduled to insure the Systems remain secure, and compatible with the latest browsers that are supported by the System. Regular system updates will be communicated and scheduled in advance and will not be performed during peak usage times. The Contractor will monitor the performance of both the storage and virtual infrastructures. The Contractor will provide monitoring to address performance issues. The Contractor will capture Web page response times from the client end point down to the backend database calls.
Performance Monitoring and Management	The Contractor's Performance Monitoring and Management will include the methods for managing system resources such as servers, backup, archiving, databases and applications.
System Availability	The System shall be hosted in Tier 3 or higher data centers, and will be equipped with multipath burstable bandwidth from the hosting facilities. The Contractor will identify software bottlenecks, excessive calls to the database, and system responses falling outside acceptable standards. The Contractor will fix found issues to ensure issues do not make it into the production environment. The Contractor's will monitor the production environment to identify and resolve issues not detected during the stand-up of the DocSite System.
IT Component Capacity Planning	The Contractor will plan, size and control the system as IT Component Capacity needs change. The Contractor's plan will address, but not be limited to the following system areas: i. Database Storage Capacity ii. Audit Log Storage The Contractor will actively analyze the health of the storage systems at both the hardware and software layer. The Contractor will provision to grow logical drives for the databases, document repository or integrated knowledge bases. All storage area networks will be full fiber channel with redundant fiber channel switches.
System Administration and Support: *Account Administration*	The System shall include both authentication and authorization mechanisms. Authentication will follow industry best practices for password strength and reset frequency. The System shall also automatically log a User out if a period of inactivity is exceeded. Any given User's access will be limited to exactly what their role or responsibility entails. Each User's security profile will include roles. Given permission can be "denied" to exclude it from a given User's role.
System Administration and Support: *System Administration*	The Contractor will provide ongoing support and maintenance, including customization of the System computing ecosystem. The Contractor's overall management framework will include: 1. Application management and monitoring 2. Web services management

	3. Systems management and monitoring 4. Identity and Access Management 5. Network management and monitoring 6. Performance monitoring The System shall capture Web page response times from the User end-point down to the backend database calls to ensure Web pages meet acceptable standards. The Contractor will provide active and passive monitoring of items such as CPU, disk and memory utilization, device up time and custom monitors for production related services such as SQL processes and anti-virus. The Contractor will monitor health, availability and status of all network and system devices in the infrastructure via SNMP traps and Syslogs. The Contractor will give each account access levels that are in direct relation to job functions using the Least Privilege Rule. The Contractor will use bandwidth monitoring on all firewall interfaces which includes VPN tunnels. The Contractor will monitor performance of both storage and virtual infrastructures analytics based IT management software solution designed to isolate and optimize performance and utilization of virtual machines, physical servers and storage resources. The Contractor will manage the performance of the virtual infrastructure. Performance data will be abstracted to health, risk and efficiency measures based off key performance indicators and will be displayed in a roles-based access dashboard.
System Administration and Support: *Audit Trail*	Contractor shall track infrastructure and applications across all tiers and capture all transactions, end-to-end, from a User click, to the database record and back. The Contractor will provide accurate and timely reporting as requested.
System Administration and Support: *Data Backup*	The Contractor will use offsite storage. Data backup must be stored offsite in the event of a physical disaster. Full online scheduled file level backups are snapped locally and replicated to disparate DR data center. Database and application backup procedures must be updated to include backups for the System. Full online data backups must occur, as well as offline backups using disconnected storage.
System Administration and Support: *Data Archival*	The Contractor's following data retention policies will dictate the timeframe at which operational databases will be truncated and archived: 1. The Contractor will maintain seven (7) years of manually entered Program data at the highest performing tier of storage and archive the expiring longitudinal dataset on a bi-annual basis to lower tiers. 2. The Contractor's archived data will remain retrievable upon demand via a database management system. This data can be restored to the production tier of storage by archiving utilities if necessary.
System Administration and Support: *Disaster Recovery*	The Contractor will develop a Disaster Recovery Plan for the System. The Contractor will have a tested Disaster Recovery Plan and Business Continuity Plan on file that can be executed in the event of an unforeseen emergency/disaster. The Contractor will conduct annual testing of the above mentioned plans to determine their validity, and determine any need for revision to meet the current situation of IT resources and personnel. The Contractor will ensure that data is protected and operations will resume as soon as possible.

Technical Documentation	The Contractor will place into the States SharePoint Archive all documentation received by Covisint on the system purchased by the State. The Contractor will provide update to existing technical documentation consisting of functionality, architecture, and code sections for any new business function added by the Contractor after the go-live. The functionality section will describe the intent of the module to be added. The architecture section will document the overall structure of the software including components and application interfaces where applicable. The code section will list file names and the database schema structure. Each iterative production release will include the associated technical documentation along with the release notes.
Production Support and Transition	The Contractor shall provide support for the System that is being migrated from Covisint. These activities will include: a. Integrated Support Model The Contractor's services will include ticket logging, management, monitoring, and maintenance. Inherent components are: i. Tiered Support ii. Service performance at each tier base-lined, monitored, measured and reported (See TECH SUPPORT - SERVICE LEVEL AGREEMENT section below) b. Transition The Contractor is responsible for planning and coordinating resources to ensure milestones for the redeployment of the DocSite System are realized and to identify, manage, and limit risks. The Contractor will fully coordinate resources required to successfully redeploy and operate the System. c. Pre Transition Planning The Contractor will engage the Blueprint Executive Director to develop an approved project transition plan. The Contractor will make available all artifacts documented by Covisint for the stand-up of the DocSite system. The Contractor will align resources to generate the targeted outcomes of the redeployment of the DocSite system. The Contractor will identify all known changes, including adjustments to the authentication system. d. System Transition Information regarding usability, supportability and operational requirements with both redeployment event and aftermath will be coordinated with the Blueprint Executive Director by the Contractor. A combination of scheduled and information delivery regarding the service deployment will be established and maintained. The knowledgebase (KB) will be updated during the Transition phase.

AHS DHVA Blueprint Clinical Registry Project

STATEMENT OF: Use of Funds (Expenses), Source of Funds (Revenue), Cash Flow, and Net Change in Operating Cost

Click on the links to the left to go to that data

CASH FLOW ANALYSIS: Click Here

SUMMARY:		IMPLEMENTATION and OPERATING COSTS:			
Total Cost:	$2,551,764	**Implementation Costs:**	$1,954,805		
Total Funding:	$1,502,460	**New Operating Costs:**	$596,960		
State Funding:	$221,082	**Current Operating Costs:**	$1,190,308		
Federal Funding:	$1,281,377			**$**	**%**
Potential Revenue Recovery:	$0	**NET CHANGE IN OPERATING COSTS-Decrease/(Increase):**		$593,348	
Funding Excess/(Shortage):	($1,049,305)		State Decrease/(Increase):	$593,348	49.85%
			Federal Decrease/(Increase):	($1,281,377)	0.00%

USE OF FUNDS - START

Description	Note	Unit Price	# of Units	Total	State Funded	Fed Funded	Implementation Year 1 (FY16)	Implementation Year 2 (FY17)	Maint and Ops Year 3 (FY18)	Maint and Ops Year 4 (FY19)	Maint and Ops Year 5 (FY20)	Maint and Ops Year 6 (FY21)	Maint and Ops Year 7 (FY22)	Maint and Ops Year 8 (FY23)	Maint and Ops Year 9 (FY24)	Maint and Ops Year 10 (FY25)	Software Total
EXTERNAL-RELATED COSTS																	
VENDOR COSTS																	
SOFTWARE AND SERVICES																	
SOFTWARE ❶																	
Software Being Licensed:	Included as SaaS Pricing																$0
1. Covisint DocSite		$1,000,000	1	$1,000,000			$1,000,000	$0	$0	$0	$0	$0	$0	$0	$0	$0	$1,000,000
2. Other:																	
SQL Server	Per Inv# 2354A	$3,242	14	$45,390			$45,390.10										
Misc 3rd Party Software:		$20,000	1	$20,000			$20,000.00										
Application - Telerik RadControls for ASP.net /MVC			1	$0			$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Application - ActiveReports			1	$0			$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Database- RxNorm			1	$0			$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Database- Loinc			3	$0			$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Database- NDC			1	$0			$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Medispan- (for Allergy)			1	$0			$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
SOFTWARE TOTAL			I				**$1,065,390**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$1,065,390**
SERVICES																	
CHA IMPLEMENTATION SERVICES																	
			I=Impl; O=Ops														
Task 1a	Data Quality Program Management	$10,000 per month (for 12 months)	O	CHA			$120,000	$0	$0	$0	$0	$0	$0	$0	$0	$0	$120,000
Task 1b	Milestone payments for DocSite success criteria validation and remediation of Independent Review findings (if any)	Two payments of $2,500 each (based on eligibility)	O	CHA			$5,000	$0	$0	$0	$0	$0	$0	$0	$0	$0	$5,000
Task 2a	Project Management of Statewide Blueprint Data Quality Initiatives	$4,000 per month (for 12 months)	O	CHA			$48,000	$0	$0	$0	$0	$0	$0	$0	$0	$0	$48,000
Task 2b	Milestone payments for Data Quality Initiatives	$15,000 twice per year (based on eligibility)	O	CHA			$30,000	$0	$0	$0	$0	$0	$0	$0	$0	$0	$30,000
Task 3	Project Management for Onboarding New Blueprint Data Quality Initiatives	$5,000 per month (for 12 months)	O	CHA			$60,000	$0	$0	$0	$0	$0	$0	$0	$0	$0	$60,000
Task 4	Involvement in Projects Supporting Data Quality Work	$6,000 per month (for 12 months)	O	CHA			$72,000	$0	$0	$0	$0	$0	$0	$0	$0	$0	$72,000
Task 5a	DocSite Migration and Operations Project and Vendor Management	$8,194.44 per month (for 9 months)	I	CHA			$73,750	$0	$0	$0	$0	$0	$0	$0	$0	$0	$73,750
Task 5b	Blueprint Clinical Registry Program Management of Operations and Vendor Management	$7,233.44 per month (for 9 months)	I	CHA			$65,101	$0	$0	$0	$0	$0	$0	$0	$0	$0	$65,101
Task 6a - ***See Hosting below***	VITL project management services for hosting environment setup	$125 per hour	I	VITL				$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Task 6b - ***See Hosting below***	VITL hardware setup and support services for Rackspace® hosting environment	$125 per hour	I	VITL				$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Task 6c	Milestone payment for verification of complete hosting environment build for Blueprint Clinical Registry	One payment of $21,335 (based on eligibility)	I	CHA			$21,335	$0	$0	$0	$0	$0	$0	$0	$0	$0	$21,335
Task 6d - ***See OTHER Software listed above***	Software licenses to operate Blueprint Clinical Registry	Up to $66,624.20,based on documented, actual costs	I	CHA			$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Task 7	Build for Operational Instance of DocSite	$150 per hour	I	MDM			$20,250	$0	$0	$0	$0	$0	$0	$0	$0	$0	$20,250
Task 8	DocSite Validation and Functional Testing and Transition Support	$150 per hour	I	MDM			$9,000	$0	$0	$0	$0	$0	$0	$0	$0	$0	$9,000
Task 9a	Establish Message Processing Functionality for DocSite Software	$150 per hour	I	MDM			$20,250	$0	$0	$0	$0	$0	$0	$0	$0	$0	$20,250
Task 9b	Interface Testing and Validation	$150 per hour	I	MDM			$3,000	$0	$0	$0	$0	$0	$0	$0	$0	$0	$3,000
Task 10a	Establish Reporting Services for DocSite Software	$150 per hour	I	MDM			$12,000	$0	$0	$0	$0	$0	$0	$0	$0	$0	$12,000
Task 10b	Reporting Testing and Validation	$150 per hour	I	MDM			$3,000	$0	$0	$0	$0	$0	$0	$0	$0	$0	$3,000
Task 11a	Initial application and network penetration testing and vulnerability scan for Blueprint Clinical Registry	$201.42 per hour	I	KeyW			$93,930	$0	$0	$0	$0	$0	$0	$0	$0	$0	$93,930

Task 11b	Milestone payments for security documentation and remediation of findings (if any)	Two payments of $5,000 each (based on eligibility)	I	KeyW	$10,000	$0	$0	$0	$0	$0	$0	$0	$0	$0	$10,000
Task 11c	Quarterly penetration tests (up to 1)	$5,940 per test (up to 1)	O	KeyW	$5,940	$0	$0	$0	$0	$0	$0	$0	$0	$0	$5,940
Task 12a	Verification of source code delivery from Covisint	$150 per hour	I	MDM	$9,000	$0	$0	$0	$0	$0	$0	$0	$0	$0	$9,000
Task 12b	Milestone payment for rebuild of DocSite from source code in State's hosting environment (at VITL's Rackspace®) prior to expiration of Covisint's software warranty period	One payment of $15,000 (based on eligibility)	I	MDM	$15,000	$0	$0	$0	$0	$0	$0	$0	$0	$0	$15,000
Task 13	Replace Covisint Connection Functions with Rhapsody	$125 per hour	I	VITL	$13,150	$0	$0	$0	$0	$0	$0	$0	$0	$0	$13,150
Task 14	Transition and Connect Production Data Feeds to Blueprint Clinical Registry	$150 per hour	I	MDM	$242,090	$0	$0	$0	$0	$0	$0	$0	$0	$0	$242,090
Task 15a - ***See Hosting below***	Actual hosting costs for Blueprint Clinical Registry	Up to $9467.17 per month (for 9 months)	O	VITL	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Task 15b	Network Assets Allocated to Blueprint Clinical Registry	$1,200 per month (for 11 months)	O	VITL	$13,200	$0	$0	$0	$0	$0	$0	$0	$0	$0	$13,200
Task 15c - ***See Hosting below***	VITL Hosting Support (Ongoing)	$125 per hour	O	VITL	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Task 16	Technical Support of Blueprint Clinical Registry	$150 per hour	I	MDM	$58,950	$0	$0	$0	$0	$0	$0	$0	$0	$0	$58,950
Task 17	Blueprint Registry User Support	One-time $8,000 for set up and then monthly cost of $3,333.00 for support (for 6 months).	O	MDM	$27,998	$0	$0	$0	$0	$0	$0	$0	$0	$0	$27,998
N/A	Cyber Liability and Related Professional Liability Insurance	Documented, actual costs	O	CHA	$28,577	$0	$0	$0	$0	$0	$0	$0	$0	$0	$28,577
N/A	Expenses and Travel	State of Vermont approved mileage and per-diem rates, and reasonable and necessary out-of-pocket expenses	I	Various	$18,000	$0	$0	$0	$0	$0	$0	$0	$0	$0	$18,000
Other					$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
TOTAL: CHA IMPLEMENTATION SERVICES					**$1,098,521**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$1,098,521**
Other Services:															
					$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Other Services Total:					**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**
SERVICES TOTAL					**$1,098,521**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$1,098,521**
SOFTWARE AND SERVICES TOTAL					**$2,163,911**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$2,163,911**
MAINTENANCE AND OPERATIONS SUPPORT															
All service costs are considered Implementation or Ops Services as Noted					$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
															$0
MAINTENANCE AND OPERATIONS SUPPORT TOTAL		**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**
HARDWARE															
No hardware costs are anticipated		$0			$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
HARDWARE TOTAL		**$0**			**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**
		$0			$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
HOSTING FEES	**I=Impl; O=Ops**														
See tasks above: 6a, 6b, 15a, 15c						$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
See task 6a above	I	VITL			$6,000	$0	$0	$0	$0	$0	$0	$0	$0	$0	$6,000
See task 6b above	I	VITL			$27,500	$0	$0	$0	$0	$0	$0	$0	$0	$0	$27,500
See task 15a above	O	VITL			$85,205	$0	$0	$0	$0	$0	$0	$0	$0	$0	$85,205
See task 15c above	O	VITL			$15,000	$0	$0	$0	$0	$0	$0	$0	$0	$0	$15,000
															$0
HOSTING TOTAL					**$133,705**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$133,705**
OTHER FEES															
No other fees anticipated					$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
															$0
OTHER TOTAL		**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**
TOTAL VENDOR COSTS		**$0**			**$2,297,616**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$2,297,616**
DII FEES															
3% Charge for DII PMO/EA Services based on total Project and Operations Costs:	I	$0			**$68,928**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$68,928**
DII FEES TOTAL					**$68,928**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$68,928**
TOTAL EXTERNAL-RELATED COSTS					**$2,366,544**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$2,366,544**
INTERNAL COSTS															
DEPARTMENTAL INTERNAL COSTS		**I=Impl; O=Ops**													
Staff Development/Training		I			$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Travel and Expenses	Any travel to training?	I			$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
WAN Costs	Any additional or incremental WAN impact?	O			$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Staffing Costs: ❷															
Implementation	Existing staff, but now allocated to this project; Directly from IT ABC Form: II.2.D: Other State Labor Hours	I 130 hours, $36/hour			$4,680	$0	$0	$0	$0	$0	$0	$0	$0	$0	$4,680

Operations	Existing staff, but now allocated to this project; Directly from IT ABC Form: II.3.A: State Labor Hours	390 hours, $36/hour	O		$14,040	$0	$0	$0	$0	$0	$0	$0	$0	$0	$14,040
Data Analyst	Existing staff, but now allocated to this project; Tim Tremblay	1 FTE, 2,000 hours, $36/hour	O		$72,000	$0	$0	$0	$0	$0	$0	$0	$0	$0	$72,000
Project Management	Contracted position-Jon Brown	.25 FTE, 500 hours, $135/hour	I		$67,500	$0	$0	$0	$0	$0	$0	$0	$0	$0	$67,500
Program Manager	Contracted position-Larry Sandage	.1 FTE, 200 hours, $135/hour	I		$27,000	$0	$0	$0	$0	$0	$0	$0	$0	$0	$27,000
Other?						$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
DEPARTMENTAL INTERNAL COSTS TOTAL					**$185,220**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$185,220**
TOTAL INTERNAL COSTS					$185,220	$0	$0	$0	$0	$0	$0	$0	$0	$0	$185,220
TOTAL COSTS (IMPLEMENTATION and OPERATIONS)					**$2,551,764**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$2,551,764**

COST BREAKOUT (IMPLEMENTATION and OPERATIONS)

Implementation	**$1,954,805**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$1,954,805**
Operations	**$596,960**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$596,960**
COST BREAKOUT TOTALS (IMPLEMENTATION and OPERATIONS)	**$2,551,764**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$2,551,764**

USE OF FUNDS - END

SOURCE OF FUNDS - START

Revenue Source:					**Year 1 (FY16)**	**Year 2 (FY17)**	**Year 3 (FY18)**	**Year 4 (FY19)**	**Year 5 (FY20)**	**Year 6 (FY21)**	**Year 7 (FY22)**	**Year 8 (FY23)**	**Year 9 (FY24)**	**Year 10 (FY25)**	**TOTAL**
															$0
Assume Year 1 and 2 are Implementation related, Years 3-x are Operations related															
STATE FUNDING: HIT Fund; Fund #GC 93.778; 15% State portion	15.00%	Implementation	5.61%		$143,220.69	$0	$0	$0	$0	$0	$0	$0	$0	$0	$143,221
STATE FUNDING: HIT Fund; Fund #GC 93.778; 44% State portion; A special fund collected in statute from .199% of each insurance claim and earmarked for projects that strengthen the State's health information infrastructure	44.00%	Operations	8.66%		$221,082.19	$0	$0	$0	$0	$0	$0	$0	$0	$0	$221,082
STATE FUNDING: MMIS State	10.00%	Funds Sandage/Brown	0.37%		$9,450.00										
FEDERAL FUNDING: Federal Match of HIT Fund; 85% Federal portion	85.00%	Implementation	31.80%		$811,583.88	$0	$0	$0	$0	$0	$0	$0	$0	$0	$811,584
FEDERAL FUNDING: Federal Match of HIT Fund; 56% Federal portion	56.00%	Operations	11.03%		$281,377.34	$0	$0	$0	$0	$0	$0	$0	$0	$0	$281,377
FEDERAL FUNDING: MMIS Fed	90.00%	Funds Sandage/Brown	3.33%		$85,050.00										
FEDERAL FUNDING: SIM purchase of Covisint DocSite source code license (State Innovation Model) (aka Vermont Healthcare Innovation Project or VHCIP); Fund #93.624			39.19%		$1,000,000	$0	$0	$0	$0	$0	$0	$0	$0	$0	$1,000,000
TOTAL:			**100.00%**		**$2,551,764**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$281,377**

Summary by State and Federal:

State Funding:	**$221,082**	$221,082	$0	$0	$0	$0	$0	$0	$0	$0	$0
Federal Funding:	**$1,281,377**	$1,281,377.34	$0	$0	$0	$0	$0	$0	$0	$0	$0

SOURCE OF FUNDS - END

PROJECT CASH FLOW - START

	Year 1 (FY16)	**Year 2 (FY17)**	**Year 3 (FY18)**	**Year 4 (FY19)**	**Year 5 (FY20)**	**Year 6 (FY21)**	**Year 7 (FY22)**	**Year 8 (FY23)**	**Year 9 (FY24)**	**Year 10 (FY25)**	**TOTAL**
Use	$2,551,764	$0	$0	$0	$0	$0	$0	$0	$0	$0	$2,551,764
Source	$2,551,764	$0	$0	$0	$0	$0	$0	$0	$0	$0	$2,551,764
Net Cash by Fiscal Year:	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Cash Flow:	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**

Potential Revenue Recovery:												
		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Net Cash by Fiscal Year:		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Cash Flow:		**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**

CASH FLOW - END

NET CHANGE IN OPERATING COSTS - START

		Year 1 (FY16)	Year 2 (FY17)	Year 3 (FY18)	Year 4 (FY19)	Year 5 (FY20)	Year 6 (FY21)	Year 7 (FY22)	Year 8 (FY23)	Year 9 (FY24)	Year 10 (FY25)	TOTAL	
Proposed Operating Costs:													
Total Operating Costs	*Per Cell H141*	$596,960	$0	$0	$0	$0	$0	$0	$0	$0	$0	$596,960	
Total: Proposed Operating Costs:		**$596,960**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$596,960**	
Current Operating Costs:													
Staffing:		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	
Operations	Existing staff, but now allocated to this project	$17,712										$17,712	492 hours, $36/hour
Annual Maintenance of Current Solution:													
Operations Support	Per IT ABC Form; $20,217/month	$242,604	$0	$0	$0	$0	$0	$0	$0	$0	$0	$242,604	
Onboarding New Sites	Per IT ABC Form; $20K/month	$240,000	$0	$0	$0	$0	$0	$0	$0	$0	$0	$240,000	
Software Licensing	Per IT ABC Form; $10,166/month	$121,992	$0	$0	$0	$0	$0	$0	$0	$0	$0	$121,992	
Hosting	Per IT ABC Form; $14K/month	$168,000	$0	$0	$0	$0	$0	$0	$0	$0	$0	$168,000	
Ad-Hoc Custom Development	Per IT ABC Form;$400K annually	$400,000	$0	$0	$0	$0	$0	$0	$0	$0	$0	$400,000	
		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	
Total: Current Operating Costs:		***$1,190,308***	***$0***	***$0***	***$0***	***$0***	***$0***	***$0***	***$0***	***$0***	***$0***	***$1,190,308***	
Net Operating Cost Decrease/(Increase)		**$593,348**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$593,348**	**49.85%**

Summary of Net Change in Operating Costs among Funding Sources: ❸

STATE:													
Proposed State Funding Source		$596,960	$0	$0	$0	$0	$0	$0	$0	$0	$0	$596,960	
Current State Funding Source	*100% of current operating costs*	$1,190,308	$0	$0	$0	$0	$0	$0	$0	$0	$0	$1,190,308	
STATE Net Operating Cost Decrease/(Increase)		***$593,348***	***$0***	***$0***	***$0***	***$0***	***$0***	***$0***	***$0***	***$0***	***$0***	***$593,348***	**49.85%**
FEDERAL:													
Proposed Federal Funding Source		$1,281,377	$0	$0	$0	$0	$0	$0	$0	$0	$0	$1,281,377	
Current Federal Funding Source	*0% of current operating costs*	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	
FEDERAL Net Operating Cost Decrease/(Increase)		***($1,281,377)***	***$0***	***$0***	***$0***	***$0***	***$0***	***$0***	***$0***	***$0***	***$0***	***($1,281,377)***	**0.00%**

NET CHANGE IN OPERATING COSTS - END

NOTES / ASSUMPTIONS:

❶ Perpetual License of Covisint; Unlimited users

❷ Current and anticipate staffing levels anticipated through this project

❸ Need current State and Federal Funding sources and $ amounts

Funding Shortage: **$0**

VERMONT Blueprint for Health

Smart choices. Powerful tools.

HSA Profile: Burlington

Period: Jan. 2014 - Dec. 2014 **Profile Type:** Adults (18+ Years)

Welcome to the *2014 Blueprint Hospital Service Area (HSA) Profile* from the Blueprint for Health, a state-led initiative transforming the way that health care and comprehensive health services are delivered in Vermont. The Blueprint is leading a transition to an environment where all Vermonters have access to a continuum of seamless, effective, and preventive health services.

Blueprint HSA Profiles are based primarily on data from Vermont's all-payer claims database, the Vermont Health Care Uniform Reporting and Evaluation System (VHCURES). Data include all covered commercial, Full Medicaid, and Medicare members attributed to Blueprint practices that began participating on or before December 31, 2014.

Blueprint HSA Profiles for the adult population cover members ages 18 years and older; pediatric profiles cover members between the ages of 1 and 17 years. Practices have been rolled up to the HSA level.

Utilization and expenditure rates presented in these profiles have been risk adjusted for demographic and health status differences among the reported populations.

These profiles use three key sources of data: VHCURES, the DocSite clinical database, and the Behavioral Risk Factor Surveillance Study (BRFSS), a telephone survey conducted annually by the Vermont Department of Health.

This reporting includes only members with a visit to a primary care physician, as identified in VHCURES claims data, during the current reporting year or the year prior. Rates for HSAs reporting fewer than 30 members for a measure are not presented in alignment with NCQA HEDIS guidelines.

Demographics & Health Status

	HSA	Statewide
Average Members	82,140	261,283
Average Age	49.0	50.2
% Female	54.4	54.9
% Medicaid	14.7	18.8
% Medicare	22.2	26.3
% Maternity	1.8	1.6
% with Selected Chronic Conditions	39.9	43.1
Health Status (CRG)		
% Healthy	43.0	42.2
% Acute or Minor Chronic	20.6	19.9
% Moderate Chronic	23.2	24.1
% Significant Chronic	11.8	12.4
% Cancer or Catastrophic	1.4	1.4

Table 1: *This table provides comparative information on the demographics and health status of the specified HSA and of the state as a whole. Included measures reflect the types of information used to generate adjusted rates: age, gender, maternity status, and health status.*

Average Members *serves as this table's denominator and adjusts for partial lengths of enrollment during the year. In addition, special attention has been given to adjusting for Medicaid and Medicare. This includes adjustment for each member's enrollment in Medicaid or Medicare, the member's HSA's percentage of membership that was Medicaid or Medicare, Medicare disability or end-stage renal disease status, and the degree to which the member required special Medicaid services that are not found in commercial populations (e.g., day treatment, residential treatment, case management, school-based services, and transportation).*

The % with Selected Chronic Conditions *measure indicates the proportion of members identified through the claims data as having one or more of seven selected chronic conditions: asthma, chronic obstructive pulmonary disease, congestive heart failure (CHF), coronary heart disease, hypertension, diabetes, and depression.*

The Health Status (CRG) *measure aggregates 3M™ Clinical Risk Grouper (CRG) classifications for the year for the purpose of generating adjusted rates. Aggregated risk classification groups include:* Healthy, Acute *(e.g., ear, nose, throat infection)* or Minor Chronic *(e.g., minor chronic joint pain),* Moderate Chronic *(e.g., diabetes),* Significant Chronic *(e.g., diabetes and CHF), and* Cancer *(e.g., breast cancer, colorectal cancer)* or Catastrophic *(e.g., HIV, muscular dystrophy, cystic fibrosis).*

HSA Profile: Burlington

Period: Jan. 2014 - Dec. 2014 **Profile Type:** Adults (18+ Years)

Total Expenditures per Capita

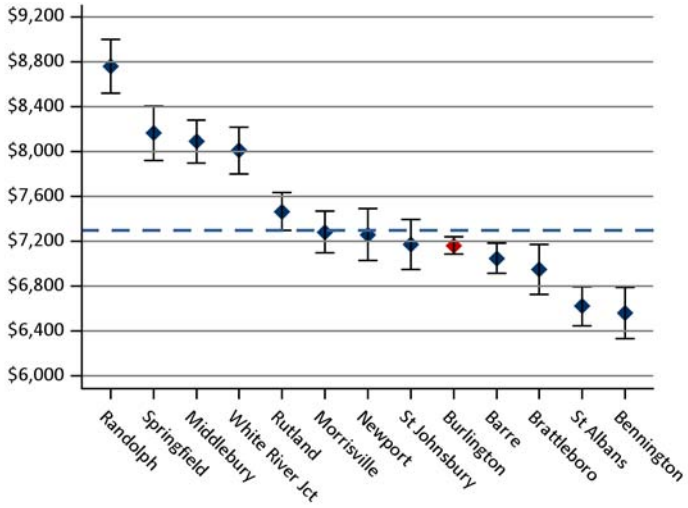


Figure 1: *Presents annual risk-adjusted rates, including 95% confidence intervals, with expenditures capped statewide for outlier patients. Expenditures include both plan payments and member out-of-pocket payments (i.e., copay, coinsurance, and deductible). The blue dashed line indicates the statewide average.*

Total Expenditures per Capita by Major Category

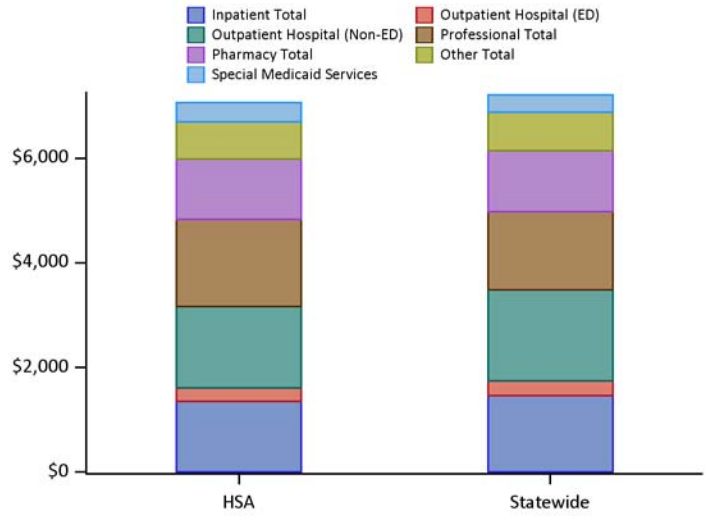


Figure 2: *Presents annual risk-adjusted rates for the major components of cost (as shown in* ***Figure 1****) with expenditures capped statewide for outlier patients. Some services provided by Medicaid (e.g., case management, transportation) are reported separately as* Special Medicaid Services (SMS).

Total Expenditures per Capita (Excluding SMS)

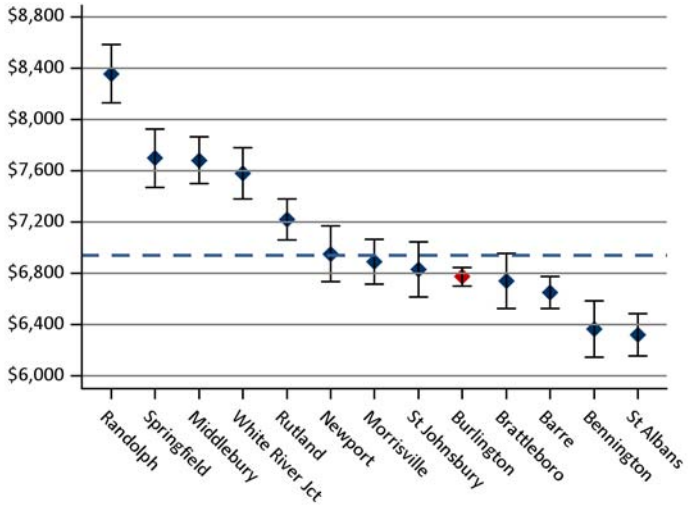


Figure 3: *Presents annual risk-adjusted rates, including 95% confidence intervals, with expenditures capped statewide for outlier patients. Expenditures include both plan payments and member out-of-pocket payments (i.e., copay, coinsurance, and deductible) and exclude* Special Medicaid Services*. The blue dashed line indicates the statewide average.*

Total Resource Use Index (RUI) (Excluding SMS)

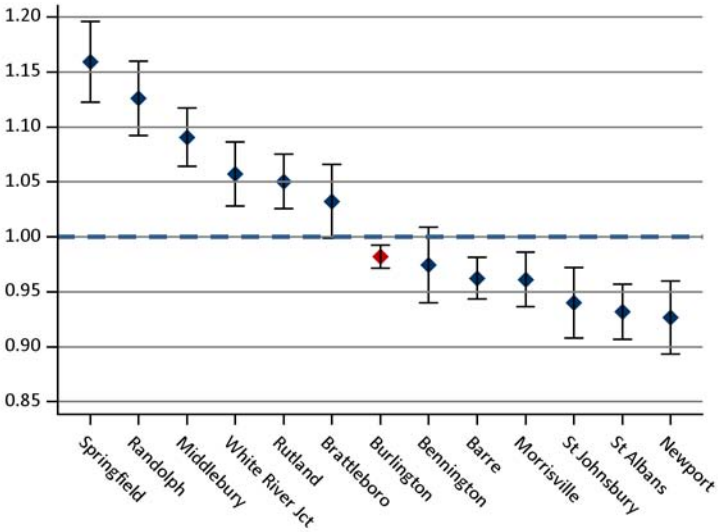


Figure 4: *Presents annual risk-adjusted rates, including 95% confidence intervals. Since price per service varies widely, a measure of expenditures based on resource use — Total Resource Use Index (RUI) — is included. RUI reflects an aggregated capped cost based on utilization and intensity of services across major components of care and excludes* Special Medicaid Services*. The HSAs are indexed to the statewide average (1.00), which is indicated by the blue dashed line.*

HSA Profile: Burlington

Period: Jan. 2014 - Dec. 2014 **Profile Type:** Adults (18+ Years)

Annual Total Expenditures per Capita vs. Resource Use Index (RUI)

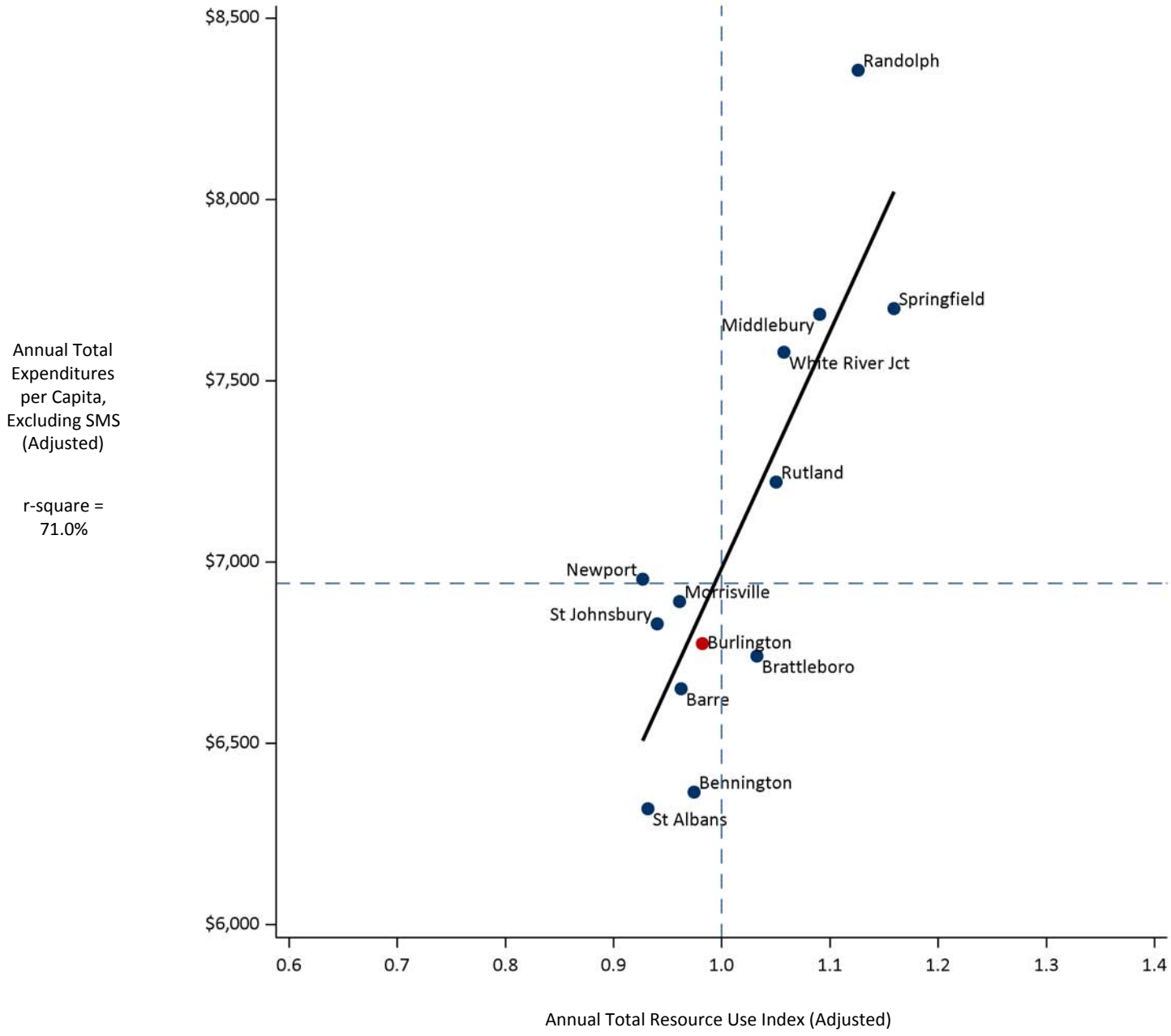


Figure 5: *This graphic demonstrates the relationship between risk-adjusted expenditures, excluding SMS, and risk-adjusted utilization for each of the HSAs in Vermont. This graphic illustrates the specified HSA's risk-adjusted rate (i.e., the red dot) compared to those of all other HSAs statewide (i.e., the blue dots). The dashed lines show the average expenditures per capita and average Resource Use Index statewide (i.e., 1.00). HSAs with higher expenditures and utilization are in the upper right-hand quadrant, while HSAs with lower expenditures and utilization are in the lower left-hand quadrant. An RUI value greater than 1.00 indicates higher than average utilization; conversely, a value lower than 1.00 indicates lower than average utilization. A trend line has been included in the graphic, which demonstrates that, in general, HSAs with higher risk-adjusted utilization had higher risk-adjusted expenditures.*

Legend

- *Burlington*
- *All other Blueprint HSAs statewide*

Inpatient Discharges

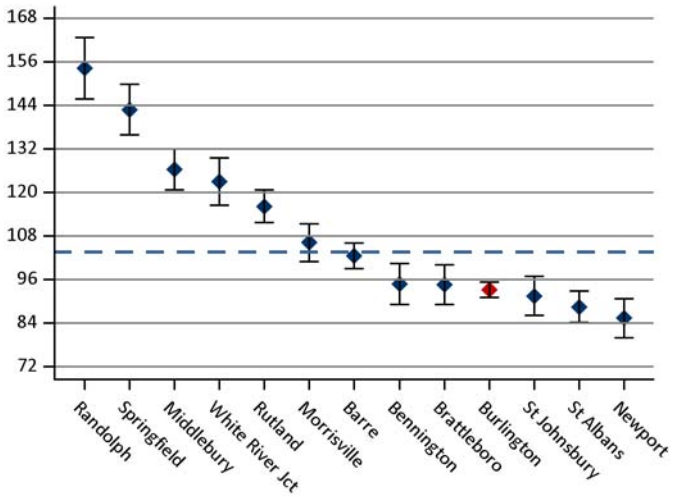


Figure 6: *Presents annual risk-adjusted rates, including 95% confidence intervals, of inpatient discharges per 1,000 members. Additional detail measures for inpatient utilization —* Inpatient Days, Inpatient Readmissions within 30 Days, *and* Inpatient Discharges for Ambulatory Care Sensitive Conditions *— can be found in* Table 5. *The blue dashed line indicates the statewide average.*

Outpatient ED Visits

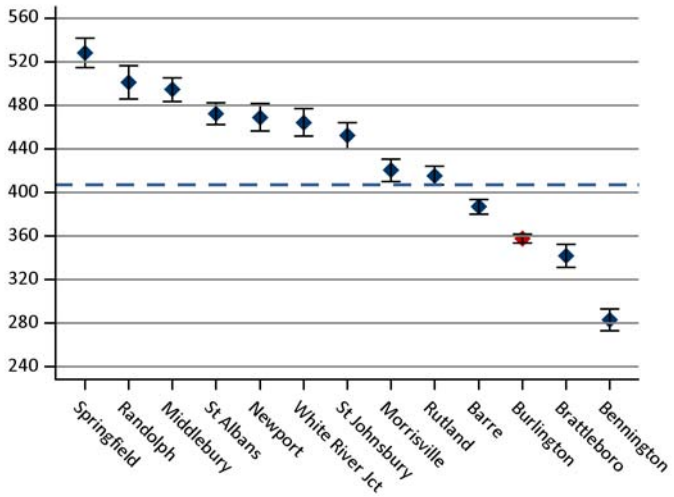


Figure 7: *Presents annual risk-adjusted rates, including 95% confidence intervals, of outpatient emergency department (ED) visits per 1,000 members. An additional detail measure —* Outpatient Potentially Avoidable ED Visits *— can be found in* Table 5. *The blue dashed line indicates the statewide average.*

Advanced Imaging (MRIs, CT Scans)

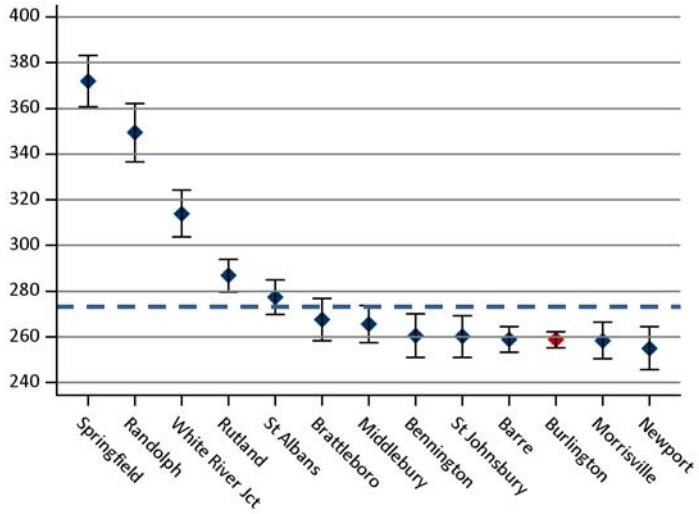


Figure 8: *Presents annual risk-adjusted rates, including 95% confidence intervals, of advanced imaging diagnostic tests (i.e., MRIs, CT scans) per 1,000 members. The blue dashed line indicates the statewide average.*

Diabetes: HbA1c Testing

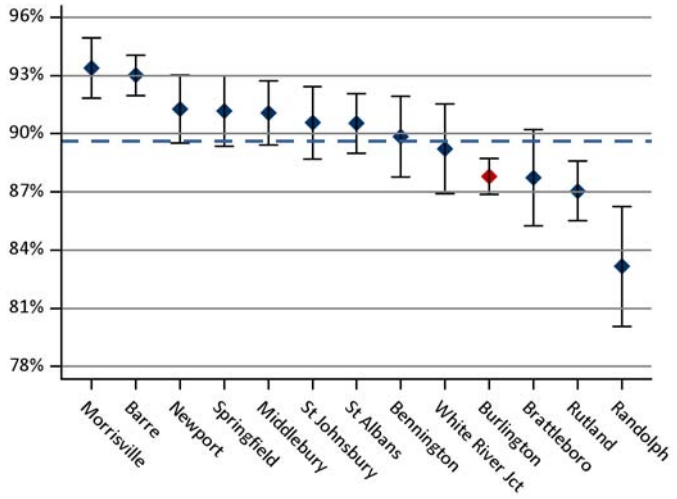


Figure 9: *Presents the proportion, including 95% confidence intervals, of continuously enrolled members with diabetes, ages 18–75 years, that received a hemoglobin A1c test during the measurement year. The blue dashed line indicates the statewide average.*

Diabetes: HbA1c Not in Control (Core-17, MSSP-27)

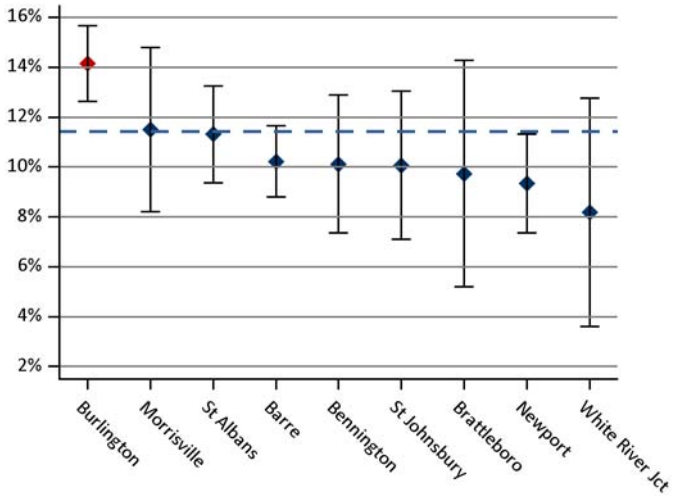


Figure 10: *Presents the proportion, including 95% confidence intervals, of continuously enrolled members with diabetes, ages 18–75 years, whose last recorded hemoglobin A1c test in the DocSite clinical database was in poor control (>9%). Members with diabetes were identified using claims data. The denominator was then restricted to those with DocSite results for at least one hemoglobin A1c test during the measurement year. The blue dashed line indicates the statewide average.*

Diabetes: Eye Exam

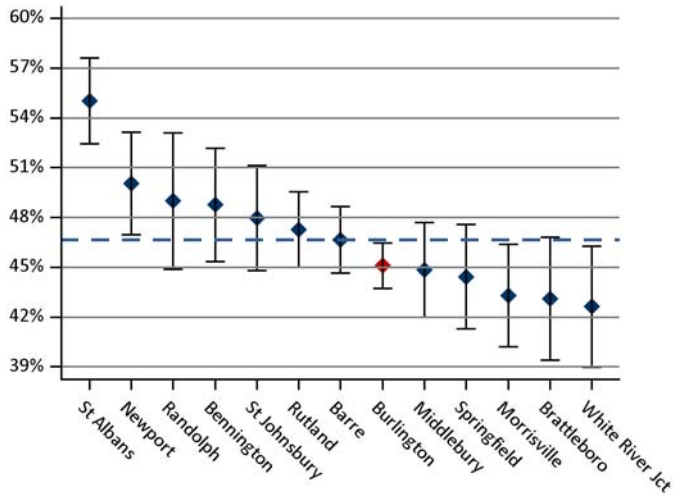


Figure 11: *Presents the proportion, including 95% confidence intervals, of continuously enrolled members with diabetes, ages 18–75 years, that received an eye screening for diabetic retinal disease during the measurement year. The blue dashed line indicates the statewide average.*

Diabetes Care Two-Part Composite (Core-53)

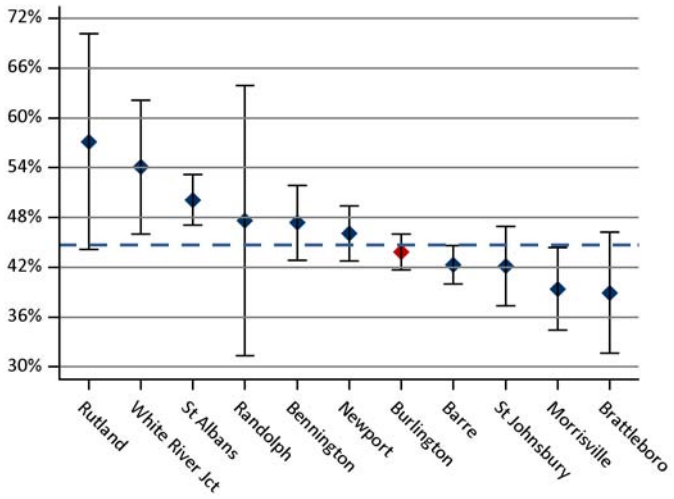


Figure 12: *Presents the proportion, including 95% confidence intervals, of continuously enrolled members with diabetes, ages 18–75 years, that had a valid HbA1c ≤9% and received an eye screening for diabetic retinal disease during the measurement year. The blue dashed line indicates the statewide average.*

Comparison of Patients by HbA1c Control Status, Statewide

Metric	Diabetes A1c in Control	Diabetes A1c Not in Control
Members	5,923	1,007
Annual expenditures per capita	$13,938 ($13,498, $14,377)	$15,563 ($14,455, $16,672)
Inpatient hospitalizations per 1,000 members	178.3 (167.5, 189.2)	218.8 (189.4, 248.2)
Inpatient days per 1,000 members	835.7 (812.2, 859.2)	1,021.8 (958.2, 1,085.4)
Outpatient ED visits per 1,000 members	634.3 (613.8, 654.8)	743.3 (689.0, 797.5)

Note: Risk-adjusted rates with 95% confidence intervals are provided in parentheses. Outliers beyond the 99th percentile have been excluded.

Table 2: *Presents a comparison of health care expenditures and utilization in the measurement year for continuously enrolled members, ages 18–75 years, whose diabetes hemoglobin A1c was in control (≤9%) compared to those with poor control (>9%). Rates have been adjusted for age, gender, and health status. The rates in this table are presented at the state level only. Members with poor control had statistically significant higher total expenditures, inpatient hospitalizations, inpatient days, and outpatient ED visits.*

Diabetes: Nephropathy Screening

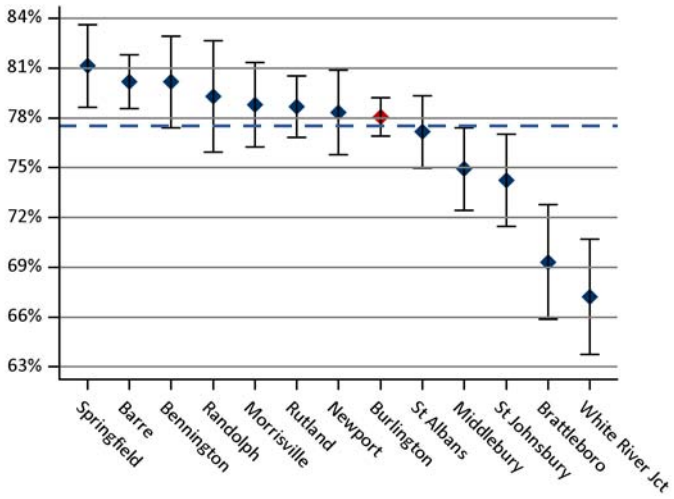


Figure 13: *Presents the proportion, including 95% confidence intervals, of continuously enrolled members with diabetes, ages 18–75 years, that had a nephropathy screening test or evidence of nephropathy documented in the claims data. The blue dashed line indicates the statewide average.*

Diabetes: Tobacco Non-Use (MSSP-25)

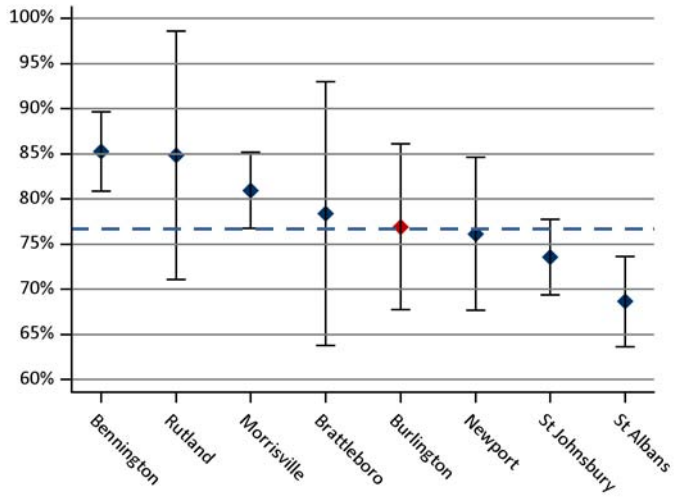


Figure 14: *Presents the proportion, including 95% confidence intervals, of continuously enrolled members with diabetes, ages 18–75 years, documented as tobacco non-users in the DocSite clinical database. Members with diabetes were identified using claims data. The denominator was then restricted to those with DocSite results for tobacco non-use during the measurement year. The blue dashed line indicates the statewide average.*

Diabetes: Blood Pressure in Control (MSSP-24)

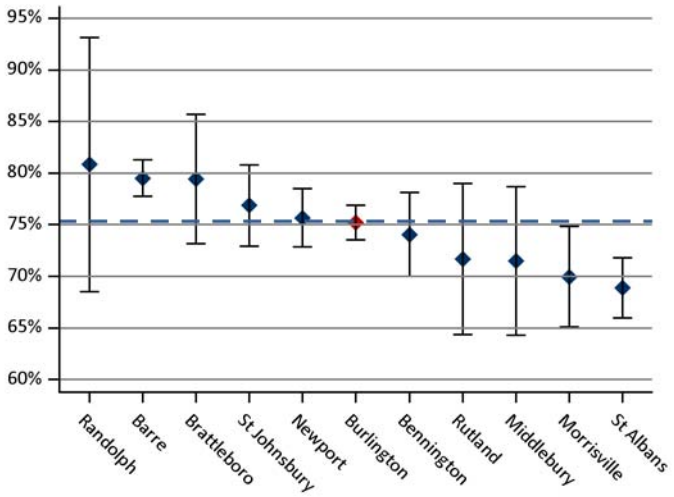


Figure 15: *Presents the proportion, including 95% confidence intervals, of continuously enrolled members with diabetes, ages 18–75 years, whose last recorded blood pressure measurement in the DocSite clinical database was in control (<140/90 mmHg). Members with diabetes were identified using claims data. The denominator was then restricted to those with DocSite results for at least one blood pressure test during the measurement year. The blue dashed line indicates the statewide average.*

Linked Clinical Data: Obesity & Hypertension

Measure (N = Count of distinct members)	HSA N=95,334	Statewide N=283,153
	Rate %	Rate %
% linked to clinical data	53%	48%
% with BMI data	44%	40%
% meeting obesity criteria	35%	38%
% with blood pressure data	47%	43%
% meeting hypertension criteria	20%	20%
Measure (N = Count of distinct members with diabetes)	**HSA N=5,525**	**Statewide N=19,098**
	Rate %	Rate %
% linked to clinical data	70%	63%
% with BMI data	58%	50%
% meeting obesity criteria	67%	71%
% with blood pressure data	60%	53%
% meeting hypertension criteria	28%	27%
% with BMI and blood pressure data	58%	50%
% meeting obesity and hypertension criteria	20%	20%

Table 3: *Presents the proportion of distinct members and distinct members with diabetes linked to clinical data with valid body mass index (BMI) and blood pressure data meeting the criteria for obesity (BMI≥ 30.0) and hypertension (mmHg≥ 140/90).*

Hypertension: Blood Pressure in Control (Core-39, MSSP-28)

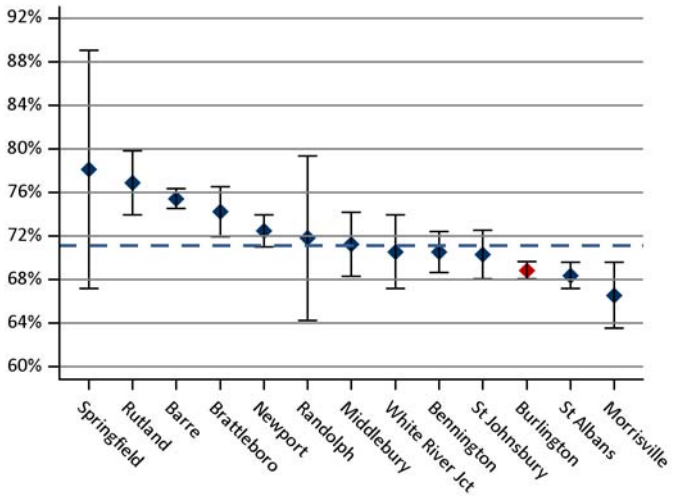


Figure 16: *Presents the proportion, including 95% confidence intervals, of continuously enrolled members with hypertension, ages 18–85 years, whose last recorded blood pressure measurement in the DocSite clinical database was in control (<140/90 mmHg). Members with hypertension were identified using claims data. The denominator was then restricted to those with DocSite results for a blood pressure reading during the measurement year. The blue dashed line indicates the statewide average.*

Imaging Studies for Low Back Pain

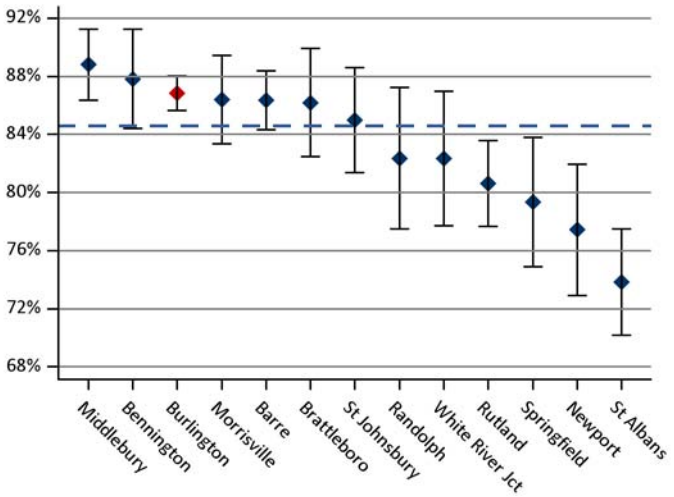


Figure 17: *Presents the proportion, including 95% confidence intervals, of continuously enrolled members, ages 18–50 years, that received a primary diagnosis of low back pain but appropriately did not have an imaging study (e.g., plain X-Ray, CT scan, MRI) within 28 days of the diagnosis. This is an inverted measure for which a higher score indicates appropriate treatment (i.e., imaging did not occur). The blue dashed line indicates the statewide average.*

Cervical Cancer Screening (Core-30)

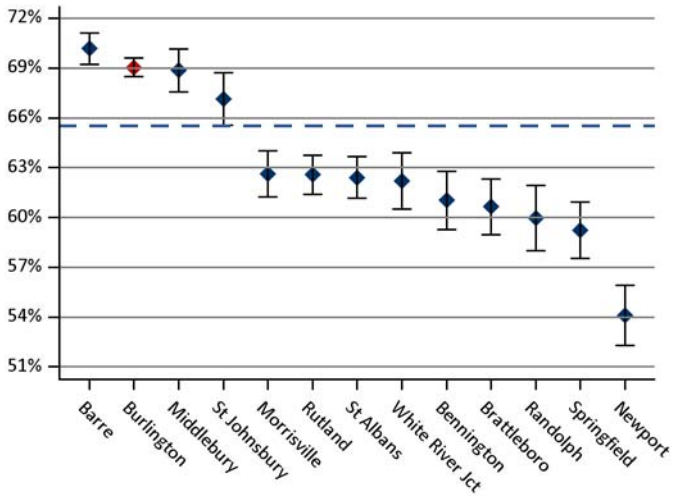


Figure 18: *Presents the proportion, including 95% confidence intervals, of continuously enrolled female members, ages 21–64 years, that received one or more Papanicolaou (Pap) tests to screen for cervical cancer during the measurement year or the two years prior to the measurement year. The blue dashed line indicates the statewide average.*

Chlamydia Screening (Core-7)

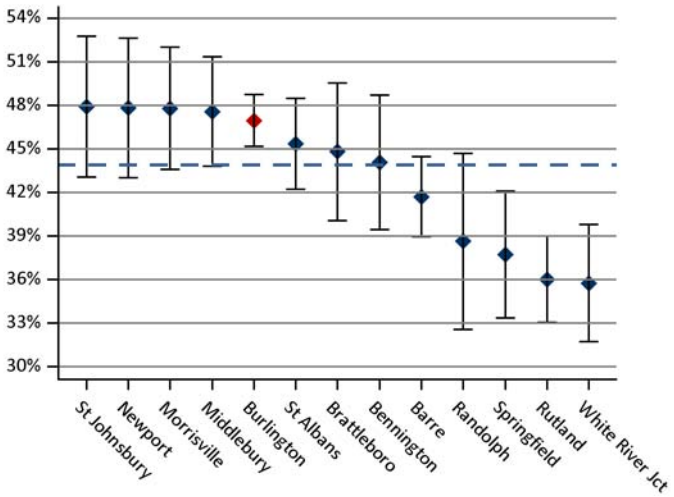


Figure 19: *Presents the proportion, including 95% confidence intervals, of continuously enrolled women, ages 16–24 years, identified as sexually active during the measurement year that received at least one test for chlamydia during the measurement year or the year prior to the measurement year. (Note that, due to the age ranges for this ACO measure, women below the age of 18 years, not typically represented in adult profiles, have been included in these rates.) The blue dashed line indicates the statewide average.*

Breast Cancer Screening (Core-11, MSSP-20)

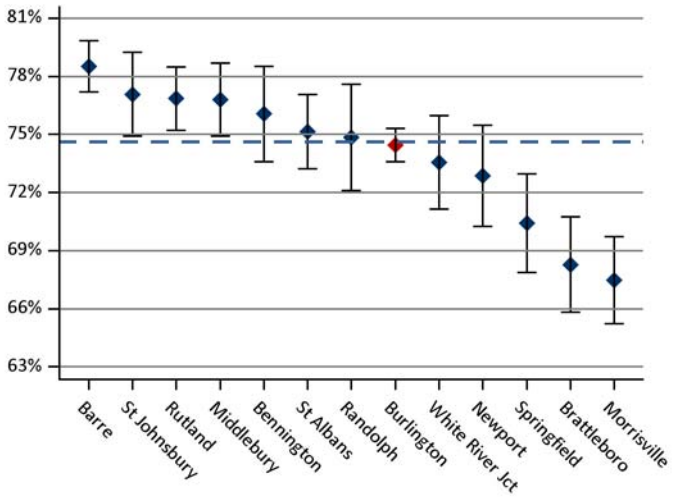


Figure 20: *Presents the proportion, including 95% confidence intervals, of continuously enrolled women, ages 52–64 years, that had a mammogram to screen for breast cancer during the measurement year or the year prior to the measurement year. The blue dashed line indicates the statewide average.*

Plan All-Cause Readmissions (Core-1)

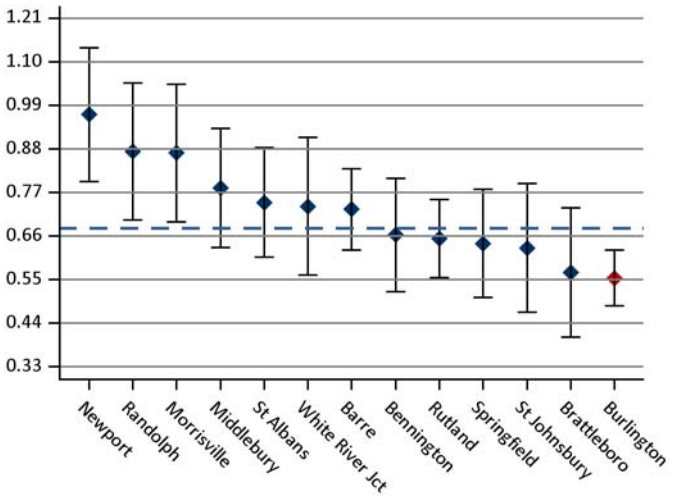


Figure 21: *Presents the relative rate, including 95% confidence intervals, of continuously enrolled members, ages 18 years and older, that had an inpatient stay that was followed by an acute readmission for any diagnosis within 30 days during the measurement year. The rate is expressed as a ratio of observed to expected readmissions where the expected number of readmissions has been risk adjusted. The blue dashed line indicates the statewide average. HEDIS specifications have changed.*

Follow-Up After Hospitalization for Mental Illness (Core-4)

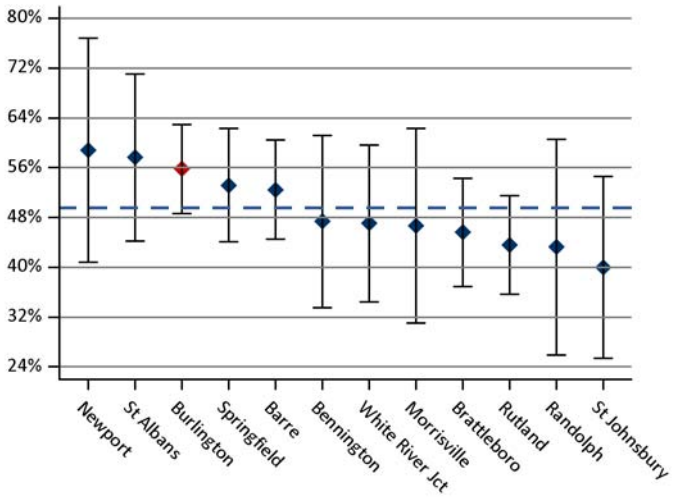


Figure 22: *Presents the proportion, including 95% confidence intervals, of continuously enrolled members, ages 6 years and older, hospitalized for mental illness with an intensive outpatient encounter or partial hospitalization with a mental health practitioner and a follow-up visit within seven days of discharge. The blue dashed line indicates the statewide average.*

Initiation of Alcohol/Drug Treatment (Core-5a)

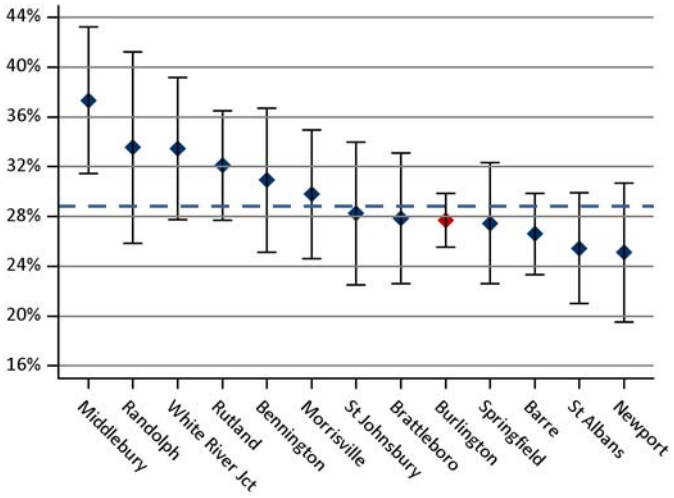


Figure 23: *Presents the proportion, including 95% confidence intervals, of continuously enrolled members, ages 18 years and older, that had their initial treatment through an inpatient alcohol or other drug (AOD) admission, outpatient visit, intensive outpatient encounter, or partial hospitalization within 14 days of the diagnosis. The blue dashed line indicates the statewide average.*

Engagement of Alcohol/Drug Treatment (Core-5b)

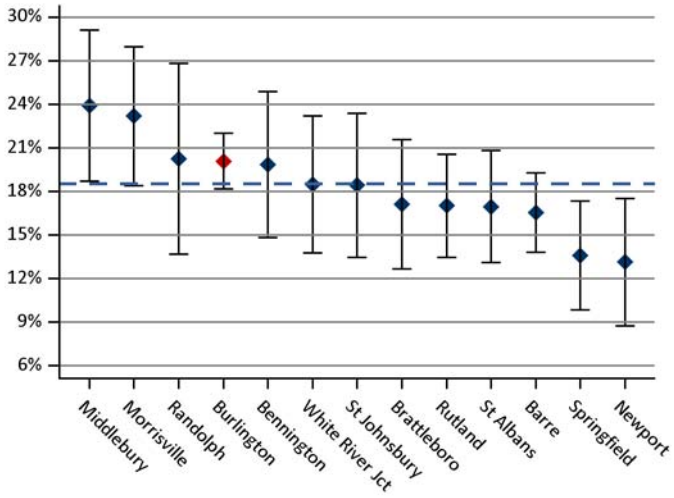


Figure 24: *Presents the proportion, including 95% confidence intervals, of continuously enrolled members, ages 18 years and older, that had their initial treatment and then had two or more additional services with a diagnosis of AOD within 30 days of the initiation visit. The blue dashed line indicates the statewide average.*

Cholesterol Management, Cardiac (Core-3, MSSP-29)

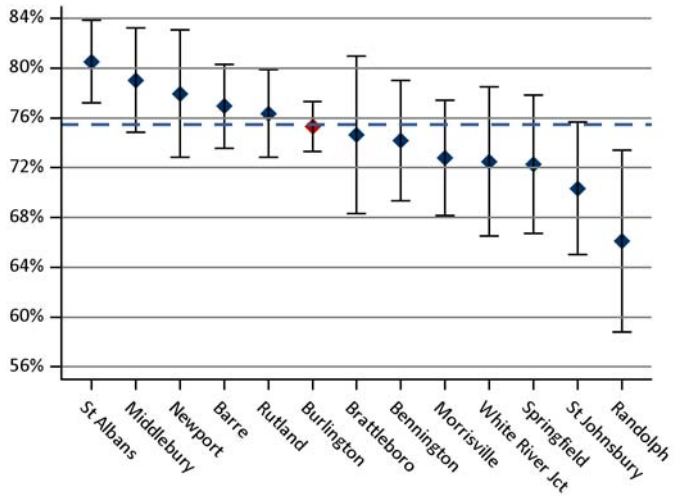


Figure 25: Presents the proportion, including 95% confidence intervals, of continuously enrolled members, ages 18–75 years, discharged alive after treatment for acute myocardial infarction (AMI), coronary artery bypass grafting (CABG), or percutaneous coronary intervention (PCI) in the year prior to the measurement year or with a diagnosis of ischemic vascular disease (IVD) during the measurement year and year prior and with an LDL-C screening during the measurement year. The blue dashed line indicates the statewide average.

Avoidance of Antibiotic Treatment, Acute Bronchitis (Core-6)

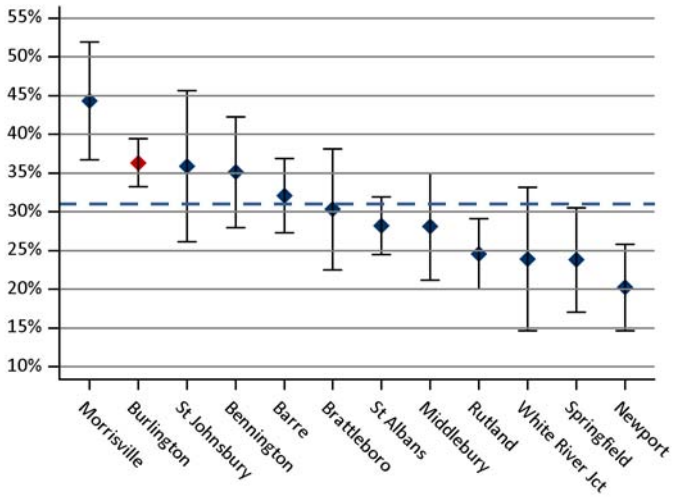


Figure 26: Presents the proportion, including 95% confidence intervals, of continuously enrolled members, ages 18–64 years, that received a diagnosis of acute bronchitis but was not dispensed an antibiotic prescription. The blue dashed line indicates the statewide average.

Influenza Vaccination (Core-35, MSSP-14)

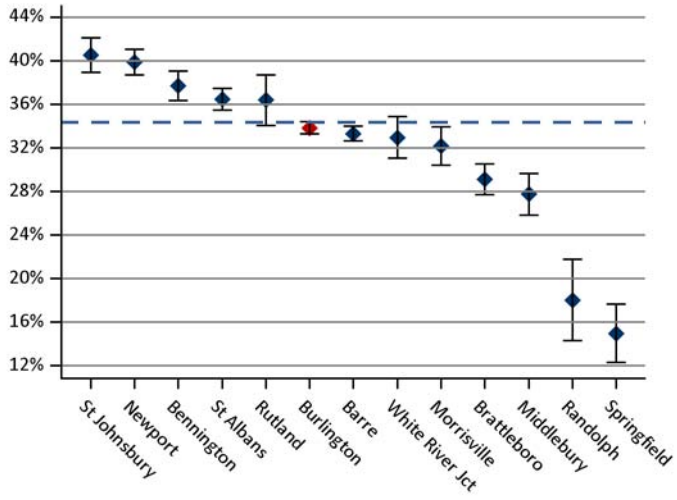


Figure 27: Presents the proportion, including 95% confidence intervals, of continuously enrolled members, ages six months and older, that received an influenza immunization from October 1 of the prior year through March 31 of the measurement year. Immunizations were identified in the medical claims or, if available, in the DocSite clinical registry. The blue dashed line indicates the statewide average.

Pneumonia Vaccination (Core-48, MSSP-15)

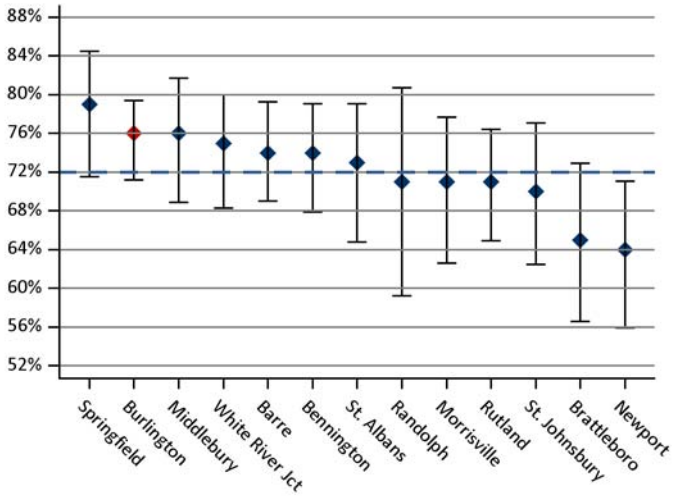


Figure 28: Presents the proportion, including 95% confidence intervals, of Vermont residents, ages 65 years and older, that reported ever receiving a pneumonia vaccination as measured by the Behavioral Risk Factor Surveillance System (BRFSS). The blue dashed line indicates the statewide average.

ACS Admissions: COPD & Asthma (Core-10, MSSP-9)

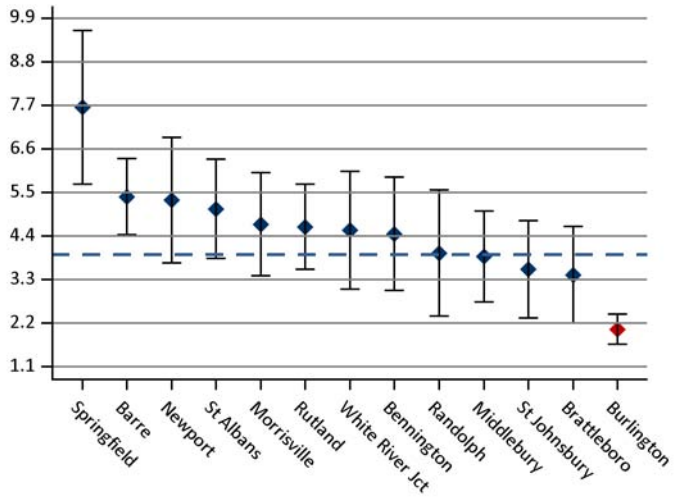


Figure 29: *This Prevention Quality Indicator (PQI) presents the rate, including 95% confidence intervals, of ambulatory care sensitive (ACS) admissions with a principal diagnosis of chronic obstructive pulmonary disorder (COPD) or asthma per 1,000 members, ages 40 years and older. The blue dashed line indicates the statewide average.*

ACS Admissions: Heart Failure (MSSP-10)

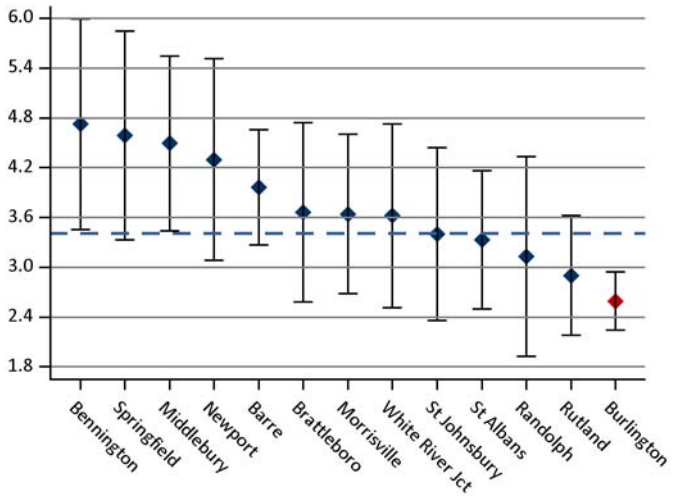


Figure 30: *This Prevention Quality Indicator (PQI) presents the rate, including 95% confidence intervals, of admissions with a principal diagnosis of congestive heart failure per 1,000 members, ages 18 years and older. The blue dashed line indicates the statewide average.*

ACS Hospitalizations: PQI Composite Chronic (Core-12)

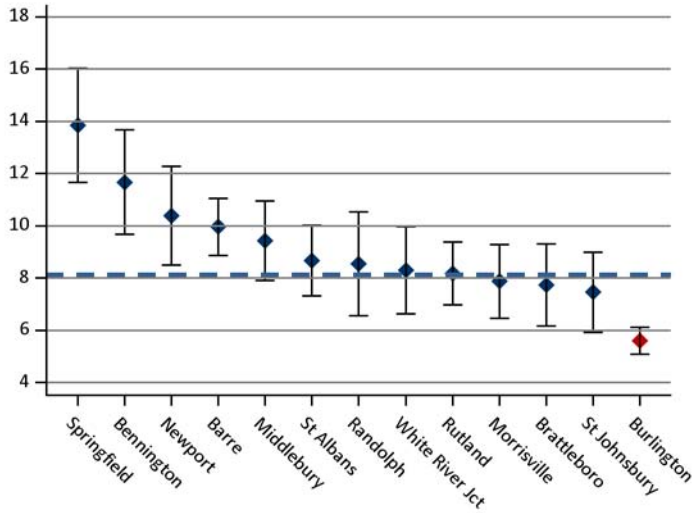


Figure 31: *This Prevention Quality Indicator (PQI) presents a composite rate, including 95% confidence intervals, of hospitalizations for chronic conditions per 1,000 members, ages 18 years and older. This measure includes admissions for at least one of the following conditions: COPD, asthma, hypertension, heart failure, angina without a cardiac procedure, diabetes with lower-extremity amputations, diabetes with short-term complications, diabetes with long-term complications, or uncontrolled diabetes without complications. The blue dashed line indicates the statewide average.*

BRFSS: Households with Income <$25,000

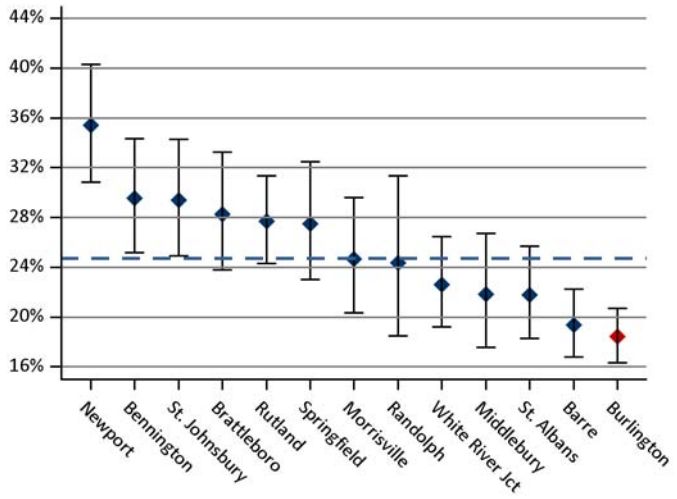


Figure 32: Presents the proportion, including 95% confidence intervals, of Vermont residents, ages 18 years and older, that reported a household income of less than $25,000 per year. This data was collected through the Behavioral Risk Factor Surveillance System (BRFSS). The blue dashed line indicates the statewide average.

BRFSS: Cigarette Smoking

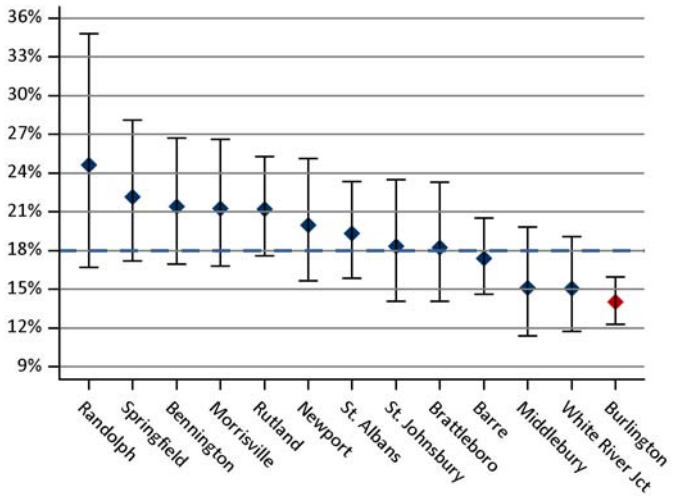


Figure 33: Presents the proportion, including 95% confidence intervals, of Vermont residents, ages 18 years and older, that reported being cigarette smokers. This data was collected through the Behavioral Risk Factor Surveillance System (BRFSS). The blue dashed line indicates the statewide average.

BRFSS: No Leisure-Time Physical Activity/Exercise

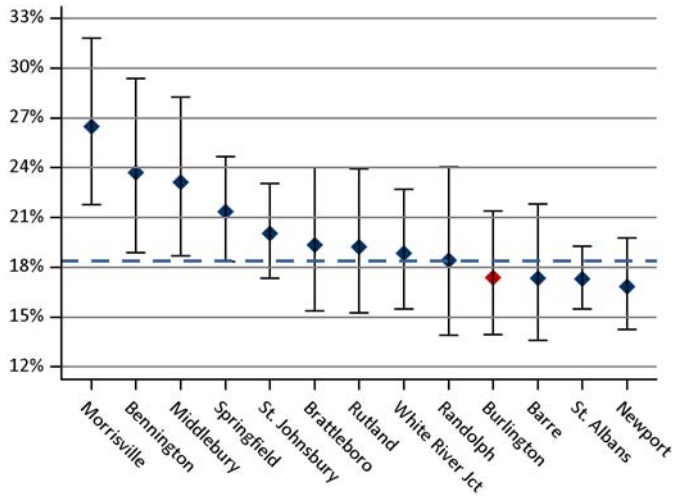


Figure 34: Presents the proportion, including 95% confidence intervals, of Vermont residents, ages 18 years and older, that said they did not participate in any physical activity or exercise during the previous month. This data was collected through the Behavioral Risk Factor Surveillance System (BRFSS). The blue dashed line indicates the statewide average.

BRFSS: Meets Fruit/Vegetable Recommendations

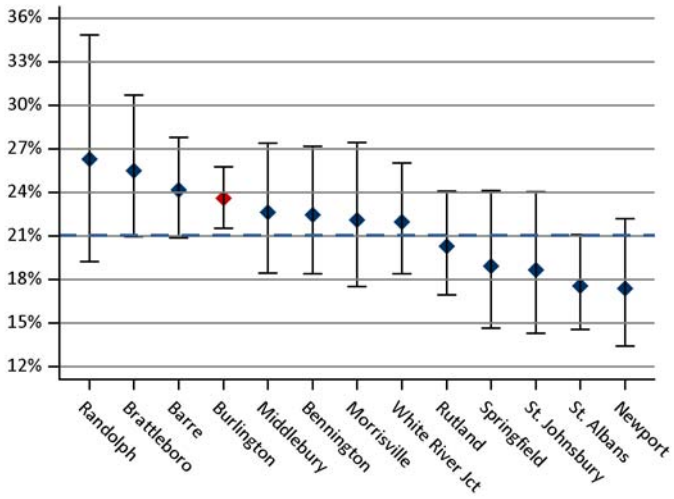


Figure 35: Presents the proportion, including 95% confidence intervals, of Vermont residents, ages 18 years and older, that said they met fruit and vegetable consumption recommendations. This data was collected through the Behavioral risk Factor Surveillance System (BRFSS). The blue dashed line indicates the statewide average.

The following tables provide greater detail on the annual rates presented in the preceding figures.

Table 3. Expenditure Measures (Adjusted)

Measure	HSA			Statewide		
	Rate per Capita	95% LCL	95% UCL	Rate per Capita	95% LCL	95% UCL
Total	$7,163	$7,088	$7,239	$7,297	$7,252	$7,343
Inpatient Total	$1,357	$1,307	$1,406	$1,467	$1,437	$1,497
Inpatient Mental Health	$69	$60	$78	$82	$75	$88
Inpatient Maternity	$76	$71	$81	$81	$78	$84
Inpatient Surgical	$662	$622	$701	$702	$678	$725
Inpatient Medical	$559	$532	$585	$612	$595	$628
Outpatient Total	$1,809	$1,785	$1,833	$2,017	$2,003	$2,032
Outpatient Hospital Mental Health	$29	$27	$31	$26	$25	$27
Outpatient Hospital ED	$252	$247	$258	$280	$277	$284
Outpatient Hospital Surgery	$431	$420	$442	$473	$466	$481
Outpatient Hospital Radiology	$458	$441	$475	$468	$459	$477
Outpatient Hospital Laboratory	$229	$226	$233	$294	$292	$297
Outpatient Hospital Pharmacy	$70	$65	$76	$75	$72	$77
Outpatient Hospital Other	$773	$760	$786	$879	$870	$888
Professional Non-Mental Health Total	$1,452	$1,440	$1,465	$1,305	$1,299	$1,311
Professional Physician Total	$1,054	$1,043	$1,065	$961	$956	$967
Professional Physician Inpatient	$163	$155	$170	$163	$159	$167
Professional Physician Outpatient Facility	$354	$348	$360	$321	$318	$324
Professional Physician Office Visit	$459	$455	$464	$412	$410	$414
Professional Non-Physician	$394	$390	$398	$340	$338	$342
Professional Mental Health Provider	$213	$208	$217	$185	$182	$187
Pharmacy Total	$1,157	$1,139	$1,175	$1,170	$1,159	$1,181
Pharmacy Psych Medication	$174	$169	$179	$178	$174	$181
Other Total	$704	$683	$724	$733	$720	$745
Special Medicaid Services	$369	$348	$389	$336	$323	$349
Mental Health Substance Combined*	$463	$454	$473	$444	$438	$450

* The *Mental Health Substance Combined* measure is the sum of all expenditures associated with medical and pharmacy services for mental health / substance abuse.

Table 4. Total Resource Use Index (RUI) (Adjusted)

Measure	HSA			Statewide		
	Index Ratio	95% LCL	95% UCL	Index Ratio	95% LCL	95% UCL
Total	0.98	0.97	0.99	1.00	0.99	1.01
Inpatient	0.91	0.88	0.95	1.00	0.98	1.02
Outpatient Facility	0.95	0.94	0.96	1.00	0.99	1.01
Professional	1.06	1.06	1.07	1.00	1.00	1.00
Pharmacy	0.98	0.97	1.00	1.00	0.99	1.01

Table 5. Utilization Measures (Adjusted)

Measure	HSA			Statewide		
	Rate per 1,000	95% LCL	95% UCL	Rate per 1,000	95% LCL	95% UCL
Inpatient Discharges	93.3	91.2	95.3	103.7	102.5	104.9
Inpatient Discharges for Ambulatory Care Sensitive Conditions	12.6	11.8	13.3	16.4	16.0	16.9
Inpatient Days	465.9	461.2	470.5	484.1	481.4	486.7
Inpatient Readmissions within 30 Days	12.5	11.8	13.3	14.8	14.3	15.2
Outpatient ED Visits	357.6	353.5	361.7	407.4	404.9	409.8
Outpatient Potentially Avoidable ED Visits	52.5	50.9	54.0	62.1	61.2	63.1
Outpatient ED Ambulatory Care Sensitive Conditions	41.6	40.2	43.0	52.2	51.3	53.0
Non-Hospital Outpatient Visits	7,042.2	7,024.0	7,060.3	6,872.7	6,862.7	6,882.8
Primary Care Encounters	3,981.7	3,968.0	3,995.3	3,706.5	3,699.1	3,713.9
Medical Specialist Encounters	990.8	984.0	997.6	936.3	932.6	940.0
Surgical Specialist Encounters	1,124.3	1,117.1	1,131.6	1,127.5	1,123.4	1,131.6
Standard Imaging	888.9	882.4	895.3	961.6	957.9	965.4
Advanced Imaging	258.8	255.3	262.3	273.3	271.3	275.3
Echography	362.7	358.5	366.8	344.5	342.2	346.8
Colonoscopy	56.1	54.5	57.8	56.9	56.0	57.9

Table 6. Effective & Preventive Care Measures

Measure	HSA				Statewide			
	N	Rate %	95% LCL	95% UCL	N	Rate %	95% LCL	95% UCL
Comprehensive Diabetes Care (CDC)								
HbA1c Testing	5,056	88%	87%	89%	18,958	90%	89%	90%
Eye Exam	5,056	45%	44%	46%	18,958	47%	46%	47%
Nephropathy Screening	5,056	78%	77%	79%	18,958	78%	77%	78%
Imaging Studies for Low Back Pain	3,143	87%	86%	88%	9,129	85%	84%	85%

Table 7a. ACO Measures Detail

Measure		HSA				Statewide			
		N	Rate %	95% LCL	95% UCL	N	Rate %	95% LCL	95% UCL
Cervical Cancer Screening	Core-30	26,644	69%	68%	70%	79,242	66%	65%	66%
CCS – Commercial	Core-30	21,550	72%	72%	73%	58,149	70%	69%	70%
CCS – Medicaid	Core-30	5,094	55%	54%	56%	21,093	54%	53%	54%
Chlamydia Screening (Ages 16–24 Years)	Core-7	3,115	47%	45%	49%	10,772	44%	43%	45%
CHL – Commercial	Core-7	2,203	45%	43%	47%	6,397	43%	42%	44%
CHL – Medicaid	Core-7	912	51%	47%	54%	4,375	46%	44%	47%
Breast Cancer Screening (Ages 52–64 Years)	Core-11	9,980	74%	74%	75%	30,935	75%	74%	75%
BCS – Commercial (Ages 52–64 Years)	Core-11	8,308	79%	78%	80%	23,674	79%	79%	80%
BCS – Medicaid (Ages 52–64 Years)	Core-11	882	53%	50%	57%	4,056	59%	57%	60%
BCS – Medicare (Ages 52–64 Years)	Core-11	790	53%	49%	57%	3,205	59%	57%	61%
BCS (Ages 52–74 Years)	Core-11	13,929	74%	73%	75%	45,582	74%	74%	74%
BCS (Ages 65–74 Years)	Core-11	3,949	73%	72%	75%	14,647	73%	72%	73%
Follow-Up After Hospitalization for Mental Illness (7 day)	Core-4	199	56%	49%	63%	1,180	50%	47%	52%
FUH – Commercial	Core-4	77	69%	58%	80%	262	61%	55%	67%
FUH – Medicaid	Core-4	86	43%	32%	54%	698	48%	45%	52%
FUH – Medicare	Core-4	36	58%	41%	76%	220	40%	33%	47%
Initiation of Alcohol/Drug Treatment	Core-5a	1,707	28%	26%	30%	5,737	29%	28%	30%
IET (INI) – Medicaid	Core-5a	978	28%	25%	30%	3,605	29%	28%	31%
Engagement of Alcohol/Drug Treatment	Core-5b	1,707	20%	18%	22%	5,737	19%	18%	20%
IET (ENG) – Medicaid	Core-5b	978	20%	17%	22%	3,605	19%	17%	20%
Cholesterol Management for Patients with CVD	Core-3	1,842	75%	73%	77%	6,180	75%	74%	77%
CMC – Commercial	Core-3	623	70%	66%	73%	1,707	75%	73%	77%
CMC – Medicaid	Core-3	104	67%	58%	77%	532	66%	62%	70%
CMC – Medicare	Core-3	1,115	79%	77%	82%	3,941	77%	76%	78%
Avoidance of Antibiotic Treatment for Acute Bronchitis	Core-6	963	36%	33%	39%	3,607	31%	29%	33%
AAB – Commercial	Core-6	700	37%	33%	41%	1,999	32%	30%	34%
AAB – Medicaid	Core-6	184	35%	28%	42%	1,175	31%	28%	33%
AAB – Medicare	Core-6	79	35%	24%	47%	433	28%	23%	32%
Influenza Vaccination	Core-35	28,156	34%	33%	34%	86,302	34%	34%	35%
INF – Commercial	Core-35	15,382	27%	26%	27%	40,185	28%	28%	29%
INF – Medicaid	Core-35	3,208	32%	31%	34%	14,436	27%	27%	28%
INF – Medicare	Core-35	9,566	46%	45%	47%	31,681	45%	45%	46%

Table 7a. ACO Measures Detail, Continued

Measure		HSA				Statewide			
		N	Rate %	95% LCL	95% UCL	N	Rate %	95% LCL	95% UCL
Diabetes Blood Pressure in Control (<140/90 mmHg)	MSSP-24	2,596	75%	74%	77%	8,486	75%	74%	76%
Diab – Commercial (BP)	MSSP-24	1,045	76%	74%	79%	2,776	76%	74%	77%
Diab – Medicaid (BP)	MSSP-24	288	77%	72%	82%	1,288	76%	73%	78%
Diab – Medicare (BP)	MSSP-24	1,263	74%	71%	76%	4,422	75%	74%	76%
Diabetes Tobacco Use in Control	MSSP-25	91	77%	68%	86%	1,732	77%	75%	79%
Diab – Commercial (Tob.)	MSSP-25					400	86%	82%	89%
Diab – Medicaid (Tob.)	MSSP-25					331	63%	57%	68%
Diab – Medicare (Tob.)	MSSP-25	75	79%	69%	89%	1,001	78%	75%	80%
Diabetes Care Two-Part Composite	Core-53	2,079	44%	42%	46%	7,586	45%	44%	46%
Diab – Commercial (Comp.)	Core-53	822	37%	34%	40%	2,487	35%	33%	37%
Diab – Medicaid (Comp.)	Core-53	212	40%	33%	46%	1,158	38%	35%	41%
Diab – Medicare (Comp.)	Core-53	1,045	50%	47%	53%	3,941	53%	51%	54%
Diabetes HbA1c Not in Control (>9%)	Core-17	2,079	14%	13%	16%	7,586	11%	11%	12%
Diab – Commercial (HbA1c Not in Control)	Core-17	822	17%	14%	19%	2,487	13%	12%	14%
Diab – Medicaid (HbA1c Not in Control)	Core-17	212	23%	17%	29%	1,158	19%	16%	21%
Diab – Medicare (HbA1c Not in Control)	Core-17	1,045	10%	8%	12%	3,941	8%	7%	9%
Hypertension with BP in Control (<140/90 mmHg)	Core-39	12,600	69%	68%	70%	39,905	71%	71%	72%
HYP – Commercial (Ages 18–85 Years)	Core-39	4,990	67%	66%	68%	13,731	69%	69%	70%
HYP – Medicaid (Ages 18–85 Years)	Core-39	925	61%	58%	64%	3,946	65%	64%	67%
HYP – Medicare (Ages 18–85 Years)	Core-39	6,685	71%	70%	72%	22,228	73%	73%	74%
HYP (Ages 18–64 Years)	Core-39	6,612	67%	66%	68%	20,635	69%	68%	70%
HYP (Ages 65–85 Years)	Core-39	5,988	71%	70%	72%	19,270	73%	73%	74%

Table 7b. ACO Measures Detail

Measure		HSA				Statewide			
		N	Observed / Expected Ratio	LCL	UCL	N	Observed / Expected Ratio	LCL	UCL
Plan All-Cause Readmissions	Core-1	3,828	0.55	0.48	0.62	14,555	0.68	0.64	0.72
PCR – Commercial	Core-1	1,065	0.66	0.50	0.82	3,202	0.76	0.67	0.86
PCR – Medicaid	Core-1	555	0.63	0.45	0.81	2,762	0.68	0.59	0.76
PCR – Medicare	Core-1	2,208	0.51	0.42	0.59	8,591	0.66	0.62	0.71

Table 7c. ACO Measures Detail

Measure		HSA				Statewide			
		N	Rate per 1,000	95% LCL	95% UCL	N	Rate per 1,000	95% LCL	95% UCL
ACS Admissions for COPD and Asthma	Core-10	56,129	2.0	1.7	2.4	183,972	3.9	3.7	4.2
PQI – Commercial (COPD and Asthma)	Core-10	32,400	0.3	0.1	0.5	91,979	0.5	0.4	0.6
PQI – Medicaid (COPD and Asthma)	Core-10	5,115	3.1	1.6	4.7	22,041	4.1	3.3	5.0
PQI – Medicare (COPD and Asthma)	Core-10	18,615	4.8	3.8	5.8	69,952	8.4	7.7	9.1
ACS Admissions for Congestive Heart Failure	MSSP-10	82,140	2.6	2.2	2.9	261,283	3.4	3.2	3.6
PQI – Commercial (CHF)	MSSP-10	51,170	0.2	0.0	0.3	140,378	0.2	0.1	0.3
PQI – Medicaid (CHF)	MSSP-10	11,772	0.4	0.1	0.8	48,496	0.8	0.6	1.1
PQI – Medicare (CHF)	MSSP-10	19,197	10.4	9.0	11.9	72,408	11.3	10.5	12.1
ACS Hospitalizations: PQI Composite (Chronic)	Core-12	82,140	5.6	5.1	6.1	261,283	8.1	7.8	8.5
PQI – Commercial (Comp.)	Core-12	51,170	0.7	0.4	0.9	140,378	1.0	0.8	1.2
PQI – Medicaid (Comp.)	Core-12	11,772	4.6	3.4	5.8	48,496	5.8	5.1	6.5
PQI – Medicare (Comp.)	Core-12	19,197	19.4	17.4	21.3	72,408	23.5	22.4	24.6

Table 8. ACO Measures Reference Table

VT Measure ID	Medicare Shared Savings Program Measure ID	Measure Name	Nationally Recognized/ Endorsed	Included in HSA Profile?	Measure Description
Core-1		Plan All-Cause Readmissions	NQF #1768, HEDIS measure	Adult	For members 18 years and older, the number of acute inpatient stays during the measurement year that were followed by an acute readmission for any diagnosis within 30 days.
Core-2		Adolescent Well-Care Visit	HEDIS measure	Pediatric	The percentage of members 12-21 years who had at least one comprehensive well-care visit with a PCP or OB/GYN during the measurement year.
Core-3	MSSP-29	Ischemic Vascular Disease (IVD): Complete Lipid Panel (Screening Only)	NQF #0075, NCQA	Adult	The percentage of members 18-75 years who were discharged alive for acute myocardial infarction, coronary artery bypass grafting, or percutaneous coronary intervention in the year prior to the measurement year or who had a diagnosis of Ischemic Vascular Disease during the measurement year and one year prior, who had LDL-C screening.
Core-4		Follow-up after Hospitalization for Mental Illness, 7 Day	NQF #0576, HEDIS measure	Adult	The percentage of discharges for members 6 years and older who were hospitalized for treatment of selected mental illness diagnoses and who had an outpatient visit, an intensive outpatient encounter, or partial hospitalization with a mental health practitioner.
Core-5		Initiation & Engagement of Alcohol and Other Drug Dependence Treatment (a) Initiation, (b) Engagement	NQF #0004, HEDIS measure	Adult	(a) The percentage of adolescent and adult members with a new episode of alcohol or other drug (AOD) dependence who received initiation of AOD treatment within 14 days. (b) The percentage of adolescent and adult members with a new episode of alcohol or other drug (AOD) dependence who initiated treatment and had two additional services with a diagnosis of AOD within 30 days of the initiation visit.
Core-6		Avoidance of Antibiotic Treatment for Adults with Acute Bronchitis	NQF #0058, HEDIS measure	Adult	The percentage of adults 18-64 years with a diagnosis of acute bronchitis who were not dispensed an antibiotic.
Core-7		Chlamydia Screening in Women	NQF #0033, HEDIS measure	Adult and Pediatric	The percentage of women 16-24 years who were identified as sexually active and who had at least one test for chlamydia during the measurement period.
Core-8		Developmental Screening in the First Three Years of Life	NQF #1448	Pediatric	The percentage of children screened for risk of developmental, behavioral, and social delays using a standardized screening tool in the 12 months preceding their first, second, or third birthday.
Core-10	MSSP-9	Ambulatory Sensitive Condition Admissions: Chronic Obstructive Pulmonary Disease or Asthma in Older Adults	NQF, AHRQ (Prevention Quality Indicator (PQI) #5)	Adult	All discharges with an ICD-9-CM principal diagnosis code for COPD or asthma in adults ages 40 years and older, for ACO assigned or aligned Medicare fee-for-service (FFS) beneficiaries with COPD or asthma. This is an observed rate of discharges per 1,000 members.
Core-11	MSSP-20	Mammography / Breast Cancer Screening	NQF #0031, HEDIS measure	Adult	The percentage of women 50-74 years who had a mammogram to screen for breast cancer in the last two years.
Core-12		Rate of Hospitalization for Ambulatory Care Sensitive Conditions: PQI Chronic Composite	NQF, AHRQ (Prevention Quality Indicator (PQI) Chronic Composite)	Adult	Prevention Quality Indicators' (PQI) overall composite per 1,000 population, ages 18 years and older; includes admissions for one of the following conditions: diabetes with short-term complications, diabetes with long-term complications, uncontrolled diabetes without complications, diabetes with lower-extremity amputation, chronic obstructive pulmonary disease, asthma, hypertension, heart failure, angina without a cardiac procedure, dehydration, bacterial pneumonia, or urinary tract infection.

Table 8. ACO Measures Reference Table, Continued

VT Measure ID	Medicare Shared Savings Program Measure ID	Measure Name	Nationally Recognized/ Endorsed	Included in HSA Profile?	Measure Description
Core-13		Appropriate Testing for Children with Pharyngitis	NQF #0002	Pediatric	Percentage of children 2-18 years who were diagnosed with pharyngitis, dispensed an antibiotic and received a group A strep test for the episode.
Core-14		Childhood Immunization Status (Combo 10)	NQF #0038, HEDIS measure	No	The percentage of children 2 years who had each of nine key vaccinations (e.g., MMR, HiB, HepB, etc.).
Core-15		Pediatric Weight Assessment and Counseling	NQF #0024	No	The percentage of members 3-17 years who had an outpatient visit with a PCP or OB/GYN and who had evidence of BMI percentile documentation, counseling for nutrition, and counseling for physical activity.
Core-17	MSSP-27	Diabetes Mellitus: Hemoglobin A1c Poor Control (>9%)	NQF #0059, NCQA	Adult	Percentage of members 18-75 years with diabetes whose HbA1c was in poor control >9%.
Core-18	MSSP-19	Colorectal Cancer Screening	NQF #0034, NCQA HEDIS measure	No	The percentage of members 50-75 years who had appropriate screening for colorectal cancer.
Core-19	MSSP-18	Depression Screening and Follow-Up	NQF #0418, CMS	No	The percentage of members 12 years and older who had negative screening or positive screening for depression completed in the measurement year with an age-appropriate standardized tool. Follow-up for positive screening must be documented same day as screening.
Core-20	MSSP-16	Adult Weight Screening and Follow-Up	NQF #0421, CMS	No	The percentage of members 18 years and older who had BMI calculated during the last visit in the measurement year or within the prior 6 months. In cases where the BMI is abnormal, a follow-up plan must be documented during the visit the BMI was calculated or within the prior 6 months.
Core-21		Access to Care Composite	NCQA	No	NCQA Survey - percentage of members who could get appointments or answers to questions from providers when needed.
Core-22		Communication Composite	NCQA	No	NCQA Survey - percentage of members who felt they received good communication from providers.
Core-23		Shared Decision-Making Composite	NCQA	No	NCQA Survey - percentage of members whose provider helped them make decisions about prescription medications.
Core-24		Self-Management Support Composite	NCQA	No	NCQA Survey - percentage of members whose provider talked to them about specific health goals and barriers.
Core-25		Comprehensiveness Composite	NCQA	No	NCQA Survey - percentage of members whose provider talked to them about depression, stress, and other mental health issues.
Core-26		Office Staff Composite	NCQA	No	NCQA Survey - percentage of members who found the clerks and receptionists at their provider's office to be helpful and courteous.
Core-27		Information Composite	NCQA	No	NCQA Survey - percentage of members who received information from their provider about what to do if care was needed in the off hours and reminders between visits.

Table 8. ACO Measures Reference Table, Continued

VT Measure ID	Medicare Shared Savings Program Measure ID	Measure Name	Nationally Recognized/ Endorsed	Included in HSA Profile?	Measure Description
Core-28		Coordination of Care Composite	NCQA	No	NCQA Survey - percentage of members whose providers followed-up about test results, seemed informed about specialty care, and talked at each visit about prescription medication.
Core-29		Specialist Composite	NCQA	No	NCQA Survey - percentage of members who found it easy to get appointments with specialists and who found that their specialist seemed to know important information about their medical history.
Core-30		Cervical Cancer Screening	NQF #0032, HEDIS measure	Adult	The percentage of females 21-64 years who received one or more PAP tests to screen for cervical cancer in the measurement year or two years prior to the measurement year.
Core-31	MSSP-30	Ischemic Vascular Disease (IVD): Use of Aspirin or Another Antithrombotic	NQF #0068, NCQA	No	Percentage of members 18 years and older with IVD who had documentation of using aspirin or another antithrombotic during the measurement year.
Core-35	MSSP-14	Influenza Vaccination	NQF #0041, AMA-PCPI	Adult	Percentage of members 6 months and older with an outpatient visit between October and March who received an influenza vaccine.
Core-36	MSSP-17	Tobacco Use Assessment and Cessation Intervention	NQF #0028, AMA-PCPI	No	Percentage of members 18 years and older who had a negative tobacco screen or positive tobacco screen with cessation intervention in the two years prior to the measurement year.
Core-38	MSSP-32	Drug Therapy for Lowering LDL Cholesterol	NQF #0074	No	Percentage of members 18 years and older with a diagnosis of CAD and an outpatient visit in the measurement year whose LDL-C <100 mg/dL or LDL-C >=100 mg/dL and who received a prescription of a statin in the measurement year.
Core-38	MSSP-33	ACE Inhibitor or ARB Therapy for Members with CAD and Diabetes and/or Left Ventricular Systolic Dysfunction (LVSD)	NQF #0066	No	Percentage of members 18 years and older with a diagnosis of CAD and a Left Ventricular Ejection Fraction (LVEF) < 40% or diagnosis of CAD and diabetes who received a prescription of ACE/ARB medication in the measurement year.
Core-39	MSSP-28	Percent of Beneficiaries With Hypertension Whose BP < 140/90 mmHg	NQF #0018, NCQA HEDIS measure	Adult	Percentage of members 18-85 years with hypertension whose BP was in control <140/90 mmHg.
Core-40	MSSP-21	Screening for High Blood Pressure and Follow-Up Plan Documented	Not NQF-endorsed; MSSP	No	Percentage of members 18 years and older seen during the measurement period who were screened for high blood pressure and a recommended follow-up plan is documented based on the current blood pressure reading as indicated.
Core-47	MSSP-13	Falls: Screening for Fall Risk	NQF #0101	No	Percentage of members 65 years and older who had any type of falls screening in the measurement year.
Core-48	MSSP-15	Pneumonia Vaccination (Ever Received)	NQF #0043	Adult	The percentage of members 65 years and older who had documentation of ever receiving a pneumonia vaccine.
Core-53		Diabetes Care Two-Part Composite	NQF #0059 and #0055	Adult	The percentage of members 18-75 years with diabetes who have a valid HbA1c less than or equal to 9% and who received an eye exam for diabetic retinal disease during the measurement year.
	MSSP-1	CG CAHPS: Getting Timely Care, Appointments, and Information	NQF #0005, AHRQ	No	CMS Survey - Getting Timely Care, Appointments, and Information
	MSSP-2	CG CAHPS: How Well Your Doctors Communicate	NQF #0005, AHRQ	No	CMS Survey - How Well Your Doctors Communicate

Table 8. ACO Measures Reference Table, Continued

VT Measure ID	Medicare Shared Savings Program Measure ID	Measure Name	Nationally Recognized/ Endorsed	Included in HSA Profile?	Measure Description
	MSSP-3	CG CAHPS: Patients' Rating of Doctor	NQF #0005, AHRQ	No	CMS Survey - Patients' Rating of Doctor
	MSSP-4	CG CAHPS: Access to Specialists	NQF #0005, AHRQ	No	CMS Survey - Access to Specialists
	MSSP-5	CG CAHPS: Health Promotion and Education	NQF #0005, AHRQ	No	CMS Survey - Health Promotion and Education
	MSSP-6	CG CAHPS: Shared Decision Making	NQF #0005, AHRQ	No	CMS Survey - Shared Decision Making
	MSSP-7	CG CAHPS: Health Status / Functional Status	NQF #0006, AHRQ	No	CMS Survey - Health Status/Functional Status
	MSSP-8	Risk-Standardized, All Condition Readmission	CMS, not submitted to NQF (adapted from NQF #1789)	No	All discharges with an ICD-9-CM principal diagnosis code for COPD or asthma in adults ages 40 years and older, for ACO assigned or aligned Medicare fee-for-service (FFS) beneficiaries with COPD or asthma. This is an observed rate of discharges per 1,000 members.
	MSSP-10	Ambulatory Sensitive Condition Admissions: Congestive Heart Failure	NQF #0277, AHRQ (Prevention Quality Indicator (PQI) #8)	Adult	All discharges with an ICD-9-CM principal diagnosis code for CHF in adults ages 18 years and older, for ACO assigned or aligned Medicare fee-for-service (FFS) beneficiaries with CHF. This is an observed rate of discharges per 1,000 members.
	MSSP-11	Percent of Primary Care Physicians who Successfully Qualify for an EHR Program Incentive Payment	CMS EHR Incentive Program Reporting	No	Percentage of Accountable Care Organization (ACO) primary care physicians (PCPs) who successfully qualify for either a Medicare or Medicaid Electronic Health Record (EHR) Program incentive payment.
	MSSP-12	Medication Reconciliation: Reconciliation After Discharge from an Inpatient Facility	NQF #0554	No	Percentage of members 65 years and older who were discharged from any inpatient facility in the measurement year and had an outpatient visit within 30 days of the discharge who had documentation in the outpatient medical record of reconciliation of discharge medications with current outpatient medications during a visit within 30 days of discharge.
	MSSP-24	Diabetes: Blood Pressure Control		Adult	Percentage of members 18-75 years with diabetes who had blood pressure <140/90 mmHg at most recent visit.
	MSSP-25	Diabetes: Tobacco Non-Use		Adult	Percentage of members 18-75 years with diabetes who were identified as a non-user of tobacco in measurement year.
	MSSP-31	Heart Failure: Beta-Blocker Therapy for Left Ventricular Systolic Dysfunction (LVSD)	NQF #0083	No	Percentage of members 18 years and older with a diagnosis of heart failure who also had LVSD (LVEF < 40%) and who were prescribed beta-blocker therapy.
		Comprehensive Diabetes Care: Eye Exams for Diabetics	NQF #0055, HEDIS measure	Adult	Percentage of members with diabetes 18-75 years who received an eye exam for diabetic retinal disease during the measurement year.
M&E-3		Comprehensive Diabetes Care: Medical Attention for Nephropathy	NQF #0062, HEDIS measure	Adult	Percentage of members with diabetes 18-75 years who received a nephropathy screening test during the measurement year.

The following tables provide risk-adjusted rates for selected quality measures, which are not represented in the preceding figures.

Table 9. Risk-Adjusted Quality Measures: PQI Composite (Chronic)

HSA	Jul. 2013-Jun. 2014		Jan. 2014-Dec. 2014		Trend
	Rate per 1,000	N	Rate per 1,000	N	Rate Difference
Barre	7.8	25,681	9.0	31,519	1.3
Bennington	7.2	12,946	7.0	11,222	-0.3
Brattleboro	5.6	9,846	5.4	12,019	-0.2
Burlington	5.5	76,556	6.5	82,140	1.0
Middlebury	5.5	11,965	10.3	15,582	4.8
Morrisville	5.4	9,842	8.7	15,100	3.3
Newport	8.1	9,239	6.1	11,171	-1.9
Randolph	7.4	7,198	11.2	8,304	3.7
Rutland	4.6	20,448	6.0	21,388	1.4
Springfield	6.7	8,798	12.9	11,121	6.2
St Albans	4.4	13,512	5.7	18,326	1.3
St Johnsbury	4.7	10,154	4.7	12,066	-0.0
White River Jct	7.2	9,744	10.0	11,325	2.8

* Cells with less than 11 in the numerator or less than 30 in the denominator are left blank due to either insufficient data or confidentiality requirements.

Table 10. Risk-Adjusted Quality Measure: Diabetes HbA1c Not in Control (>9%)

HSA	Jul. 2013-Jun. 2014		Jan. 2014-Dec. 2014		Trend
	Rate %	N	Rate %	N	Rate Difference
Barre	11.7%	1,651	12.0%	1,780	0.2%
Bennington	10.0%	347	10.2%	494	0.2%
Brattleboro	10.9%	130	11.4%	185	0.5%
Burlington	11.8%	2,109	11.8%	2,079	-0.0%
Middlebury					
Morrisville	10.5%	147	10.5%	391	-0.0%
Newport	9.9%	715	10.4%	879	0.5%
Randolph		34		42	
Rutland		67		63	
Springfield					
St Albans	10.5%	627	10.9%	1,070	0.4%
St Johnsbury	11.3%	315	12.1%	427	0.8%
White River Jct	14.0%	147	14.8%	159	0.8%

* Cells with less than 11 in the numerator or less than 30 in the denominator are left blank due to either insufficient data or confidentiality requirements.

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Vermont Blueprint for Health

2015 Annual Report

January 31, 2016

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Vermont Blueprint for Health in 2015

1 INTRODUCTION

The Vermont Blueprint for Health (the Blueprint) is a state-led, nationally-recognized initiative transforming health care delivery and payments. The foundation is the Blueprint's Transformation Network, a network of Practice Facilitators, Community Health Team leaders, and Project Managers, who work with Patient-Centered Medical Homes (PCMHs), Community Health Teams (CHTs), and local health and human services leaders. This network allows for rapid response to Vermont's health priorities through statewide implementation of new initiatives. Blueprint programs are continuously informed by comprehensive evaluations of health care quality and outcomes at the practice-, community-, and state-levels. As the care delivery system and payment model evolve, the Blueprint's aim is constant: connecting Vermonters with whole person health care that is evidence-based, patient- and family-centered, and cost-effective.

1.1 2015 IN BRIEF

In 2015, Blueprint work focused on three priority areas as outlined in the 2014 Annual Report:

1) Unified community health systems
2) Unified performance reporting and data utility
3) Options for payment modifications.

This work is summarized here and covered in depth later in this report.

In the first area, the Blueprint worked closely with Vermont's three Accountable Care Organizations (ACOs) to align quality and coordination activities. Together, the Blueprint and ACOs also supported the development and maturation of Unified Community Collaboratives (UCCs), groups with inclusive and balanced local leadership structures drawn from health and human service organizations. These Collaboratives are the foundation for the transition to Accountable Health Communities, where local coalitions take responsibility for the wellness of a population and the area's health care budget.

In the area of performance reporting and data utility, the Blueprint partnered with the ACOs to develop a unified approach to data collection, analysis, reporting, and distribution. The aim was to meet the analytic needs of the communities and practices and promote continuous quality improvement s. The Blueprint advanced these efforts in 2015 by acquiring the Blueprint Clinical Registry from the former vendor/host Covisint. It also expanded its data management and analysis work by merging all-payer claims data with clinical data from practices and complementary datasets for specific populations (such as substance abuse treatment data and corrections data) from state partners. The Blueprint also developed more comprehensive and timely performance reports for communities and practices, and contributed to the national literature through publication of Blueprint processes and outcomes in a peer-reviewed journal.

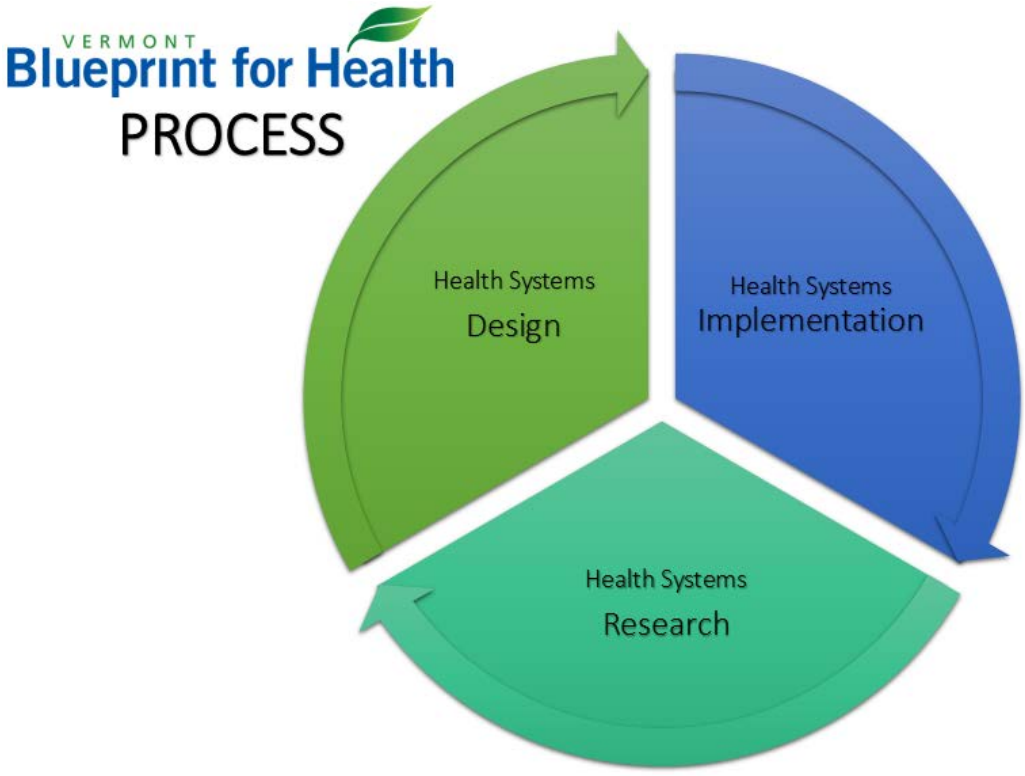
Payment modifications were the third priority area in 2015, and the Blueprint worked collaboratively with stakeholders to design a new payment model that increases payment amounts to practices to more

fully support the expense of operating as a medical home and establishes a payment component based on performance. These changes to the payment model will help Vermont shift away from the volume-based fee-for-service and towards a new payment model that rewards prevention and efficient delivery of high-quality care.

1.2 Serving Vermont Health Reform in 2016 and Beyond

Looking ahead to 2016 and beyond, the Blueprint is considering how the program can be positioned and configured to best serve Vermont's evolving health care system. The Blueprint's unique strengths such as its statewide Transformation Network, evaluation and analytic capabilities, and experience designing and implementing new services serve as a foundation for more reforms aimed at improving health quality and outcomes and reducing expenditures. These strengths are evident in the Blueprint's process, shown below, of health systems design, implementation, and research. Each step feeds the next.

Figure 1: Blueprint Process



1.2.1 Health Systems Design

Health Systems Design is the strength most recently demonstrated in the Blueprint's payment redesign process. In prior years this work included the Adverse Childhood Events (ACEs) prevention brief delivered to the Legislature in late 2014, the Hub & Spoke strategy for medication assisted treatment (MAT), the SASH program for helping elders age safely at home, and the Blueprint program itself. As a state-led program, the Blueprint is responsible for responding to priorities identified by the Vermont Legislature, and by extension, the people of Vermont. The Blueprint's does so by surveying national and international best practices, collecting input from stakeholders here in Vermont, and developing and vetting evidence-based, locally responsive solutions to Vermont's health priorities.

1.2.2 Health Systems Implementation

Health Systems Implementation is the part of the Blueprint process that utilizes the Blueprint's Transformation Network. Project Managers, Practice Facilitators, and CHT leaders work with Blueprint leadership, PCMHs, CHTs, and other affiliated health care providers to introduce and implement evidence-based, locally-responsive programs. These efforts are further supported by corresponding payments. The success of Health Systems Implementation is highly dependent on the engagement of the state's health care organizations, including the ACOs and all of the hospital systems, FQHCs, and independent practices they represent. Daily collaboration between state and local leadership, between public, private, and non-profit sectors, and between health and human services is required for successful implementation. Progress in this part of the process is tracked and measured continuously.

1.2.3 Health Systems Research

Health Systems Research encompasses all of the Blueprint's data collection, data quality assurance, data merging, measurement, analysis, performance reporting, and self- and system-evaluation work. The essential utility behind the Blueprint's Health Systems Research is the Blueprint Clinical Registry (formerly Docsite) for which the state acquired a perpetual software license in late 2015. Beginning in 2016, the reconstructed Registry will be hosted by VITL and managed by the Blueprint.

As a neutral, state-based service the Blueprint has unique access to data from a wide variety of sources. The program has demonstrated the effectiveness of merging clinical data with Vermont's all-payer claims data by producing comprehensive and meaningful reports for practices and communities. Many communities have used these reports to guide continuous quality improvement activities within health care organizations and across medical and social services. Recognizing the value of this reporting, other state services are contributing complementary datasets to the Blueprint's measurement and analytics team, with the goal of serving specific high-needs populations (such as, individuals accessing MAT or connected with the Corrections system) more effectively.

Beyond working to support continual improvement in delivery of health care across Vermont, the Blueprint is engaged in the national health reform dialogue through its participation in the Multi-payer Advanced Primary Care Practice Demonstration and the Milbank Memorial Fund Multi-State Collaborative, and through publication in national peer-reviewed journals.

1.2.4 2016 and Beyond

Each step in the Blueprint's process represents a strength that will continue to serve Vermonters as health care delivery and funding evolve. Leveraging those strengths in 2016, 2017, and beyond is considered at the end of this report, in Section 8.

2 How The Blueprint Works

2.1 The Blueprint is a statewide initiative with local leadership and implementation

The Blueprint combines state level strategic direction with local organization and ownership of care delivery. The state's 14 Health Service Areas (HSAs) each have an Administrative Entity such as a hospital or Federally Qualified Health Center (FQHC) that leads the Blueprint locally. Their work includes local project management, staffing of Community Health Teams (CHTs), and financial management. The Blueprint's Transformation Network includes Project Managers, hired by the Administrative Entities, who lead implementation and engage community partners. Each Administrative Entity has contributed their own financial and human resources, beyond the scope of their Blueprint grants, demonstrating their commitment to the Blueprint's sustainability and success.

2.2 Unified Community Collaboratives identify local health priorities, plan coordinated responses

The Administrative Entities in each HSA have always included local partners in guiding Blueprint implementation. That collaboration is even stronger today with the merging of Blueprint workgroups with Accountable Care Organization (ACO) workgroups. These combined groups are called Unified Community Collaboratives (UCCs). Their leadership teams include the area's Blueprint Project Manager, representatives of ACOs present in that community, local primary care leaders (including a pediatric provider), the hospital, home health or the Visiting Nurse Association, Area Agency on Aging, Designated (mental health) Agency, Designated Regional Housing Organization, and others. They meet to identify local priorities, goals, and strategies, including the configuration of the Blueprint CHT. The ultimate goal of these UCCs is to prepare each health service area (HSA) to function as an Accountable Health Community, responsible for the wellness of the whole population and its health care budget. This model supports the complete integration of high-quality medical care, mental health and substance abuse services, social services, and prevention.

2.3 Patient Centered Medical Homes provide top-quality primary care

Vermont's primary care practices are supported by the Blueprint in the process of achieving and maintaining recognition as Patient Centered Medical Homes (PCMHs) under the National Committee for Quality Assurance (NCQA) standards. These standards promote excellence in six (6) areas:

- patient-centered access
- team-based care
- population health management
- care management and support
- care coordination and transitions
- performance measurement and quality improvement

All Vermont insurers (Medicaid, Medicare, and major commercial insurers) support practices to do this work through per member per month (PMPM) payments to NCQA-recognized PCMHs. New performance-based payments will further promote improvement of utilization patterns and health

quality. The Blueprint's Transformation Network supports practices with Practice Facilitators, professionals trained in quality improvement and change management. Each practice has access to a Facilitator, who provides technical expertise in the NCQA standards and ongoing quality improvement coaching.

2.4 COMMUNITY HEALTH TEAMS EXTEND AVAILABLE SERVICES

Good medical care happens in a doctor's office, but good health happens in a community –the Blueprint's CHTs take on this challenge. CHTs supplement services available in PCMHs and link patients with the social and economic services that make healthy living possible for all Vermonters. CHT services include:

- population/panel management and outreach
- individual care coordination
- brief counseling and referral to more intensive mental health care as needed
- substance abuse treatment support
- condition-specific wellness education and more

The services may be co-located with the practices ("embedded") or centralized in the HSA. Actual service configuration, staffing, and location are determined by local leaders based on community demographics and health needs, identified gaps in available services, and the strengths of local partners. Funded by Medicaid, Medicare, and major commercial insurers, access to CHT teams is offered barrier-free to patients and practices (meaning no co-payments, no prior authorizations, and no billing).

2.5 EXTENDED COMMUNITY HEALTH TEAMS SUPPORT ADDICTION RECOVERY (HUB & SPOKE)

Since the CHTs first began operation, the Blueprint has added two service models to their offerings. One of these service models, called the Care Alliance for Opioid Addiction (Hub & Spoke), expands the availability of medication assisted treatment (MAT) for opioid addiction. Hubs are regional opioid addiction treatment centers, located around the state, that treat patients with especially complex needs, using either methadone or buprenorphine. Spokes are primary care and other specialty practices where buprenorphine is prescribed.

As part of the a statewide partnership that includes the Vermont Department of Health (VDH), the Blueprint has helped to expand access to MAT by opening a new Hub in the Rutland area, expanding Hub caseloads, and encouraging more primary care practices to offer buprenorphine-prescribing services. The program also embeds a nurse and a Master's-prepared, licensed mental health or addictions clinician in each of the Spokes. These staff members provide the additional clinical support and care coordination that MAT patients require. Through the Hub & Spoke approach, each MAT patient has an identified medical home, a single MAT prescriber, a pharmacy home, and access to all CHT services.

2.6 EXTENDED COMMUNITY HEALTH TEAMS SUPPORT HEALTHY AGING-IN-PLACE (SASH)

Since the CHTs launched, the Blueprint has worked with Cathedral Square, a Designated Regional Housing Organization, to add a service model called Support and Services at Home (SASH). SASH connects the health and long-term care systems for Medicare beneficiaries to support aging at home.

SASH is administered by regional Designated Regional Housing Organizations (DRHOs) and serves participants both in subsidized housing and in residences in the community at large.

Each panel of 100 participants is served by a SASH coordinator and Wellness Nurse. Together, they focus on three areas of intervention shown to be effective in reducing Medicare expenditures:

- Transition support after a hospital or rehabilitation facility stay
- Self-management education and coaching for chronic conditions and health maintenance
- Care coordination.

SASH is primarily funded by the Center for Medicare and Medicaid Services (CMS) through its Multi-Payer Advanced Primary Care Practice Demonstration (MAPCP), which is currently scheduled to end on December 31, 2016.

2.7 PAYMENT REFORMS FUEL HIGH-QUALITY, HIGH-VALUE CARE

Funding support for practices to function as PCMHs and for CHTs to operate comes from Medicare (through the MAPCP Demonstration), Medicaid, and major commercial insurers. While participation in the Blueprint program is optional for providers, Medicaid and major commercial insurers are required to participate in these payments. The exception is self-insured employers, though many have opted to participate.

In 2015, the Vermont Legislature approved the first increase in Blueprint payments since program inception. Taking the total new allocation as a starting point, the Blueprint led a consensus-based process to redesign the payment model. As before, funding was split into two payment streams. The first was a (PMPM) payment that PCMHs receive on top of their traditional fee-for-service payments; these support the additional and often un-reimbursable work that is needed to operate as a PCMH. The second payment stream funds CHTs.

Initially, the PCMH PMPM payment was based on the level of NCQA recognition achieved by the practice. The new payment structure (fully described in Section 5), sets a base rate for PCMH payments ($3 PMPM) based on NCQA recognition and participation in UCC quality improvement initiative. In addition to the base payment, the new payment structure features performance-based components designed to promote high-quality, high-value care: up to $0.25 for utilization and up to $0.25 for quality of care. The payment that funds a service area's CHT is approximately $2.70 PMPM. Following an adjustment made in July 2015, payers, both commercial and public, pay in proportion to their market share of members across the state.

2.8 DATA UTILITY, MEASUREMENT & ANALYTICS SUPPORTS A LEARNING HEALTH SYSTEM

The production and use of data is threaded throughout the Blueprint program. This data is used to evaluate the current status of health care delivery in Vermont and the progress made in quality of care, utilization, and cost of services. These evaluations, in turn, play a critical role in improvement.

The data the Blueprint works with include claims from the all-payers claims database, also known as the Vermont Health Care Uniform Reporting and Evaluation System (VHCURES), and clinical data from the Blueprint Clinical Registry, formerly known as DocSite. Claims data provides important insights into utilization of services and the cost of care. For example, the Blueprint can identify the rates at which

Vermonters go to the emergency department (ED), changes in rates of visits to primary care providers, and how long patients are staying in the hospital. Data in the Blueprint Clinical Registry comes from clinical documentation entered in practices' electronic medical records (EMRs). EMRs record the care delivered to patients and clinical measurements like height, weight, blood pressure, blood tests results, and much more. Linked claims and clinical data are more powerful than either dataset alone. The linked data can identify, for instance, the number of persons diagnosed with hypertension that have their blood pressure under control based on their most recent reading or the number of diabetics who are obese or who do not have their hemoglobin (Hb) A1c in control. The Blueprint includes these and many more clinically relevant measurements in dashboards for practices, and community-level profiles.

Clinicians use this information to improve care at their practices and communities use it to collaborate on addressing root causes, such as access to prescriptions, transportation, or nutrition support. The Blueprint also routinely evaluates its own performance and reports on program impact and return-on-investment (ROI) through its annual reports to the Vermont Legislature and peer-reviewed articles.

3 BLUEPRINT OUTCOMES FOR 2015

3.1 EARLY 2015 ANALYSIS EVALUATED IMPACT OF PCMH ACTIVITIES BY PROGRAMMATIC STAGE

Earlier this year, the Blueprint published an article in the peer-reviewed journal *Population Health Management* evaluating the impact of health delivery reforms for the years 2008-2013 (see Appendix A). The paper focused on the impact on patients' medical expenditures and utilization for those attributed to a patient-centered medical home (PCMH) compared to those who received their primary care from a non-PCMH practice. One way that this analysis differed from previous analyses is that patients were grouped by the programmatic stage that their PCMH had reached. The reason was to identify how the maturation of a PCMH affected the patient outcomes. In previous analyses, the Blueprint examined outcomes by calendar year. While this approach was straight forward, it diluted the impact that more mature PCMHs had.

The stages of PCMH maturation were divided into Pre-Year (the year prior to starting work with the program), Implementation Year (the year that the practice started to prepare for NCQA scoring and receive CHT staffing six months prior to scoring), NCQA Scoring Year (the year that the practice was independently scored against NCQA standards), Post-Year 1 (the first year after NCQA scoring), and Post-Year 2 (the second year after NCQA scoring). For example, if a practice started in December 2011, then 2009 was their Pre-Year, 2010 their Implementation Year, 2011 their Scoring Year, 2012 their Post-Year 1, and 2013 their Post-Year 2. The comparison population from each calendar year is comprised of people who received the majority of their primary care at sites that had not joined the program (no direct exposure) by December 2013. The comparison group was randomly assigned to each programmatic stage with the proportion from each year mirroring the overall distribution of the comparison group across all calendar years.

To account for differences between participant and comparison groups, rates were adjusted for demographics (e.g. age and gender groups), health status (3M Clinical Risk Groups), select chronic conditions as identified by the Blueprint program (asthma, attention deficit disorder, chronic obstructive pulmonary disorder, congestive heart failure, coronary heart disease, depression, diabetes, and hypertension), maternity, Medicaid and Medicare coverage, and length of enrollment. Medicare-specific adjustors included disability, end stage renal disease (ESRD), and death. Adjusted values were produced at the person level and summarized by relative year and study group.

3.2 EARLY 2015 ANALYSIS SHOWED PCMH PATIENTS HAVE LOWER MEDICAL EXPENDITURES

Based on the Difference in Differences (DID) analytic approach, a technique that calculates the final difference while accounting for any initial difference, the results suggest that patients receiving the majority of their care in a PCMH had reduced annual medical expenditures and utilization rates. After accounting for the initial (albeit statistically insignificant) difference between the PCMH patients and the comparison group in the Pre-Year, the expenditures for PCMH patients in Post-Year 2 practices was $482 less per year than the comparison group. When broken down to specific expenditure categories, the PCMH patients had significantly less inpatient expenditures (DID: $-217.80; p-value: <0.001), and outpatient expenditures (DID: $-154.10; p-value: <0.001). These decreases are also reflected in the utilization rates per 1,000, for which there were decreases in inpatient discharges, inpatient days,

surgical specialist visits, standard imaging, advanced imaging, and echography. The DID in rates of visits to medical specialists was not significant.

One category in which there was virtually no difference between the comparison group and the PCMH patients was emergency department (ED) expenditures. The utilization rates again reflected the expenditures. The results indicate an increase, though not statistically significant, in outpatient ED visits, and a significant increase in potentially avoidable ED visits.

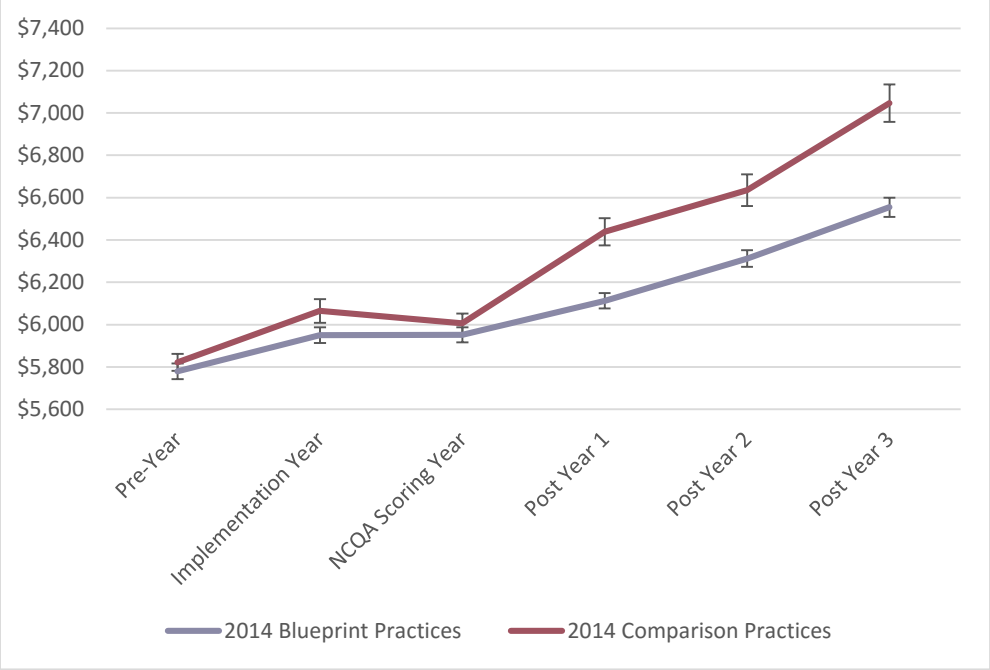
3.3 Early 2015 analysis showed PCMH patients use more special Medicaid services

An expenditure category in which there was an increase was use of special Medicaid services (SMS). These services, covered only by Medicaid, are targeted at meeting social, economic, and rehabilitative needs (e.g., transportation, home and community-based services, case management, dental, residential treatment, day treatment, mental health facilities, and school-based services). The results indicate that DID spending on SMS for PCMH patients increased by $56.50 (p-value: <0.001) relative to the comparison group. One explanation for the trend is that PCMHs and CHTs are better at linking their patients to social and non-medical services, although additional analysis into how communities are bridging the medical and non-medical services divide is needed for a more full explanation of the SMS expenditures. This analysis will most likely occur through the evaluation of UCC development.

3.4 Latest analysis shows more mature PCMHs continue to produce savings

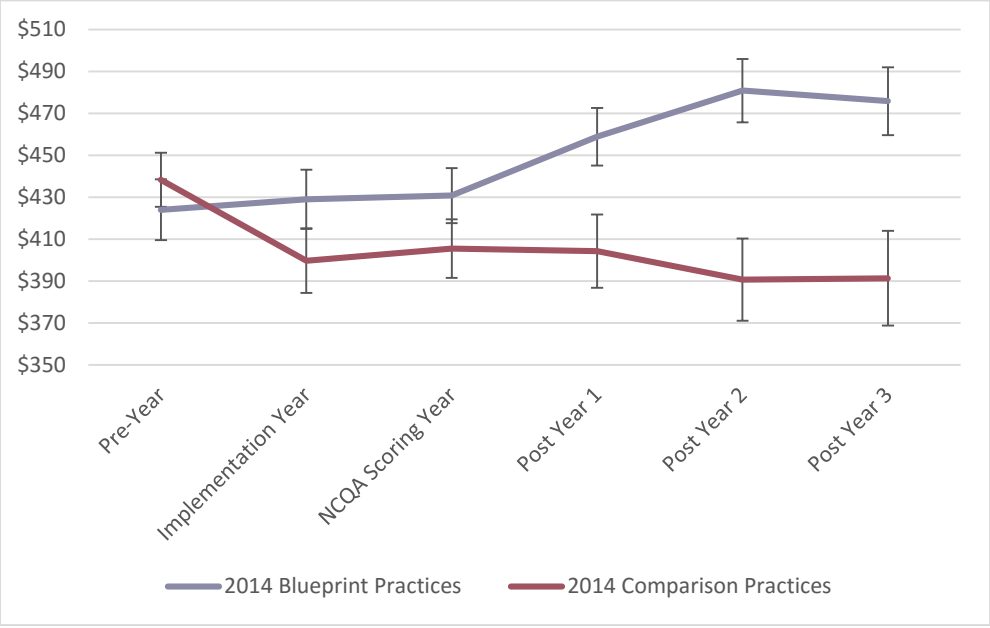
The Blueprint recently reran the programmatic stage analysis with a Post-Year 3 stage using the newly available 2014 claims and clinical data. Based on the methodology described above, the results indicate that the trend of diverging expenditures for patients receiving the majority of their primary care at a PCMH and patients receiving the majority of their care at a non-PCMH practice has continued. Figure 2 shows a significant difference beginning in Post-Year 1 and a greater difference in Post-Year 3. Using DID methodology, PCMH patients attributed to Post-Year 3 practices lowered their annual expenditures by $449.50 (p-value: <0.001) relative to comparison patients. A large proportion of the reduction in total expenditures is due to decreases in inpatient expenditures. Relative to the Pre-Year and the comparison group's expenditures, PCMH patients saw inpatient expenditures reduced by $160.40 (p-value: <0.001) annually.

Figure 2: Total Expenditure per Capita 2008-2014, All Insurers, Ages 1 Year and Older



As with the previous analysis, the SMS expenditures continued to grow Figure 3. Based on DID, PCMH patients saw their SMS annual expenditures grow by $98.90 (p-value: <0.001) relative both to expenditures in the Pre-Year and to the Comparison patients.

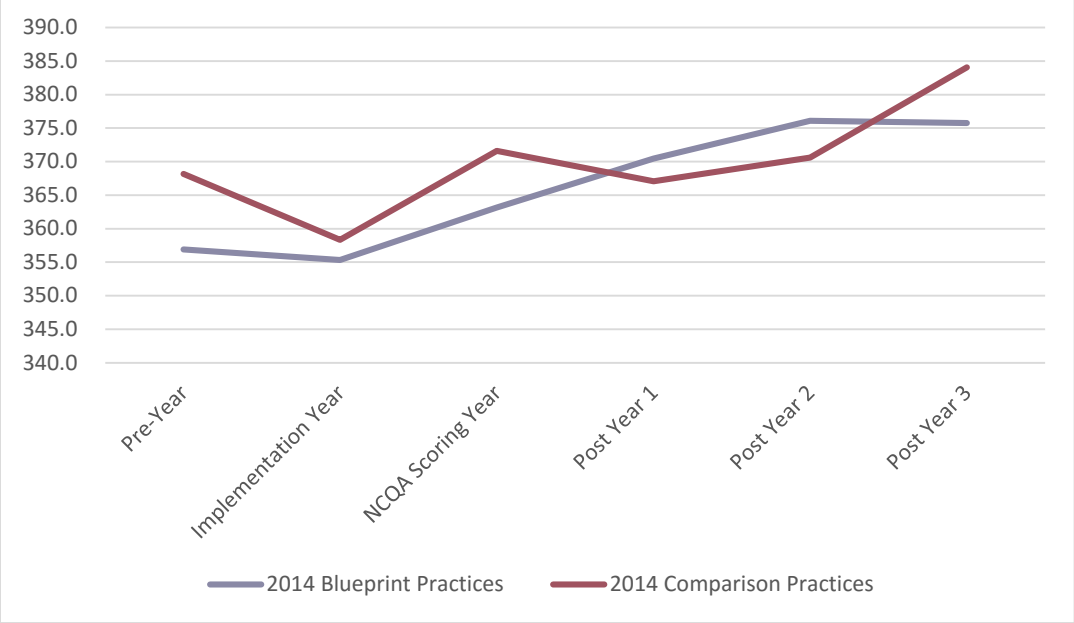
Figure 3: SMS Expenditures per Capita 2008-2014, All Insurers, Ages 1 Year and Older



Utilization rates also followed similar trends as in the previous analysis. DID analysis showed that inpatient discharges decreased by 3.0 per 1,000 (p-value: 0.095) for patients attributed to Post-Year 3 practices. Similarly, inpatient days decreased by 23 days (p-value: 0.076). Also, PCMH patients saw significantly lower relative rates of standard imaging, advanced imaging, and echography. However, while PCMH patients continued to have fewer visits to surgical specialists than the comparison group, DID analysis indicates that the PCMH patients had a slight increase in visits relative to the comparison group when accounting for the Pre-Year visit rates. Also different from the previous analysis, the results show significantly fewer visits to medical specialists (DID: -34.6; p-value: <0.001) for patients attributed to PCMHs than the comparison group.

ED visits for PCMH patients and the comparison groups continue to follow similar trend lines (Figure 4). While PCMH patients attributed to Post-Year 3 practices have significantly lower rates of ED visits, when the initial Pre-Year rates are accounted for (DID analysis), PCMH patients had 3/1,000 more ED visits than then comparison group (p-value: 0.474). Nevertheless, the ED visit trend line for PCMH patients appears to have leveled off. Another year of data will be necessary to see if the trend line holds and whether initiatives in HSAs across the state aimed at decreasing ED visits are effective.

Figure 4: Emergency Department Visits per 1,000 Members 2008-2014, All Insurers, Ages 1 Year and Older



3.5 Return on Investment

While using stage of program maturation to evaluate the growing impact that PCMHs and CHTs are having on health expenditures and utilization is important, funding for the Blueprint program and insurer payments to PCMHs and CHTs is calculated on an annual basis. Therefore to estimate an annualized return on investment (ROI), the reduction in expenditures was translated from programmatic stage to calendar year (CY).

Table 1 shows how the reduction in expenditures (both with and without SMS) for the CY2014 was calculated. First, the number of patients attributed to PCMHs at each programmatic stage in 2014 was established (second column). The patient count was multiplied by the estimated reduction in expenditures at each stage (columns 3 and 4) to find the total reductions for each stage in 2014 (columns 5 and 6). These totals are then summed to estimate the total reduction in expenditures for 2014 across all PCMH stages (last row).

Table 1: Summary of Patients Attributed to Each Programmatic Stage in 2014 for All Payers

Program Stage	Number of Attributed Patients	Difference in Total Expenditures per Person per Year*		Total Difference in Annual Expenditures	
		With SMS	Without SMS	With SMS	Without SMS
Pre-Year	0	--	--	--	--
Implementation Year	0	--	--	--	--
NCQA Scoring Year	5,853	$(54)	$(63)	$(315,631)	$(371,616.70)
Post-Year 1	44,713	$(326)	$(353)	$(14,568,381)	$(15,777,603)
Post-Year 2	60,596	$(323)	$(387)	$(19,575,995)	$(23,475,138)
Post-Year 3	180,357	$(492)	$(536)	$(88,682,334)	$(96,659,904)
Total				$(123,142,342)	$(136,284,263)

*Difference in expenditures between PCMH patients and comparison group for programmatic stage; no difference-in-difference (DID)

Table 2 shows the estimated return on investment in the CY2014 across all payers. The second column shows the amount of money that had been invested in 2014. It includes PCMH PMPM and CHT payments by Medicaid, Medicare, and commercial insurers and the Blueprint program budget, which includes staff salaries, community grants, contracts, and other operating expenditures. Column 3 shows the estimated reduction in total expenditures including Medicaid SMS for 2014. Based on a cost-gain ratio of total investment against reduction in total expenditures, the health care system saw a gain of approximately $5.80 in reduced expenditures for every dollar invested. Column 4 shows the reduction in medical expenditures without Medicaid SMS spending. The gain here was a reduction in expenditures by $6.50 for every dollar invested.

Table 2: Estimated Return on Investment for All Payers in Calendar Year 2014

All-Payer	Investment	Reduction in total expenditures w/ SMS	Reduction in expenditures w/o SMS
Reduction in expenditures		$123,142,342	$136,284,263
PCMH Payments	$6,590,964		
Core CHT Payments	$8,893,643		
Total Payments	$15,484,607		
Blueprint Program Budget	$5,633,236		
Total investment	$21,117,843		
Return on investment		5.8	6.5

Note: Blueprint Program Budget is the average of the FY2014 and FY2015 budgets to estimate the calendar year 2015 budget. Also note the budgeted amount does not reflect actual programmatic expenditures, which may be lower.

3.6 Analysis of Return on Investment for the Medicaid Population

To calculate the return on investment by the State of Vermont for the Medicaid population in 2014, the same methodology as described for all payers was used (i.e. multiplying the number of Medicaid enrollees attributed to each PCMH-stage in 2014 by the reduction in expenditures for each PCMH-stage and calculating the total reduction of expenditures across all PCMH-stages). The reduction in expenditures for each stage was calculated in a model specific to the Medicaid population. Investments include both federal and state funding of PCMH and CHT payments and the Blueprint program budget.

When including SMS spending, the reduction in expenditures did not fully offset investments– for every state and federal Medicaid dollar spent on the Blueprint program, total costs decreased by only $0.90. However, when limiting the analysis to medical services typically covered by other payers, Medicaid saw a three dollar gain for every dollar invested (Table 3). Although total expenditures for Medicaid did not result in a net gain, the expenditure pattern shows decreased use of traditional health services and increased use of community-based supports – a promising balance of investments in health and the social determinants impacting health.

Table 3: Estimated Return on Investment for Medicaid in Calendar Year 2014

Medicaid	Investment:	Reduction in expenditures w/ SMS	Reduction in expenditures w/o SMS
Reduction in expenditures		$8,644,011	$29,554,703
PCMH Payments	$2,202,342		
Core CHT Payments	$2,172,308		
Total Payments	$4,374,650		
Blueprint Program Budget	$5,633,236		
Total investment	$10,007,886		
Return on investment		0.9	3.0

Note: “Blueprint Program Budget” is the average of the FY2014 and FY2015 budgets to estimate the calendar year 2015 budget. Also note the budgeted amount does not reflect actual programmatic expenditures, which may be lower.

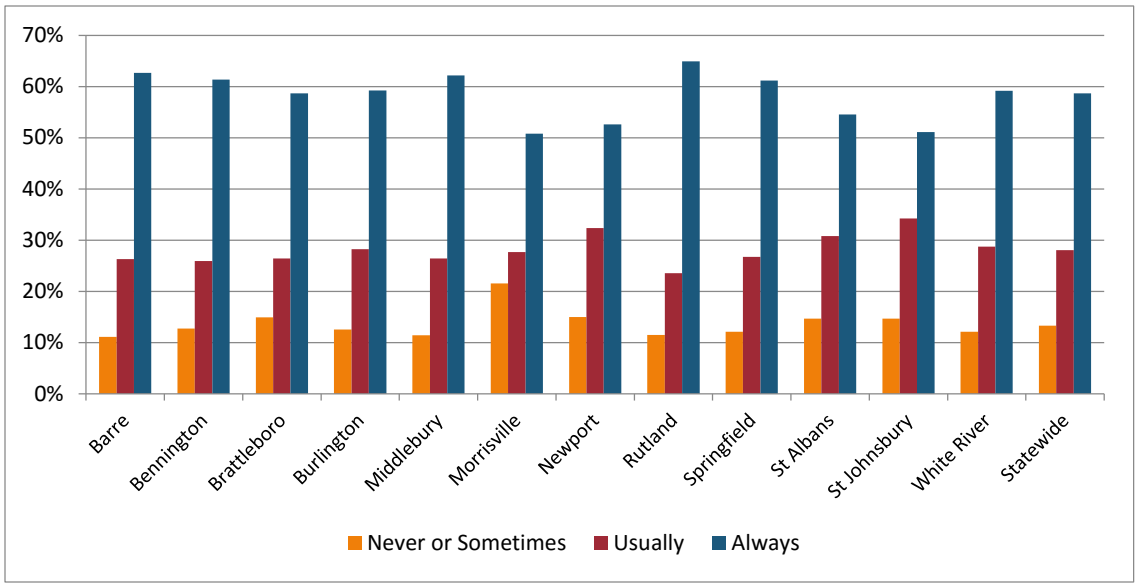
3.7 Patient Experience – The Consumer Assessment of Health care Providers and Systems (CAHPS) Survey

Every year, the Blueprint, in conjunction with the Green Mountain Care Board and the Vermont Health Care Innovation Project, invites practices across the state to participate in the Consumer Assessment of Healthcare Providers and Systems (CAHPS) PCMH survey. This survey helps practices and the Blueprint evaluate patients’ experiences at their primary care practice. The areas that the survey covers are:

- access to care (i.e., ability to get a desired appointment or answer during or after office hours, and wait time)
- communication (i.e., a provider’s ability to explain and answer questions about care or listen to concerns)
- self-management care (i.e., did provider discuss specific goals for patient’s health)
- office staff (i.e., were office staff respectful and helpful)
- coordination of care (i.e., did a provider follow up on tests ordered or was provider up-to-date on care received from a specialist)
- shared-decision making (i.e., provider talking to patient about reasons why a patient may or may not want to take specific prescription medicines)
- mental health and substance use (i.e., did provider discuss issues such as depression, stress, or personal or family problems with the patient)

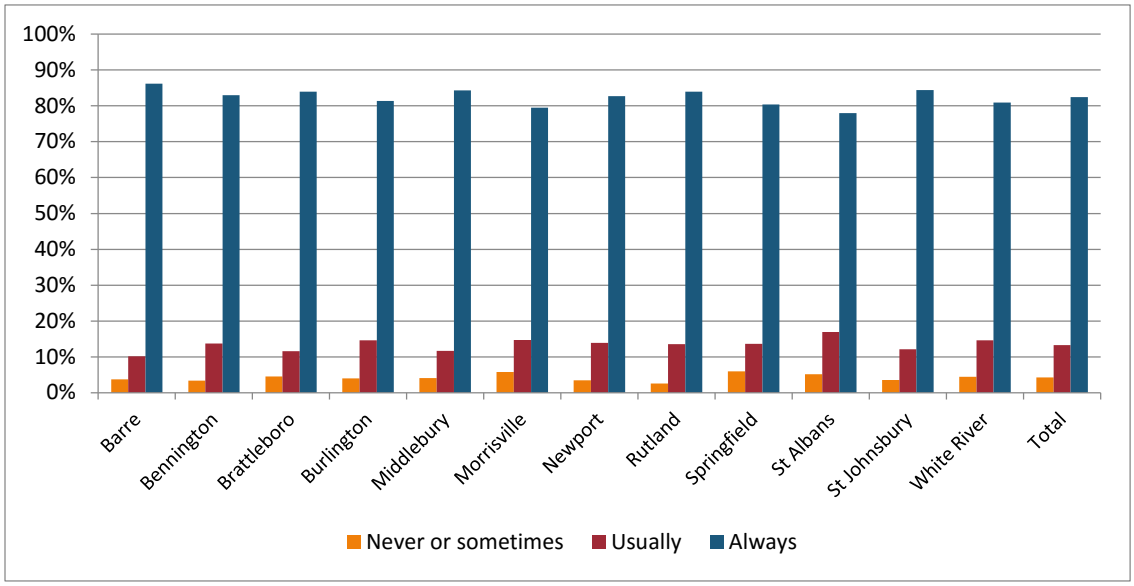
Overall, Vermonters scored their primary care providers and practices favorably. The below figures (Figures 5-9) show a sample of the response rates for some of the areas covered by the CAHPS-PCMH survey. For example, Figure 5 shows the combined responses to all five “access to care” questions for each of the HSAs. While there is some variation across the HSAs, all scored above 50 percent for “Always”. Figure 6 shows the composite response rates for the six “communication” questions. Providers scored even better in this category of questions with the “Always” response ranging from 78 percent to 86 percent. Figure 7 shows the response rates for “Shared-Decision Making”. Again, the majority of patients reported that their provider spoke to them a lot about their reasons for or for not taking prescription medication. In the next two figures, (Figure 8 and Figure 9), however, the responses are more centered around a 50/50 split, indicating providers can improve on incorporating the patient’s goals into treatment and putting more emphasis on the patient’s emotional well-being and personal situation. These two factors are central elements to a patient-centered approach to health care.

Figure 5: Response Rates for Composite Access to Care



Questions include: “In the last 12 months, when you phoned this provider's office to get an appointment for care you needed right away, how often did you get an appointment as soon as you needed?”; “In the last 12 months, when you made an appointment for a check-up or routine care with this provider, how often did you get an appointment as soon as you needed?”; “In the last 12 months, when you phoned this provider's office during regular office hours, how often did you get an answer to your medical question that same day?”; “In the past 12 months, when you phoned this provider's office after regular office hours, how often did you get an answer to your medical question as soon as you needed?”; and “Wait time includes time spent in the waiting room and exam room. In the last 12 months, how often did you see this provider within 15 minutes of your appointment time?”

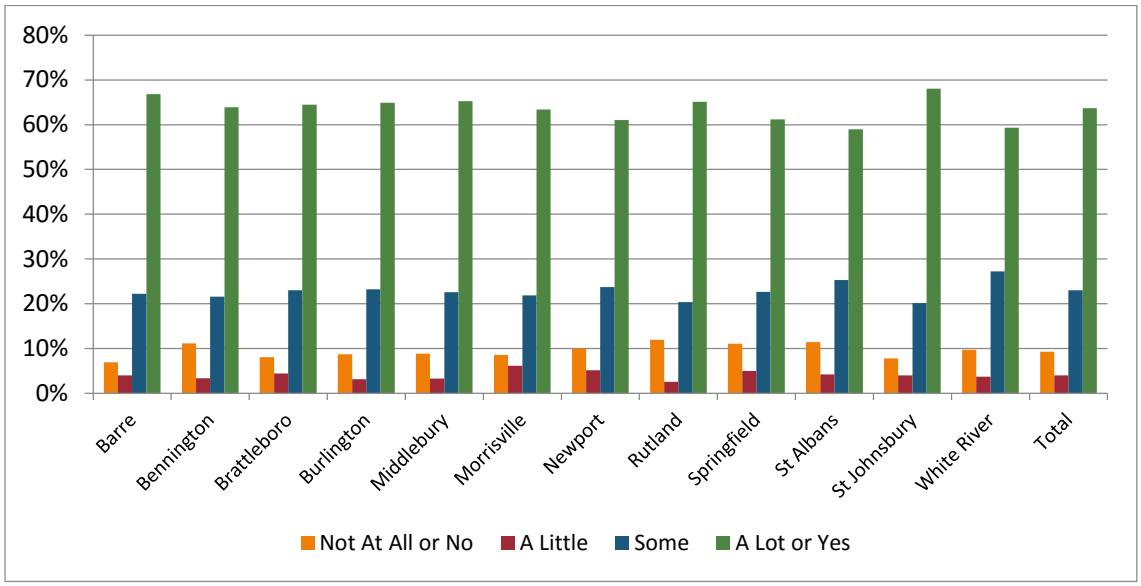
Figure 6: Response Rates for Composite for "Communication"



Questions include: “In the last 12 months, how often did this provider explain things in a way that was easy to understand?”; “In the last 12 months, how often did this provider listen carefully to you?”; “In the last 12 months, how often did this provider give you easy to understand information about these health questions or concerns?”; “In the last 12 months, how often did this provider seem to know the important information about your medical history?”; “In the last 12 months, how often did this

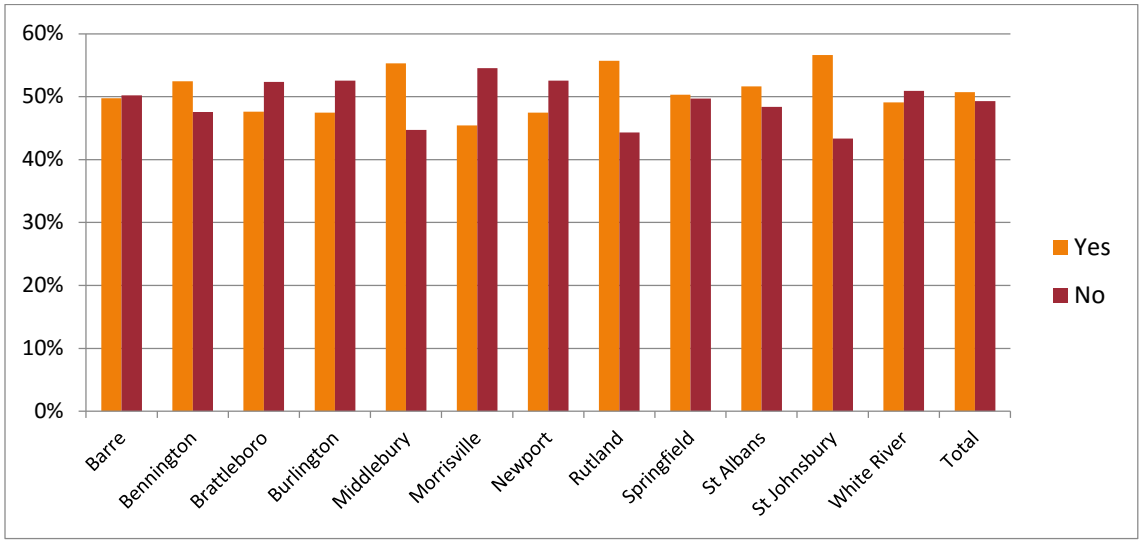
provider show respect for what you had to say?"; and "In the last 12 months, how often did this provider spend enough time with you?"

Figure 7: Response Rates for Composite "Shared Decision Making"



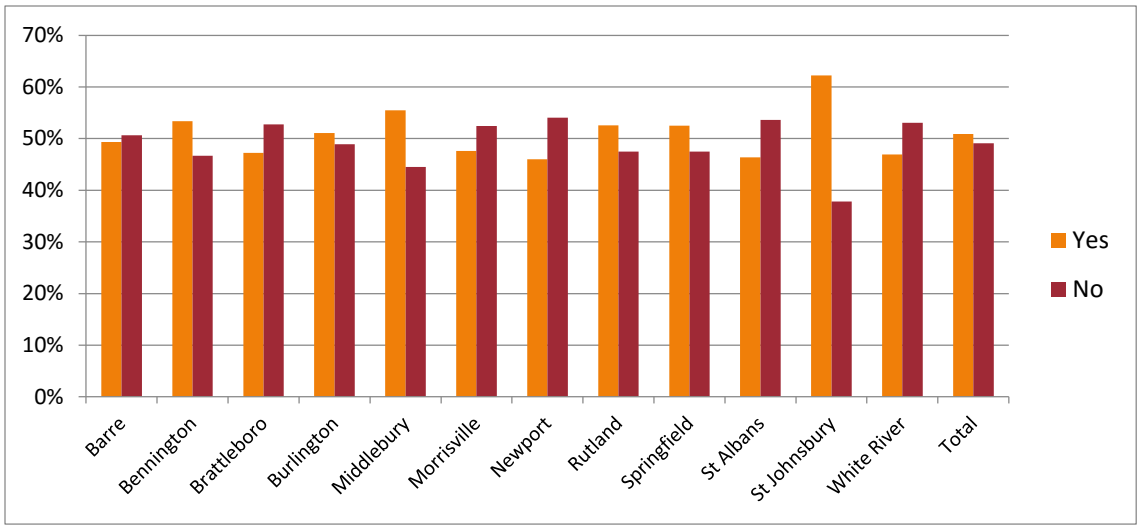
Questions include: "When you talked about starting or stopping a prescription medicine, how much did this provider talk about the reasons you might want to take a medicine?"; "When you talked about starting or stopping a prescription medicine, how much did this provider talk about the reasons you might not want to take a medicine?"; and "When you talked about starting or stopping a prescription medicine, did this provider ask you what you thought was best for you?"

Figure 8: Response Rates for Composite "Self-Management Support"



Questions include: "In the last 12 months, did anyone in this provider's office talk with you about specific goals for your health?" and "In the last 12 months, did anyone in this provider's office ask you if there are things that make it hard for you to take care of your health?"

Figure 9: Response Rates for Composite "Mental Health and Substance Abuse"



Questions include: “In the last 12 months, did anyone in this provider's office ask you if there was a period of time when you felt sad, empty or depressed?”; “In the last 12 months, did you and anyone in this provider's office talk about things in your life that worry you or cause you stress?”; and “In the last 12 months, did you and anyone in this provider's office talk about a personal problem, family problem, alcohol use, drug use, or a mental or emotional illness?”

4 LEADERSHIP AND CULTURE HIGHLIGHTS FOR 2015

In 2015, the Blueprint partnered with Vermont's three Accountable Care Organizations (ACOs) to design health care delivery and a payment structure that will improve health outcomes and efficiency.

4.1 BACKGROUND: WHAT ARE ACOS?

Accountable Care Organizations (ACOs) are groups of doctors, hospitals, and other health care providers who join together to provide high-quality, coordinated care. They can participate in numerous types of payment models, including the commercial and Medicaid Shared Savings Programs in Vermont. When certain defined process and outcomes goals are met and costs are kept down, savings may be shared by insurers (public or private) through shared savings plans with the ACO and distributed among member providers.

In Vermont, three statewide ACOs have formed – OneCare Vermont (OneCare), Community Health Accountable Care (CHAC), and Vermont Collaborative Physicians (Healthfirst). The participating members are linked by common business interests and could roughly be characterized as representing hospital systems and independent providers (OneCare), Federally Qualified Health Centers (CHAC), and independent providers (Healthfirst), although there are significant exceptions to this rule.

Beyond their formal role as shared-savings ACOs, these organizations are functioning as provider networks advocating for the interests of their constituents – an important advance in organizational capacity in Vermont's health care landscape.

4.2 BLUEPRINT/ACO INTEGRATION

Vermont's three ACOs could behave as competitors (for members, patients, funding, power), but together with the Blueprint for Health they have formed an alliance dedicated to putting population and patient needs first.

Throughout 2015, Blueprint leaders met weekly with leadership of the three ACOs to plan payment reforms, a shared data utility and collective reporting, and the establishment and maturation of Unified Community Collaboratives (UCCs, also known as Regional Community Performance Committees) in each health service area.

4.3 ESTABLISHMENT OF UNIFIED COMMUNITY COLLABORATIVES

The partnership of Blueprint and ACO leadership is mirrored at the local level in UCCs, groups that merge the long standing Blueprint Integrated Health Services workgroups with the ACOs' Regional Clinical Performance Committees. The resulting Collaboratives are intended to identify priorities for improvement, select service models and strategies, and guide planning, implementation and oversight for coordination and quality initiatives.

4.4 UCC LEADERSHIP TEAMS REPRESENT BOTH HEALTH CARE AND HUMAN SERVICES

UCC formation began with establishment of representative leadership teams. By design each leadership team has balanced representation – including primary care leaders from each ACO in the area (including

a pediatrics provider) as well as leaders from other major local service provider groups such as the area's Hospital, Designated (mental health) Agency, Home Health or the Visiting Nurse Association, Area Agency on Aging, and Designated Regional Housing Organization.

4.5 Field Staff Integration

The Blueprint and ACO field teams have joined forces to support the local UCCs. The combined field team, jointly led by the Blueprint and ACOs, leverages the Blueprint's Transformation Network and the ACOs' provider and clinical partnerships. Blueprint Project Managers, CHT Leaders, and Facilitators act as neutral conveners in their HSAs and work in partnership with the ACOs' local clinical representatives. The field staff from across the state also meet together regularly for shared Blueprint/ACO updates, best-practice sharing, peer support, and professional development such as training in new continuous quality improvement tools.

5 PAYMENT REFORMS AND FUNDING HIGHLIGHTS FOR 2015

5.1 2015 MARKS FIRST INCREASE IN PAYMENTS TO PCMHS IN PROGRAM HISTORY

As of early 2015, Blueprint payments to Patient-Centered Medical Homes (PCMHs) and Community Health Teams (CHTs) had not increased since the program's launch. Feedback from both practices and CHTs indicated that these payments were no longer sufficient to cover the cost of the work required to operate as a medical home. These concerns brought into question the viability of the Blueprint program even as early evidence from Medicare and Blueprint evaluations indicated that the program was producing a positive return on investment and improving health outcomes.

New appropriations in the state budget were needed to cover Medicaid's portion of any payment increase for the 2016 state fiscal year (July 1, 2015 through June 30, 2016) and beyond. The programmatic changes, basic payment models, and proposed payment amounts were formally introduced in a report submitted to the Vermont State Legislature in October 2014. These reforms included 1) a new medical home payment model (described below), 2) doubling of the medical home payment amounts, 3) a shift of CHT payments to a market share basis, and 4) doubling of the CHT payment amounts. In January 2015, the Governor's budget recommended a new appropriation to support Medicaid's portion of the payment increases based on the October report. This was followed by a challenging Legislative session due to a large budget deficit. Despite these challenges, on May 16, 2015, the session ended with a new appropriation of $2,446,075, about 50% of the amount needed for Medicaid to fully implement the payment proposals.

5.2 CONSENSUS PROCESS DETERMINED ALLOCATION OF NEW FUNDING

After May 16, leadership from the three ACO provider networks, the Blueprints leadership committees, commercial insurers, and leadership in the Department of Vermont Health Access (DVHA), which oversees Vermont's Medicaid program, reviewed the best options for use of the new funds. Priorities (highest to lowest) for payment changes emerged as 1) increasing medical home payment amounts but at a lower level than originally proposed, 2) adopting a new medical home payment model, and 3) shifting CHT payments to a market share basis. Unfortunately, the amount appropriated for increased payments was not enough for any increase to CHT payments. Based on these priorities, on June 18, 2015 the Blueprint leadership committees supported a formal recommendation for payment modifications, and this recommendation was presented to the Green Mountain Care Board so that payment changes would be included the 2015 rate approval process for commercial insurers.

5.3 CHANGES TO PCMH PAYMENTS

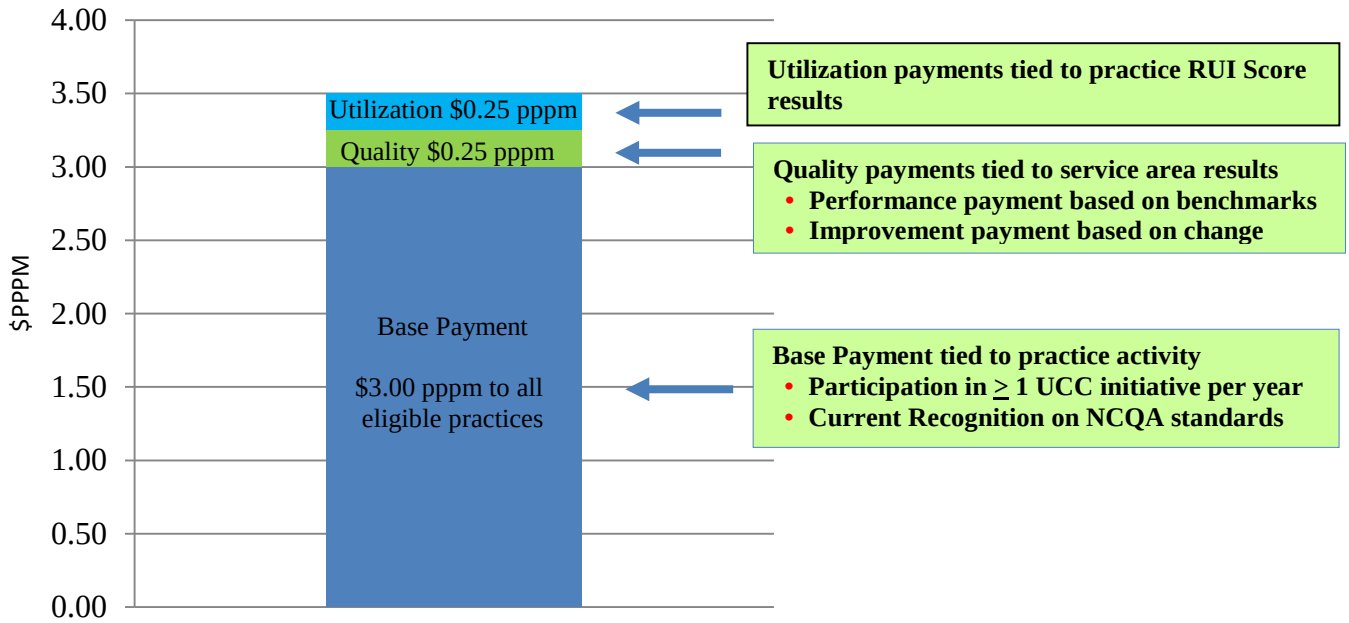
5.3.1 Increased base payment requires NCQA pass and UCC participation

The first change in payments reflects the first two priorities identified above: payment increases and adoption of a new payment model. While Blueprint payments to PCMHs have always had the purpose of incentivizing practices to adopt the patient-centered integrated care model of the medical home, the new payment structure adjusted the focus of these incentives. The new model moved from PMPM (per-member per-month) payment levels based on a practice's NCQA recognition score (averaging $2.05 PMPM; ranging from $1.36 to $2.39 PMPM) to a base payment of $3.00 PMPM contingent on qualifying

for or maintaining recognition as a PCMH and participation in the UCC. One reason for this decision was practice feedback indicated that the effort required to achieve the highest level of recognition did not result in corresponding increases in the standard of care practices were able to provide. A shift to a pass/no-pass payment model allowed providers to focus on the must-pass elements in NCQA scoring, plus any additional areas they determined clinically relevant for their practice and patients. The other aspect of the base payment, the participation in UCC development and quality improvement initiatives, is meant to further incent collaboration with other practices and other medical and social service providers in the service area.

The new payment model also included two performance-based payments, up to an additional $0.50 PMPM: one based on a composite of quality measures and the other based on health service utilization.

Figure 10: Structure of the new Medical Home Payment Model



5.3.2 Quality performance payment incentivizes improvement on core measures

The second part of the new PMPM payment model includes the two performance-based payments based on quality of care and utilization of health care services. Combined they offer up to $0.50 PMPM. The quality performance payment is based on an HSA's outcomes in four measures that are part of the Centers for Medicare & Medicaid Services (CMS)-defined Medicare ACO core quality measures:

1. Adolescent Well-Care Visits
2. Developmental Screening in the First Three Years of Life
3. Diabetes in poor control (i.e. Hemoglobin A1c >9%)

4. Rate of Hospitalization for Ambulatory Care Sensitive Conditions[1]

Several fundamental decision points were used in the selection of these four measures:

- These measures reflect the priorities of each of the three provider networks (ACOs) in Vermont.
- Each measure can be generated at a service area level using Vermont's centralized data sources without any need for additional data collection or reporting by providers.
- Each measure is tied to prevalent underlying health concerns involving complex medical and social determinants.
- Each measure can be improved through better coordination, outreach, and transitions between medical and non-medical providers.
- The blend of the four measures emphasizes improved coordination, quality, and prevention across a broad spectrum of the life span.

Current results suggest an opportunity for improvement. An example highlighting variation in results across Vermont's service areas is shown in Figure 11.

The HSA outcomes for each of these measures were compiled into a single score based on whether the HSA's outcome for each measure was above or below the state average or whether the HSA qualified for a high achiever distinction, and whether scores improved from one measurement period to the next. The scoring methodology is described Appendix B. The purpose of basing a practice's payment on HSA outcomes was again to encourage providers to participate in population and community health improvement initiatives with the goal of greater collaboration across medical and social provider groups.

Outcomes for each of these four measures are reported in the Blueprint's HSA Adult and Pediatric Profiles (available here: http://blueprintforhealth.vermont.gov/reports_and_analytics/hospital_service_area_profiles). Of note, the HSA outcomes for each of these measures were adjusted by demographic characteristics, payer mix, and health status so as to be comparable to the state average.

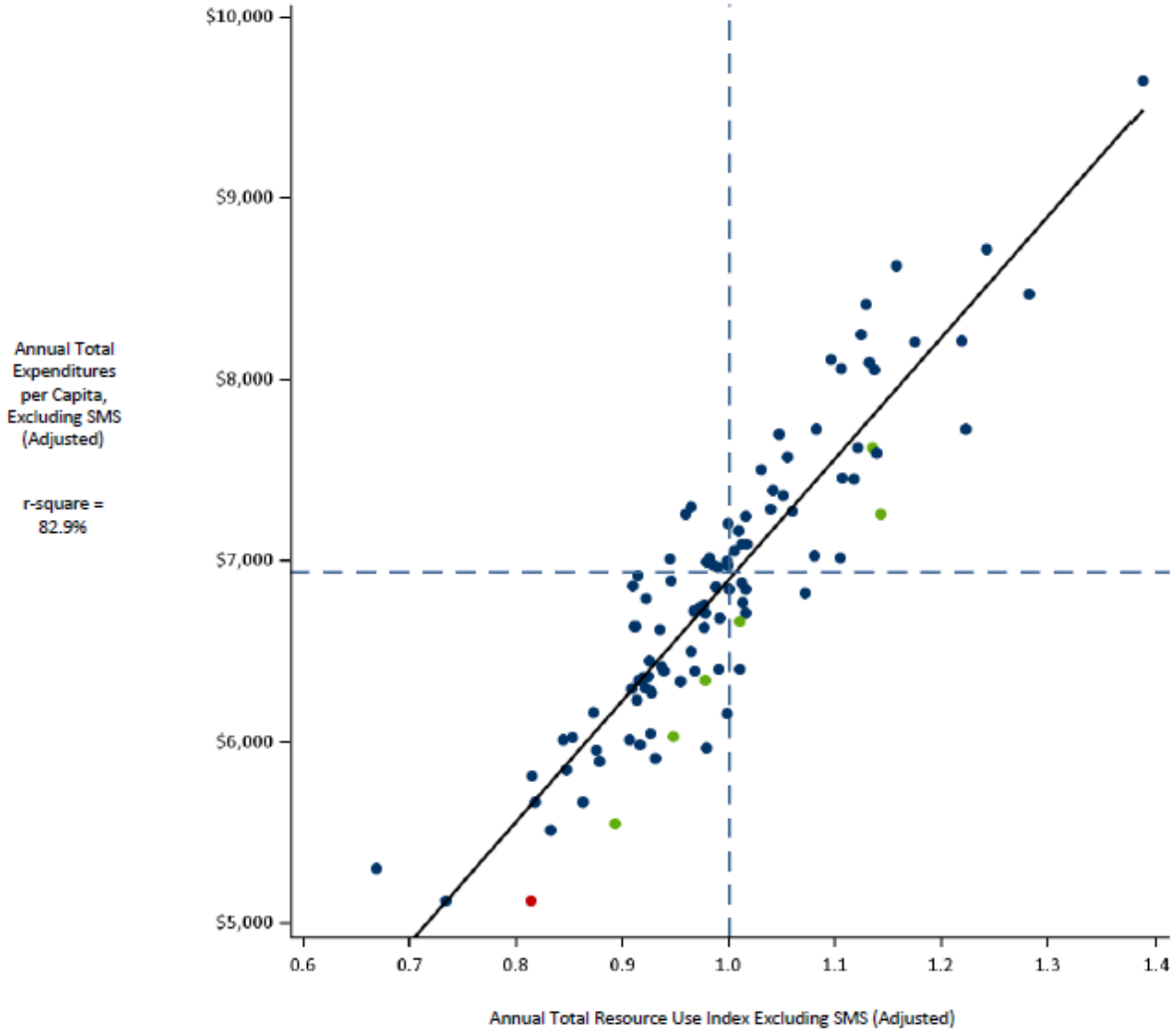
5.3.3 Utilization performance payment incentivizes improved efficiency

The utilization performance payment is based on Total Resource Utilization Index (TRUI). The TRUI is a standardized measure that reflects overall utilization and is endorsed by the National Quality Forum. It removes the influence of price variation and can be compared across organizations and geographic settings. Changes in the TRUI have a predictable impact on health care expenditures. The total index is comprised of four domains (Inpatient, Outpatient Facility, Professional, and Pharmacy). TRUI results are routinely generated for each practice and each service area using standardized methodology, and the results are reported back to practices and service areas in Blueprint profiles. Initially, the utilization payment was planned to be based on HSA outcomes. However, feedback from practices indicated a need for part of the performance payments to be based on a practice's performance, which the practice has direct influence over. The Blueprint and ACOs agreed a mixed model would strike the necessary balance and modified the payment model so that utilization payments would be based on practice

[1] PQI Chronic Composite (which includes the admission rate per 1000 for diabetes with short-term complications, diabetes with long-term complications, uncontrolled diabetes without complications, diabetes with lower-extremity amputation, chronic obstructive pulmonary disease, asthma, hypertension, heart failure, or angina without a cardiac procedure)

performance, as identified by the TRUI score listed in a practice's Blueprint practice profile. Payment model methodology is described in more detail Appendix B. Figure 11 shows the relationship between the TRUI and annualized expenditures per person for each practice (blinded). The data shows a strong correlation between utilization and cost, and also demonstrates the potential for reducing both across the state.

Figure 11: Annual Total Expenditures vs. Total Resource Use Index by Practice



Note: This figure is from a specific practice profile, in which the practice is represented by the dot shown in red. The green dots are other practices in the same HSA. The blue dots represent all practices around the state. The payment is based on the TRUI, or placement on the X-axis.

5.3.4 Timeline and magnitude of new payments

The new base payments and criteria went into effect for Medicaid on July 1, 2015. Commercial payers will implement the new base payments on January 1, 2016. Both Medicaid and commercial payers will implement the performance-based portion of the PMPM payment on January 1, 2016. Medicare will continue with the same payment model as before since it was previously negotiated in Vermont's agreement to participate in CMS's Multi-Payer Advanced Primary Care Practice (MAPCP) Demonstration.

The one modification is that since a practice is no longer incentivized to increase their NCQA score in the new payment model for Medicaid and commercial payers, a practice's NCQA score as of July 1, 2015 will serve as the minimum score for Medicare payments for the remainder of the demonstration. If a practice's score increases, however, the higher score will be used to calculate Medicare payments. Table 4 shows the distribution of patients attributed to PCMHs by insurer and the impact the increased PMPM payments will have on annualized PCMH payments by insurers.

Table 4: Annualized Impact of Increased PCMH Payment Rates.

Payer	Previous (Pre-July 1, 2015) Annualized PCMH Costs	Payer-Reported Attributed PCMH Patients*	Market Share of Attributed PCMH Patients	Increased Annualized PCMH Costs ($3.21 PPPM Avg.)	Increased Annualized Cost Difference	Percent Change From Previous Costs
BCBSVT	$2,721,019.40	107,819	36.30%	$4,153,187.88	$1,432,168.48	52.63%
Cigna	$34,305.60	1,404	0.47%	$54,082.08	$19,776.48	57.65%
Medicaid	$2,625,359.48	109,496	36.86%	$4,217,785.92	$1,592,426.44	60.66%
Medicare	$1,655,788.56	68,448	23.04%	$1,655,788.56	$0.00	0.00%
MVP	$273,290.04	9,866	3.32%	$380,038.32	$106,748.28	39.06%
Total	$7,309,763.08	297,033	100.00%	$10,460,882.76	$3,151,119.68	43.11%

*Estimates are based on insurer-reported PCMH-attributed patients in 2015-Q2.

5.4 CHANGES TO CHT PAYMENTS

The second major adjustment to Blueprint payments shifted CHT payments to a market-share basis. Previously, a fixed proportion of the overall CHT payments were assigned to each payer. However, due to changes in the commercial insurance market and the expansion of Medicaid, the relative proportions of patients attributed to each of the payers have changed substantially since these proportions were first determined, resulting in an unbalanced payment burden among the payers. Initially, the Blueprint worked with the Legislature and provided data needed to appropriate enough money to cover the increase in Medicaid's share. Table 5 shows the distribution of patients used to assign payers' CHT payments prior to July 1, 2015. It also shows current (2015-Q2) patient attribution numbers and the distribution across payers at the time of the payment methodology change.

Table 5: Annualized Impact of Basing CHT Payment on Market Share

Payer	Share of CHT Costs Pre-July 1, 2015	Previous (Pre-July 1, 2015) Annualized CHT Costs	Payer-Reported Attributed CHT Patients*	Market Share of Attributed Patients	Market-Share Annualized CHT Costs	Market-Share Annualized Cost Difference	Percent Change From Previous Costs
BCBSVT	24.22%	$2,302,103.76	107,819	36.78%	$3,583,903.56	$1,281,799.80	55.68%
Cigna	13.66%	$1,298,378.92	1,404	0.48%	$46,668.96	-$1,251,709.96	-96.41%
Medicaid	24.22%	$2,302,103.76	109,496	37.35%	$3,639,647.04	$1,337,543.28	58.10%
Medicare	22.22%	$2,112,004.36	68,448	23.35%	$2,028,798.72	-$83,205.64	-3.94%
MVP	11.12%	$1,056,952.68	6,000	2.05%	$199,440.00	-$857,512.68	-81.13%
Total	95.44%	$9,071,543.48	293,167	100.00%	$9,498,458.28	$426,914.80	4.71%

*Estimates are based on insurer-reported PCMH-attributed patients in 2015-Q2.

Following the Blueprint Executive Committee's approval of the new market-share-based payment structure at the end of June 2015, market share has been determined by insurer-generated PCMH attribution numbers on a quarterly basis. Insurer claims-based patient attribution counts, which are de-duplicated on a statewide level, have historically averaged about 54% of practice-reported patient counts, which include duplicates at a statewide level. Total CHT cost was previously based on one full-time equivalent ($70,000) for every 4000 practice-reported patients, and is now based on one full-time equivalent ($70,000) for an equivalent population measure of 2,162 payer-claims-attributed patients, in the medical home population. Market share of the insurer claims-based patient attribution counts now determines each insurer's quarterly share of the CHT cost. This shift to a market-share basis for CHT payments resolved a funding gap of approximately 5% of CHT costs which went unpaid in early 2015 due to insurer payment disagreements related to market-share shifts, and avoided a much larger potential funding gap that would have occurred in the absence of a market-share adjustment. This new payment approach aims to maintain stable funding for CHTs, while assuring that insurers pay a fair share of the cost as shifts occur in Vermont's insurance market. This process went into effect for Medicaid and commercial payers on July 1, 2015. The one exception to these changes, as with PCMH payments, was Medicare, which had previously negotiated its proportion of CHT payment in its agreement to participate in the MAPCP Demonstration.

5.5 Impact of Payments

In the legislation appropriating additional funds for increasing Blueprint payments to PCMHs and adopting a new payment model, the legislature requested an evaluation of the impact these payment increases had. At time of this report, the Blueprint does not have data on specific impacts for health expenditure or utilization since the commercial payers are implementing the base and performance

payments on January 1, 2016, and Medicaid is implementing performance payment on the same date. Medicaid has paid the higher base payments since July 1, 2015; however this is a period for which claims and clinical data are not yet available.

However, assuming reductions in expenditures and the Blueprint program budget hold steady over the next year, we can approximate the overall impact of payment increases on the return on investment. Table 6 replicates Table 2 but increases the payments by the estimates of total payments shown in Tables 4 and 5. Of note however, that the trend lines for expenditures in Figure 2 continue to diverge as PCMHs mature, indicating that the return on investment shown in Table 6 may underestimate actual returns. Nevertheless, Table 6 indicates a positive return on investment if slightly lower that the 2014 return on investment.

Table 6: Projected Impact on All Payers of Increased PCMH and CHT Payments in 2016

All-Payer	Investment	Reduction in total expenditures w/ SMS	Reduction in expenditures w/o SMS
Reduction in expenditures		$123,142,342	$136,284,263
PCMH Payments	**$10,460,883**		
Core CHT Payments	**$9,498,458**		
Total Payments	$19,959,341		
Blueprint Program Budget	$5,633,236		
Total investment	$25,592,577		
Return on investment		4.8	5.3

While the impact on health outcomes and expenditures can only be projected at the time of this report, the most immediate result of the payment increases is the retention of all practices in the Blueprint program. Prior to the increase in payments and finalization of the payment model, some practices warned they could not afford to continue to participate because previous payment levels did not cover the often unbillable or un-reimbursable services required of PCMHs. With the new payment model, all of these practices have either maintain or are planning to maintain their PCMH recognition. Furthermore, three new practices were recognized as PCMHs in 2015, and nine more are seeking recognition in 2016.

Another result is that since one of the quality measures for the performance-based payments is based on clinical data, practices have worked more closely with the Blueprint and its data quality team to improve the flow and quality of clinical data into the Blueprint Clinical Registry. Not only is this data important for assessing payment amounts, but it complements the wealth of information found the VHCURES claims data and allows for a deeper understanding of population health at the state- and local-levels.

Finally, planning for the new payment model has increased collaboration between the three ACOs. Representing different provider interests and diverse populations, they worked together with the Blueprint to develop a mutually beneficial payment model, which included agreement on four quality measures deemed most effective for improving population health. The ACOs have also worked collectively to build the local UCC structure. Each UCC is committed to moving forward in pursuit of a

cohesive and collaborative approach to improving population health in their community. Knowing that the base payment will require engagement in this effort, providers are engaging in the UCCs either directly or through their ACOs.

6 DATA COLLECTION, ANALYSIS AND REPORTING HIGHLIGHTS FOR 2015

6.1 DATA COLLECTION, ANALYSIS, AND REPORTING HIGHLIGHTS

The Blueprint is continuously expanding and refining an end-to-end data collection, analysis, and reporting process. From ensuring high-quality practice data is flowing to the statewide clinical registry, to merging clinical and claims data, to producing reports that inform quality improvement priorities, this work is a foundational part of the Blueprint's value to Vermont practices, patients and communities.

6.2 THE BLUEPRINT CLINICAL REGISTRY IN 2016

The Blueprint's registry has been aggregating clinical data for the last seven years. Data flows from Patient-Centered Medical Homes' (PCMHs') Electronic Medical Records (EMRs) to the Vermont Health Information Exchange (VHIE), operated by Vermont Information Technology Leaders (VITL), to the clinical registry. The clinical registry is also used for direct clinical data entry and clinical data management by some Blueprint partners, including the Support and Services at Home (SASH) program, some Community Health Teams (CHTs), Tobacco Cessation Counselors, and Self-Management Support Programs.

The registry software product, "DocSite" was operated by the vendor Covisint Corporation. When Covisint decided to discontinue support of their health care software products, the State developed a plan to acquire a perpetual license to use the DocSite software application and source code. The registry will be hosted by VITL. Blueprint staff and contractors will manage its development, maintenance, and operations. DocSite, as managed by Covisint, went offline on August 31, 2015. Contracts for the purchase of the perpetual use software license and management of the new clinical registry – to be known as the Blueprint Clinical Registry – were signed in December 2015. The acquisition of the perpetual use software license was supported by State Innovation Model Testing funds through the Vermont Health Care Innovation Project. The Blueprint Clinical Registry will re-launch to users in 2016.

The revitalized clinical registry will continue to enable data collection from providers across the state, creating a comprehensive clinical dataset documenting medical care and health outcomes for the majority of Vermonters. This dataset, together with all-payer claims data, is the basis for the Blueprint's performance reporting to practices and communities and its program and health system evaluations.

6.3 INTERFACE CONNECTIONS FROM BLUEPRINT PRACTICES EMRS TO THE VHIE AND REGISTRY

The programs and services provided through the Blueprint are supported by a statewide health information technology (HIT) infrastructure.

One important part of the infrastructure is the VHIE, which is operated by VITL. The Blueprint and VITL continue their collaborative relationship, providing connectivity to the VHIE and assisting Blueprint practices with improving the quality of data that are being sent to the Blueprint clinical registry (DocSite).

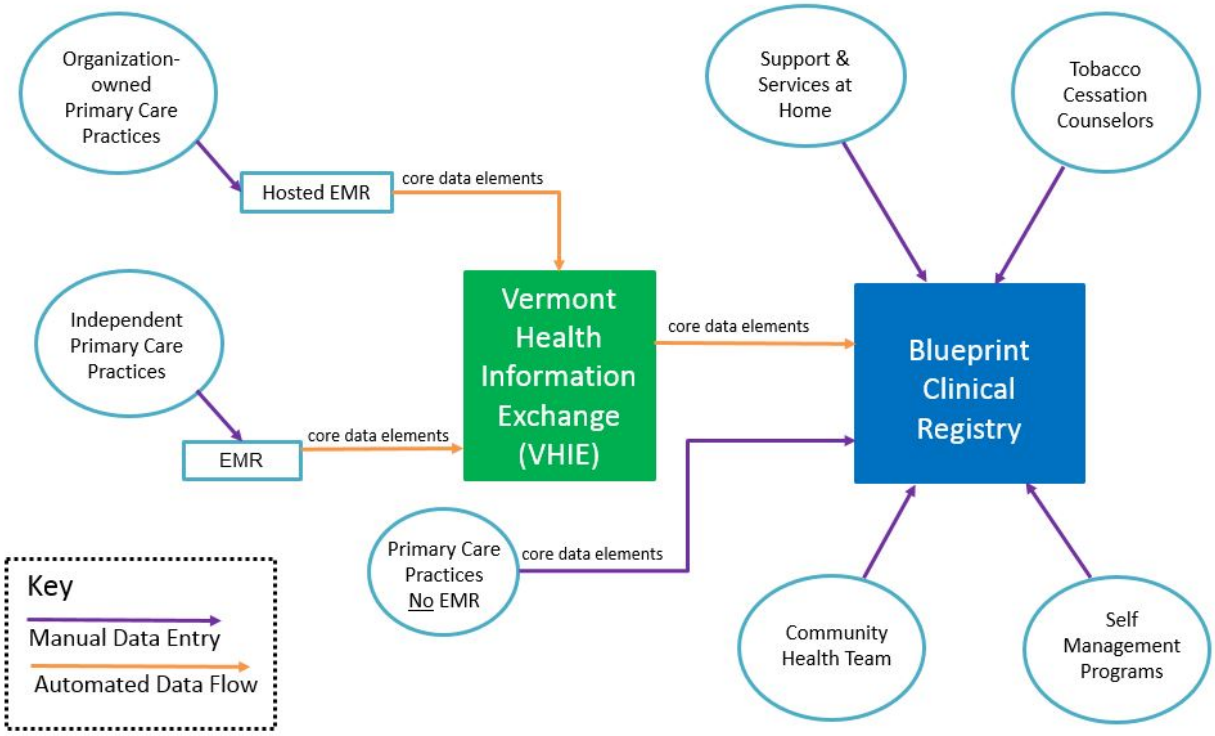
With the assistance of the Blueprint, VITL connects practice EMR systems to the VHIE via three different types of interfaces:

- Admit, Discharge and Transfer orders (ADT)
- Continuity of Care Documents (CCD)
- Medical Document Management (MDM) reports

The Blueprint clinical registry is the single largest consumer of clinical data from the VHIE. The registry serves as a data aggregator and reporting engine with the capability for population health analysis across the state.

In addition to data coming from interfaces with the VHIE, PCMHs can also send information to the registry via flat files, while program users, such as SASH, CHT, and TCC, can perform direct manual data entry. Figure 12 shows a schematic of the Blueprint's statewide clinical HIT infrastructure.

Figure 12: Vermont Health Information Technology Flows



6.4 End-To-End Health Care Information Transmission - Data Quality

6.4.1 Data Quality Project ("Sprint") Introduction

Data quality in practice EMRs and the VHIE is essential for meaningful reporting and accurately targeted improvement activities. Newer team-based care models used in PCMHs may include regular use of health information technology reports, such as panel reports (or lists) of patients that need attention, such as women over 50 who are overdue for a mammogram or diabetic patients with HbA1c over 8 who

need an office visit. Quality data is also required for reliable outcome measurements and the comparative effectiveness analyses use by practices, communities, and state health care leaders.

The Blueprint employs a team-based approach, known as “Sprints”, across organizations to ensure accurate, timely, and reliable end-to-end data extraction, transmission, and registry reporting to support the delivery of high-quality health services. To date, the Sprints have uncovered a number of common data quality issues, such as patients still flagged as active who are actually deceased or patients attributed to a provider who no longer practices at that location.

Sprints connect representatives of individual PCMHs or full hospital/ health systems with Blueprint data quality specialists. Sprint project teams work together in weekly meetings, using a joint action plan, to rapidly resolve data quality issues. The Sprint is considered complete and successful when the lead clinician for the project and a Blueprint project team representative verify and attest to continuity of data quality from the source EMR through the VHIE to the clinical registry, based on reports generated from the registry.

The data quality improvements achieved by the Sprints benefit users of data from the VHIE, ranging from the PCMHs and hospital/health systems themselves, to the Accountable Care Organizations (ACOs), to the Unified Community Collaboratives, to state health care improvement and reform leaders – all of whom need access to high-quality, trustworthy, and secure information.

6.4.2 Core Data Quality

The Blueprint Sprint team experience has identified a core set of data quality issues consistent across a majority of practices. Issues fall into two major categories:

- Demographic and administrative data known as Admit, Discharge, and Transfer (ADT) data
- Clinical data made up of encounters recorded in the EMRs and laboratory results.

6.4.3 Admission, Discharge, and Transfer (ADT) Data

Proper provider-to-patient panel attribution is the biggest issue addressed in all communities during the Sprint process. This data set can be anywhere from 25% to 95% inaccurate and encompasses:

- Active and inactive providers
- Active, inactive, and deceased patient status
- Proper patient attribution to a provider

6.4.4 Clinical Data

Major issues encountered with the clinical data center around unstructured or free-text data entry into the EMR, disparate nomenclatures used by medical records systems for structured data entry, and the packaging, transmission, and acceptance of that data by other systems consuming it.

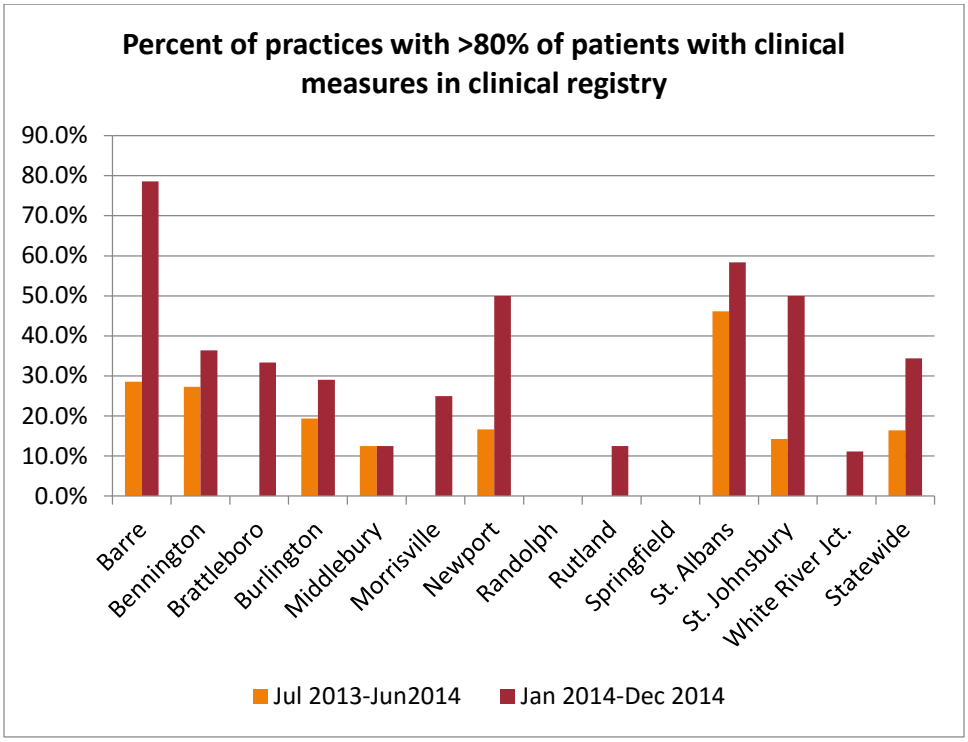
Since data quality issues vary from one EMR or information system to another and from one practice to another within a health care enterprise, the Sprint team addresses each community and its medical information systems with a plan of action designed to identify problems and incompatibilities with the data and establish a baseline from which the team can work and measure improvement.

The Blueprint has made a commitment to continue and expand end-to-end data transmission and quality efforts through the Sprint process in 2016.

6.4.5 Sprint Project Progress

The Blueprint's Sprint process helped 83% of PCMHs increase the percentage of their patients who have clinical measures in the clinical registry (measuring the data available for July 2013 to June 2014 against the data available for January 2014 through December 2014). Having more patients with clinical measures in the clinical registry supports more meaningful reporting and more accurate comparative analysis. It also enables more complete links between clinical and claims data.

Figure 13: Percent of practices by HSA with over 80% of their patients with clinical measures in the clinical registry



6.4.6 Sprint Projects in 2015

In 2015, the Sprint Management Team targeted a number of practices for Sprint data quality projects in Vermont. Unfortunately, Covisint's decision to sunset its maintenance of the DocSite software in 2015 led to a lack of skilled resources to assist with Sprint projects and ultimately system availability. As a result, the Sprint program continued to conduct data quality projects and establish new practice interfaces to the VHIE, but this data could not be filed into the clinical registry.

As soon as the DocSite software, licensed for application and source code use by the Blueprint in December 2015, can be re-established as a production system to be known as the Blueprint Clinical Registry, demographic and clinical data interfaces for the following practice sites will be connected to the Registry. At that time, all backlogged messages, being held by the VHIE since August 31, 2015, will be transferred into the Registry.

Table 7: Practice Sites with Interfaces Established to the VHIE in 2015

Blueprint 2015 Live VHIE Sites Awaiting Connection to Registry		
Health Service Area	**Organization Name**	**Offered Service Name**
Bennington	Brookside Pediatrics and Adolescent Medicine LLP	CCD
Brattleboro	Grace Cottage Family Health	CCD
Burlington	Alder Brook Family Health	CCD - ADT
Burlington	Charlotte Family Health Center, Inc.	ADT - Flat File
Middlebury	Porter - 9 Clinical Sites	ADT - CCD
St. Albans	Franklin County Home Health Agency	ADT - CCD
St. Johnsbury	NVRH - 4 Clinical Sites	ADT - CCD
Windsor	MAHHC - 3 Clinical Sites	ADT - CCD
St. Johnsbury	NCHC - 3 Clinical Sites	ADT - CCD
Morrisville	NCHC - 1 Clinical Site	ADT - CCD
Newport	NCHC - 1 Clinical Site	ADT - CCD

During 2015, 22 new interfaces were established between Blueprint practices and the VHIE. Of those interfaces:

- 10 are demographic information (ADT) interfaces
- 11 are clinical care summary document (CCD) interfaces
- 2 are flat file interfaces

In 2015, the Sprint team had initially targeted 18 onboarding and data quality Sprints for completion. The team met 80% of its stated goals in relation to new interfaces connected to the VHIE. Due to lack of Covisint resource availability and eventual DocSite system availability, the team met only 11% of its stated goals for the establishment of interfaces sending data into DocSite.

As of December 2015, two onboarding and data quality Sprints have been completed with data filing into Docsite with 11 projects pending final data quality checks and production interfaces to the Blueprint Clinical Registry. Five sites were deferred for either programmatic reasons or practice readiness, and one new site was added. In 2015, the Sprint Management Team worked with a total of 52 practice sites using 7 EMR systems in nine health services areas (HSAs).

Table 8. Sprint Project Work in 2015

Blueprint Sprint Program 2015		
Health Service Area	**Health Care Organization**	**Clinical Sites**
Bennington	Southern Vermont Medical Center Pediatrics - Complete	Sites - 1
Windsor	White River Family Practice - Complete	Sites - 1
Bennington	Brookside Pediatrics - Live VHIE, Pending Registry	Sites - 1
Burlington	Alder Brook Family Health - Live VHIE, Pending Registry	Sites - 1
Burlington	Charlotte Family Health - Live VHIE, Pending Registry	Sites - 1
Middlebury	Porter Medical Center - Live VHIE, Pending Registry	Sites - 13
Randolph	Gifford Medical Center - Live VHIE , Pending Registry	Sites - 9
St. Johnsbury	Northern Vermont Regional Medical Center - Live VHIE, Pending Registry	Sites - 9
St. Johnsbury	Northern Counties Health Care - Live VHIE, Pending Registry	Sites - 5
Windsor	Grace Cottage - Live VHIE, Pending Registry	Sites - 1
Windsor	Mt. Ascutney Hospital and Health Center - Live VHIE, Pending Registry	Sites - 2
Bennington	Battenkill - Deferred	Sites - 1
Bennington	Keith Michl, MD-PC - Deferred	Sites - 1
Bennington	Shaftsbury Medical Associates - Deferred	Sites - 1
Morrisville	Community Health Services of Lamoille Valley - Deferred	Sites - 3
Morrisville	Paul Rogers, MD - Deferred	Sites - 1
Upper Valley	Little Rivers Health Care - Deferred	Sites - 5
Burlington	Good Health PC - Pending VITL	Sites - 1

6.4.7 Planned 2016 Sprint Project Work

In 2016, the Sprint Management team plans to complete data quality and interface onboarding projects for all remaining eligible practices in Vermont. Currently, there are four health care organizations that have begun the Sprint process of onboarding their demographic information (ADT interfaces) in 2015 and will be working on the submission of clinical data (CCD interfaces), including required data quality efforts, in the early part of 2016.

As Sprint projects are completed, an additional six sites will be added to the program. Two existing sites have acquired new EMR systems and need to go through the process again in the coming year. The Sprint team will assist these sites in performing data migration, focusing on quality initiatives, and establishing the required interfaces.

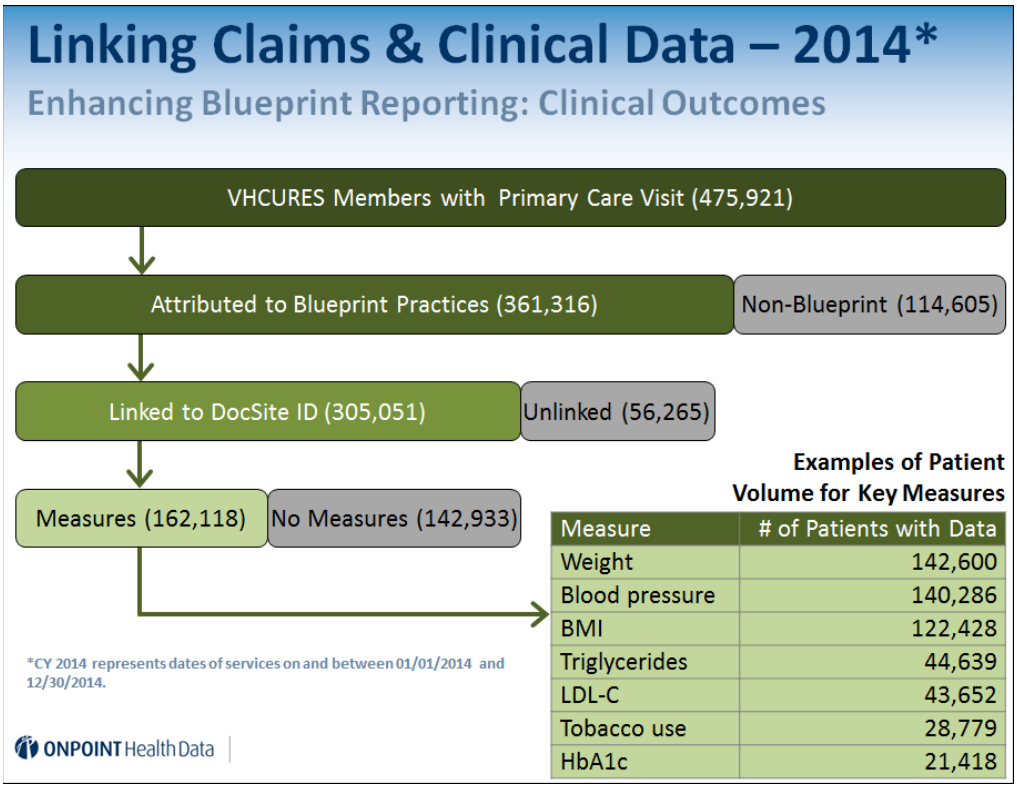
In total, the Sprint Management team has a goal of completing eleven onboarding and data quality Sprints in 2016, in addition to two new EMR implementations, accounting for 32 practice sites. As the

Sprint team approaches the end of onboarding the eligible primary care practices during the first half of 2016, we begin to investigate the integration of additional sources of data, including specialty practices, hospital inpatient discharge data, emergency room visits, and expanded data sets from FQHC practices.

6.5 How Clinical and Claims Data are Aggregated for Comprehensive Reporting

The Blueprint has developed a process for aggregating Vermont's clinical data, from the clinical registry, and claims data, from the all-payer claims database, Vermont Health Care Uniform Reporting and Evaluation System (VHCURES). After analysis of the data in the clinical registry for quality and completeness, de-identification of this data, and linkage of individuals' clinical records in the registry with individuals' claims records in VHCURES, the Blueprint's analytics vendor, Onpoint Health Data (Onpoint), determines the portion of the population in VHCURES for which clinical data can be assessed with claims, as shown in Figure 14.

Figure 14. Step Down of Available Clinical Measures in the Registry for Individuals with a Primary Care Claim in VHCURES

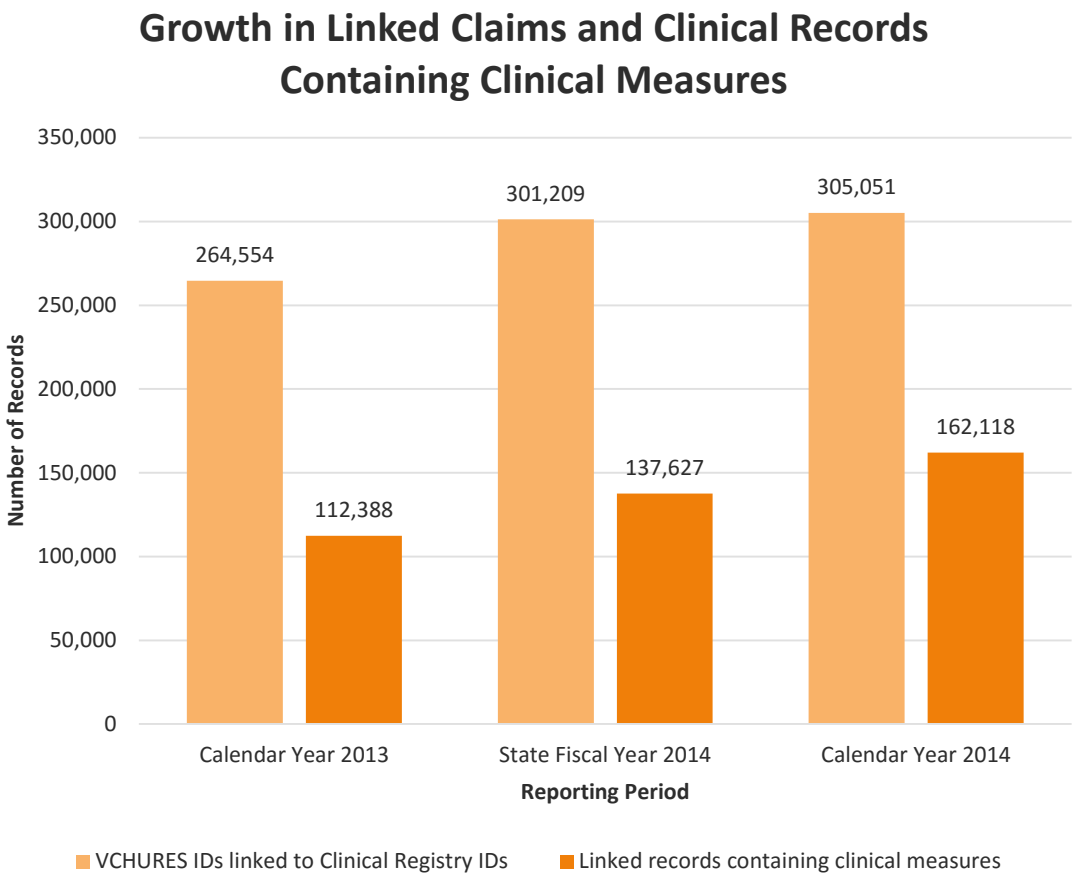


Note: that 2014 is the latest full calendar year for which data is available.

This population has increased every six months, driven by the Blueprint Sprint projects' work improving connections from PCMH or hospital/health system EMRs to the VHIE and clinical registry. An Onpoint analysis of calendar year 2013 clinical and claims data connected 264,554 clinical registry IDs with VHCURES member IDs. Within these 264,554 linked records, 112,388 included clinical measures. Six months later, Onpoint's analysis of state fiscal year 2014 (7/1/13 – 6/30/14) clinical and claims data connected 301,209 clinical registry IDs with VCHURES member IDs and found 137,627 of these included clinical measures. Within these 301,209 linked records, 137,627 (46%) included clinical measures.

Onpoint's analysis of calendar year 2014 clinical and claims data found 162,118 linked records that included clinical measures (53% of the 305,051 linked registry and VCHURES records from that reporting period).

Figure 15: Growth in Linked Claims and Clinical Records Containing Clinical Measures



One of the benefits of analyzing the step-down in available linked data is it helps to identify limitations on data quality and connectivity down to the specific practice site and organization. VITL and Blueprint data quality teams can use these gaps to target their work, identifying those HSAs and practices where clinical data is not being captured or sent to the VHIE and the Registry – and where a Sprint project may be warranted.

Nevertheless, the data that is available can begin to tell a compelling story of population health across regions. Figure 16 shows claims-based data on the percent of an HSA's diabetic population that received HbA1c testing (chart on the left), and the clinical-based data on proportion of those with HbA1c testing whose percent of glycosylated HbA1c is greater than 9%, an indication that their diabetes is not well controlled (chart on right). As another example of how the merging of claims and clinical can benefit the health system, Figure 17 shows the difference in costs and utilization rates associated with diabetics who have their diabetes in control (HbA1c < 9%) and diabetics who do not (HbA1c ≥ 9%). These types of

cost comparison dashboards, using clinical and claims data, can be used to provide meaningful guidance for community- and practice-level quality improvement initiatives.

Figure 16: Sample Part of Dashboard of ACO Measures Included in Blueprint HSA Profiles

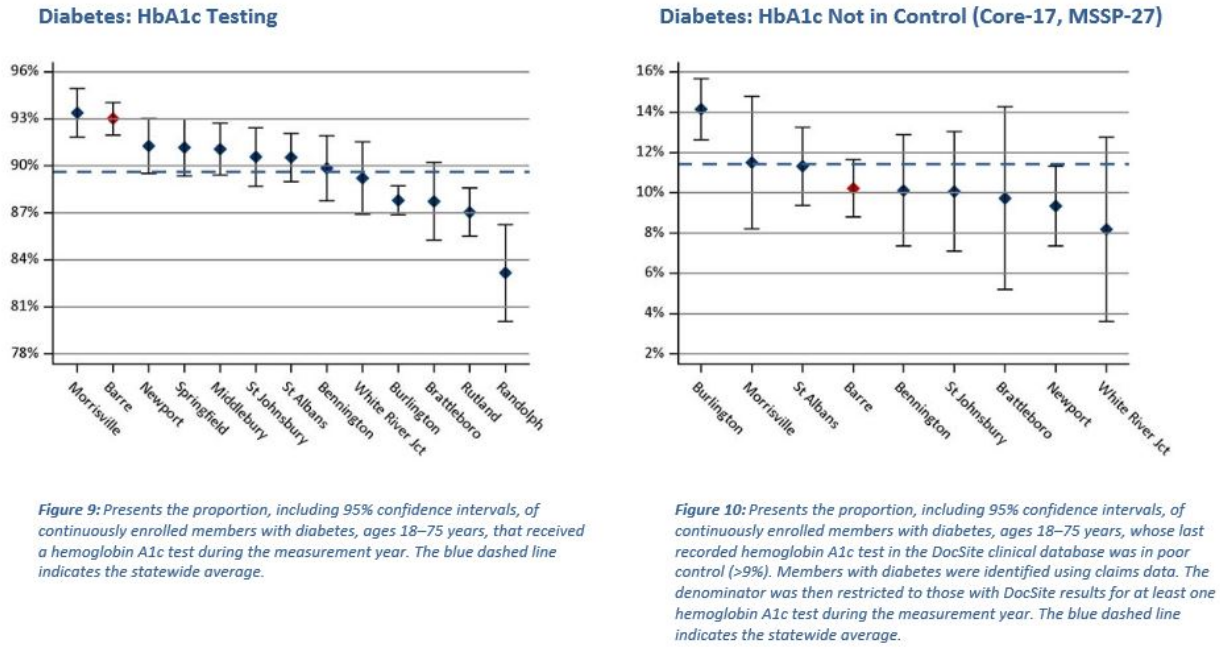


Figure 9: *Presents the proportion, including 95% confidence intervals, of continuously enrolled members with diabetes, ages 18–75 years, that received a hemoglobin A1c test during the measurement year. The blue dashed line indicates the statewide average.*

Figure 10: *Presents the proportion, including 95% confidence intervals, of continuously enrolled members with diabetes, ages 18–75 years, whose last recorded hemoglobin A1c test in the DocSite clinical database was in poor control (>9%). Members with diabetes were identified using claims data. The denominator was then restricted to those with DocSite results for at least one hemoglobin A1c test during the measurement year. The blue dashed line indicates the statewide average.*

Figure 17. Comparison of Diabetic Patients by HbA1c Control Status, Statewide

Comparison of Patients by HbA1c Control Status, Statewide

Metric	Diabetes A1c in Control	Diabetes A1c Not in Control
Members	5,923	1,007
Annual expenditures per capita	$13,938 ($13,498, $14,377)	$15,563 ($14,455, $16,672)
Inpatient hospitalizations per 1,000 members	178.3 (167.5, 189.2)	218.8 (189.4, 248.2)
Inpatient days per 1,000 members	835.7 (812.2, 859.2)	1,021.8 (958.2, 1,085.4)
Outpatient ED visits per 1,000 members	634.3 (613.8, 654.8)	743.3 (689.0, 797.5)

Note: Risk-adjusted rates with 95% confidence intervals are provided in parentheses. Outliers beyond the 99th percentile have been excluded.

Table 2: *Presents a comparison of health care expenditures and utilization in the measurement year for continuously enrolled members, ages 18–75 years, whose diabetes hemoglobin A1c was in control (≤9%) compared to those with poor control (>9%). Rates have been adjusted for age, gender, and health status. The rates in this table are presented at the state level only. Members with poor control had statistically significant higher total expenditures, inpatient hospitalizations, inpatient days, and outpatient ED visits.*

6.6 Data Reports to Practices and HSAs

6.6.1 Practice Profiles offer comparative reporting for quality improvement

Building on the Blueprint's data aggregation utility and data analysis capabilities, the program produces Practice Profile reports for 123 of 126 practices active in the program (the remaining 3 practices are too small for meaningful comparative analysis). There are distinct profiles for adults and for pediatric populations. These profiles report on a wide range of quality and utilization measures and compare practice results to local peer practices and a state average. In 2015 the Blueprint produced two sets of profiles, with each new release coming 6 months apart. The regular release of the profiles, with historical information included, provides primary care practices with a longitudinal look at their outcomes. They also help practices and Blueprint Practice Facilitators identify and prioritize quality improvement projects.

Since September 2014, practices have been receiving whole population profiles with data from all payers combined into a single report. Previously, performance data came separately from each payer. Providers rarely consider payer affiliation in their interactions with patients, so payer-specific data has limited usefulness in improving care. Very few practices had the resources to piece these reports together and assess performance for their patient population overall. Blueprint overcame this challenge with whole population profiles that include data for Vermont residents enrolled in major commercial health plans, Medicaid enrollees for whom Medicaid was the primary payer (excluding dual-eligible

beneficiaries), and Medicare enrollees for whom Medicare was the primary payer (ages 18 years and older and including duals).

The Blueprint distributes practice profiles directly to the primary contact on file with the Blueprint for each practice and to the Project Manager and Practice Facilitator representing the geographic hospital service area (HSA), as defined by the Vermont Department of Health (VDH), in which the practice is located.

6.6.2 HSA Profiles show health care quality and utilization for whole populations

The Blueprint also develops profiles at the hospital service area (HSA) level, essentially an aggregation, or "roll up," of the profiles for all practices within an area. These HSA Profiles provide data comparing utilization, expenditures, and quality outcomes within an individual HSA to all other HSAs and the statewide average.

Partnering with Vermont's ACOs, the Blueprint offers the HSA Profiles as a way to best operationalize statewide data collection and reporting, especially for ACO measures with a clinical component. To reduce the burden of clinical data collection (often through practice-level chart review) for production of the ACO measures, the Blueprint takes an extract from the statewide clinical registry (DocSite/The Blueprint Clinical Registry) and sends it to the analytics vendor, Onpoint Health Data. The clinical data extract is then linked to the claims data from VHCURES to produce clinical and hybrid measures (Figure 16).

Socioeconomic and behavioral data from the Behavioral Risk Factor Surveillance System/BRFSS, a telephone survey conducted annually by the Vermont Department of Health (VDH), is also included in the HSA profiles (Figure 18). This inclusion helps communities identify root causes of health disparities and identify behaviors that may impact health outcomes.

Figure 18: Sample Part of Dashboard of BRFSS Measures Included in Blueprint HSA Profiles

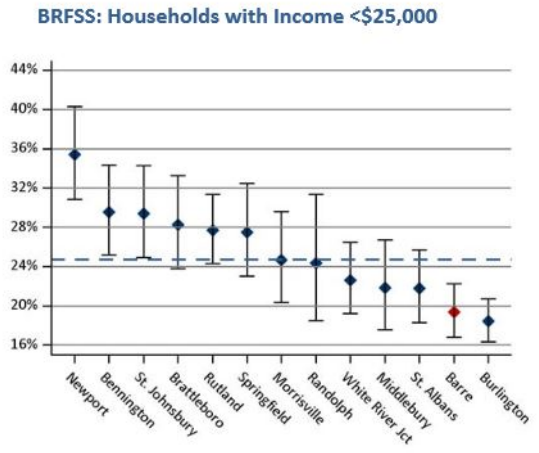


Figure 32: Presents the proportion, including 95% confidence intervals, of Vermont residents, ages 18 years and older, that reported a household income of less than $25,000 per year. This data was collected through the Behavioral Risk Factor Surveillance System (BRFSS). The blue dashed line indicates the statewide average.

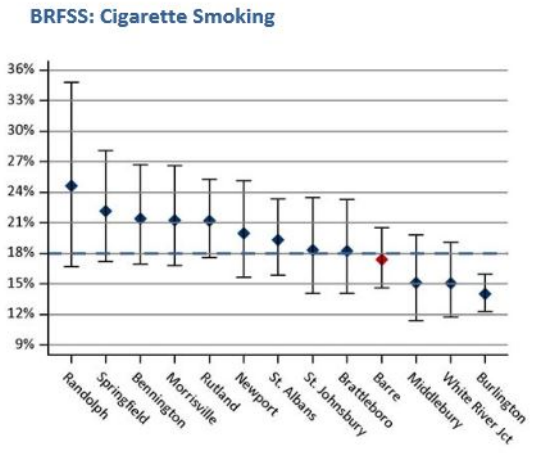


Figure 33: Presents the proportion, including 95% confidence intervals, of Vermont residents, ages 18 years and older, that reported being cigarette smokers. This data was collected through the Behavioral Risk Factor Surveillance System (BRFSS). The blue dashed line indicates the statewide average.

The regular production of timely HSA Profiles across all payers that feature ACO core measures and key population health indicators serves as a starting point for community-wide quality improvement initiatives. Additionally, in January 2016, performance payments are being implemented based on utilization (as reported in Practice Profiles) and quality measures (as reported in HSA Profiles).

Complete sets of both adult (ages 18 and older) and pediatric (ages 1 through 17) Blueprint HSA Profiles can be found on the Blueprint website, at
http://blueprintforhealth.vermont.gov/reports_and_analytics/hospital_service_area_profiles

6.7 COMMUNITY NETWORK ANALYSIS

6.7.1 The Challenge of Measuring Community Networks

Vermont's health care and human services organizations have partnered to varying degrees for as long as both have existed. The Blueprint strengthens these partnerships, by formalizing a convening role (the Project Manager) and workgroups (first the Integrated Health Services Workgroups, now the Unified Community Collaboratives (UCCs)). Anecdotal evidence abounds for the importance of this role and activity, but community network development had been uniquely difficult to quantify. In 2013, as part of the Blueprint program evaluation, contracted researchers trialed a new methodology for mapping and measuring community networks. This research was repeated, with improvements, in 2015.

6.7.2 Mapping and Measuring Blueprint Communities Using Network Analysis

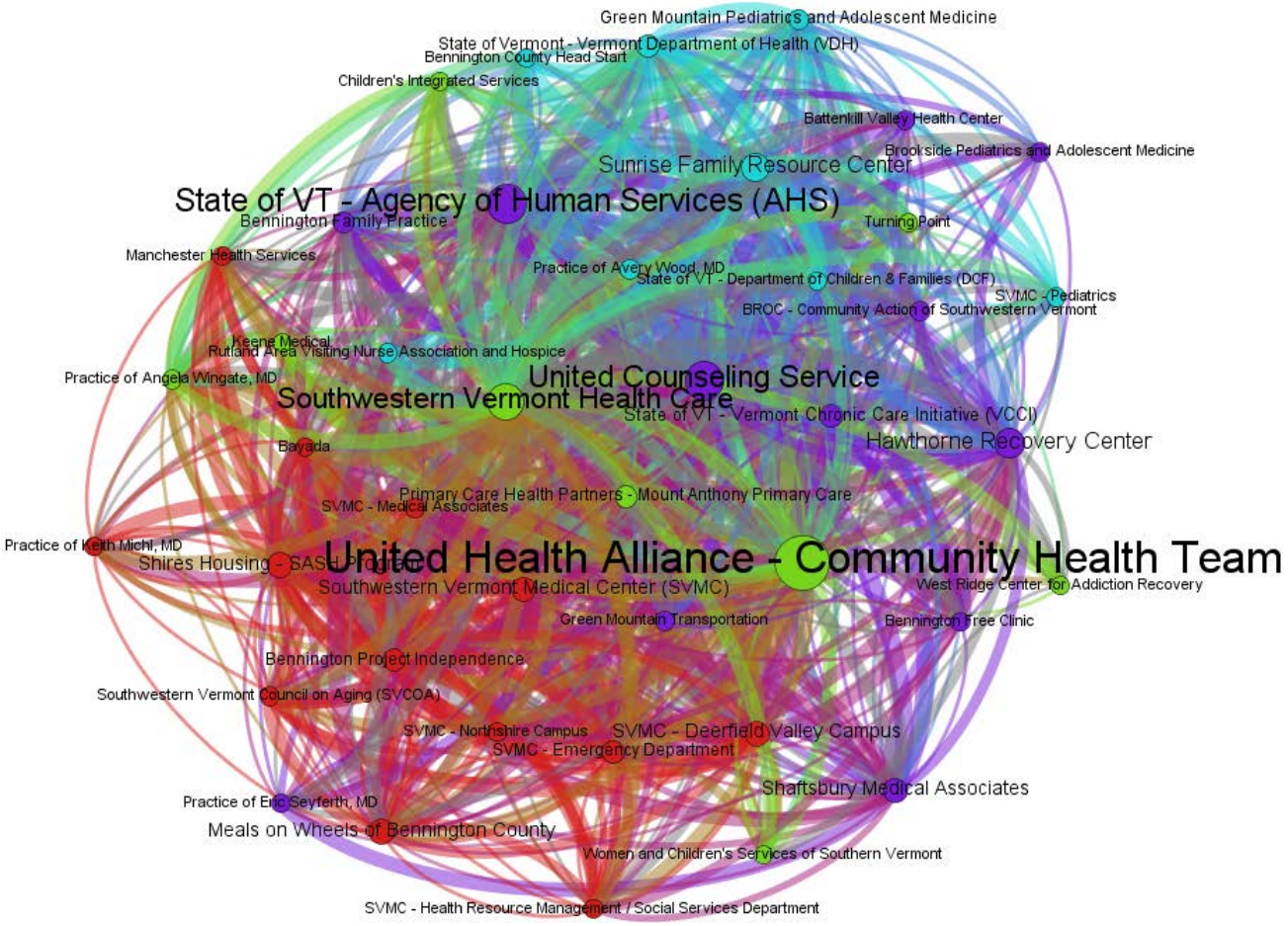
Network Analysis offers an opportunity to visualize the community networks and quantify overall connectedness and the position of key organizations. The methodology begins with a survey of community partners in each HSA. Survey participants are asked to indicate how their organization interacts with each other organization listed in the survey, based on six types of interactions:

1. Having patients/clients in common
2. Sharing information about specific patients/clients
3. Sharing information about programs, services and/or policy
4. Sharing resources (e.g. joint funding, shared equipment, personnel, or facilities)
5. Sending referrals
6. Receiving referrals

The researchers then map relationships using network analysis software (Gephi). A force-based algorithm pulls connected organizations closer together and pushes unconnected organizations further apart, creating a picture representing each organization in a position that takes into account its relationship to every other organization in the network. This relationship is quantified in several ways, most importantly a centrality score. Measures of an individual organization's position in the network include centrality, degree of connectedness, and sub-network membership. Useful measures of the overall HSA network include network density, average degree of member connectedness, and modularity (meaning the presence and strength of sub-networks or neighborhoods within the larger network). Any of these measures may be compared across communities, presenting the possibility of identifying characteristics of high-functioning networks.

Figure 19 shows the community network map, with all six types of interactions included, for the Bennington HSA. This map was produced in the Blueprint's 2015 network analysis research.

Figure 19. Bennington HSA Community Network Map



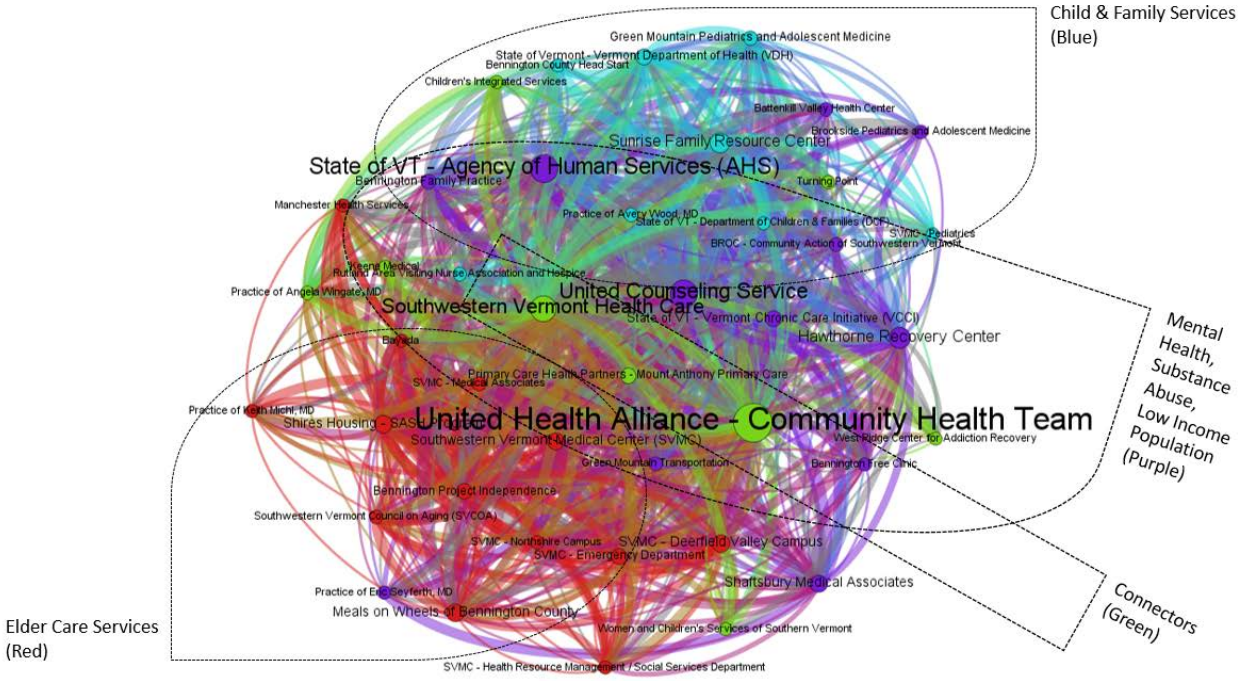
The map shown in Figure 19 includes nodes (dots) representing organizations surveyed and edges (lines) showing the relationships that connect them.

The size of the nodes indicates their relative Betweeness Centrality (larger nodes have higher Betweeness Centrality scores), a measure of how often the organization appears on the shortest path between randomly selected pairs of organizations in the network. This measure can help communities identify the organizations in their network best positioned to help connect organizations to each other, to lead coordination projects, or to rapidly disseminate critical information.

The color of the nodes shows each organization's network neighborhood membership. Organizations are more likely to be connected with other organizations marked in the same color than with the average randomly selected organization in the network. Figure 20 below shows researcher and community observations of the types of organizations that make up each neighborhood in the Bennington network. This analysis can help communities understand the basis for existing partnerships

within the larger network, and help them assess whether specific types of services are adequately connected to all the populations that need them. For instance (in an example drawn from another HSA, not shown here) if elder care organizations are clustered in one part of a map, and substance abuse services treatment are clustered in another, this might raise the question of whether older community members have adequate access to substance abuse treatment services. If further local discussion and evaluation confirmed that better connected services would benefit this population, elder care and substance abuse treatment programs could work together to share more information, establish referral protocols, and develop other strategies for improving access.

Figure 20: Bennington Network Map with Network Neighborhood Observations



7 CARE PROGRAMS HIGHLIGHTS FOR 2015

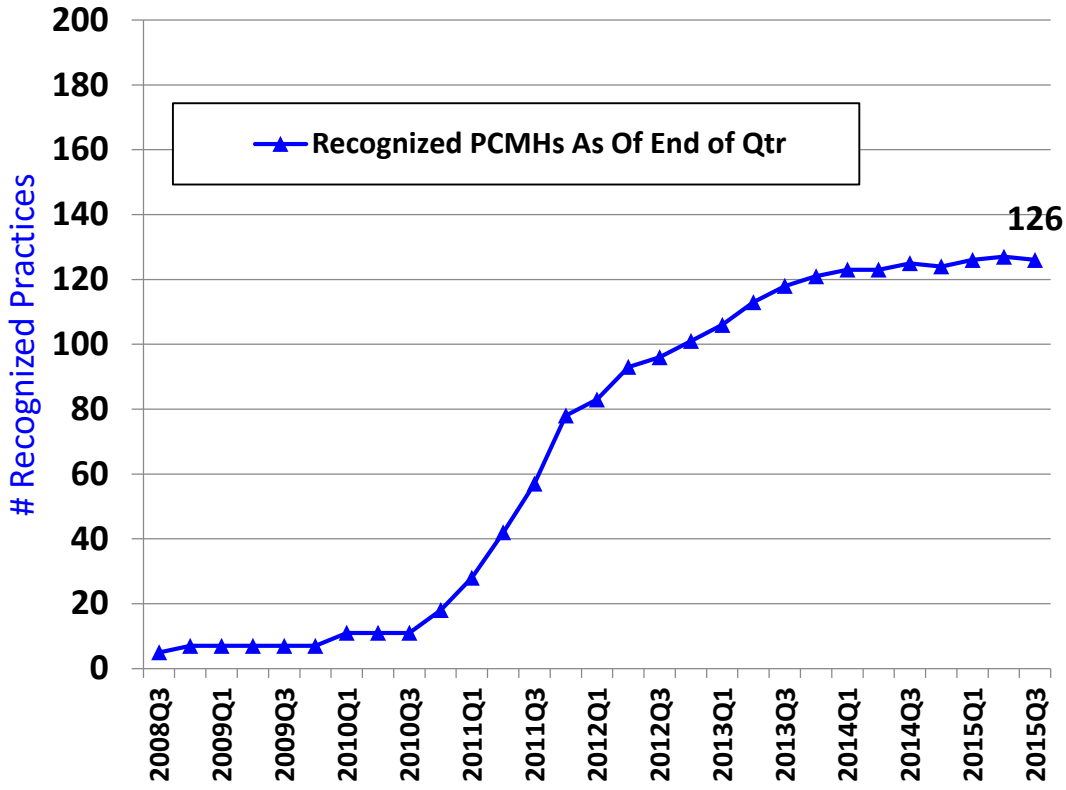
7.1 PATIENT CENTERED MEDICAL HOMES (PCMHS)

7.1.1 Re-commitment of practices to Blueprint participation

The Blueprint Patient Centered Medical Homes (PCMHs) re-committed themselves to providing evidence-based, patient and family-centered, cost-effective care in 2015. The year began with an uncertain budget environment, in which the governor proposed the first increase in Blueprint funding for primary care practices since the program began. Some primary care practices doubted whether they could continue to participate in the program, citing the financial and administrative burden of instituting, maintaining and documenting patient centered medical home practices, without a substantial increase in funding for this work. A group of practices indicated intention to withdraw from the program in writing. By the end of the year, however, not only were all existing Blueprint practices still engaged and actively participating, but several new practices chose to do the work required to join the program. This re-commitment and growth may be attributed primarily to the increase in funds granted by the legislature in 2015, a new payment design (see Section 5), and the Blueprint's responsiveness to practice feedback.

The Blueprint estimates that there are 140 primary care practices in Vermont, with 126 enrolled in the Blueprint and more preparing to join.

Figure 21: Growth in Recognized PCMHs 2008-2015



7.1.2 Participating in redesign of national NCQA processes

The National Committee for Quality Assurance (NCQA) asked the Blueprint to participate in a re-envisioning of how practices all across the country will demonstrate that they have put the organization's rigorous, evidence-based standards into action. The goal was to limit the administrative burden of demonstrating quality of care and patient-centeredness.

What the NCQA called its "Engagement Pilot" was trial implementation of the newly designed first-time recognition process. Right now that process can be thought of as studying and preparing for the final exam of NCQA scoring. The new/proposed process involves regular meetings of practice staff and NCQA representatives, with iterative submission of documentation and iterative scoring. Blueprint Practice Facilitators helped practices connect with the NCQA, understand the scoring process, implement quality improvement projects, document their work, and keep up with the timeline of submissions. The newly recognized PCMHs reported feeling confident and supported throughout the process.

At the same time, a group of existing practices due to renew their PCMH recognition participated in the NCQA's "Sustaining Pilot." The purpose of this process redesign was to minimize the administrative burden of demonstrating that high-quality care continues without interruption. The NCQA began with a feasibility study, assessing the documentation already available in the practices, to understand whether they could limit the documentation required to those records already generated during the provision of care. Alternatively, the NCQA is considering leveraging newer technology to help streamline the process by which practices provide proof of continuity for a limited number of clinically important elements. For example, could NCAQ sufficiently evaluate how practices function through live screen-sharing sessions? The streamlined renewal process also limits the number of elements the practice must demonstrate to the NCQA to the most clinically important, "must pass" elements of the standards. Practices participating in this pilot had positive feedback about the changes, and helped the NCQA further refine the new process.

7.2 Community Health Teams

7.2.1 CHT staff help plan and implement area quality improvement initiatives

As Unified Community Collaboratives (UCCs) formed and matured in each community this year, the work of Community Health Teams (CHTs) took on a new focus. Each UCC identified high needs and high utilizing populations in their area and priorities for quality improvement, based on data from Blueprint Health Service Area Profiles and other sources. Often, quality improvement projects were adopted to align with Accountable Care Organization (ACO) priorities and the ACO core measure set, such as emergency department utilization or reducing all-cause 30-day hospital readmissions. Communities also had discretion to work on emerging initiatives meaningful to their community, such as Adverse Childhood Experiences (ACE). Once QI projects were identified, work groups formed to create Plan Do Study Act (PDSA) cycles that document planned interventions, identify data collection strategies and evaluate effectiveness. CHT staff members participated in these work groups and were often tasked with implementing the interventions in their day-to-day work.

7.2.2 CHT Leader meetings offer peer-to-peer learning

In each of the 14 Blueprint Health Service Areas (HSAs) in the state, a CHT Leader supervises the day-to-day work of CHT staff. CHT Leaders participate in monthly meetings of all ACO and Blueprint field team

staff (including Project Managers, Practice Facilitators, CHT Leaders, and Quality Improvement Consultants). They also meet separately each month to share information about the successes and challenges their Community Health Teams experience and collectively develop Best Practices. These CHT Leader meetings have matured in 2015, providing new value to the participants. Each community's CHT Leader can leverage the knowledge they gain in these meetings and many have adopted successful strategies from other leaders to use with their own staff and patients. Some of the topics covered this year include:

- Implementation of Screening, Brief Intervention, and Referral to Treatment (SBIRT) in both the Emergency Department (ED) and primary care practices.
- Successes and failures from ED utilization projects
- Impact of CHT staffing models on quality improvement projects chosen by the UCCs
- Brainstorming approaches to reducing Adverse Childhood Experiences (ACE)
- Strategies for collecting patient consent for information sharing among community partners

7.2.3 Flat funding challenges CHT staffing models

Due to budget limitations, the full increase in funding requested by the Blueprint for both PCMHs and CHTs was not granted in the 2015 legislative session. Blueprint leadership, advised by its Executive Committee, chose to use the partial funding increase to adjust CHT payments to reflect insurer market share and increase PCMH payments. No new funding was provided to the CHTs, which have not had an increase in funding since the inception of the Blueprint program. Due to this, several HSAs have chosen to lay off some CHT staff or close positions when staff members leave. Additionally, some CHTs have chosen to hire fewer licensed professions (for instance Registered Nurses and Social Workers). At the same time, CHT workload and project complexity has increased. CHTs participated in the quality improvement projects chosen by the UCCs, and 11 of 14 participated in the Integrated Communities Care Management Learning Collaboratives sponsored by the Vermont Health Care Innovation Project (VHCIP). This work requires CHT staff time beyond their time with patients. Flat funding challenges the ability of CHTs to devote the necessary time to patients, improvement work, and new initiatives the legislature has requested such as Adverse Childhood Experience (ACE) intervention and suicide prevention services.

7.3 SUPPORT AND SERVICES AT HOME

7.3.1 Support and Services at Home (SASH) is federally funded and evaluated

Support And Services at Home (SASH) is a key component of Medicare's Multi-payer Advanced Primary Care Practice (MAPCP) Demonstration program, funded by the Center for Medicare and Medicaid Innovation (CMMI) and awarded to the Blueprint in 2011. This leveraging of federal funds complements the targeted payment streams already part of the Blueprint.

Originally scheduled to end on June 30, 2014, CMMI extended funding for the MAPCP demonstration in Vermont initially through December 31, 2014 and, upon further consideration, for an additional two years, through December 31, 2016.

CMMI based this extension on promising evaluation results, released in 2014, showing a reduced rate of growth in total Medicare expenditures and expenditures for post-acute care among SASH participants

involved in the program for at least one year[2]. Most importantly, the evaluation noted the qualitative finding that SASH successfully integrates services across community-based organizations and links care teams to primary care practices, hospitals, and CHTs.

7.3.2 The SASH Partnership coordinates medical and social services for Medicare beneficiaries

Administered statewide through Cathedral Square and five Designated Regional Housing Organizations (DRHOs), the SASH model is a caring partnership of non-profit housing, hospitals, community-based health, and social services agencies collaborating to support participants' efforts to remain healthy and safe at home. SASH participants are typically elder Vermonters. By design the program serves all Medicare beneficiaries as needed, so participants may live either in subsidized housing or in residences in the community at large. Each panel of 100 SASH participants is served by one full-time housing-based SASH Coordinator and one quarter-time Wellness Nurse. Staffing is provided by the non-profit affordable housing organizations and primary partners including Home Health Agencies, Area Agencies on Aging, and Community Mental Health Organizations. Each SASH team meets regularly with other SASH teams in the region, as well as with the CHT, representatives of local Home Health Agencies, Area Agencies on Aging, and mental health providers. A Memorandum of Understanding (MOU) between all partner organizations formalizes the roles and responsibilities of the team members. This SASH partnership connects the health and long-term care systems for Medicare beneficiaries statewide. Together, these systems facilitate streamlined access to the medical and non-medical services necessary for this vulnerable population to remain living safely at home.

7.3.3 SASH grew to serve 4,800 Vermonters by the end of 2015

Starting as a single pilot team in Burlington in 2009, SASH grew to 26.5 teams by the end of 2012, added 10 new teams in 2013, 15.5 teams in 2014, and 2 in 2015. With 54 teams in place, the total number of people served by SASH grew from 4,122 participants at the end of 2014 to 4,800 participants at the end of 2015 – an increase of 14%.

7.3.4 Evidence-based SASH interventions aim to reduce Medicare expenditures

SASH teams focus their efforts around three areas of intervention proven most effective in reducing unnecessary Medicare expenditures:

- Transition support after a hospital or rehabilitation facility stay
- Self-management education and coaching for chronic conditions and health maintenance
- Care coordination

Evidence-based practices provided by the core SASH team (SASH coordinators and Wellness Nurse) also include a comprehensive health and wellness assessment, creation of an individualized care plan, on site one-on-one nurse coaching, care coordination, and health and wellness group programs.

7.3.5 SASH Outcomes

SASH teams are now in place in every county and HSA in Vermont and showing positive outcomes. An independent evaluation of the SASH model comparing a group of SASH participants to two control

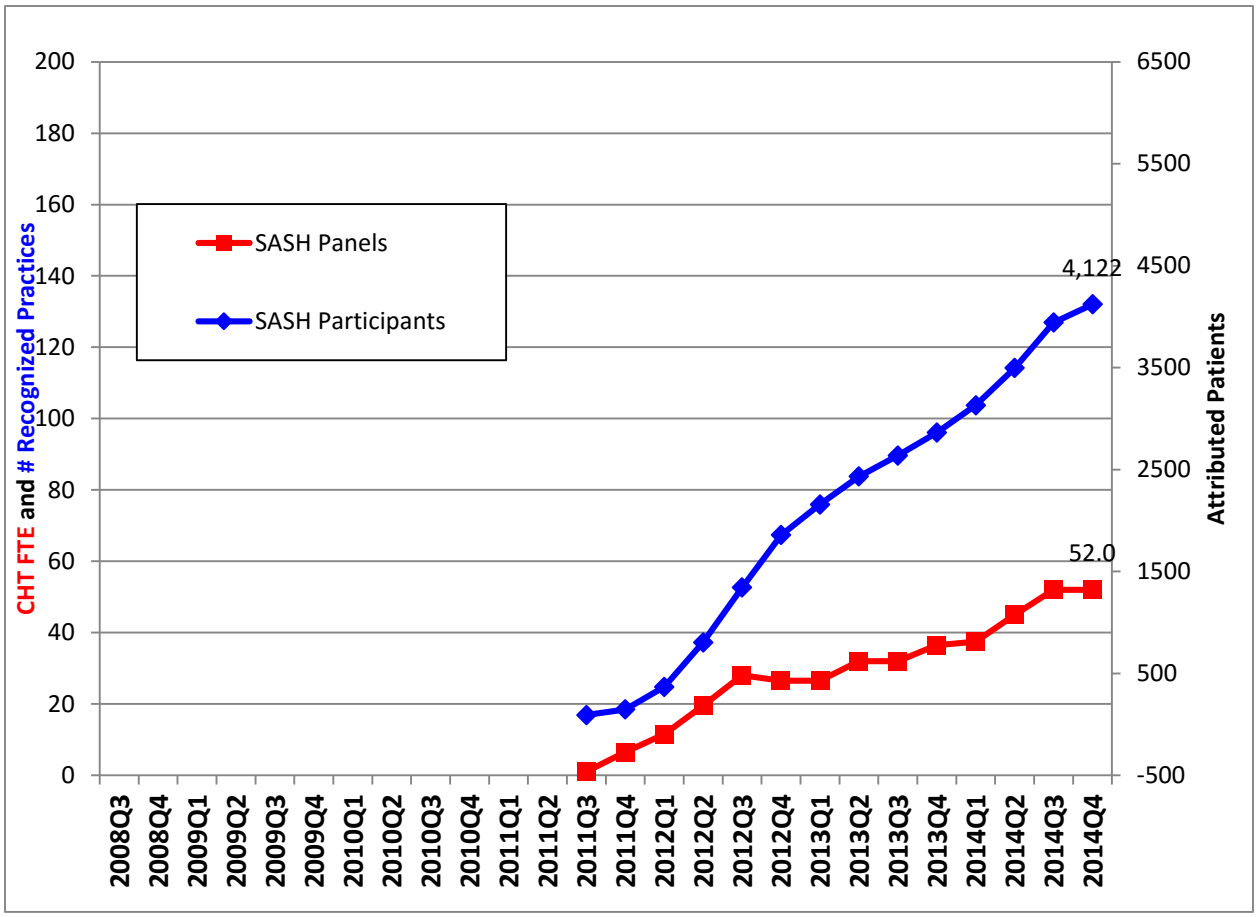
[2]U.S. Department of Health and Human Services, Assistant Secretary for Planning and Evaluation, Office of Disability, Aging and Long-Term Care Policy. *Support and Services at Home (SASH) Evaluation: First Annual Report*, by RTI International and LeadingAge. September 2014.

groups showed statistically significant reductions in Medicare spending growth for the SASH group. Additionally, key outcome measures tracked for a cohort of individual SASH participants (N=1,062), over a four year period (July 1, 2011 to July 1, 2015) of SASH participation, showed the following trends:

- The percentage of participants with documented advance directives in place grew from 26% to 66%. Significant cost savings associated with end of life planning haves been documented in the research literature with estimates that end of life spending per person life is $5,585 less if an advance directive is in place.
- The proportion of participants with immunizations (annual flu and shingles) grew substantially, from 1% to 34% for shingles and from 42% to 56% for annual flu immunizations.
- The rate of falls for the cohort varied over the 4 year period. From 2014-2015, fall rate decreased from 37% to 28%.
- The proportion of SASH participants diagnosed with hypertension and with documented blood pressure readings classified as “in control” by the National Quality Forum standard, increased from 4% to 60%. Diagnosed hypertension decreased from 96% to 40%.

Refer to Figure 22 for a timeline of growth the SASH Model across Vermont.

Figure 22. SASH Implementation July 2011 through December 2015



More information about SASH can be found at http://sashvt.org

7.4 Hub & Spoke: The Care Alliance For Opioid Addiction

Vermont's innovations combating opiate abuse over the past two years are getting results:

- 65 percent more Vermonters are getting treatment
- We are moving addicts into recovery instead of jail
- By getting rescue kits to anyone who will take them we have prevented hundreds of overdose deaths
- Most importantly, we've removed the stigma that discriminates against our friends and family members struggling so hard against this terrible disease.

However, there is more work to do. The rate of overdose deaths due to heroin and fentanyl is rising in Vermont[3] and, in spite of increased capacity, the health and specialty addictions service systems continued to be unable to meet demand for treatment in Vermont. Heroin use appears to be increasing

[3] The Vermont Office of the Chief Medical Examiner reports 19 heroin and 11 fentanyl overdose deaths in 2013 and in 2014 there were 32 from heroin and 17 from fentanyl. Better news is that the number of accidental overdose deaths from prescription opioids is declining from 41 in 2013 to 31 in 2014.

in Vermont, attributed to both its availability and relatively low cost compared to prescription narcotics. As narcotic prescribing protocols for pain are tightened, the resulting reduced availability of medication may have the unintended consequence of increasing demand for heroin by people with addiction. Community members report that buprenorphine is available "on the street" indicating that diversion continues to be a problem. Vermont's neighbors in the region are experiencing a similar trend in overdose deaths, and it does not yet appear that we have stemmed the tide in what is commonly described as an "epidemic" of addiction to both prescribed and illicitly obtained opioids. Community groups across the state are organizing increased access to treatment services, to support law enforcement's efforts to reduce drug trafficking, and to support those whose lives are impacted by addiction. These grass roots activities combined with the continued strong commitment by policy makers to frame addiction as a public health issue are the truly positive notes in what is otherwise a grim situation.

The Blueprint for Health, in collaboration with the Vermont Department of Health (VDH) Division of Alcohol and Drug Abuse programs and community health and human services partners, continued expansion of the Hub & Spoke treatment initiative throughout 2015. Key program and evaluation milestones are described here. As most readers are familiar with the initiative and the core components of medication assisted treatment (MAT), descriptions of these are included in Appendix C.

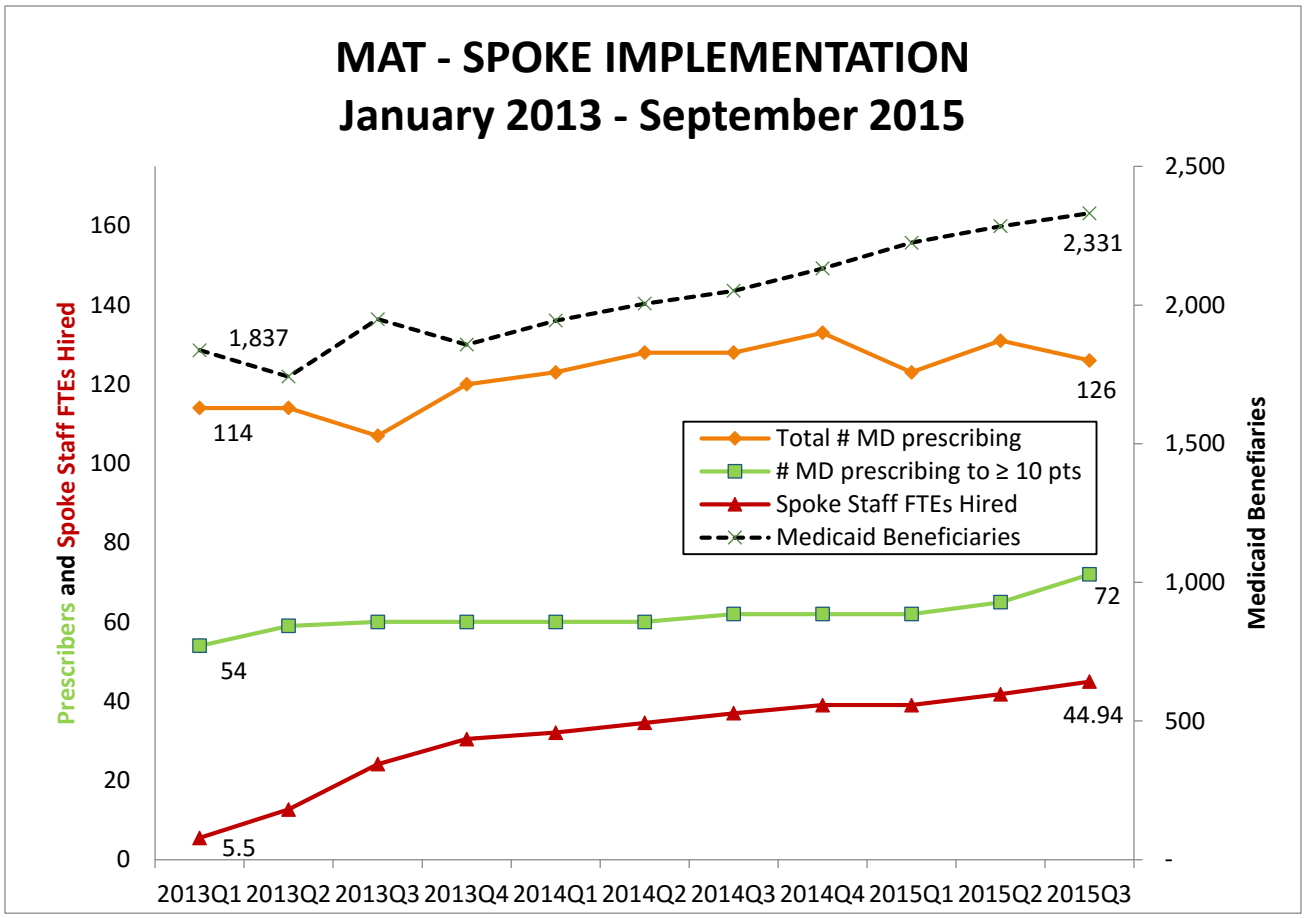
7.4.1 Access to Care

By federal regulation physicians providing MAT with buprenorphine must be "waivered" and the number of patients they can prescribe to is capped at no more than 30 in the first year, and upon request, up to 100 patients after that. The long term nature of the treatment, combined with these caseload caps, results in the need to continuously engage new providers in MAT in order to meet demand. The Blueprint tracks three measures of access to MAT in general medical settings:

- number of unique Medicaid beneficiaries seen each month,
- total number of physicians who actively prescribe buprenorphine to Medicaid beneficiaries
- number of physicians who see 10 or more patients

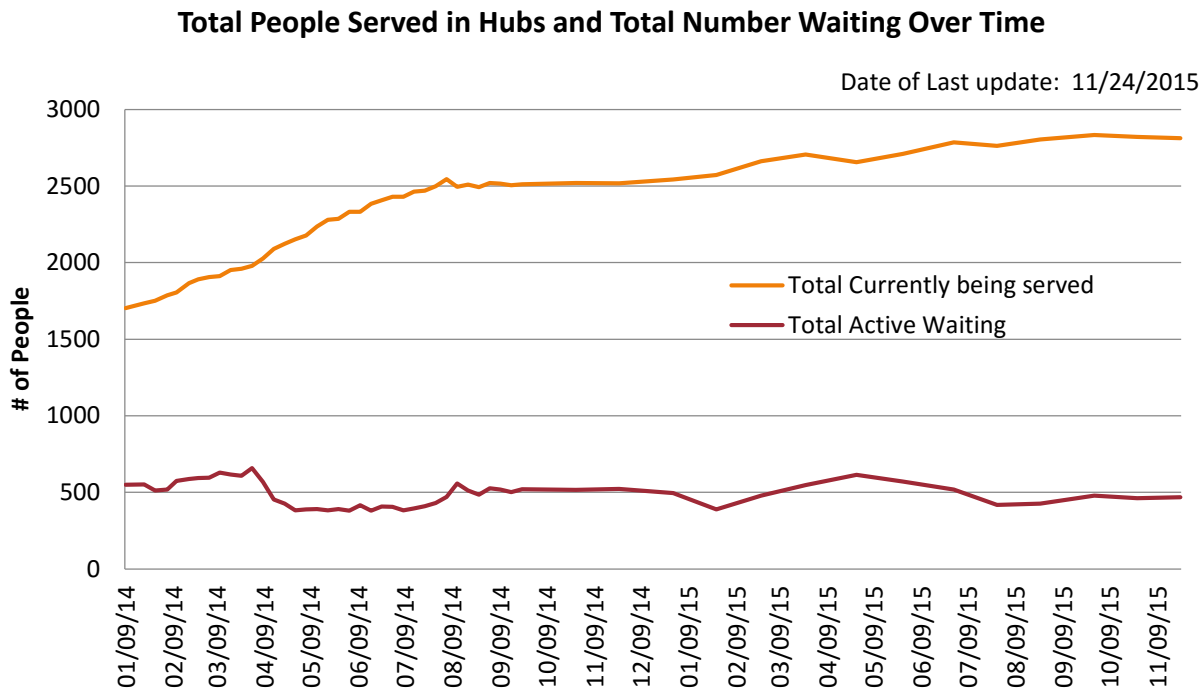
The addition of the nurse and the addictions/mental health counselor ("Spoke staff") to the practices increases the support to physicians and practices providing MAT. Since January 2013 we have seen a modest increase in the total number of physicians prescribing buprenorphine to Medicaid beneficiaries (from 114 to 126). The number of physicians who actively treat 10 or more Medicaid patients has also increased (from 54 to 72). The total number of unique Medicaid patients served by Vermont physicians each month has grown from 1,837 in March 2013 to 2,331 in September 2015. Since the Hub & Spoke initiative was implemented, the total number of Spoke staff hired has grown to nearly 45 full time equivalents by September 2015.

Figure 23: Spoke Implementation



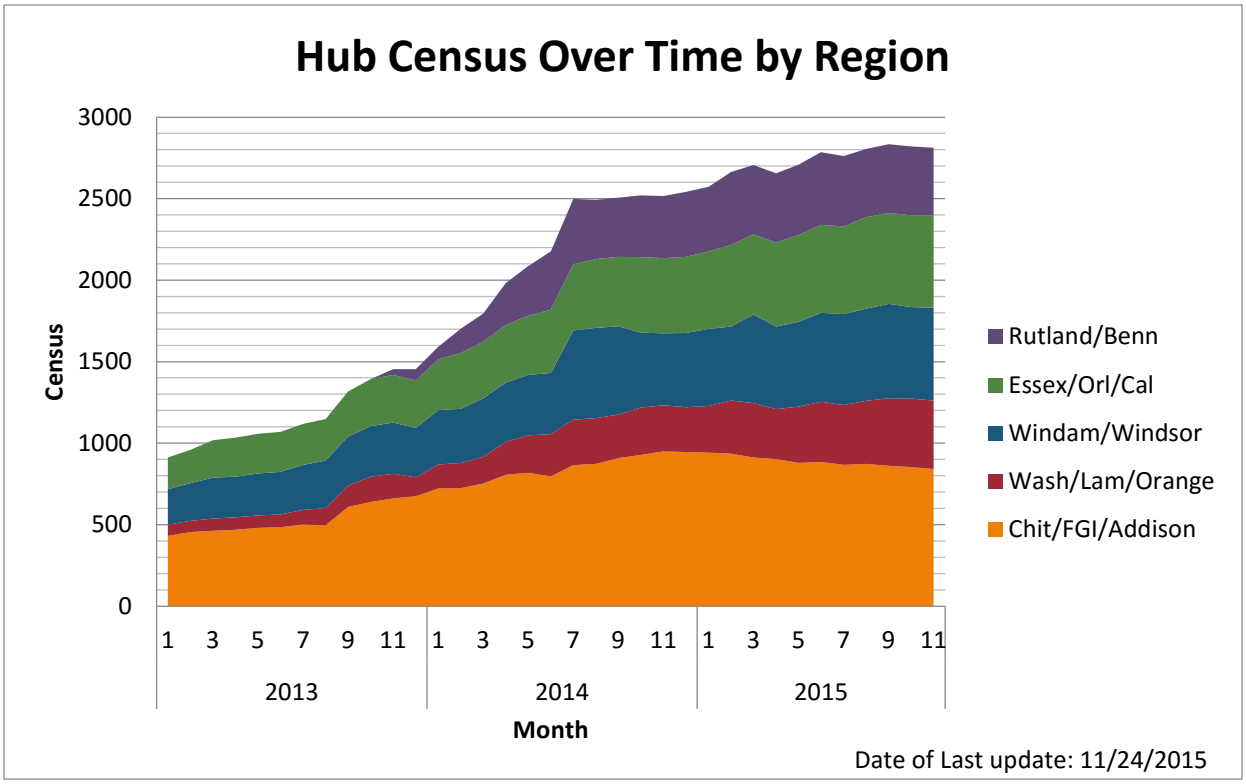
The initiative's partnering entities, Department of Vermont Health Access (DVHA) and the Alcohol and Drug Abuse Division of the VDH also track waiting lists and caseload in the Hub programs. The wait list figures for Hub services remain persistently high at just under 500 people statewide.

Figure 24: Hub Patients Served and Waiting List over Time



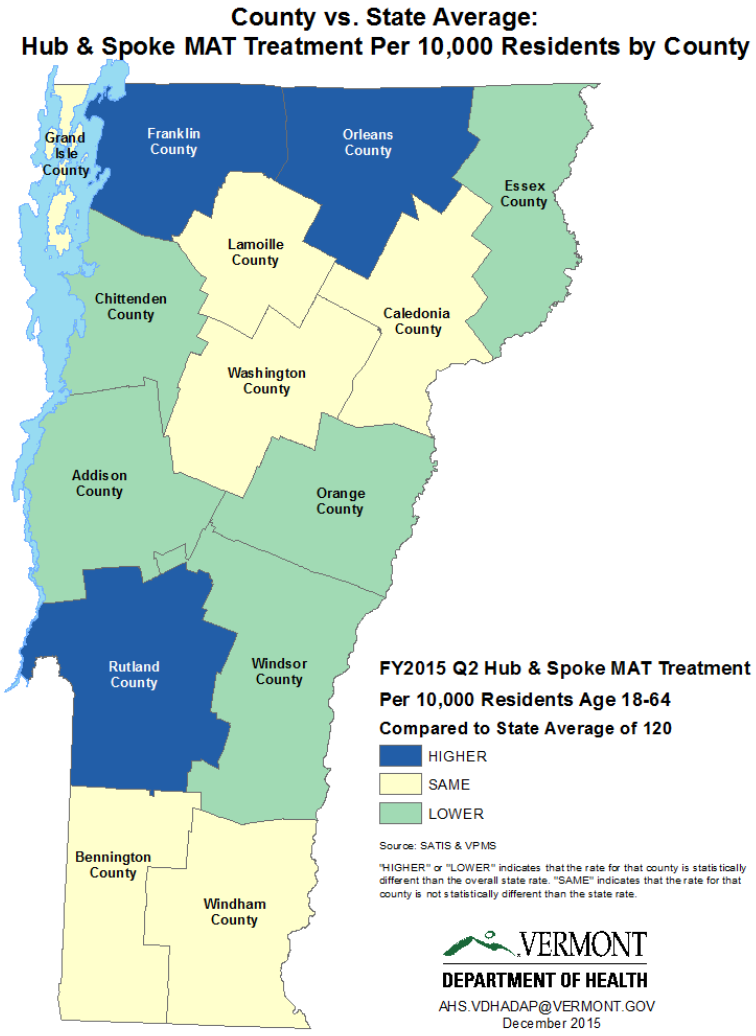
The number of Vermonters served in "Hub" programs has almost doubled in two years (from less than 1,000 in 2013 to 2,812 in December 2015). Significantly, over one third of the Hub patients receive dispensed buprenorphine – an important contribution of DVHA to the initiative, and which also allows patients to transition back to general medical settings for ongoing care.

Figure 25: Hub Census over Time by Region



Looking at combined Hub & Spoke access by county, it is quickly apparent that certain regions, especially Chittenden County, lack access to MAT at either a Hub or in general medical settings (Spokes). Chittenden, Addison, Essex, Orange and Windsor counties have lower than the statewide average access for Hubs & Spokes combined.

Figure 26: MAT Treatment per 10,000 Residents by County



7.4.2 Recruitment of New Providers

In collaboration with the leadership of DVHA and VDH, the Blueprint actively encourages physicians to offer MAT, especially to patients they may already see for primary care. The most often cited barriers to providing MAT are:

- patient complexity
- provider time
- lack of access to specialty care
- concern that the practice will be flooded with too many addictions patients
- skepticism about the efficacy of MAT

To help address these barriers, we offer training and support for practices to implement MAT protocols through the use of Blueprint Practice Facilitators, Learning Collaboratives, and providing Spoke nurses

and counselors in advance of seeing patients for MAT to design the work flow, set up program protocols, and begin the intake assessment process.

7.4.3 Notable Communities Improving MAT Access

There are several notable communities and leaders who worked to expand access in 2015.

The Porter Medical Group faced the unique challenge of having no providers in Addison County who offered MAT. This presented hardships for area residents who needed to travel out-of-county for care and put additional pressures on the already stretched resources in Burlington and Rutland. The providers at ***Bristol Internal Medicine*** systematically began to grow a program by sharing the clinical responsibility among four physicians and contracting for addictions Spoke staff from the local Designated Agency. The program has grown to over 75 patients in the course of 2015 and has by all accounts, been extremely successful.

The collaboration between the ***Hawthorne Recovery Center*** in Bennington, ***United Counseling Services***, the Blueprint, and ***Southwestern Vermont Medical Center*** has significantly improved access to care in the region. SVMC took a leadership role in recruiting two physicians from the hospital-owned practices to begin offering MAT in collaboration with the Hawthorne Recovery Center. United Counseling Services provides the addictions counselors for the Spoke teams county-wide, and the Blueprint project manager actively convenes all the practices together to develop systemic approaches to common issues. For instance, all providers now share a common treatment contract, observed dosing is helping to limit diversion of prescribed medication, and a Spoke staff has specialized in working closely with probation and parole on behalf of patients who are involved with the legal system. Also, by enhancing specialty services, Hawthorne Recovery Center is better supporting the local primary care MAT providers by providing a local referral option for patients who need more intensive or specialized care.

The Board of the ***Community Health Services of the Rutland Region (CHCRR***) voted this year to support the expansion of MAT to the ***Brandon*** office and beyond. Strong leadership by the providers in the Brandon practice created the pathway for expansion and is quadrupling the number of providers offering MAT at the Rutland area FQHC.

Two ***pediatricians*** in the ***Windsor*** area developed a grant to offer MAT to the parents of children in the practice. They took 2015 to plan and develop the programing and will begin offering services in early 2016. This groundbreaking approach to family care holds great promise and responds to a clear need in our community.

Most impressive of all is the commitment of the ***University of Vermont Medical Center*** (UVMMC) to begin offering MAT. Consistent with the excellence of the academic medical center, the UVMMC leadership has led an intensive planning effort with community partners to expand access to MAT and reduce the waiting list for care in Chittenden County. More than 25 physicians have become waivered, and this fall they began transitioning patients from the Chittenden Hub back to their UVMMC primary care provider for MAT. To insure that practices are not “flooded” providers are beginning with small panels (5 or less) and the Department of Psychiatry is opening an intensive program to receive new MAT patients and help stabilize them before stepping down to general medical offices.

7.4.4 Building a Culture of Community Response

In ***Central Vermont***, the new medical director of the ***Hub*** reached out the Blueprint MAT team of Spoke staff to assist with triaging the Hub program waiting list for services. Working on the principle that the responsibility to treat people who request care should be shared by all the area providers, the MAT team and the Hub intake coordinator contacted people on the wait list. They assessed each person's needs and preferences and worked to connect people to services. Throughout August they were able to get everyone who wanted care into treatment either in the Hub, area Spoke practices, or other substance abuse treatment. As the MAT team works across all the area MAT programs and understands the strengths of each program, they were able to match patients to providers. Collectively they were able to eliminate the waiting list. The experience is changing the relationships between providers in the region, and although staffing shortages in the Hub have limited the program's ability to take new patients at present – the Hub medical director insists that "there is **no** waitlist for any referral from an area MAT provider."

Led by the ***Blueprint Community Health Team Leader***, the ***Burlington area*** providers began meeting weekly in the late fall to review the waiting list for MAT services maintained by the ***Chittenden Center*** (the area Hub). By mid-December the participating organizations had worked out a universal consent and disclosure agreement allowing true interagency collaboration to triage the waiting list and match clients to services in a much more timely fashion. Similar to the experience in Central Vermont, this work is helping to grow a sense of collective responsibility for access to care within the region and to help increase the participation of the specialty addictions Hub program in the health neighborhood.

7.5 Improving the Standard of Care

Annually, VDH transfers $165,000 to DVHA to support co-occurring substance use and mental health care in the Blueprint primary care practices. Since 2012, the Blueprint has used these funds to support practice improvement in MAT through a series of learning collaboratives. The faculty is provided by the Geisel School of Medicine at Dartmouth. Continuing medical education credits were obtained through Dartmouth Hitchcock Medical Center. The learning collaborative approach combines didactic lectures, small groups of independent practice teams coming together, collecting common outcome measures, and sharing both outcomes data and clinical experience. The goals are to educate and support physicians and their practice teams, to increase the numbers of patients appropriately prescribed buprenorphine, to reduce the non-medical use and diversion of the medication, and to use evidence-based practice guidelines to improve patient and community outcomes. Four cohorts of practice teams comprised of 34 physicians and 97 team members serving more than 1,600 patients have participated in regional learning collaboratives. Provider engagement was objectively underscored by continued participation of 26 of the 27 practices that joined a collaborative. The participating practices measure substantial improvement in care including:

- prescribing buprenorphine only to patients who meet diagnostic criteria for opioid addiction
- adhering to dosage range recommendations
- conducting regular, observed random drug urine screens
- increasing frequency of office visits for unstable patients
- routinely using the Vermont Prescription Monitoring System
- maintaining patients in treatment (retention)

- documenting coordination of care with specialty providers

The Figures 27-30 show the improvements in the measures for practices participating in the Learning Collaboratives.

Figure 27: Average % of at least monthly urine drug screens n=1,661

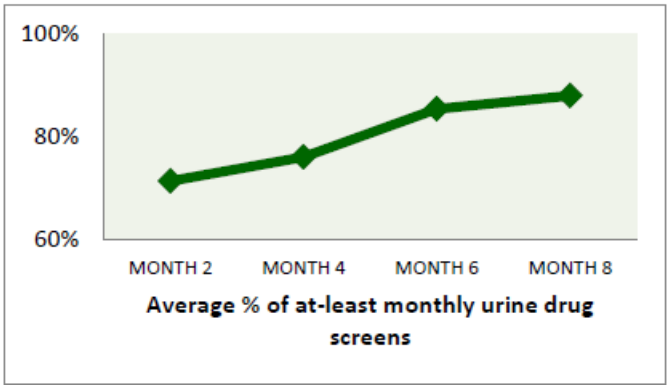


Figure 28: Average % of unstable patients seen weekly n=1,661

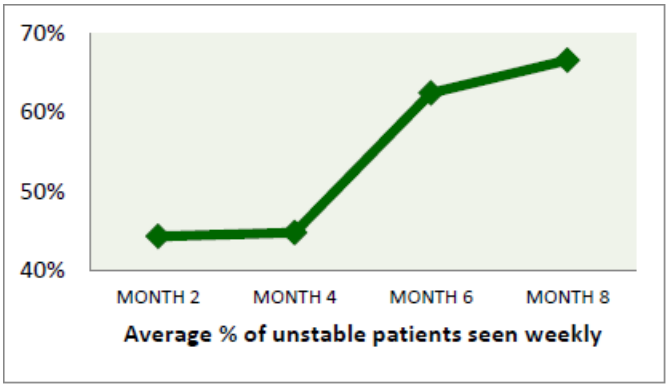


Figure 29: Average % of VPMS access at admission and quarterly thereafter n=1,661

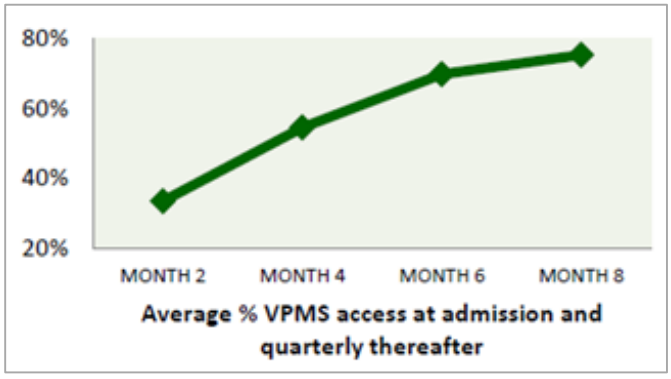
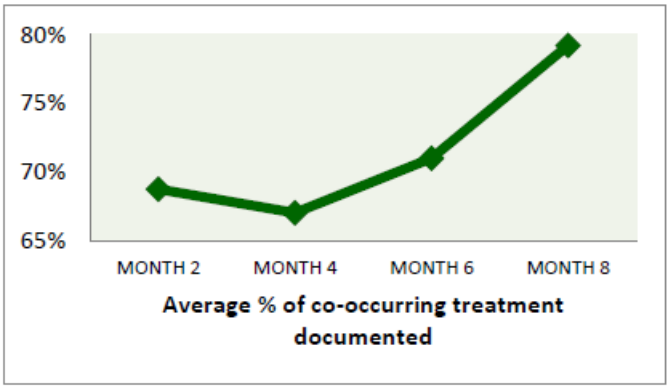


Figure 30: Average % of co-occurring treatment documented



7.5.1 MAT Analytics and Evaluation Plan

The Blueprint and the VDH Division of Alcohol and Drug Abuse Programs have developed an analytic plan to evaluate the impact of MAT on Medicaid beneficiaries. The Blueprint's analytic contractor, Onpoint Health Data, will conduct this multi-stage evaluation. The Vermont study, which will proceed in phases, will test the impact of MAT on health care expenditures and utilization, clinical health outcomes, incarceration, and employment in Vermont.

7.5.1.1 MAT preliminary baseline study

Analysis of health care claims 2007-2013 (prior to full implementation of the Hub & Spoke program) was conducted for Medicaid beneficiaries receiving MAT in both specialty opioid treatment programs (OTP) and general medical office (OBOT) settings. The study focuses on Medicaid beneficiaries because it is the dominant insurer for MAT and is the only payer participating in the services enhancements to OBOT settings. The results of this analysis are reported below.

7.5.1.2 Impact of Hub & Spoke enhancements

A pre-post study will measure the differences in outcomes after the investments in the Hub & Spoke initiative. The study will cover the following time frame: with 2007-2012 used as the baseline; 2013 as an implementation year; and 2014 as year one post implementation. This analysis will also be performed on subsequent calendar years.

7.5.1.3 Incarceration data analysis

The Blueprint has arranged for regular extracts from the Department of Corrections "Offender Management System" and will begin working with this data in early 2016. This will link health care claims to incarceration data.

7.5.1.4 Clinical data analysis

A report on the Medicaid Adult Core Measure will be sent to Centers for Medicare and Medicaid Services (CMS) as required under the Health Home State Plan Amendment. This reporting includes claims measures such as Emergency Department use and clinical measures such as Adult Body Mass Index (BMI) and hypertension control. The Blueprint Clinical Registry will be the source for the clinical measures.

7.5.1.5 Employment data analysis

Blueprint is seeking feeds from the Department of Labor on the employment status of Medicaid beneficiaries treated for opioid addiction. This analysis will further test key social outcomes of treatment for opioid addiction.

7.5.2 Preliminary Baseline Study: MAT and Health Care Costs

Vermont's all-payer claims database, the Vermont Health Care Uniform Reporting and Evaluation System (VHCURES), served as the primary data source for a baseline study on the impact of MAT of health care costs and utilization. The study population included members with full Medicaid coverage, ages 18–64 years, who had claims in VHCURES indicating treatment for opioid addiction between the calendar years 2008 and 2013. Within each year, members participating in MAT were compared to members with opioid addiction who received substance abuse treatments other than MAT (non-MAT). Expenditures and selected utilization measures were evaluated for the MAT and non-MAT groups over the six-year period.

For each calendar year, MAT and non-MAT members were evaluated using demographic, health status, total medical expenditures, medical expenditures excluding addiction treatment costs, and selected utilization measures (e.g., inpatient use, emergency department use). Demographic measures included age, gender, and county of residence. Health status indicators included selected chronic disease diagnoses targeted by Blueprint (e.g., diabetes) and 3M Clinical Risk Group (CRG) categories, which are used to help identify differences in health status for other conditions (e.g., cancer) among the MAT and non-MAT populations. Members with claims indicating maternity or hepatitis C also were identified.

To remove the effect of extreme outlier cases, total expenditures were capped at the 99th percentile for each year, and measures were adjusted for partial enrollment within the year. A measure of continuity of enrollment in Medicaid ("Medicaid in the Prior Year") was assigned for a member who was enrolled in Medicaid during both the current year and the prior year.

7.5.2.1 Demographic Results

The study analyzed results for 8,656 Medicaid beneficiaries over a six year period. The MAT group was slightly younger and more likely to be female (55% vs. 43%) than the non-MAT group of beneficiaries with opioid addiction. MAT members had a higher rate of maternity compared to non-MAT (9% vs 4%). This is expected given that pregnant women are prioritized for MAT treatment. MAT members also had a higher rate of hepatitis C (14% vs 9%). The MAT group was more likely than non-MAT members to have continuity of coverage in Medicaid as indicated by having Medicaid in the prior year (75% vs 47%).

7.5.2.2 Cost Results

Total annual health and addictions treatment expenditures for the MAT group were slightly less (-$60) than for the non-MAT group, but not statistically significant. Excluding the key MAT treatment costs (the bundled rate for methadone treatment and the pharmacy costs for buprenorphine), the total health care costs for the MAT group were significantly lower (-$2,012) annually than for the non-MAT group and the result was statistically significant (<0.001). This differential in health care costs was primarily driven by lower rates of inpatient discharges, inpatient days, and outpatient emergency department visits, which were significantly lower in the MAT group compared to the non-MAT group. The differences were consistent across all years (2008-2013). Enrollment in Medicaid both in the current

year and the prior year lowered average annual expenditures regardless of whether MAT treatment costs were included ($1,341: *P*<0.001) or excluded ($1,4514; *P*<0.001).

7.5.2.3 Discussion

These preliminary results indicate that receiving the more intensive and targeted MAT treatment was associated with decreased total annual average expenditures for health care compared to Medicaid members with opioid addiction receiving other treatment methods – a reduction that was large and statistically significant when key MAT treatment costs (methadone bundled rates and buprenorphine pharmacy) were removed. Given the higher rates of maternity and Hepatitis C in the MAT group, this finding of lower health care costs for opioid addicts receiving MAT is quite promising. While this preliminary baseline study does not confirm whether the cost of the new Hub & Spoke system enhancements in MAT will outweigh potential savings, these baseline results make a compelling case for such investments. In addition, the finding that continuous enrollment in Medicaid was also associated with reduced expenditures independent of MAT services indicates that expansion of Medicaid coverage for people with opioid addiction may be cost effective for the system overall.

7.6 VERMONT CHRONIC CARE INITIATIVE (VCCI)

The Vermont Chronic Care Initiative (VCCI) is a statewide Medicaid health care reform program that provides care coordination and intensive case management services to non-dually-eligible Medicaid members that are high risk and high cost. These patients often have multiple chronic conditions and complex health histories. VCCI primarily focuses on improving outcomes and reducing unnecessary utilization by using a holistic approach that addresses socio-economic barriers to health and health care.

7.6.1 Determining Eligibility for VCCI Services

Since 2011, VCCI has specifically targeted eligible members in the top 5% high-utilizing Medicaid population, since these members account for an estimated 39% of Medicaid expenditures. Eligibility for VCCI services is determined primarily, though not solely, on the following criteria:

- Included in top 5% of Medicaid cost/utilization
- High emergency department and hospital utilization
- Multiple prescribed medications (poly pharmacy)
- One or more chronic health conditions
- Co-occurring conditions of substance abuse or mental health
- Not receiving other CMS-funded case management services, such as Choices for CARE, PACE, CRT, etc.
- Not dually eligible for Medicare

VCCI further targets beneficiaries determined to be “impactable” based on an analysis of clinical acuity and recent utilization patterns conducted by the program analytics contractor. For each Medicaid member, this analysis considers the member’s:

- Chronic Disability and Payment System (CDPS) score
- Actual per-member-per-month cost to the Medicaid program
- Number of chronic conditions

- Number of emergency department and inpatient encounters
- Evidence of fragmented, uncoordinated care, such as several encounters with different providers in a short amount of time

Finally, at-risk members are also identified for VCCI services through direct referrals from:

- Primary care providers
- Emergency department staff
- Field and embedded program staff
- Other internal and external statewide partners, including Blueprint CHT staff who partner with VCCI at the local/Health Service Area (HSA) level for direct referrals and transitions of care support between levels of service for the Medicaid population

7.6.2 Outreach to VCCI Clients

VCCI reaches Medicaid members primarily through a team of licensed case managers/care coordinators (nurses, LADCs and/or LICSWs) operating at the local level. VCCI staff serves members in a variety of settings, such as embedded resources within provider practices and hospitals with a high volume of Medicaid members. Embedded staff facilitates:

- Direct communication, care coordination, and referrals
- Transitions between the hospital and the patient's primary care provider (PCMH)
- Access to a PCMH when one is not being utilized

Multiple hospitals also provide VCCI with daily secure data transfers on emergency department and inpatient admissions to further support members post-hospitalization and minimize hospital readmission rates, an area of significant expenditures among the top 5%.

Employed by DVHA, VCCI case managers/care coordinators are also located in state Agency of Human Services (AHS) district office settings and work closely with AHS partners, including AHS District Field Directors, Economic Service Division/eligibility staff, Department of Corrections (DOC) probation and parole colleagues, and VDH/local health office leadership and staff.

7.6.3 Blueprint-VCCI Collaboration

The Blueprint works with VCCI – considering VCCI staff part of the Blueprint's Extended CHT. VCCI Case Managers/Care Coordinators work closely with the Primary Care provider, AHS partners, CHT staff, and other local partners to identify and assure wrap-around services are in place to support the Plan of Care. The VCCI staff are also members of most of the statewide Unified Community Collaboratives (UCCs, also known as Regional Clinical Performance Committees) and participate with Blueprint CHT colleagues in the VHCIP "Integrated Communities" learning collaborative.

7.6.4 VCCI Outcomes

VCCI rate reductions and savings reported here were provided to the Blueprint by VCCI, based on analysis by their vendors. The methodology, using a Historical Control Design, involved comparing actual cost trends following VCCI intervention to projected costs based on pre-intervention costs trends. Full savings-calculation methodology and additional information is available upon request from VCCI.

Figure 31: Inpatient Admissions, 30-Day Readmissions, and Emergency Department Visits for VCCI-targeted Medicaid Population

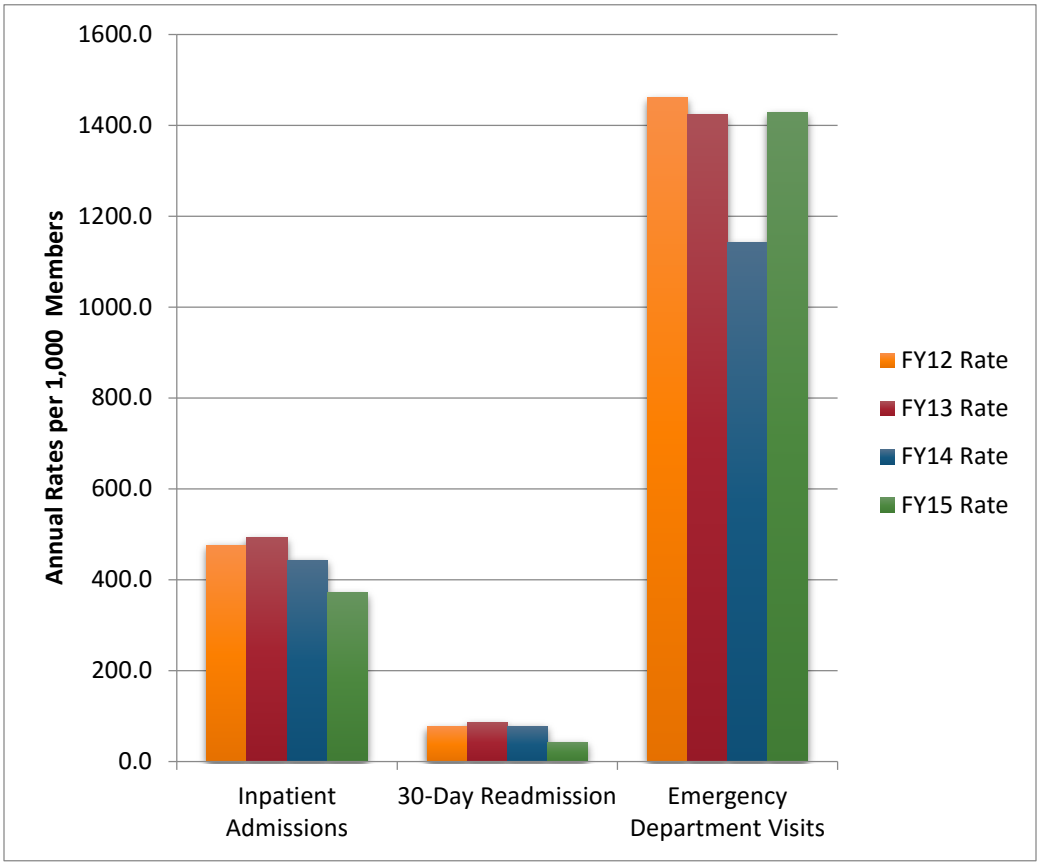
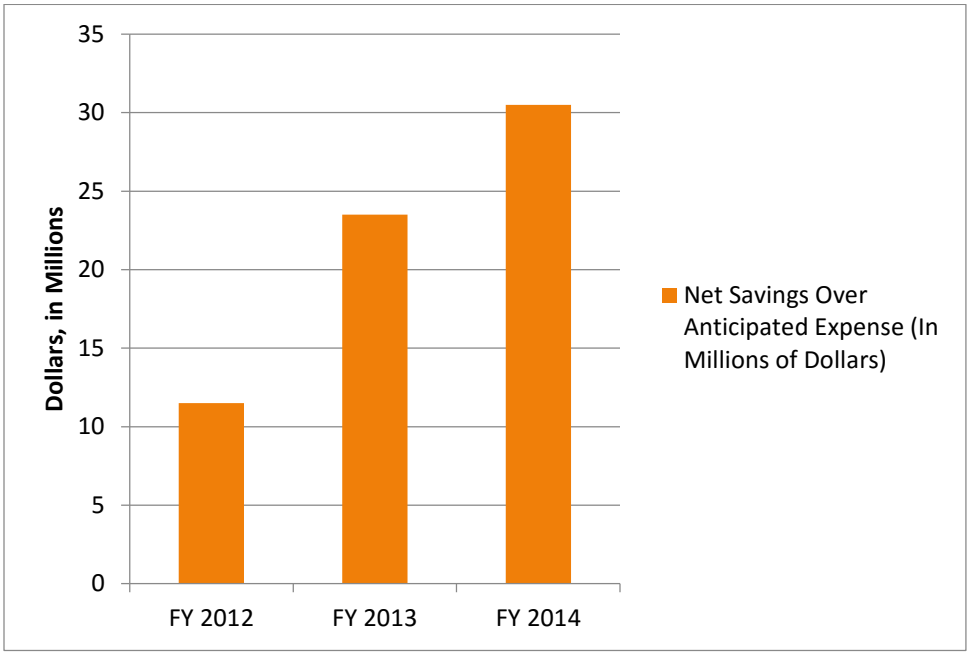


Table 9. Percent Rate Changes in Inpatient Admissions, 30-day Readmissions, and Emergency Department Visits Realized for VCCI-targeted Medicaid Population (Increase in ED utilization in FY2015 is likely a result of change in PCP access for Medicaid members.)

	Inpatient Admissions	30-Day Readmission	Emergency Department Visits
% Change FY12 to FY13	3.39%	10.78%	-2.52%
% Change FY13 to FY14	-10.09%	-8.84%	-19.85%
% Change FY14 to FY15	-16.21%	-44.96%	25.08%

DVHA analysis of Medicaid claims, indicates that VCCI demonstrated net savings[4] over anticipated costs of $30.5 million in state fiscal year 2014 (July 1, 2013 through June 30, 2014) (Figure 32). Since most providers are currently reimbursed by the state's Medicaid program through a fee-for-service model, reductions in unnecessary spending achieved by VCCI translate directly to savings for the state's Medicaid program budget.

Figure 32: VCCI Savings for Eligible Members in the 'Top 5%" of Medicaid



[4] VCCI patients are distributed across Blueprint and non-Blueprint practices; therefore the VCCI versus Blueprint PCMH contribution to reduction in expenditures for patients attributed to PCMHs could not be assessed at this time. VCCI will be able to assess clinical improvement, utilization, and cost savings in the new Enterprise Care Management system for the VCCI cohort, Blueprint PCMHs, and ACO affiliated practices and their attributed Medicaid members.

8 PLANNING FOR THE FUTURE

In 2016, Vermont is poised to enter the next stage of healthcare reforms with the potential for a novel level of system integration, coordination across providers, and all payer payment models that promote quality and value.

8.1.1 The Health Care Reform Environment

Vermont's three Accountable Care Organizations (ACOs) are in negotiations that, if successful, would enable them to form a single ACO in which the vast majority of health care providers are part of a unified network with their financial interests tied to improving health care quality, health outcomes, and controlling the growth in health care costs. At the same time, the Green Mountain Care Board (GMCB) and the Administration are negotiating with the Centers for Medicare and Medicaid Innovation (CMMI) to support the next phase of value-based payment models through capitated payments to ACOs. Vermont's existing shared savings programs with the three ACOs, across all payers, has set the stage for this next phase of reform.

The opportunity right now is to develop a more coordinated statewide health system with financial incentives that promote better quality and health instead of volume of services. While the outcome of each of these negotiations is uncertain, Vermont will continue to plan for an all payer model for capitated payment with or without a new waiver.

8.1.2 A Strong Foundation of Advanced Primary Care Working with Community Networks

As these high-level negotiations take place, leadership from the three ACOs and their affiliated primary care providers have spent the last year working with the Blueprint program to establish a more unified, community-oriented approach to the care they deliver. High quality primary care, well-coordinated team-based services, more balanced investment in social and medical services, and data-driven quality improvement are widely recognized as important ingredients for an effective health system. In Vermont, these elements have been introduced through a Transformation Network, which includes Practice Facilitators, Project Managers, and Community Health Team (CHT) Leaders working with Patient-Centered Medical Homes (PCMHs) and CHTs, and participating in data-guided learning forums. The Transformation Network works to establish a statewide foundation that demonstrates sustained and improved benefits (i.e., better care, lower costs).

The three ACOs and the Blueprint team have worked together to strengthen this foundation by forming Unified Community Collaboratives, also known as Regional Clinical Performance Committees, in each service area. These groups use comparative results on core measures to guide planning for local coordination and quality initiatives. Local planning is supplemented by statewide forums where Blueprint and ACO field teams share information and best practices, participate in professional development, and provide input for state-level planning. The strong foundation of primary care working with community networks positions Vermont to take full advantage of the opportunities that may arise from any administrative and financial restructuring.

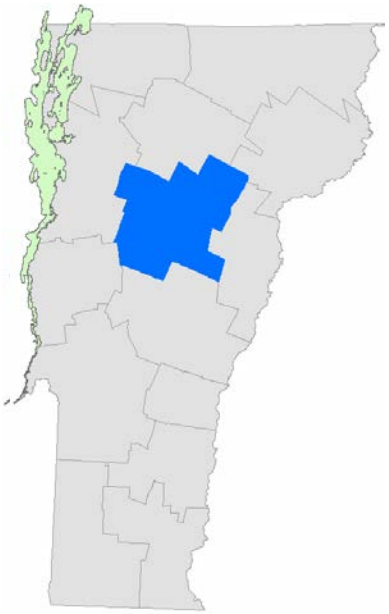
Today's dynamic health care environment – including the maturation of the ACO framework and advancement towards an all payer model – presents exciting opportunities for Vermonters and the health system that will serve them. The Blueprint program is well suited to assist the ACOs and other

providers with evolution to a more integrated health system, and in particular a system with more seamless coordination between medical and social services.

The Blueprint's expertise in health systems science (design, implementation, and research) and data systems will continue to be valuable assets, and the Blueprint's experience as a supportive convener of state and local networks will be useful during the next phase of reforms. These reforms will be complex and require fundamental changes in the way that providers of all kinds work together. The Blueprint team will continue to prioritize the role of trusted facilitator, assisting providers in their mission and helping to plan and implement new strategies that meet the needs of Vermont's citizens.

9 HEALTH SERVICE AREA HIGHLIGHTS FOR 2015

Each year Blueprint Project Managers in each HSAs tell us what the highlights of their year were, for inclusion in the Annual Report. They report on which practices are part of the program in their area, staffing of their CHTs and Extended CHTs (with Hub & Spoke and SASH teams), how many referrals their CHT received, and more. This year we also asked them to tell us a little about their area's Unified Community Collaborative (UCC), describe a key Quality Improvement project, and a major achievement their team is proud of. Please read on for more about what the Blueprint achieved in each Health Service Area, in the words of local leaders.



BARRE HEALTH SERVICE AREA

Project Manager – Mark Young, RN

At a Glance:

- 33,002 claims-attributed Vermont primary care patients served by Blueprint practices in the past two years
- 14.3 FTE Community Health Team Staff
- 5.5 FTE Spoke Staff
- 15 Community Self-Management Workshops offered
- 5.5 SASH Teams; 414 Participants (Capacity = 550)
- 1835 CHT referrals
- 372 patients treated by MAT staff

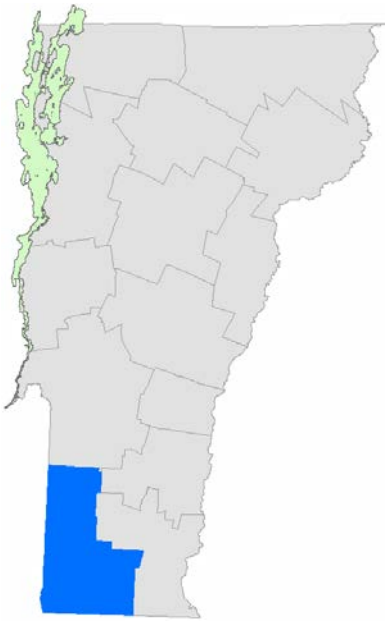
MEDICAL HOME PRACTICES

OneCare Vermont
CVMC Adult Primary Care - Barre
CVMC Adult Primary Care - Berlin
CVMC Family Medicine - Berlin
CVMC Family Medicine - Mad River
CVMC Family Medicine - Waterbury
CVMC Green Mountain Family Practice
CVMC Integrative Family Medicine - Montpelier
CVMC Pediatric Primary Care - Barre
CVMC Pediatric Primary Care - Berlin
Green Mountain Natural Health
UVMMC Family Medicine - Berlin

Community Health Accountable Care
The Health Center - Plainfield

Highlights

UCC name: Community Alliance for Health Excellent (CAHE)
The majority of community partners are represented on the CAHE steering committee. Our group uses a decision matrix tool to help prioritize proposed projects. The state-wide learning collaboratives help guide active QI projects chosen by the CAHE. The CAHE community partner collaboration has created a balanced focus on health care and social determinants of health, both of which are crucial factors to recognize in the care management process.
Spotlight QI Project: Chronic Care Management Project
This project began as a six-month pilot involving a small panel of patients, half receiving care management and the other half receiving usual care. A certain set of criteria determined participants chosen. They received care management based on certain evidence-based guidelines. While the initial pilot patient population was small, results showed evidence of increased home health use, falls risk screening, care plan completion, and advance directive completion, as well as a decrease in PCP and inpatient utilization. The CAHE voted to expand the pilot and use the regional Integrated Communities Care Management Learning Collaborative as a venue for organizing and implementing the larger care management project.
Major achievement: CVMC received a great to implement Screening, Brief Intervention, and Referral to Treatment (SBIRT) in medical homes. SBIRT is a comprehensive, integrated, public health approach to the delivery of early intervention and treatment services for patients at risk for alcohol or other substance use dependence. Two (2) full-time SBIRT clinicians currently provide support to patients at six (6) of our medical homes.



BENNINGTON HEALTH SERVICE AREA

Project Manager – Jennifer Fels, RN, MS

At a Glance:

- 16,407 claims-attributed Vermont primary care patients served by Blueprint practices in the past two years
- 6.75 FTE Community Health Team Staff
- 5.2 FTE Spoke Staff
- 10 Community Self-Management Workshops offered
- 3 SASH Teams; 295 Participants (Capacity = 300)
- 8582 CHT referrals
- 304 patients treated by MAT staff

MEDICAL HOME PRACTICES

Keith Michl, MD
Brookside Pediatrics and Adolescent Medicine

OneCare Vermont
Avery Wood; MD
Bennington Family Practice
Eric Seyferth; MD
Mount Anthony Primary Care
SVMC Deerfield Valley Campus
SVMC Medical Associates
SVMC Pediatrics
SVMC Northshire Campus
Shaftsbury Medical Associates

HealthFirst
Green Mountain Pediatrics

OneCare Vermont and Community Health Accountable Care
Battenkill Valley Health Center

Highlights

UCC name: Regional Clinical Performance Committee
We have 24 organizations and services represented. Our goals for 2016 include implementing a pre-diabetes coaching program and aligning ACO and Blueprint measures and initiatives. We are fortunate to have medical and human services partners willing to work together to improve the health of our population, improving the person experience, and reducing healthcare costs. Our partners are also moving towards a data-driven network to support the health of the community.

Spotlight on QI Projects:
For the MAT teams, we are working on the implementation of a common SPOKE patient contract and a referral and communication process among obstetric services and office-based opioid treatment. For reduction of hospital admissions and readmissions, we are developing a heart failure admission reduction program, implementing a pulmonary rehabilitation program, and focusing on medication reconciliation across the continuum of care. For Emergency Department (ED) utilization, the Community Care Team, made up of multiple agencies, has been formed to address patients with high use of the Southwestern Vermont Medical Center (SVMC) ED.

Major achievement: The Aging and Disability Resource Connection (ADRC) is a Vermont pilot project to support a program of "no wrong door" options counseling. Key stakeholders include SVMC, SASH, Council on Aging, VCIL, Brain Injury Association, transitional care nurses, and Bennington Blueprint patient-centered medical homes. This team has developed common data elements, known as a Universal Transfer Protocol, for a shared care plan.

BRATTLEBORO HEALTH SERVICE AREA

Project Manager – Wendy Cornwell, RN, BS, BSN

MEDICAL HOME PRACTICES

OneCare Vermont
Brattleboro Family Medicine
Brattleboro Internal Medicine
Brattleboro Primary Care
Grace Cottage Family Health
HeartSong Health: Ani Hawkinson
Just So Pediatrics
Maplewood Family Practice
Putney Family Healthcare
Windham Family Practice

At a Glance:

- 14,674 claims-attributed Vermont primary care patients served by Blueprint practices in the past two years
- 9.07 FTE Community Health Team Staff
- 3.5 FTE Spoke Staff
- 40 Community Self-Management Workshops offered
- 5.5 SASH Teams; 306 Participants (Capacity = 550)
- 1671 CHT referrals
- 297 patients treated by MAT staff

Highlights

UCC name: Windham County Health Service Area Regional Clinical Performance Committee
All primary care practices in the Brattleboro HSA are participants in the OneCare Vermont ACO. Our HSA has established an ACO Steering Committee that meets regularly. Our RCPC has provided an opportunity to strengthen community partnerships, leading to improved collaboration. Our goal is to provide comprehensive "wrap around" community care for Windham County residents.

Spotlight on QI Projects:
For primary care patient panels with a history of chronic controlled substance use, there is a QI project in progress that ensures these patients have a controlled substance agreement with provisions for pill counts and urine drug screens. The goal is to lower MED scores for these patients. Through the Integrated Communities Care Management Collaborative, we are working with patients that have both mental health and substance abuse disorders and who are high utilizers of the ED. Our workgroup includes 15 community agencies and organizations. Our RCPC is also focusing on improvement in Medicare hospice utilization and the improvement of quality of life at the end of life.

Major achievement: Brattleboro Memorial Hospital's Diabetes Self-Management Education Program has maintained certification from the American Diabetes Association and thus continues to provide excellence in evidence-based diabetes care to our population.

BURLINGTON HEALTH SERVICE AREA

Project Managers – Pam Farnham, Penrose Jackson

Burlington Health Service Area Resource Allocation in FTE

*Other includes: Referral Manager, Psychiatrist, Psychologist, Certified Diabetic Educator, Accupuncturist

At a Glance:

- 93,393 claims-attributed Vermont primary care patients served by Blueprint practices in the past two years
- 40.98 FTE Community Health Team Staff
- 9.25 FTE Spoke Staff
- 25 Community Self-Management Workshops offered
- 16.5 SASH Teams; 1660 Participants (Capacity = 1650)
- 5676 CHT referrals
- 422 patients treated by MAT staff

Highlights

- Our UCC, called the Chittenden County Regional Clinical Performance Committee, currently includes 20 community partners, has developed mission and values statements, and has a leadership team. We currently focus on 3 QI projects.
  - Increase hospice and palliative care in Chittenden County by 5% in the next year
  - Decrease potentially avoidable Emergency Department visits for URI, UTI, diarrhea, and vomiting
  - Test team-based shared care management interventions with at-risk populations
- 25 new MAT prescribers in 2016
- Opioid task force aimed to address the wait list for opioid treatment:
  - Developed values and a shared purpose
  - Team developed and prioritized strategies to increase MAT capacity

MEDICAL HOME PRACTICES

Mountain View Natural Medicine
Champlain Center for Natural Medicine
Frank Landry, MD, PLC

OneCare Vermont
Adult Primary Care – Burlington
Adult Primary Care – Essex
Adult Primary Care – South Burlington
Adult Primary Care – Williston
Burlington Primary Care
Family Medicine – Colchester
Family Medicine – Hinesburg
Family Medicine – Milton
Family Medicine – South Burlington
Pediatric Primary Care – Burlington
Pediatric Primary Care – Williston
Timberlane Pediatrics North
Timberlane Pediatrics South

HealthFirst
Alder Brook Family Health
Charlotte Family Health Center
Chris Hebert, MD
Essex Pediatrics
Evergreen Family Health
Gene Moore, MD
Good Health
Hagan, Rinehart and Connolly Pediatricians; PLLC
Richmond Family Medicine
Thomas Chittenden Health Center
Winooski Family Health

Community Health Accountable Care
Community Health Centers of Burlington

MIDDLEBURY HEALTH SERVICE AREA

Project Manager – Susan Bruce

At a Glance:

- 18,064 claims-attributed Vermont primary care patients served by Blueprint practices in the past two years
- 7.25 FTE Community Health Team Staff
- 1.5 FTE Spoke Staff
- 5 Community Self-Management Workshops offered
- 3.5 SASH Teams; 259 Participants (Capacity = 350)
- 3000 CHT referrals
- 130 patients treated by MAT staff

MEDICAL HOME PRACTICES

OneCare Vermont
Bristol Internal Medicine
Little City Family Practice
Middlebury Pediatric and Adolescent Medicine
Neshobe Family Health
Porter Internal Medicine
Rainbow Pediatrics

HealthFirst
Middlebury Family Health Center

Community Health Accountable Care
Mountain Health Center

Highlights

UCC name: Community Health Action Team (CHAT)
In partnership with all three Vermont ACOs and approximately 30 agencies and organizations throughout the Middlebury Health Service Area, we formed the CHAT Unified Community Collaborative committee. To date, our UCC has elected to take part in the Integrated Communities Care Management Learning Collaborative. We are exploring other QI projects, such as increasing hospice utilization, implementing SBIRT, and decreasing ED utilizations.
Spotlight on QI Project: Integrated Care Coordination
Begun on August 19 as part of the statewide care management learning collaborative, we have 15 health and human services agencies and departments involved in this project. For those who would benefit from wrap-around services, our goal is to form an integrated care team that develops a shared plan of care for individuals and families identified as having moderate to high utilization rates, multiple chronic conditions, and social determinants impacting their health. Barriers of the engagement process are being analyzed currently.
Major achievement: We hired a new QI Facilitator (Alexandra Jasinowski, pictured above on right) in our HSA, and she completed her first successful NCQA recognition process with a practice. She has also serves as the facilitator for the Care Management Learning Collaborative project, achieving active participation from the UCC sub-committee for this project.

MORRISVILLE HEALTH SERVICE AREA

Project Manager – Elise McKenna, RN, MPH

MEDICAL HOME PRACTICES

Cambridge Family Practice Associates
Dr. Bisbee Personalized Healthcare
Stowe Natural Family Wellness

HealthFirst
Paul Rogers, MD

Community Health Accountable Care
Hardwick Area Health Center

OneCare Vermont and Community Health Accountable Care
Morrisville Family Practice
Stowe Family Practice

At a Glance:

- 16,575 claims-attributed Vermont primary care patients served by Blueprint practices in the past two years
- 6.45 FTE Community Health Team Staff
- 3.6 FTE Spoke Staff
- 5 Community Self-Management Workshops offered
- 2 SASH Teams; 189 Participants (Capacity = 200)
- 1400 CHT referrals
- 194 patients treated by MAT staff

Highlights

UCC name: Executive Community Healthcare Organization (ECHO)
There are a total of six (6) HSA-wide QI initiatives integrated through the UCC, including 100% all cause readmission reviews by hospital and primary care, home visits for medication reconciliation post-hospitalization, Care Management Team Learning Collaborative for complex patients, ED visit follow-up calls by care coordinators, developmental screenings for all children under three (3) years old, and PCP referral request from patients seen in the ED.

Spotlight on QI Projects:
In partnership with Community Health Services of Lamoille Valley (CHSLV) and Lamoille Home Health and Hospice (LHHH), all patients 65 and older receive a home visits for medication reconciliation after being discharged from Copley Hospital. A transportation pilot program that serves over 30 unique patients was completed this year. It fills the gaps for patients needing transportation not covered by existing programs. The funding is now supported by all medical homes in the HSA. In partnership with LHHH, a new 24-hour ED Hot Line has been established to perform next-day follow-up home visits for patients discharged from the ED. Calls to the Hot Line are made by ED staff after identifying patients who could benefit from a home visit.

Major achievement: Two new medical home practices, Dr. David Bisbee Personalized Healthcare and Appleseed Pediatrics, participated in the NCQA engagement pilot and will receive recognition status.

NEWPORT HEALTH SERVICE AREA

Project Manager – Julie Riffon, LICSW, PCMH CCE

At a Glance:

- 12,616 claims-attributed Vermont primary care patients served by Blueprint practices in the past two years
- 4.8 FTE Community Health Team Staff
- 1 FTE Spoke Staff
- 7 Community Self-Management Workshops offered
- 3.5 SASH Teams; 310 Participants (Capacity = 350)
- 1780 CHT referrals
- MAT staff shared with St. Johnsbury HSA

MEDICAL HOME PRACTICES

OneCare Vermont
North Country Pediatrics
North Country Primary Care Barton
Orleans
North Country Primary Care Newport

Community Health Accountable Care
Island Pond Health Center

Highlights

UCC name: Newport Health Service Area RCPC/UCC
Our UCC formed and began to meet this year. We identified several community quality improvement priorities, including improving outcomes for people with COPD, increasing the number of referrals to hospice services and doing so earlier in the process, decreasing ED utilization for non-emergent reasons, and decreasing the rate of obesity.
Spotlight on QI Projects: Hospice Utilization
Our UCC has set a goal to increase the number of referrals to hospice and increase the length of stay (LOS) from a baseline of 3 referrals and an average LOS of 20 days. In Phase 1, our primary care practices improved their in-office referral process workflow, including use of the EHR. Key hospice staff provided education to these providers and their staff on the importance of early referrals. Public education events were also extended to the community to explain hospice benefits to increase knowledge of these services among patients and their loved ones. Referrals increased to 17 during the measurement period, and the average LOS increased to 22 days. In Phase 2, panel management of patients with a diagnosis that might indicate an opportunity for discussion of an early referral to hospice as one option for care will occur through a report developed in the EHR used by North Country primary care physicians.
Major achievement: Two of our primary care practices achieved Level 3 recognition by NCQA as patient-centered medical homes, using the more challenging 2014 NCQA PCMH standards. They were the first practices in Vermont to do so.

RANDOLPH HEALTH SERVICE AREA

Project Manager – Jennifer Wallace

At a Glance:

- 11,237 claims-attributed Vermont primary care patients served by Blueprint practices in the past two years
- 4.5 FTE Community Health Team Staff
- 1.4 FTE Spoke Staff
- 6 Community Self-Management Workshops offered
- 2 SASH Teams; 144 Participants (Capacity = 200)
- 449 CHT referrals
- 97 patients treated by MAT staff

MEDICAL HOME PRACTICES

South Royalton Health Center

OneCare Vermont and Community Health Accountable Care
Bethel Health Center
Chelsea Health Center
Gifford Health Center at Berlin
Gifford Primary Care
Rochester Health Center

Highlights

UCC name: Randolph Executive Community Council (RECC)
Our UCC passed a charter that focuses on learning how to best serve all segments of the Randolph HSA population through person-centric, wrap-around support. We aim to address the social determinants of health, including the availability of housing, food, education, employment, health care services, community-based resources, transportation, and social supports in our HSA. Our UCC is evolving with a lot of enthusiasm from community partners. All people are considered neighbors, and generational relationships are essential building blocks to our community.

Spotlight on QI Project: Uncontrolled Diabetes
The purpose of this project is to decrease the number of patients with uncontrolled diabetes, defined as having an Hba1c level greater than 9. The team convened to examine management of diabetic patients at Gifford, including review and revision of the existing policy for the diabetic clinic and treatment of diabetic patients. The team is currently exploring several changes at the diabetic clinic, as well as diagnosis-based scheduling for labs and follow-up appointments. The primary outcome measure for the project relates to Hba1c control. Measures are tracked quarterly on the Primary Care Dashboard.

Major achievement: With a new Project Manager on board since June, the Randolph HSA Blueprint program has undergone a "reboot". An entirely new CHT team was hired this year, and together they have achieved quick successes in dramatically increasing referrals to CHT and designing and using a shared care plan in the Gifford EHR for every person served. Additionally, the Extended Community Health Team (ECHT) meets monthly with an average of 20 agencies in attendance. A multi-agency release of information form was created by the ECHT and is used to coordinate care amongst agencies. Many members of the ECHT also participate in the state-wide learning collaborative, focusing on shared care plans for individuals with complex health conditions.

RUTLAND HEALTH SERVICE AREA

Project Manager – Sarah Narkewicz, RN, MS

At a Glance:

- 26,825 claims-attributed Vermont primary care patients served by Blueprint practices in the past two years
- 13.5 FTE Community Health Team Staff
- 4.5 FTE Spoke Staff
- 44 Community Self-Management Workshops offered
- 5 SASH Teams; 470 Participants (Capacity = 500)
- 1600 CHT referrals
- 247 patients treated by MAT staff

MEDICAL HOME PRACTICES

Drs. Peter and Lisa Hogenkamp

OneCare Vermont and Community Health Accountable Care
Brandon Medical Center
Castleton Family Medical Center
Mettowee Valley Family Health Center
Pediatrics Associates
Rutland Community Health Center

HealthFirst
Marble Valley Family Medical Center

Highlights

UCC name: Rutland Regional Incubator for Health System Improvement & Collaboration (RRIHSIC)
Our QI workgroup (RCPC) focuses on COPD and reducing readmissions, increasing appropriate referrals to palliative care, developing and distributing common education materials across the community, and developing a registry. The Medicare readmission rate has decreased from 16.67% at the end of 2014 to 14.2% at the end of 2015.Over 10 local health and human services organizations participate in our Integrated Community Care Coordination Collaborative, which identifies high users of hospital services, appoints a lead care coordinator, engages the patient, and uses a shared care plan. Providers from RRMC and CHCRR also meet monthly as a Clinical Integration Committee to work together on quality of care. Efforts include using secure texting, electronic transfer of discharge information, closing the loop on referrals for lab testing and specialty consultation, improved lab and diagnostic imaging ordering for medical necessity, and development of a common opioid treatment contract.
Spotlight on QI Project: Pediatric Care Coordination Collaborative and Pediatric Referral Committee
This project identifies families that can benefit from shared care planning via a scoring tool. A system and team are under development for meeting with these families to create the shared plan of care. The Pediatric Referral Committee convenes staff from multiple programs in the region that provide services for children and families. The format of monthly meetings involves discussing systems, participating in case discussions, hearing educational presentations from service providers, and sharing updates from each organization.
Major achievement: The Core CHT participated in a four-state CMS Innovation Grant called the Pediatric In Home Asthma Program. This program identifies pediatric patients with uncontrolled asthma and provides tailored asthma education to the family, including medication review and a home environmental assessment with modifications for reducing asthma triggers. Improvements have resulted in decreased ED utilization in this population.

SPRINGFIELD HEALTH SERVICE AREA

Project Manager – Trevor Hanbridge

At a Glance:

- 12,660 claims-attributed Vermont primary care patients served by Blueprint practices in the past two years
- 4.63 FTE Community Health Team Staff
- 1.5 FTE Spoke Staff
- 9 Community Self-Management Workshops offered
- 1 SASH Team; 116 Participants (Capacity = 100)
- 1275 CHT referrals
- 129 patients treated by MAT staff

MEDICAL HOME PRACTICES

OneCare Vermont and Community Health Accountable Care
Charlestown Family
Chester Family Practice
Ludlow Health Center
Rockingham Medical Group
Springfield Community Health Center

Highlights

UCC name: Springfield Unified Community Collaborative
Our UCC elected a leadership subcommittee responsible for the agendas and facilitation of meetings. This subcommittee will organize, present, and support the work of the UCC and meets between UCC meetings to track collaboration and action items from the UCC work. It includes leaders from the Council on Aging, Adult Day, Springfield medical staff leadership, the Designated Agency, and Valley Health Connections and Home Health.
Spotlight on QI Project: Integrated Communities Care Management Learning Collaborative QI Project
Formed as a subcommittee of our UCC, the Integrated Communities Care Management Learning Collaborative has outlined criteria for the population to study and develop interventions for as part of the collaborative. These criteria include adults with five (5) or more ED visits in a one-year period who have a mental health diagnosis and at least three (3) chronic medical conditions.
Major achievement: Through our HSA's Adverse Childhood Experience (ACE) group, known as *Aces-in-Action*, we are a statewide leader in support of the ACEs initiatives, services, and programming. We work and plan collaboratively with many local agencies, including the Designated Agency, DCF, the Parent Child Center, VDH, AHS leadership, the local school system, and Project Action. We coordinated and hosted several public forums on ACEs where a local panel of experts and providers presented on region-wide collaboration in support of early identification, prevention, and interventions for trauma-informed work and ACEs. We also expanded and sustained our *HealthTransit* transportation initiative with the award of a HRSA grant that provides education and direct transportation services for health and wellness.

ST. ALBANS HEALTH SERVICE AREA

Project Manager – Lesley Hendry

At a Glance:

- 22,658 claims-attributed Vermont primary care patients served by Blueprint practices in the past two years
- 8.95 FTE Community Health Team Staff
- 6.6 FTE Spoke Staff
- 10 Community Self-Management Workshops offered
- 2.5 SASH Teams; 183 Participants (Capacity = 250)
- 1753 CHT referrals
- 330 patients treated by MAT staff

MEDICAL HOME PRACTICES

OneCare Vermont
Cold Hollow Family Practice
Enosburg County Pediatrics
NMC – Northwestern Primary Care
Northwestern Georgia Health Center
Richford Health Center
St. Albans Primary Care
St. Albans Health Center
Swanton Health Center

HealthFirst
Max Bayard; MD; PC
Mousetrap Pediatrics – Enosburg
Mousetrap Pediatrics – St. Albans

Community Health Accountable Care
Alburg Health Center

Highlights

UCC name: St. Albans Regional Clinical Planning Committee
All ACO participating providers and affiliates meet once a month to plan for community-wide quality improvement projects, resource allocation, and governance planning for the next phases of payment and delivery reform. Providers are sharing quality improvements and new tools to improve population management. We use Basecamp to provide a platform for sharing processes and tools.

Spotlight on QI Project: Blueprint ACO Learning Collaborative
Our HSA is running a learning collaborative to improve ACO measures and implement population management. The five-session collaborative began May 15, 2015 and reports results to the UCC. Eleven (11) participating teams come from primary care, inpatient case management, home health, the mental health designated agency, and VDH. We are grouping the 42 Vermont ACO measures by type of measure and learning about the process for improving on each type of measure. To date, we have completed 3 of 5 sessions, and the teams have addressed the screening, prevention, and at-risk population measures. The fourth session to address utilization measures is scheduled for January 29, 2016.

Major achievement: Our Care Management and Coordination Workgroup reports directly to the St. Albans UCC. It includes 12 teams from a variety of practices and organizations that participate in bi-weekly meetings, as well as the statewide Integrated Communities Care Management Learning Collaborative.

ST. JOHNSBURY HEALTH SERVICE AREA

Project Manager – Laural Ruggles, MBA, MHA

At a Glance:

- 14,186 claims-attributed Vermont primary care patients served by Blueprint practices in the past two years
- 7.25 FTE Community Health Team Staff
- 9 Community Self-Management Workshops offered
- 2 SASH Teams; 146 Participants (Capacity = 200)
- 4301 CHT referrals
- 95 patients treated by MAT staff

MEDICAL HOME PRACTICES

OneCare Vermont
Corner Medical
Kingdom Internal Medicine
St. Johnsbury Pediatrics

Community Health Accountable Care
Concord Health Center
Danville Health Center
St. Johnsbury Family Health Center

Highlights

UCC name: The "A Team" (pictured above)
Leaders from NVRH and key community organizations have come together to create a common set of goals, share data on important health measures, and pool their talents and resources to improve health and the quality of life in our region. While each organization brings its own set of services and programs to the table, the leaders are committed to unifying, aligning, and focusing their strategic plans and visions to create a true accountable health community. We have chosen to focus on the health and social needs of people with COPD and vulnerable families and children.

Spotlight on QI Project: Pediatric Care Coordination
St. Johnsbury Pediatrics is leading an effort to improve pediatric care coordination for 25 identified patients and families. The project includes a welcome letter introducing care coordination, a shared care plan and patient summary, a monthly QI meeting with the care team, including two (2) family health partners, relationships with community resources and schools, and a partnership with a social worker specializing in children with special health care needs from VDH. The Family Experience Questionnaire assesses the family's experience of the care they are receiving, including a measure for if their provider's office created a shared care plan. To date, 6 shared care plans, 18 questionnaires, and 4 care conferences have been completed.

Major achievement: The A Team received a grant from the Laura and John Arnold Foundation to support Collaborating for Clients, a groundbreaking initiative brining nonprofit organizations together in an effort to reduce hunger and improve the lives of low-income families. This partnership will work to address food insecurity and help families find affordable housing, job training, steady employment, and health care services.

UPPER VALLEY HEALTH SERVICE AREA

Project Manager – Donna Ransmeier

At a Glance:

- 3,886 claims-attributed Vermont primary care patients served by Blueprint practices in the past two years
- 1.75 FTE Community Health Team Staff
- 4 Community Self-Management Workshops offered
- 1 SASH Team; 47 Participants (Capacity = 100)
- 1024 CHT referrals
- 15 patients treated by MAT staff

MEDICAL HOME PRACTICES

Newbury Health Clinic
Upper Valley Pediatrics

Community Health Accountable Care
Bradford
E. Corinth
Wells River

Highlights

UCC name: Upper Valley Health Service Area Unified Community Collaborative/Regional Clinical Performance Committee (UCC-RCPC)
The formation of a UCC was a natural progression for our Upper Valley Blueprint Advisory Committee. We decided to work on the measure "follow-up to mental health inpatient hospitalization within 7 days of discharge". Our medical and mental health providers, ACO representatives, housing and elderly assistance agencies, VDH, and our pediatric service providers are all equally invested in researching and developing an improvement plan for this metric. We believe that better communication between hospitals, mental health agencies, independent mental health providers, and primary care is necessary.

Spotlight on QI Project: Panel Management
Our goal has been to establish and maintain regular and consistent patient panel management in all of our medical homes. Patients monitored include those with diabetes who have an HgA1c over 8.0 and no visit for 3 months, hypertension patients (BP of 140/90 or higher) and no visit for 3 months, children due for well-child visits and adults due for yearly physicals, and pneumonia and influenza vaccination reminders. Due to these efforts, the number of patients with uncontrolled diabetes and no visits for 3 months dropped by 45% in 2015. Over 80 children received well-child exams for which they were overdue.

Major achievement: Our Regional Coordinator for self-management workshops revitalized the program, attracting participants through creative efforts, such as scheduling workshops at convenient times and places (Senior Centers and workplaces at lunch time) and offering small incentives, such as healthy snacks and walking shoes, which were donated from local merchants.

WINDSOR HEALTH SERVICE AREA

Project Manager – Jill Lord, RN

At a Glance:

- 9,630 claims-attributed Vermont primary care patients served by Blueprint practices in the past two years
- 7.35 FTE Community Health Team Staff
- 2.5 FTE Spoke Staff
- 13 Community Self-Management Workshops offered
- 1 SASH Team; 123 Participants (Capacity = 100)

MEDICAL HOME PRACTICES

OneCare Vermont
Mt. Ascutney Hospital Physician Practice
Ottauquechee Health Center

HealthFirst
White River Family Practice

Highlights

UCC name: Windsor HSA Coordinated Care Committee
A leadership team has been formed, made up of key representatives recommended by the Blueprint and the ACOs, and meets on a quarterly basis. Two (2) key priorities have been identified through data review and adopted, including ED readmissions and COPD readmissions, quality of life, and best practice approach.

Spotlight on QI Projects
Through our Adolescent Depression Screening project, White River Family practice has screened over 350 adolescents this year and referred appropriate patients to local counseling services, including an onsite Blueprint counselor from the Clara Martin Center. Some of our providers have expanded their practice by prescribing antidepressants when indicated while an adolescent awaits counseling. Through the SIM grant, we are following a panel of patients with the goal of decreasing ED and hospital admissions through close care management. For Well Child Visits for Adolescents, we send informative letters to families explaining the importance of these visits.

Major achievements: We organized regional community health team meetings to share information and build collaboration between the teams in proximity to our boundaries. Two (2) satellite, community-based clinics were established to assist individuals with completing their advance directives. Our medication assisted treatment (MAT) staff worked with the pediatricians of the Mt. Ascutney Hospital Physician Practice to plan services for addicted moms in recovery. We provide support groups for elderly residents to fight loneliness and isolation due to disability and poverty, and we started a new group for those with cognitive impairment.

APPENDIX A

POPULATION HEALTH MANAGEMENT
Volume 0, Number 0, 2015
Mary Ann Liebert, Inc.
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Original Article

Vermont's Community-Oriented All-Payer Medical Home Model Reduces Expenditures and Utilization While Delivering High-Quality Care

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Abstract

Patient-centered medical home programs using different design and implementation strategies are being tested across the United States, and the impact of these programs on outcomes for a general population remains unclear. Vermont has pursued a statewide all-payer program wherein medical home practices are supported with additional staffing from a locally organized shared resource, the community health team. Using a 6-year, sequential, cross-sectional methodology, this study reviewed annual cost, utilization, and quality outcomes for patients attributed to 123 practices participating in the program as of December 2013 versus a comparison population from each year attributed to nonparticipating practices. Populations are grouped based on their practices' stage of participation in a calendar year (Pre-Year, Implementation Year, Scoring Year, Post-Year 1, Post-Year 2). Annual risk-adjusted total expenditures per capita at Pre-Year for the participant group and comparison group were not significantly different. The difference-in-differences change from Pre-Year to Post-Year 2 indicated that the participant group's expenditures were reduced by −$482 relative to the comparison (95% CI, −$573 to −$391; $P < .001$). The lower costs were driven primarily by inpatient (−$218; $P < .001$) and outpatient hospital expenditures (−$154; $P < .001$), with associated changes in inpatient and outpatient hospital utilization. Medicaid participants also had a relative increase in expenditures for dental, social, and community-based support services ($57; $P < .001$). Participants maintained higher rates on 9 of 11 effective and preventive care measures. These results suggest that Vermont's community-oriented medical home model is associated with improved outcomes for a general population at lower expenditures and utilization. (*Population Health Management* 2015;xx:xxx–xxx)

Introduction

Increasing health care costs without corresponding improvements in care quality and population-level health outcomes have led many states to pursue a variety of health care reforms. Vermont has pursued a coordinated statewide approach to health, wellness, and disease prevention through a broad set of delivery system reforms. These involve the transition of primary care practices to National Committee for Quality Assurance (NCQA)-recognized patient-centered medical homes (PCMHs), augmentation of medical services with multidisciplinary staff from community health teams (CHTs), and coordinated funding support from both private and public payers.[1] The goals were better control over growth in medical expenditures, a reduction in unnecessary hospital care, and improved quality of care across the population. The program is designed to achieve these goals through: local leadership and organization; consistent statewide quality standards (ie, NCQA PCMH standards) and measurement of performance against those standards; close coordination between primary care, CHT staff, and community-based services; and an emphasis on prevention, improved control of established health problems, and healthier lifestyles.

Description of the Blueprint for Health program

Launched in 2003 as a Governor's initiative, the Blueprint for Health's (Blueprint) initial aim was to improve care

[1]Vermont Blueprint for Health, Department of Health Access, Williston, Vermont.
[2]Onpoint Health Data, Portland, Maine.

and control costs for citizens with chronic conditions. Legislation in 2007 codified and expanded the scope of Blueprint's mission.[2] Working with a broad set of stakeholders, the Blueprint team organized the health service model around local leadership, resources, and infrastructure. State grants were used to support local project management, practice facilitators, learning collaboratives, and patient self-management programs in each of Vermont's 14 service areas.[1]

In order to participate, a primary care practice had to undergo independent scoring by the Vermont Child Health Improvement Program (VCHIP) team based at the University of Vermont. Local facilitators and project managers in the service areas were available to help practices prepare for scoring and operation as a medical home. NCQA standards identify procedures and policies considered essential to high-quality care based on peer-reviewed evidence and expert opinion. They address access to care, medication and care management, continuity of care, and quality improvement initiatives.[3] Vermont practices have scored well regularly, even as the NCQA has increased the rigor of their standards with each update.[4]

When a practice committed to a scoring date, they were provided access to staffing from the CHT. These teams were comprised of diverse staff that could include nurse coordinators, social workers, counselors, dietitians, health educators, and others. The precise structure and operations of the teams were guided by input from workgroups in each community that included leadership from medical home practices, the local hospital, health centers, the public health district office, mental health providers, home health organizations, and other community stakeholders. In each area of the state, an administrative entity managed the local CHT, hired the project manager, and worked with practices to coordinate staffing and scheduling. The staffing provided by the CHT augmented the medical home practice team, driving better integration of medical and nonmedical services, and improving coordination with other community providers. Additionally, community-based self-management programs operated alongside PCMHs and CHTs to help patients address tobacco use, chronic pain, diabetes, and behavioral health. Learning collaboratives allowed service areas to learn from one another's successes, failures, and best practices.

Two payment reforms were implemented to support PCMH and CHT operations: (1) a capitated payment that goes directly to the practice based on their NCQA PCMH score, and (2) a capitated payment that goes to the administrative entity in each service area to operate the CHT. These payments, combined with Blueprint grants, have supported statewide expansion of the model. Details on program structure and operations have been reported previously.[1,5]

In 2008, two communities established Blueprint pilot programs with Vermont's major commercial insurers and Medicaid participating in the payment reforms. In 2010, with Medicare preparing to join as part of the US Centers for Medicare & Medicaid Services' (CMS's) Multi-Payer Advanced Primary Care Practice (MAPCP) demonstration, the Vermont legislature passed a subsequent statute calling for statewide expansion of the Blueprint model.[6] Subsequently, the number of participating practices increased dramatically—from 18 in December 2010 to 123 by December 2013. This phase marked an intensive period of continuous practice- and community-level changes in Vermont, with practices undergoing 6 to 12 months of preparation to score as a medical home accompanied by parallel expansion of CHT operations.

Investment in the Blueprint initiative consisted of the Blueprint annual budget, which included community grants, personnel costs, and program administrative costs. Multi-payer investments included annual per person payments made to PCMHs and CHTs by Medicaid, Medicare, and the 3 major commercial insurers. The Blueprint annual budget remained relatively stable between 2008 and 2013, increasing from $4.8 million to $4.9 million (unpublished data, Department of Vermont Health Access Business Office, 2013).[7,8] The average annual payment made by payers to PCMHs and CHTs over the same period were $23.22 and $32.58 per person, respectively, for a combined total of $55.80 (unpublished data, administrative reports to Vermont Blueprint for Health, 2008–2013), which is very close to the total $54.74 per person payment in 2013. The average number of persons attributed to Blueprint practices in 2013 was 268,892, bringing the total annualized payments in the last year of this study period to $14.7 million.

The purpose of this study, which builds on previous assessments,[9] is to analyze the Blueprint program's impact on population-level outcomes as practices opt to transition to NCQA-recognized PCMHs, CHTs bridge the divide between medical and nonmedical services, and both participate in locally organized health reform. In this context, Vermont serves as a statewide laboratory to examine whether these health reforms improve quality of care and slow the growth of health care costs through a reduction in unnecessary utilization.

Methods

Using a sequential cross-sectional design, this study reviewed annual outcomes from 2008 through 2013 for participants versus a comparison population at each stage of program implementation and maturation. Methods were designed to evaluate whether outcomes diverged between participant and comparison populations as practices steadily joined the program, implemented transformative processes, and matured their operations. This approach is similar to that employed by CMS in its MAPCP demonstration.[10]

Data sources

Vermont's all-payer claims database, the Vermont Health Care Uniform Reporting and Evaluation System (VHCURES), served as the primary data source for this study. A more detailed description of the database has been published previously.[9] Measures were constructed from commercial, Medicaid, and Medicare claims from 2008 to 2013. A roster of Blueprint practices was used to identify provider-to-practice affiliations and thereby established which patients were attributed to Blueprint practices based on claims.

Study population

This study combined members from the following populations: commercial, ages 1–64 years; full Medicaid, ages

1–64 years; and Medicare, ages 1 year and older. Members younger than 1 year of age were excluded because of the frequent difficulty of separating maternal and perinatal claims. The full Medicaid category included people for whom Medicaid was the primary payer and excluded dually eligible Medicare members. The Medicare population focused on Medicare fee-for-service beneficiaries with both Medicare parts A and B and those dually eligible for Medicare and Medicaid. To be eligible for inclusion, members were required to have had at least 1 primary care visit in the preceding 24-month period as of December 31 of each calendar year. Evaluation and Management codes were used to determine the practice at which each member received the plurality of their primary care. Blueprint participants included Vermont residents who received the plurality of their primary care at any of the 123 practices that began operating as PCMHs on or before December 31, 2013. The comparison group included Vermont residents who received the plurality of their primary care at practices not operating as PCMHs on or before December 31, 2013. The process flow is documented in Figure 1.

The participant population was grouped according to the stage of participation that their practice reached in each calendar year, providing an opportunity to evaluate program impact on population outcomes at each stage of a complex multiyear change process. These stages included: Pre-Year (the year prior to starting work with the program), Implementation Year (the year that the practice started to prepare for NCQA scoring and receive CHT staffing 6 months prior to scoring), NCQA Scoring Year (the year that the practice was independently scored against NCQA standards), Post-Year 1 (the first year after NCQA scoring), and Post-Year 2 (the second year after NCQA scoring). For example, if a practice started in December 2011, then 2009 was their Pre-Year, 2010 their Implementation Year, 2011 their Scoring Year, 2012 their Post-Year 1, and 2013 their

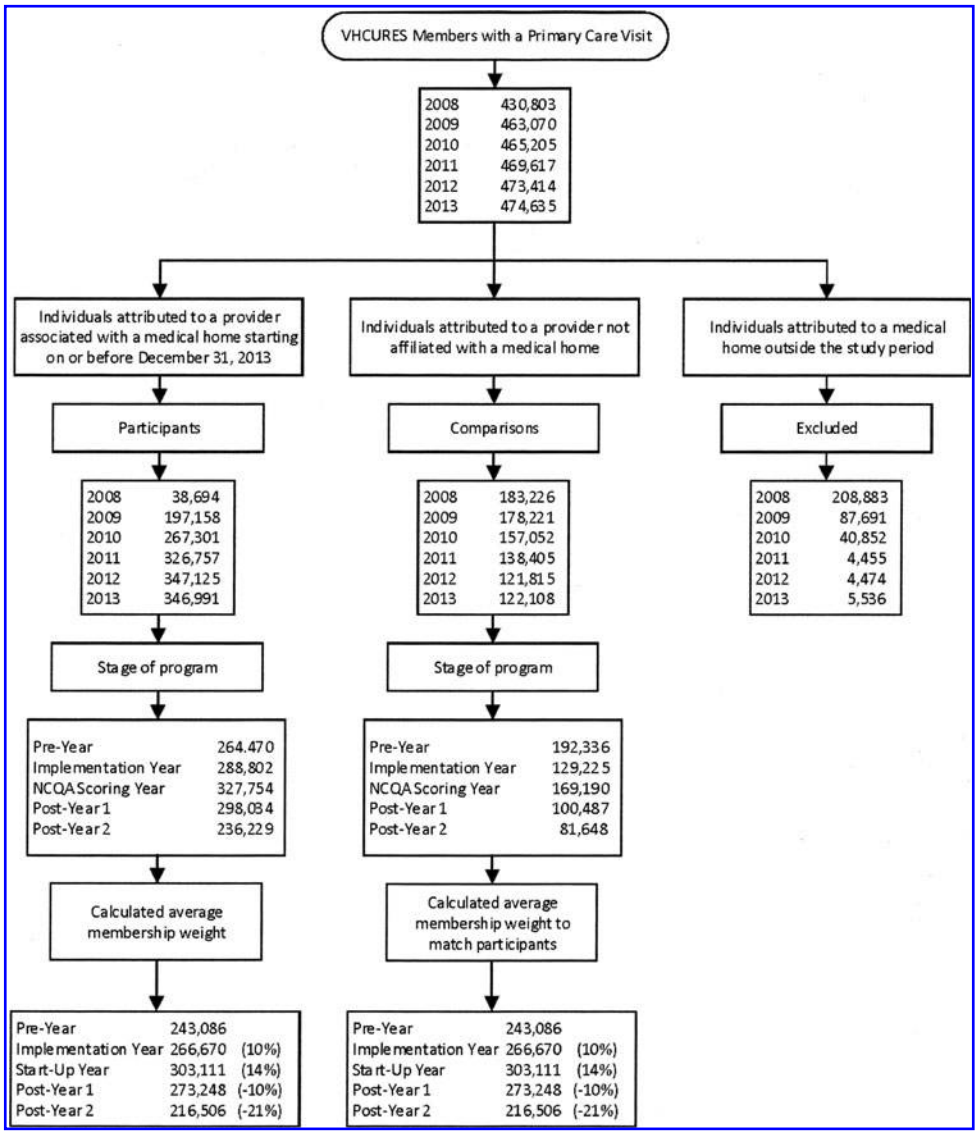

FIG. 1. Selection of study populations. Protocol for selecting sample population for patients receiving the plurality of their care from either Blueprint for Health or comparison practices through the all-payers claims database Vermont Health Care Uniform Reporting and Evaluation System (VHCURES). NCQA, National Committee for Quality Assurance

Post-Year 2. The comparison population from each calendar year is comprised of people who received the majority of their primary care at sites that had not joined the program (no direct exposure) by December 2013. The comparison group was randomly assigned and weighted to the same groupings to match the proportion of participants from each calendar year. This approach was used to ensure that overarching environmental influences impacted both groups similarly. Members attributed to medical homes outside of the study period were excluded.

Outcome measures

Claims-based measures included expenditures, utilization, Resource Use Index (RUI), and quality in terms of rates of preventive care. Expenditures were defined as the allowed amount from Vermont's claims data, calculated by summing the plan paid and member out-of-pocket payments. Utilization measures included total inpatient discharges and days; outpatient emergency department (ED) visits; potentially avoidable ED visits; standard imaging; colonoscopy; echography; advanced imaging; and primary care, medical specialist, and surgical specialist visits. RUI, an application of HealthPartners' Total Care Relative Resource Values (TCRRVs),[11] measures total utilization across all major components of care and has been tested and applied previously to Vermont claims data.[12] In accordance with the National Quality Forum-endorsed methodology, TCRRVs were converted to an RUI to allow relative comparisons. The RUI is a ratio of either study group's TCRRV to the statewide average TCRRV by relative year. In contrast to simple utilization rates, TCRRVs enable case-mix adjustment.

To provide insight into quality, the following NCQA Healthcare Effectiveness Data and Information Set measures were generated: breast cancer screening; cervical cancer screening; use of imaging studies for low back pain; comprehensive diabetes care (ie, hemoglobin A1c (HbA1c) testing, eye exam, nephropathy screening, and low-density lipoprotein cholesterol (LDL-C) screening); well-child visits in the third, fourth, fifth, and sixth years of life; adolescent well-care visits; appropriate testing for children with pharyngitis; and appropriate treatment for children with upper respiratory tract infection.[3]

This study treated Special Medicaid Services (SMSs) targeted at meeting social, economic, and rehabilitative needs (eg, transportation, home and community-based services, case management, dental, residential treatment, day treatment, mental health facilities, school-based services) as nonmedical services. Because these services are only covered by Medicaid, total expenditures and RUI were calculated without these services. This separation allowed an evaluation of more commonly supported health care services across all insurers, and therefore an evaluation of outcomes for the whole population.

Analytic approach

This study used a difference-in-differences (DID) method to evaluate the relative changes between the participants and the comparison groups over the successive stages of PCMH recognition and maturation. Participants and controls in the Pre-Year served as baseline measurements.

To account for differences between participant and comparison groups, rates were adjusted for demographics (eg, age, sex), health status (3M Clinical Risk Groups), select chronic conditions as identified by the Blueprint program (asthma, attention deficit disorder, chronic obstructive pulmonary disorder, congestive heart failure, coronary heart disease, depression, diabetes, and hypertension), maternity, Medicare and Medicaid coverage, and length of enrollment. Medicare-specific adjustors included disability, end-stage renal disease, and death. Adjusted values were produced at the person level and summarized by relative year and study group.

Evaluation of measures involved capping results at the 99th percentile by major insurer to minimize the influence of outlier cases. Expenditure measures were adjusted for inflation based on US Federal Reserve economic data. To account for partial enrollment, measures were adjusted for member months during a calendar year. SAS version 9.3 (SAS Institute Inc., Cary, NC) was used for all analyses.

Results

Study Population

Participant and comparison group demographics, health status, and payer differences are provided in Table 1 for Pre-Year and Post-Year 2. At Pre-Year, the participant group was more likely to be enrolled in Medicaid, less likely to be enrolled in Medicare, and more likely to have selected chronic conditions. These differences continued into Post-Year 2.

Expenditures

Expenditure results are provided in Table 2 and Figure 2. Annual risk-adjusted total medical expenditures per capita (Fig. 2A), in US dollars, at Pre-Year for the participant group and comparison group were not significantly different ($P = 0.100$). By Post-Year 2, the participant group was significantly lower than the comparison group ($P < .001$). The DID change from Pre-Year to Post-Year 2 indicated that the participant group reduced expenditures relative to the comparison group (–$482.4; 95% CI, –$573.4 to –$391.4; $P < .001$). This reduction was driven largely by inpatient expenditures (–$217.8; 95% CI, –$280.6 to –$155.0; $P < .001$) and outpatient (hospital) expenditures (–$154.1; 95% CI, –$183.8 to –$124.5; $P < .001$), accounting for 45% and 32% of the total reduction, respectively. Relative to the comparison group, the DID reduction in professional ($P < .001$) and pharmacy ($P < .001$) had less impact on the overall change. In conjunction with lower expenditures on traditional health care, participants insured through Medicaid showed a relative increase in expenditures for SMS ($P < .001$; Fig. 2B).

Utilization

Results for standard measures of utilization supported expenditure findings (Table 2). Relative to the comparison group, inpatient discharges and days were reduced by 8.8 per 1000 members ($P < .001$) and by 49.6 per 1000 members ($P < .001$), respectively. These utilization trends over program maturation are shown in Figure 3. Use of common

TABLE 1. DEMOGRAPHICS AND HEALTH STATUS FOR PARTICIPANT AND COMPARISON STUDY GROUPS

	Commercial, Medicaid, and Medicare, Ages 1 Year and Older							
	Pre-Year				*Post-Year 2*			
Measure	*Part.*	*Comp.*	*Diff.*	P	*Part.*	*Comp.*	*Diff.*	P
% Male	46.0%	46.2%	−0.3% (−0.6%, 0.0%)	0.05	46.0%	46.5%	−0.5% (−0.8%, −0.2%)	<.001
% Healthy CRG	48.7%	48.6%	0.1% (−0.2%, 0.4%)	0.39	44.2%	48.3%	−4.1% (−3.8%, −4.3%)	<.001
% Maternity	1.6%	1.6%	0.0% (−0.0%, 0.1%)	0.36	1.7%	1.6%	0.0% (−0.1%, 0.1%)	0.49
% Blueprint Selected Chronic Conditions	23.5%	20.5%	3.0% (2.8%, 3.2%)	<.001	26.5%	19.5%	7.0% (6.8%, 7.3%)	<.001
% Medicaid	22.2%	15.6%	6.6% (6.4%, 6.9%)	<.001	22.5%	17.4%	5.1% (4.9%, 5.4%)	<.001
% Medicare	18.0%	21.0%	−3.0% (−3.2%, −2.8%)	<.001	23.1%	25.1%	−2.0% (−2.3%, −1.8%)	<.001
% Disabled (Medicare Only)	24.3%	23.2%	1.1% (0.5%, 1.6%)	<.001	26.0%	24.4%	1.5% (1.0%, 2.1%)	<.001
% ESRD (Medicare Only)	0.35%	0.38%	−0.04% (−0.11%, 0.04%)	0.38	0.35%	0.32%	0.03% (−0.04%, 0.10%)	0.42
% Died During Year (Medicare Only)	2.1%	3.0%	−0.9% (−1.1%, −0.7%)	<.001	2.13%	2.94%	−0.8% (−1.0%, −0.62%)	<.001
Average Age, y	38.9	41.8	−2.9 (−3.0,− 2.7)	<.001	43.4	43.0	0.4 (0.0, 0.8)	<.001

In the Pre-Year, N for the participant group was 264,470 and the unweighted membership for the comparison group was 192,336. For Post-Year 2, the N for the participant group was 236,229 and the unweighted membership for the comparison group was 81,648. The comparison group membership was then weighted for a matched comparison with the participant group.
CRG, Clinical Risk Group; Comp, comparison group; Diff, difference; ESRD, end-stage renal disease; Part, Blueprint for Health participant group.

outpatient hospital facility services (eg, standard imaging, advanced imaging, echography) also declined significantly in the participant group relative to the comparison group. The DID in outpatient ED visits increased in the participant group relative to the comparison group but was not statistically significant ($P = 0.207$).

Relative to comparisons, the RUI also demonstrated a significant reduction in inpatient ($P < .001$) and outpatient hospital ($P < .001$) utilization for participants.

Quality: preventive and effective care measures

Coinciding with lower expenditures and utilization, the participant group maintained higher rates on 9 of 11 effective and preventive care measures through Post-Year 2 (Table 2). In Post-Year 2, participants had significantly higher rates of adolescent well-care visits ($P < .001$), breast cancer screening ($P < .001$), cervical cancer screening ($P < .001$), and appropriate testing (as defined by NCQA measure)[13] for pharyngitis ($P < .001$). Rates for imaging for low back pain, treatment of upper respiratory infection, and well-child visits for children were not significantly different. Participants with diabetes had higher rates of eye exams ($P < .001$), HbA1c testing ($P < .001$), LDL-C testing ($P < .001$), and nephropathy screening ($P < .001$). Only 2 measures—diabetes LDL-C and eye exam—were significant in DID.

Discussion

This study demonstrates favorable expenditure, utilization, and quality outcomes for the whole population, ages 1 year and older, who received the majority of their primary care in the medical home and CHT setting compared to a similar population receiving primary care from nonparticipating providers. The difference in medical expenditures was driven by several factors, including lower hospitalization rates and outpatient facility use.

Results for expenditures and utilization generally began to diverge as practices prepared for medical home scoring and began working with CHT staff, with further divergence occurring as program operations matured. The findings in this 6-year general population study highlight the importance of providing sufficient time for complex delivery system reforms to mature. They reinforce results from the Gesinger Health System's 7.5-year medical home initiative, where time of exposure to the program was associated with favorable outcomes for Medicare beneficiaries, such as reductions in hospital-based care.[14]

Although overall decreases in medical expenditures are promising, they also must be reviewed in the context of programmatic and payment investments. As indicated in the introduction, the total annualized investment in the final year of the study period was $4.9 million (unpublished data, Department of Vermont Health Access Business Office, 2013) in programmatic costs and $14.7 million in payments (unpublished data, administrative reports to Vermont Blueprint for Health, 2013) for a total of $17.9 million. This study found that the relative annualized per person decrease in medical expenditures for Post-Year 2 was $482.4 based on the DID analysis (Table 2). When applied to the 216,505 persons attributed to Post-Year 2 practices (Figure 1), the total annual reduction in expenditures is $104.4 million.

Table 2. Expenditure, Utilization, and Quality Outcomes of the Blueprint for Health

	Pre-Year				*Post-Year 2*				*DID*	
	Part.	*Comp.*	*Diff.*	P	*Part.*	*Comp.*	*Diff.*	P	*Diff.*[a]	P
Annual Expenditures per Capita										
Total Expenditures	$5659	$5704	−$44.5	0.100	$6331	$6858	−$526.9[b]	<.001	−$482.4 (−$573.4, −$391.4)	<.001
Total Expenditures Excluding SMS	$5238	$5264	−$26.3	0.297	$5923	$6464	−$541.5[b]	<.001	−$515.2 (−$600.9, −$429.4)	<.001
Inpatient Expenditures	$1112	$1061	$51.6[b]	0.005	$1330	$1496	−$166.2[b]	<.001	−$217.8 (−$280.6, −$155.0)	<.001
Outpatient Total Expenditures	$1502	$1496	$6.5	0.451	$1745	$1893	−$147.6[b]	<.001	−$154.1 (−$183.8, −$124.5)	<.001
Outpatient ED Expenditures	$192	$186	$5.9[b]	0.002	$242	$238	$4.0	0.190	−$1.9 (−$8.4, $4.6)	0.560
Professional Total Expenditures	$1295	$1327	−$32.0[b]	<.001	$1296	$1366	−$70.4[b]	<.001	−$38.4 (−$52.9, −$23.9)	<.001
Pharmacy Expenditures	$853	$884	−$31.2[b]	<.001	$925	$994	−$69.6[b]	<.001	−$38.4 (−$56.7, −$20.1)	<.001
Other Total Expenditures	$517	$512	$4.4	0.589	$619	$691	−$71.6[b]	<.001	−$76.0 (−$102.7, −$49.3)	<.001
Special Medicaid Services Total	$413	$416	−$2.6	0.788	$415	$361	$53.9[b]	<.001	$56.5 ($26.8, $86.2)	<.001
Annual Utilization per 1,000 Members[c]										
Inpatient Discharges	87.3	87.0	0.3	0.813	96.2	104.8	−8.6[b]	<.001	−8.8 (−12.4, −5.2)	<.001
Inpatient Days	390.9	394.7	−3.8	0.621	465.6	518.9	−53.4[b]	<.001	−49.6 (−75.7, −23.4)	<.001
Outpatient ED Visits	355.6	365.0	−9.4[b]	<.001	382.1	386.3	−4.2	0.223	5.2 (−2.9, 13.2)	0.207
Potentially Avoidable ED Visits	63.9	66.2	−2.3[b]	0.033	65.6	66.1	−0.5	0.202	3.4 (0.6, 6.1)	0.017
Primary Care Visits	3,775.8	3,801.5	−25.7[b]	0.013	3,683.9	3,737.5	−53.6[b]	<.001	−27.9 (−60.4, 4.7)	0.094
Medical Specialist Visits	817.7	861.1	−43.4[b]	<.001	853.3	910.0	−56.7[b]	<.001	−13.3 (−31.4, 4.8)	0.150
Surgical Specialist Visits	1,066.1	1,101.2	−35.1[b]	<.001	1041.5	1,099.3	−57.8[b]	<.001	−22.8 (−39.1, −6.4)	0.006
Standard Imaging	852.5	886.2	−33.7[b]	<.001	863.4	940.0	−76.6[b]	<.001	−42.8 (−55.2, −30.5)	<.001
Advanced Imaging	223.8	231.6	−7.8[b]	<.001	238.5	261.0	−22.5[b]	<.001	−14.7 (−20.4, −8.9)	<.001
Echography	265.1	274.2	−9.0[b]	<.001	287.5	314.9	−27.4[b]	<.001	−18.4 (−24.8, −12)	<.001
Colonoscopy	45.3	45.9	−0.6	0.269	46.8	47.1	−0.3	0.690	0.3 (−1.5, 2.2)	0.716
Resource Use Index (RUI)										
Total RUI	0.985	1.010	−0.025[b]	<.001	0.960	1.040	−0.080[b]	<.001	−0.055 (−0.058, −0.052)	<.001
Inpatient RUI	1.003	0.997	0.005	0.747	0.943	1.057	−0.115[b]	<.001	−0.120 (−0.136, −0.104)	<.001
Outpatient Facility RUI	0.990	1.010	−0.020[b]	<.001	0.958	1.043	−0.085[b]	<.001	−0.065 (−0.078, −0.052)	<.001
Professional RUI	0.979	1.021	−0.043[b]	<.001	0.970	1.030	−0.060[b]	0.006	−0.017 (−0.022, −0.012)	0.001
Pharmacy RUI	0.975	1.025	−0.050[b]	<.001	0.990	1.010	−0.020[b]	<.001	0.030 (0.027, 0.033)	0.003
Quality: Preventive and Effective Care (%)										
Adolescent Well-Care Visits	48.9%	43.2%	5.7%[b]	<.001	48.2%	43.2%	5.0%[b]	<.001	−0.7% (−3.6%, 2.2%)	0.647
Breast Cancer Screening	78.2%	77.0%	1.2%[b]	0.003	76.5%	74.6%	1.9%[b]	<.001	0.7% (−1.9%, 3.3%)	0.583
Cervical Cancer Screening	62.0%	60.8%	1.2%[b]	<.001	68.0%	65.3%	2.7%[b]	<.001	1.5% (−0.5%, 3.6%)	0.144
Children with Pharyngitis	82.8%	81.8%	1.0%	0.106	87.1%	80.8%	6.3%[b]	<.001	5.3% (−1.4%, 11.9%)	0.123
Diabetes – Eye Exam	48.6%	49.7%	−1.1	0.096	48.1%	44.9%	3.2%[b]	<.001	4.3% (0.0%, 8.5%)	<.001
Diabetes – HbA1c	83.1%	80.5%	2.6[b]	<.001	90.6%	87.1%	3.5%[b]	<.001	0.8% (−3.5%, 5.1%)	0.710
Diabetes – LDL-C	70.4%	69.5%	0.9%	0.113	76.9%	71.3%	5.6%[b]	<.001	4.7% (0.4%, 9.0%)	0.030
Diabetes - Nephropathy	74.0%	70.4%	3.6[b]	<.001	79.6%	72.8%	6.8%[b]	<.001	3.3% (−1.0%, 7.5%)	0.136
Low Back Pain	83.8%	82.6%	1.2%	0.058	83.8%	84.1%	−0.3%	0.747	−1.5% |(−7.5%, 4.5%)	0.624
Upper Respiratory Tract Infection	92.4%	87.6%	4.8%[b]	<.001	90.4%	90.2%	0.2%	0.825	−4.6% (−11.6%, 2.5%)	0.205
Well-Child Visits	74.4%	72.7%	1.7%[c]	0.004	75.4%	74.1%	1.3%	0.147	−0.3% (−5.1%, 4.5%)	0.900

[a]Differential change between participants and comparisons Post-Year 2 to Pre-Year.
[b]Differences significant to greater than 95%.
[c]Number of events per 1000 members.

In the Pre-Year, N for the participant group was 264,470 and the unweighted membership for the comparison group was 192,336. For Post-Year 2, the N for the participant group was 236,229 and the unweighted membership for the comparison group was 81,648. The comparison group membership was then weighted for a matched comparison with the participant group.

Comp, comparison group; Diff, difference; DID, difference in differences; ED, emergency department; LDL-C, low-density lipoprotein cholesterol; Part, Blueprint for Health participant group; SMS, special Medicaid services.

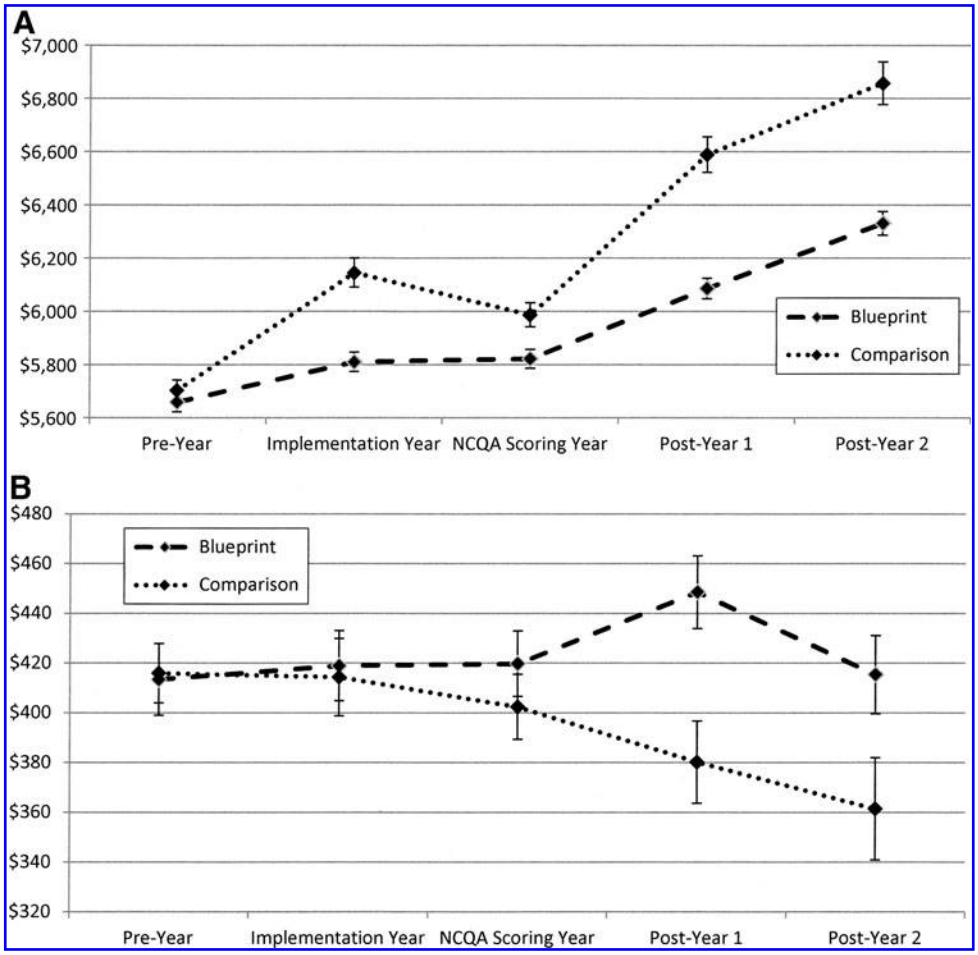

FIG. 2. Expenditures per capita, all insurers, members ages 1 year and older. **(A)** Total medical expenditures per patient receiving the plurality of care in either Blueprint for Health or comparison practices over programmatic stages and maturation (excludes social support service expenditures shown in Fig. 2B. **(B)** Total Special Medicaid Services expenditures per patient receiving the plurality of care in either Blueprint for Health or comparison practices over programmatic stages and maturation. NCQA, National Committee for Quality Assurance

Based on an annualized cost-gain ratio, medical expenditures decreased by approximately $5.8 million for every $1 million spent on the Blueprint initiative.

The findings from Vermont also suggest that the Blueprint model helped Medicaid beneficiaries connect with services targeting unmet economic and social needs. Based on research showing that increases in social service expenditures can reduce medical spending,[15,16] this analysis put SMS into its own expenditure category with the purpose of identifying how the Blueprint program is affecting the ratio of social and medical expenditures.

Although these results show some promising outcomes, they also point to opportunities for improvement and the need for additional analyses that would support communities' efforts to improve services. For example, rates of outpatient ED visits remained similar in both groups. A better understanding of how populations are using the ED may help PCMHs and CHTs in each service area plan better access and outreach strategies.

The Blueprint program involves a complex health services environment that is continually evolving; therefore, outcomes cannot be attributed to only 1 component of the model, such as primary care practices becoming recognized as a PCMH or the community outreach by the CHTs. More likely, the results reflect an array of structural, programmatic, and cultural changes occurring as PCMH and CHT operations matured and interactions strengthened within an extended network of community providers.

Much time and many resources were invested in the development, rollout, and maturation of the Blueprint program. Because of the time needed to accomplish many of the elements involved in effecting change, preparing for scoring as a medical home, and incorporating CHT staff into the practice workflow, a 12-month implementation cycle for each practice was common. This time frame was needed even with support through insurer payments and the investment of Vermont government in leadership and administrative support, practice facilitators, technology, and self-management programs through grants to each service area. The results reported in this study occurred in association with this investment in the change process, a vital component for sustained primary care improvement.[17]

The steadily diverging outcomes between participant and comparison populations reinforce the importance of allowing sufficient time and observation to adequately evaluate this type of reform.[14,18] Despite the complexity involved,

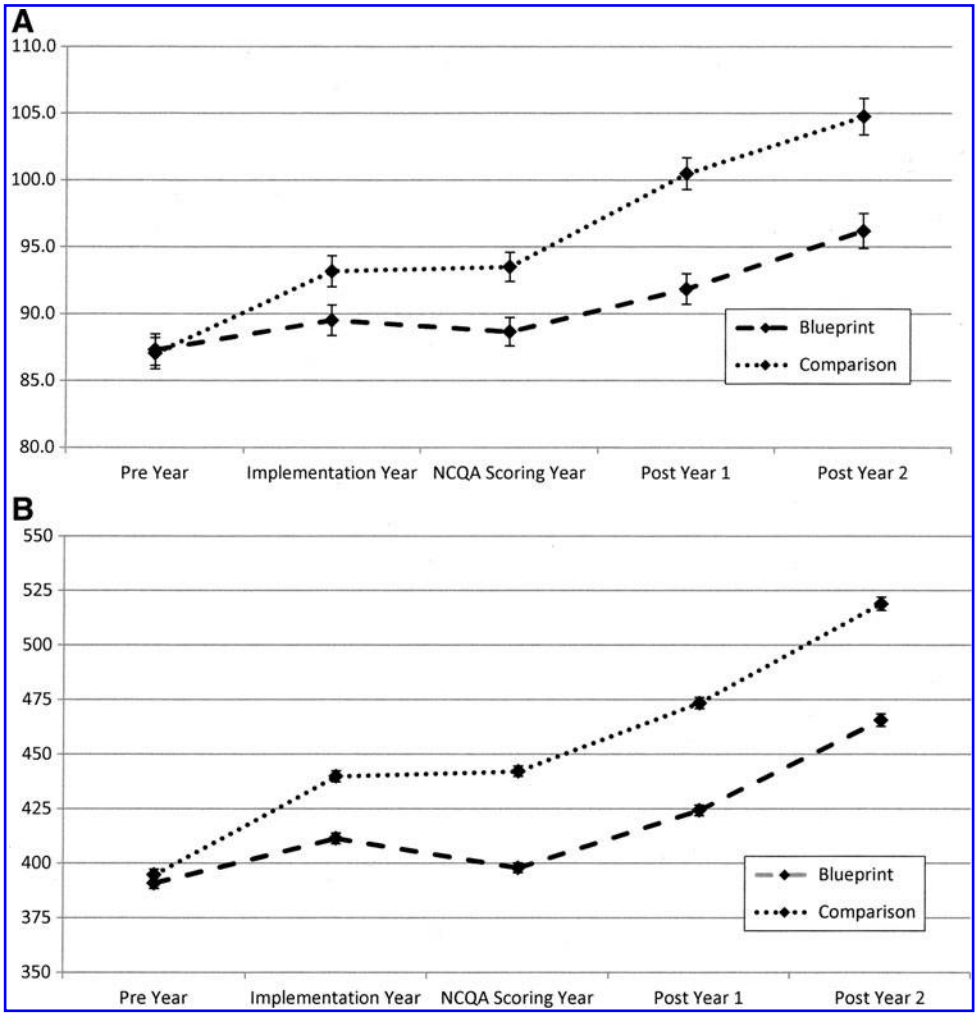

FIG. 3. Inpatient utilization levels, 2008–2013, all insurers, ages 1 year and older. **(A)** Number of inpatient discharges per 1000 patients receiving the plurality of care in either Blueprint for Health (Blueprint) or comparison practices over programmatic stages and maturation. **(B)** The number of inpatient days per 1000 patients receiving the plurality of care in either Blueprint for Health (Blueprint) or comparison practices over programmatic stages and maturation. NCQA, National Committee for Quality Assurance

insurer investments in PCMHs and CHT staff were more than offset by a reduction in per capita expenditures. During the study period, PCMH payments averaged slightly more than $2.00 per member per month (PMPM) and CHT payments averaged $1.50 PMPM for the Blueprint program. For a medical home initiative, these investments rates ($3.50 to $4.00 PMPM) were low and did not include the additional transformation support provided through community grants. Nevertheless, the results provide a strong rationale to continue supporting PCMHs, CHTs, the transformation infrastructure, and a multimodal evaluation in order to determine whether favorable results persist, whether results equate to improvements in the health of the population, and whether comparative evaluation can identify the elements most important for an effective delivery system.

Limitations

The results of this study are encouraging, yet factors beyond medical homes and CHTs may influence the findings. However, although potential factors beyond participation in the Blueprint program may have accounted for the favorable outcomes, they are unlikely to be a dominant factor given that results for the participant and comparison groups were similar during the Pre-Year, and the difference only emerged as the program expanded and matured. Furthermore, early results from CMS's MAPCP demonstration indicate substantial slowing in the growth of Medicare expenditures for beneficiaries attributed to Vermont Blueprint practices compared to beneficiaries attributed to PCMH and non-PCMH practices in the neighboring states of New Hampshire and Massachusetts.[10] One factor that may have contributed to differences between participants and comparisons is inherent differences in the members attributed to each group. However, these differences would have been minimized by the adjustments for disparities in demographics, health status, and maternity. Another factor could have been a selection bias in the form of a specific type of patient choosing a PCMH over a traditional practice and the motivations behind that choice (ie, were healthier or sicker

patients more likely to choose PCMHs). Unfortunately, identifying the motivations behind a patient's choice of a practice or provider over another was beyond the scope of this study. Further studies into patients' awareness of the PCMH model and the incentives for switching to, switching from, and remaining in a PCMH would address this issue as well as assess individual engagement in health decisions.

This study could be strengthened if the same members could be tracked as cohorts across years; however, Vermont's VHCURES currently contains only de-identified member information, limiting this option. Despite these limitations, it is important to note that the demographic and health characteristics did not change substantially in each cross-sectional sampling of the participant and comparison groups, and that the results remained comparable because of both risk adjustment and comparison assignment to balance the influence of calendar year. Lastly, external factors, such as the overall economy and insurance benefit design, may have influenced the reported outcomes.[19] However, because both study groups were comprised of Vermont residents with similar insurance coverage and exposed to the same overall economic influences, it is unlikely that these factors led to diverging outcomes.

Conclusion

Advanced primary care initiatives are under way across the United States.[20] Although payment structures, care support models, and implementation strategies vary, 4 essential undertakings have been identified across 17 multi-payer initiatives including: convening stakeholders, establishing provider participation criteria, determining payment, and measuring performance.[21] Implementation in Vermont required addressing these 4 components programmatically, and then balancing programmatic design with local innovation through direct investments in community-based teams, local leadership, and a locally organized transformation and self-management infrastructure. This approach has been designed to stimulate reforms aimed at improving overall population health through enhanced access and coordination of medical and nonmedical services in communities independent of an individual's socioeconomic status or insurance benefits.[17,22,23] This approach may amplify the effectiveness of Vermont's PCMH model, and direct comparison to other initiatives is required to determine whether a more complex, community-oriented approach adds value to a more selective focus on the practice setting.

A number of initiatives implementing the PCMH model across the country also have reported early favorable trends, especially for people with complex chronic conditions.[24–30] However, different study designs, small sample sizes, payer-specific reports, variable measures, and short study periods limit the ability to compare programs and definitively identify successful strategies. These circumstances highlight the need for a coordinated evaluation of PCMH programs using consistent measures and methods to identify design principles and strategies that contribute to a high-quality, high-value health system.[31,32]

Author Disclosure Statement

Drs. Jones and Mohlman, and Mr. Finison, Ms. McGraves-Lloyd, Mr. Tremblay, Ms. Tanzman, Ms. Hazard, Mr. Maier, and Ms. Samuelson declared no conflicts of interest with respect to the research, authorship, and/or publication of this article.

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APPENDIX B: PAYMENT METHODOLOGY

Quality Performance-Based Payment

The quality performance-based payment will be based on hospital service area (HSA) outcomes for the following measures:

1. Adolescent Well-Care Visits
2. Developmental Screening in the First Three Years of Life
3. Diabetes in poor control (i.e. Hemoglobin A1c >9%)
4. Rate of Hospitalization for Ambulatory Care Sensitive Conditions: PQI Chronic Composite (which includes the admission rate per 1000 for diabetes with short-term complications, diabetes with long-term complications, uncontrolled diabetes without complications, diabetes with lower-extremity amputation, chronic obstructive pulmonary disease, asthma, hypertension, heart failure, or angina without a cardiac procedure)

A total of three points for HSA outcomes will be available for each measure summing up to 12 points across all four measures. Points for each measure will be awarded for an HSA achieving an average (or rate per 1000 for the Chronic Composite measure) result at or above thresholds in the current measurement period and for improvement from the previous measurement period to the current measurement period. Measurement periods occur every six months and include results from attributed patients in the 12 month look-back.

There are two thresholds: the minimum threshold, which is the statewide average or rate, and the high achiever, which is the 90th percentile of Vermont HSA results or national results, whichever is higher. An HSA will get one point for being at or above the state average and will get 3 points for qualifying for as a high achiever. If the HSA is not in the High Achiever level, it is eligible for improvement points. Improvement points are described in Table a.

Table A: Improvement Scores

If not High Achiever, the following change scores apply	Points
Worsening of percent or index score	0 points
Maintaining (or not achieving minimum improvement)	1 point
Improving at or above the minimum improvement	2 points

The minimum improvement is a percent difference of 5%, meaning that if one HSA's average increases from 50% to 55% and another from 5% to 10%, both HSAs have an increase of 5%. Of note, an improvement for Adolescent Well-Care Visits and Developmental Screening is an increase by 5%. An improvement for Diabetes, Poor Control is a decrease of 5%. Also of note, since the PQI Chronic Composite is a rate per 1000, the minimum improvement is a decrease in the HSA rate by 1.5 per 1000.

The score for each measure is calculated by adding the threshold score to the improvement score, unless the HSA is in the high achiever level. In that case, the HSA gets the maximum score of 3. The points for each measure are summed for a Quality Measure Score. The combined score is associated

with one of three payment levels up to the full $0.25 available for the Quality Performance-Based Payments. Table b shows the payment levels for which scores are eligible.

Table B: Quality Score and Payment Eligibility

Score	Payment
≥3 points	$0.07
≥6 points	$0.13
≥9 points	$0.25

Utilization Performance-Based Payment

The utilization performance-based payment is based on practice-level Resource Use Index (RUI) score. This measure is based on software developed by HealthPartners as part of their Total Cost of Care (TCOC) measurement system, which has been endorsed by the National Quality Forum (NQF). This methodology applies nationally accepted weighting methods such as Medicare Severity Diagnosis Related Groups (MS-DRGs) for inpatient services, Current Procedural Terminology codes (CPTs) and associated Ambulatory Payment Classifications (APCs) for outpatient facility services, and CPTs and associated Resource-Based Relative Value Scale (RBRVS) relative weights for professional services) to measure the relative intensity of services.

Each patient-centered medical home (PCMH) in the Blueprint program receives an RUI score relative to the state average, which is indexed at 1. The lower the RUI score the better a practice ranks for their attributed adult members and pediatric members. Both the practice RUI scores for the adult populations and pediatric populations were divided into quartiles. Q1 is the mid-way score between the first quartile, the one with the highest scores and the second quartile. Q2 is the median score demarking the second and third quartiles. Q3 is the mid-way score between the third quartile and the fourth, the quartile is the lowest scores. The three quartiles with the lowest scores are eligible for three payment levels, as shown in Table C.

Table C: RUI Score Quartiles and Eligible Payment Levels

Quartile Range	Payment Level
>Q1	$0.00
Q1 to Q2*	$0.07
Q2 to Q3*	$0.13
<Q3*	$0.25

* Inclusive of lower bound

If a practice has both an adult and pediatric RUI score, then the payment a practice receives will be based the score of the population that makes up more than 75% of the practice's total population. If the majority population makes up less than 75% of the practice population, then the higher score of the two populations will be used.

APPENDIX C: VERMONT "HUB & SPOKE" INITIATIVE – TREATMENT FOR OPIOID ADDICTION

Three partnering entities - the Blueprint for Health, the Department of Vermont Health Access (DVHA), and the Vermont Department of Health (VDH) Division of Alcohol and Drug Abuse Programs (ADAP) - in collaboration with local health, addictions, and mental health providers have implementing a statewide treatment program. Grounded in the principles of Medication Assisted Treatment[1], the Blueprint's health care reform framework, and the Health Home concept in the Federal Affordable Care Act, the partners have created the Care Alliance for Opioid Treatment, known as the Hub & Spoke initiative. This initiative:

- *Expands access to Methadone treatment* by opening a new methadone program in the Rutland area and supporting providers to serve all clinically appropriate patients who are currently on wait lists

- *Enhances Methadone treatment programs (Hubs)* by augmenting the programming to include Health Home Services to link with the primary care and community services, provide buprenorphine for clinically complex patients, and provide consultation support to primary care and specialists prescribing buprenorphine

- *Embeds new clinical staff (a nurse and a Master's prepared, licensed clinician) in physician practices that prescribe buprenorphine (Spokes)* through the Blueprint CHTs to provide Health Home services, including clinical and care coordination supports to individuals receiving buprenorphine

Under the Hub & Spoke approach, each patient undergoing MAT has an established medical home, a single MAT prescriber, a pharmacy home, access to existing Blueprint CHTs, access to Hub or Spoke nurses and clinicians, and access to VCCI services as appropriate.

[1] Medication Assisted Treatment (MAT), the use of medications, in combination with counseling and behavioral therapies, is a successful treatment approach and is well supported in the addictions treatment literature. The two primary medications used in conjunction with counseling and support services to treat opioid dependence are methadone and buprenorphine. MAT is considered a long-term treatment, meaning individuals may remain on medication indefinitely, akin to insulin use among people with diabetes.

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APPENDIX F: PARTNERSHIPS WITH NATIONAL INITIATIVES

CENTERS FOR MEDICARE AND MEDICAID SERVICES (CMS)

Vermont is one of 8 states chosen to be part of the Multi-payer Advanced Primary Care Practice (MAPCP) Demonstration through the Center for Medicare and Medicaid Innovation (CMMI). For more information, refer to (http://www.cms.gov/DemoProjectsEvalRpts/MD/ItemDetail.asp?ItemID=CMS1230016). This opportunity includes Medicare into the Blueprint multi-payer payment reforms as a fully participating insurer. In 2014, CCMI extend the MAPCP Demonstration in Vermont for an additional 2.5 years, through December 2016.

INSTITUTE OF MEDICINE OF THE NATIONAL ACADEMIES (IOM)

The Blueprint Executive Director serves as a member of the IOM Roundtable on Value and Science-Driven Health Care (http://iom.edu/Activities/Quality/VSRT.aspx), which has been convened to help transform the way evidence on clinical effectiveness is generated and used to improve health and health care. The stated goal is that by the year 2020, 90% of clinical decisions will be supported by timely and accurate information reflecting the best available evidence. The Blueprint Executive Director also sits on the IOM Consensus Committee on the Learning Health Care Systems in America. This group has undertaken the study of transforming the current delivery system into one of continuous assessment and improvement for both the effectiveness and efficiency of healthcare.

NATIONAL ACADEMY OF STATE HEALTH POLICY (NASHP)

NASHP provides a forum for constructive, nonpartisan work across branches and agencies of state government on critical health issues facing states. It has been a long-term supporter of the Blueprint, and Blueprint team members have shared their expertise and experience in multiple venues. Presentations at conferences and conference calls, policy brief preparation, serving on advisory groups, and site visits have been part of this valuable collaboration. Topics addressed include payment reform, data collection and utility, legislative approaches, Patient-Centered Medical Homes, Community Health Teams, and integration of mental health and substance abuse treatment. A Blueprint Assistant Director serves on the NASHP ReForum Advisory group. More information can be found at http://www.nashp.org/about-nashp

APPENDIX G: PRESENTATIONS AND MEETINGS

2015 Out of State Meetings			
1/15/2015	CMS Exploring Medicaid Health Homes: Opioid-Dependency Focused Health Homes	Webinar	B. Tanzman
3/3/2015	Presentation to CPC Adjunc Meeting of the Multi-Stakeholder Faculty	Baltimore, MD	C. Jones
3/9/2015	Presentation to the All-Payer Claims Database (APCD) Council: Linked Claims & Clinical Data Sources	Webinar	M. Hazard & T. Tremblay
3/16/2015	4th Annual Leadership Summit - Patient Centered Medical Homes & Behavioral Health Integration; Case Study: The Vermont Blueprint for Health	Buena Vista, FL	B. Tanzman
3/17 & 3/18/2015	IOM Roundtable Members Meeting	Washington, DC	C. Jones
4/1/2015	Maine Quality Counts; Primary Care Transformation: Lessons from Across the Nation - Speaker Panel	Augusta, ME	J. Samuelson
4/24/2015	NESCO Behavioral Health Medicaid Leadership Network Regional Meeting: Vermont's Opioid Addiction Treatment Health Home	Providence, RI	B. Tanzman
4/28/2015	IOM Core Metrics Report Relase Participant	Washington, DC	C. Jones
4/29/2015	Reform to Transform - Getting to Better Health: Connecting Care and Community	Meriden, CT	J. Samuelson
05/19/15 - 05/20/15	NASHP 5th Learning Consortium: Supporting State Strategies to Design and Deliver Whole-Person Care in Ambulatory Settings - Vermont's Opioid Addiction Treatment Health Home	Philadelphia, PA	B. Tanzman
5/29/2015	Milbank - Investing in Population Health	New York, NY	C. Jones
6/17/2015	NASHP Mtg. - Federal State Discourse on Assessing State Demonstrations	Washington, DC	C. Jones
6/22/2015	Foundation for Health Reform	Washington, DC	B. Tanzman
6/23/2015	Outcomes Building Sustainability	Alexandria, VA	B. Tanzman
6/23/2015 - 6/24/2015	Technical Advisory Committee Participant - MacColl Center	Washington, DC	C. Jones
7/13/2015	Medicaid Innovation Accelerator Program (IAP) - IAP Learning Collaborative: Substance Use Disorders (SUD)	Webinar	B. Tanzman
7/28/2015	National Governor's Association Meeting: Complex Care Programs Policy Academy	Washington, D.C.	C. Jones
9/15/2015	ASTHO: Maximizing Partnerships to Expand Care Coordination Vermont's Opioid Addiction Treatment Health Home	Webinar	B. Tanzman
9/21/2015	GHRI Technical Advisory Committee - Participant	Washington, D.C.	C. Jones
9/22/2015	GHRI Technical Advisory Committee - Participant	Washington, D.C.	C. Jones
9/24/2015	National Academy of Medicine's Leadership Consortium for Value & Science-Driven Health Care - Participant	Washington, D.C.	C. Jones
10/19/2015	Payer's Summit on Behavorial Health Management - Capacity Based Payments for Behavorial Health Integration and ROI: The Vermont Blueprint for Health	Alexandria, VA	B. Tanzman
10/20/2015	Integrating Behavorial Health Services for Individuals with Complex Needs; The Vermont Health Home for Opioid Addiction	Dallas, TX	B. Tanzman
10/22/2015	TAC Follow-Up Webinar Presentation	Webinar	C. Jones
10/22/2015	Transformation Network	Webinar	J. Samuelson
10/30/2015	The National Association of Health Data Organizations 30th Anniversary Meeting - Effective Use of APCD Data	Washington, D.C.	J. Samuelson
11/5/2015 - 11/6/2015	Transformation with Accountable Care Organizations, Community Care Organizations, DSRIP and Others. Presentations: Vermont's Unified Community Collaboratives	Detroit, MI	C. Jones
11/5/2015 - 11/6/2015	Transformation with Accountable Care Organizations, Community Care Organizations, DSRIP and Others. Presentations: Vermont's Unified Community Collaboratives	Detroit, MI	J. Samuelson
12/8/2015	SIM Annual Meeting: Presentation	Augusta, ME	C. Jones
12/8/2015	SIM Annual Meeting: Sustainability Panelist	Augusta, ME	C. Jones

2015 In State Meetings			
1/8/2015	Business Round Table - Speaker Panel	Essex, VT	C. Jones
1/16/2015	Vermont House Committee on Health Care - Blueprint 101 Presentation	Montpelier, VT	C. Jones
1/18/2015	Business Roundtable Annual Meeting - Blueprint and Health Systems Advancement	Essex, VT	C. Jones
2/10/2015	Vermont House Committee on Health Care - Blueprint Presentation	Montpelier, VT	C. Jones
2/10/2015	Vermont Appropriations - Blueprint Presentation	Montpelier, VT	C. Jones
2/10/2015	VHCIP Care Management Care Model Work Group Meeting - Blueprint Presentation	Montpelier, VT	J. Samuelson
2/11/2015	One Care Leadership Council - Blueprint Presentation	Montpelier, VT	C. Jones
2/23/2015	Blueprint/ACO Integration and Community Health Systems - Payment Models Work Group	Montpelier, VT	C. Jones
2/26/2015	Vermont House Committee on Health Care - Blueprint Presentation	Montpelier, VT	C. Jones
3/4/2015	CHAC Governing Board - Blueprint Phase II Delivery System Reform	Montpelier, VT	C. Jones
3/13/2015	North Country Hospital Physicians Retreat - Blueprint Presentation	Newport, VT	C. Jones
3/23/2015	VHCIP Care Management Care Model Work Group Meeting - Blueprint Presentation	Montpelier, VT	J. Samuelson
4/2/2015	VNA Board of Directors - Blueprint Plans & Role for Home Care	Berlin, VT	C. Jones
4/16/2015	Testimony - Vermont House Health Committee	Montpelier, VT	C. Jones
5/19/2015	Vermont Business Round Table - Health Care Working Group	Burlington, VT	C. Jones
10/1/2015	VITL Summit	Burlington, VT	M. Mohlman
10/20/2015	2015 Vermont Collective Impact Conference: Vermont Blueprint for Health	Fairlee, VT	C. Jones
10/21/2015	Northern Counties Health Care, Inc.'s Annual Meeting - Panel Discussion	Lyndonville, VT	C. Jones
10/23/2015	Transforming Primary Care & Behavorial Health - Panel: Vermont's Response to Keynote Address	Essex, VT	B. Tanzman
10/23/2015	Transforming Primary Care & Behavorial Health - Vermont's Evolving Community Health Systems: Blueprint for Health and New Reforms	Essex, VT	B. Tanzman

APPENDIX H: ACRONYMS

Acronym	Definition
ACO	Accountable Care Organization
CHT	Community Health Team
DVHA	Department of Vermont Health Access
EMR	Electronic Medical Record
HIT	Health Information Technology
MAT	Medication Assisted Treatment
NCQA	National Committee for Quality Assurance
PCMH	Patient Centered Medical Home
PMPM	Per-member per-month
SASH	Support and Services at Home
VCHURES	Vermont Healthcare Uniform Reporting and Evaluation System
VDH	Vermont Department of Health
VHIE	Vermont Health Information Exchange
VITL	Vermont Information Technology Leaders